Leitz-Lexicon

Edition 6

High process efficiency is the most important factor in economic success. Leitz, as a strong reliable partner, has helped customers for years optimise their manufacturing processes. In Lexicon Edition 6, we continue this support. The Leitz Lexicon is now established and recognised around the world as the source of information for both manual and industrial processing of solid wood, wood derived and plastic materials. But not just the most competent source of information the Lexicon also details the most complete and coherent product range from a single source. The Lexicon is a comprehensive user manual that gives you the knowledge to choose the right tool, to choose the correct cutting material and on tool maintenance: practical oriented and so key to your success.

Resources are critical and valuable; against a background of increasing global competition it is just not enough to have the best material, good machines and good tools. In an accelerating technological environment knowledge of how these interrelate is increasingly important as well as information on the new and future developments that will further optimise efficiency saving you time and material. Each new edition of the Leitz Lexicon reflects these developments in the industry.

Leitz has produced tools for the woodworking industry for 135 years. Since its foundation the Leitz-group is family-owned. This family continuity creates a particular type of corporate culture. Sustainability of product, service level and reliability for all our customers are the principles that guide us; these principles are fundamental to all our business decisions. Leitz has always been highly committed to its tradition, the reliability and quality of Leitz products and the services to its customers. Technological progress, ecologically justifiable and economic customer benefits have always been considered as one by Leitz. It is for these reasons Leitz is recognised worldwide as the leader in precision tools for the wood processing industries.

With this in mind, let us shape our success and future together.

Yours

D. Brucklacher

Dr. Dieter Brucklacher, Managing Director Leitz-Group

Explanation of abbreviations

A	=	dimension A
a_e	=	cutting thickness (radial)
a_p	=	cutting depth (axial)
ABM	=	dimension
APL	=	panel raising length
APT	=	panel raising depth
AL	=	working length
AM	=	number of knives
AS	=	anti sound (low noise design)
b	=	overhang
B	=	width
BDD	=	thickness of shoulder
BEM	=	note
BEZ	=	description
BH	=	tipping height
BO	=	bore diameter
CNC	=	Computerized Numerical Control
d	=	diameter
D	=	cutting circle diameter
D0	=	zero diameter
DA	=	outside Diameter
DB	=	diameter of shoulder
DFC	=	Dust Flow Control (optimised chip clearance)
DGL	=	number of links
DIK	=	thickness
DKN	=	double keyway
DP	=	polycrystalline diamond
DRI	=	rotation
FAB	=	width of rebate
FAT	=	depth of rebate
FAW	=	bevel angle
FLD	=	flange diameter
f_z	=	tooth feed
$f_{z\ eff}$	=	effective tooth feed
GEW	=	thread
GL	=	total length
GS	=	Plunging edge
H	=	height
HC	=	tungsten carbide, coated
HD	=	wood thickness (thickness of workpiece)
HL	=	high-alloyed tool steel
HS	=	high-speed steel (HSS)
HW	=	tungsten carbide (TCT)
ID	=	ident number
IV	=	insulation glazing
KBZ	=	abbreviation
KLH	=	clamping height
KM	=	edge breaker
KN	=	single keyway
KNL	=	combination pinhole consists of 2/7/42 2/9/46,35 2/10/60
L	=	length
l	=	clamping length
LD	=	left hand twist
LEN	=	Leitz standard profiles
LL	=	left hand rotation
M	=	metric thread
MBM	=	minimum order quantity
MC	=	multi-purpose steel, coated
MD	=	thickness of knife
min^{-1}	=	revolutions per minute (RPM)
MK	=	morse taper
m min^{-1}	=	metres per minute
m s^{-1}	=	metres per second
n	=	RPM
n_{max}.	=	maximum permissible RPM
NAL	=	position of hub
ND	=	thickness of hub
NH	=	zero height
NL	=	cutting length
NLA	=	pinhole dimensions
NT	=	grooving depth
P	=	profile
POS	=	cutter position
PT	=	profile depth
PG	=	profile group
QAL	=	cutting material quality
R	=	radius
RD	=	right hand twist
RL	=	right hand rotation
RP	=	radius of cutter
S	=	shank dimension
SB	=	cutting width
SET	=	set
SLB	=	slotting width
SLL	=	slotting length
SLT	=	slotting depth
SP	=	tool steel
ST	=	Cobalt-basis cast alloys, e. g. Stellit®
STO	=	shank tolerance
SW	=	cutting angle
TD	=	diameter of tool body
TDI	=	thickness of tool
TG	=	pitch
TK	=	reference diameter
UT	=	cutting edges with irregular pitch
V	=	no. of spurs
v_c	=	cutting speed
v_f	=	feed speed
VE	=	packing unit
VSB	=	adjustment range
WSS	=	workpiece material
Z	=	no. of teeth
ZA	=	number of fingers
ZF	=	tooth shape (cutting edge shape)
ZL	=	finger length

Guide for selection of cutting material

		Type of tool	Tipped tool			Tipped tool		Tool set				Single tool Tipped tool Tool set			
	Application		**Sawing**			**Hogging**		**Planing**				**Cutting**			
		Cutting material	ST	HW	DP	HW	DP	HL	HS	MC	HW	SP	HL	HS	MC
	Workpiece material	**Type**													
Solidwood	Softwood	dry		♦		♦		◇	♦	♦		♦	♦	♦	♦
		wet	♦	♦				♦	♦	♦			♦	♦	♦
	Hardwood	dry		♦		♦			◇	♦	♦			♦	♦
		wet	♦	♦					♦	♦				◇	♦
Panels	Laminated wood (plywood etc.)	Plywood		♦		♦			◇		♦		♦	♦	
		Multiplex		♦		♦	◇		◇		♦		♦	♦	
	Particle board (Chipboard)	uncoated		♦	◇	♦	♦								
		veneered		♦		♦	♦								
		plastic-coated		♦	◇	♦	♦								
		paper-coated		♦		♦									
	Fibre board (MDF)	uncoated		♦	♦	♦	♦								
		veneered		♦		♦	♦								
		plastic-coated		♦	♦	♦	♦								
		paper-coated		♦		♦									
	Hardboard			♦	◇	♦	♦								
	Softboard			♦		◇									
	Laminated boards (HPL/CPL...)			◇	♦	◇	♦								
Plastics	Duromers (Pertinax...)			◇	♦	◇	♦								
	Plastomers (PA, PE, PP...)			♦		◇				♦	♦				♦
	Fibre reinforced (GFK, CFK...)			◇	♦		♦								
	Polymer compound (Corian...)			♦	♦										
Composite materials	Solid wood with HF, MDF...			♦	◇	♦	◇								
	Wood materials with HPL, cork...			♦	◇	♦									
	Gypsum plaster board			♦		♦	♦								
	Cement board			◇	♦	◇	♦								
	Mineral wool			♦		♦					♦				
	Composite with aluminium			♦	♦	♦	♦								
	Composite with steel			◇											
Metal	Aluminium	pure (99.5)		♦	♦										
		alloyed		♦	♦										
	Lead alloy			♦	◇										
	Copper, zinc, brass			♦	◇										

		Type of tool	Single tool Tipped tool Tool set		Single tool Tipped tool Tool set					Single tool Tipped tool Tool set				
	Application		**Cutting**		**Routing**					**Drilling**				
		Cutting material	HW	DP	SP	HS	HW	HC	DP	ST	HS	HW	HC	DP
	Workpiece material	**Type**												
Solidwood	Softwood	dry	♦		♦	♦	♦	♦		♦	♦	♦	♦	
		wet				♦		♦		◇	♦	♦	♦	
	Hardwood	dry	♦			♦	♦	♦			♦	♦	♦	
		wet				♦		♦			♦	♦	♦	
Panels	Laminated wood (plywood etc.)	Plywood	♦			♦	◇	♦			♦	♦	♦	
		Multiplex	♦	◇		♦	◇	♦	♦		♦	♦	♦	
	Particle board (Chipboard)	uncoated	♦	♦			♦	◇	♦			♦		♦
		veneered	♦	♦			♦	◇	♦			♦		
		plastic-coated	♦	♦			♦	◇	♦			♦		♦
		paper-coated	♦	♦			♦	◇	♦			♦		
	Fibre board (MDF)	uncoated	♦	♦			♦	♦	♦			♦		♦
		veneered	♦	♦			♦	♦	♦			♦		
		plastic-coated	♦	♦			♦	♦	♦			♦		♦
		paper-coated	♦	♦			♦	♦	♦			♦		
	Hardboard		♦	♦			♦	♦	♦			♦		♦
	Softboard		♦			◇	♦	♦				♦		
	Laminated boards (HPL/CPL...)		◇	♦			◇	◇	♦			♦		♦
Plastics	Duromers (Pertinax...)		◇	♦			◇	◇	♦			♦		◇
	Plastomers (PA, PE, PP...)		♦			◇	♦	♦				♦		
	Fibre reinforced (GFK, CFK...)		◇	♦			◇	◇	♦			♦		♦
	Solid surface materials (Corian...)		♦	♦			♦	♦	♦			♦		◇
Composite materials	Solid wood with HF, MDF...		♦	♦			♦	◇	♦			♦		◇
	Wood materials with HPL, cork...		♦	♦			♦	◇	♦			♦		◇
	Gypsum plaster board		♦	♦			♦	◇	♦			♦		
	Cement board		◇	♦			♦	◇	♦			♦		◇
	Mineral wool		♦				♦	◇				♦		
	Composite with aluminium		♦	♦			♦	♦	♦			♦		
	Composite with steel						◇	◇						
Metal	Aluminium alloy		◇	♦			◇	◇	♦			♦		
	Copper, zinc, brass		◇	♦			◇	◇	♦			♦		

♦ Suitable ◇ Partly suitable



ntrol 2100

leitz
leitz



Leitz was founded in Oberkochen, Southern Germany in 1876. Precision tools and tooling systems developed and produced in house, meet the needs of the woodworking and plastic machining industries, Tooling plus complex tool services make Leitz a reliable partner for both industry and craft. Today Leitz is a global player with production plants, sales companies and service centres in over 100 countries.

Leitz Group

Leitz GmbH & Co. KG, with its headquarters in Oberkochen, Baden-Württemberg, Germany is a technological leading manufacturer of precision machine tools and tooling systems for industrial processing of solid wood, wood derived materials and plastic materials. In addition to a comprehensive product program, Leitz offers consultancy services using the company's 135 plus years experience of supplying tools to its customers.

Wigo, a member of the Leitz Group, supplies a complementary range of cutting tools for plastics, thermoplastics and thermosetting polymers, laminates and elastomers, mineral materials and non-ferrous metals. Wigo brings over 100 years of knowledge and experience in these sectors to the Leitz Group.

Leitz: facts and figures

The Leitz Group has 14 production facilities in Europe, America and Asia. The 3,500 employees at Leitz design, make and deliver over 8,000 precision tools from the standard tool program, in addition to tooling systems and numerous customer specific tools.

With many subsidiaries and over 200 service centres around the world Leitz is always close to the customer. Supported by local stocking Leitz delivers products quickly and reliably in over 150 countries and offers qualified consultancy support, and fast tool maintenance.

Leitz: a producer service provider

Leitz has, at the head office in Oberkochen and at the subsidiaries in Unterschneidheim, Germany and Riedau, Austria, in-house research and development centres. There Leitz engineers work closely with customers and leading machine manufacturers to develop and test innovative and efficient machining and tooling solutions.

Leitz also co-operates closely with the renowned research institutes and universities to offer the best tooling solution to its customers. Optimised performance, reduced processing costs and consideration of the environmental impact of the machining solutions are three of the priorities for research and development at Leitz.

Leitz supplies much more than a special range of products: Leitz is a service provider; the product spectrum encompasses the entire range of precision machine tools for global industrial organisations and craftsman's shops in the wood and plastic processing industries and are, for example, used in window, timber construction, panel processing and furniture. Leitz offers the right solution for every process.

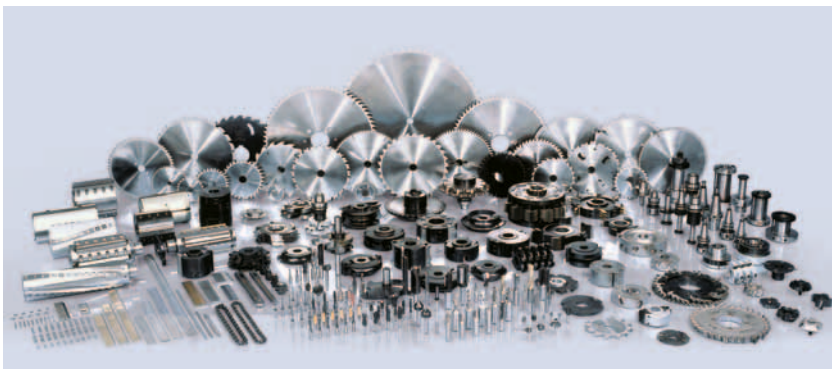
Leitz sees itself as an industrial partner and trouble shooter and offering first class consultancy services, project and process engineering, from traditional tool service to complex tool management and tool procurement, tool management, tool controlling, implementation and training. Leitz services are individually tailored and give each customer the opportunity to concentrate on his strengths and core business.

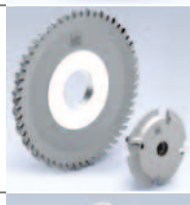
Service within hearing distance

Even the best quality tool can only give of its best if regularly maintained by experts over the its entire life. Leitz offers a global tool maintenance service servicing all tools to uniform and certified quality standards – service within hearing distance. The Leitz collection and delivery service complements this professional service and ensures customers' tools are returned to them quickly.

From the edge to tool – an all in one solution

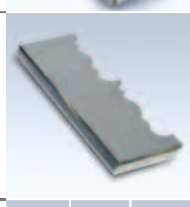
Leitz Group, Boehlerit GmbH & Co.KG of Kapfenberg, Austria and Bilz GmbH & Co.KG of Ostfildern, Germany work closely together developing and producing innovative tungsten carbide and diamond cutting materials; Here is foundation for the quality and inherent value of Leitz tools. Bilz's expertise is in tool clamping technology and is a leading manufacturer of thermal clamping systems for high speed machining of metal, wood and plastics. Bilz's products influence the economic success of Leitz tools. The knowledge and the development capability of Leitz, Boehlerit and Bilz opens up promise exciting prospects for the three companies and their customers.

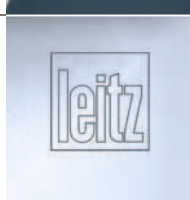






Content Notes

With the Leitz-Lexicon you have the most extensive reference tool for the solid wood and panel processing in your hands. The Leitz-Lexicon sets benchmarks in respect of information, detail and product information for the wood and plastics processing industries. The aim of the Leitz-Lexicon is to help you, our customer, find the right tooling solution quick, safe and easy.

The Leitz-Lexicon will guide you clearly through the complete and varied range of Leitz tools. You will find the cutting material you need for the workpiece to be machined just as quickly as the selection overviews and the user-oriented product specifications outlining the necessary application data and technical information.

If you cannot find a solution for your requirements in our standard program, you can specify your individual needs in the form at the end of each chapter. Only careful matching of all components will ensure a successful and economic production process.

The Leitz-Lexicon gives you a working instrument with useful information to help you achieve your objectives in terms of processing quality and economic production.

The Leitz-Lexicon's extensive content covers all the processes in the woodworking industry – process parameters, workpiece and cutting materials. Detailed descriptions of the Leitz tools lead you logically and in an easy understandable way to the correct tool for a specific application.

If preferred you can select both the required process operations, and the specification for the desired tool before starting the selection procedure.

What is known?	Steps to find the required tool
The processing task in general lines	The User Manual guides you from the industry to the processing task and to advantageous tool solutions in the relevant chapter in the Leitz-Lexicon.
The processing task and the required tool type	The Lexicon is classified by tool types, the detailed classification leads you to the processing task. The introduction to each subchapter gives all the essential information regarding the individual tool systems in that specific chapter. This allows for a comparison and selection of the most appropriate tool system.

Notes to the Lexicon concerning the diagrams and tables
The statements made in the diagrams and tables relate to specific conditions, and represent parameters from tests subjected to defined conditions.

Variations when using tools in individual case due to special application conditions may be possible. Our support team will provide you with detailed information.

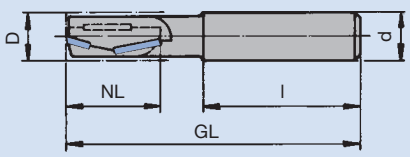
General Terms and Conditions
The sale of our tools is exclusively subject to our General Terms and Conditions in their respective valid version. Any sale conditions to the contrary will not be accepted by Leitz.
See page 849.

Important Order and Delivery Notes

Standard tools
The identification number clearly defines the tool. All the data the identification number, dimensions, direction of rotation and cutting material add to the information and help avoid wrong deliveries in case of an inaccurate identification number. Shank tools and tools with bore are detailed below as examples.

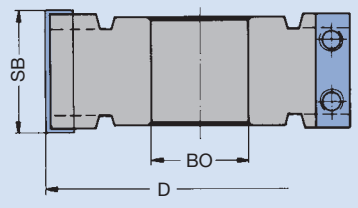
Shank tool

Identification:	Router cutter Diamaster Quattro
Item number:	WO 140-2
Ident. no.:	091147
Dimensions:	D x GL/NL x (d x l) 25 x 100/38 x (20 x 50)
Dir. of rotation:	LH (clockwise)
Cutting material:	DP (poly-crystalline diamond)



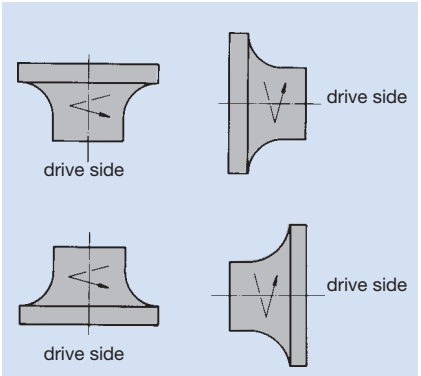
Tool with bore

Identification:	Rebating cutterhead
Item number:	WW 420-1-01
Ident. no.:	024498
Dimensions:	D x SB x BO; Z/V 125 x 50.4 x 30; Z2/V4
Cutting material:	HW (tungsten carbide)

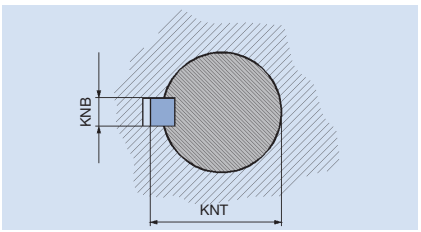


Special tools
Smooth enquiry and order processing requires detailed information. – The enquiry and order forms aid the order process and prevent errors. The following information will help you complete the order form.

Characteristic tool data
- Diameter x cutting width x bore (tools with bore)
- Diameter x working length x shank dimension (shank tools)
- Number of teeth
- Profile depth
- Direction of rotation (from the drive side)
- Speed of rotation
- Feed speed
- Keyway dimensions
- Tool design
- Quality of cutting material (HS, stellite, tungsten carbide, diamond)



Direction of rotation right.

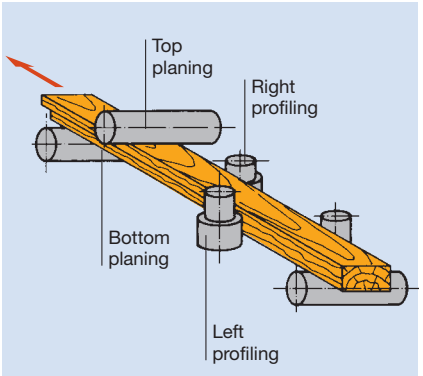


Keyway reference dimensions measured on the spindle

For bevelling, rebating and profiling tools we always supply:
Right hand rotation tools with the large diameter or spur to the top (unless specified differently at the time of order).

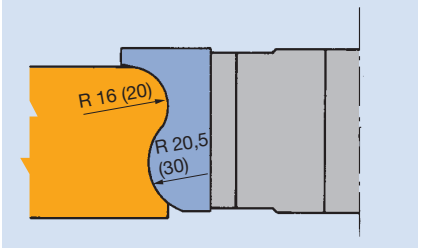
Type of feed
- Manual feed (MAN)
- Mechanical feed (MEC)

Tool set data
- Material: e. g.: softwoods, hardwoods, tempered or compressed woods, plywood boards, wood core boards, wood chipboards, MDF boards, soft fibreboards, hard fibreboards, compressed glulam, laminated woods, plastics, etc.
- Surface finish of the material: veneered, plastic coated, lacquered, etc. (in case of doubt regarding the material or its characteristics: send a sample of the material to be processed).
- Direction of processing: processing along or across the grain. Processing with or against feed.
- Machine data: manufacturer and type, range of rotation, installed power, max. tool dimensions, interfaces, type of feed, etc.
- Position of the workpiece to the tool: support of the workpiece, position of the fence and feed direction.



Position of the workpiece relative to the tool

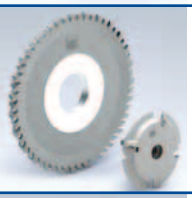
Profile information
Profile sketches or profile drawings must clearly indicate if they refer to the material (wood) or cutter. Please specify motor side, direction of rotation, dimensions and working conditions on the material sample or drawing.

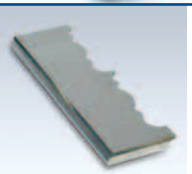


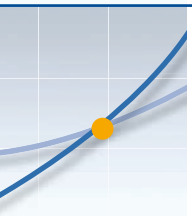
Useful helps for you!

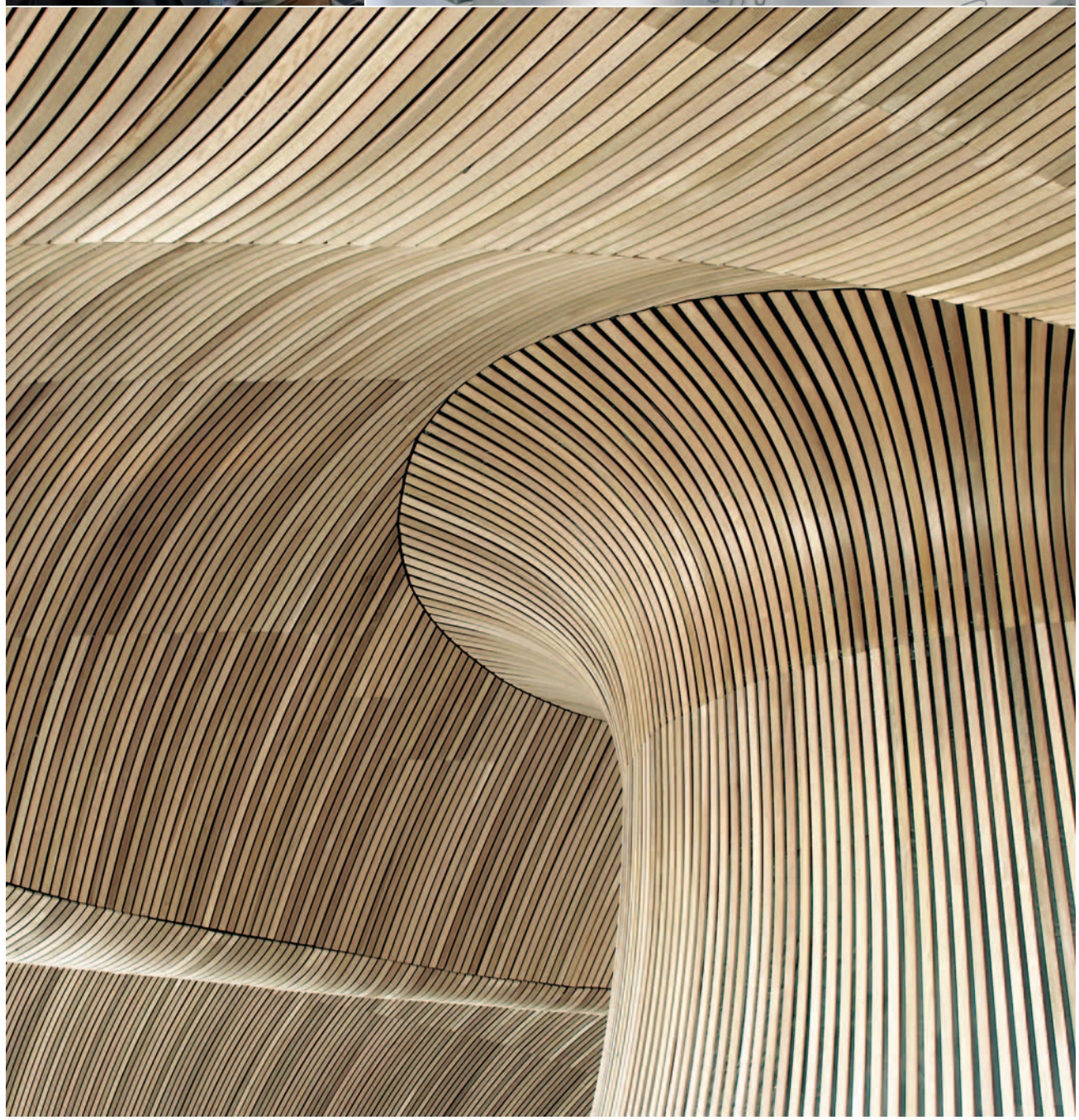
Dear Lexicon user,

we integrated in the Leitz-Lexicon, Edition 6 a number of useful add-ons for make your daily work with the Lexicon more comfortable.









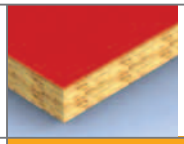
1. Sawing

Selection overview
Solid wood

Operation	 Along grain – dry Page/Chart	 Along grain – wet Page/Chart	 Across grain Page/Chart	 Universal Page/Chart
	Solid wood	**Solid wood**	**Solid wood**	**Solid wood**
	**FZ** **HW** 26/1 33/1 26/2 36/1 27/1 37/1 28/1 37/2 31/1 38/1 32/1 38/2 **WZ** **HW** 30/1 30/2 31/2	**FZ** **HW** 26/1 26/2 36/1 37/1 38/1		
	**FZ** **HW** 26/1 37/2 26/2 38/1 36/1 38/2 37/1 **WZ** **HW** 30/1 30/2	**FZ** **HW** 26/1 26/2 36/1 37/1 38/1		
	**FZ** **HW** 27/1 28/1 31/1 32/1 33/1 **WZ** **HW** 30/2 31/2 33/1			
	**FZ** **HW** 29/1 31/1 32/1 **WZ** **HW** 31/2			
			**WZ** **HW** 42/1 51/1 42/2 51/2 43/1 52/1 44/1 53/1 44/2 53/2 45/1 **HZ** **HW** 46/1 **WZ / WZ / FZ** **HW** 47/1 47/2	
				**FZ** **HW** 104/1 **WZ** **HW** 104/2 **TR** **HW** 105/1

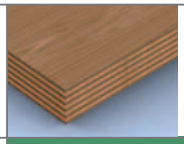
Description of tooth shapes see back cover/fold out page.

Selection overview
Cutting and fibre materials

Operation	 Plastic coated Page/Chart	 Paper coated Page/Chart	 Veneered Page/Chart	 Uncoated Page/Chart
	Board, coated	**Board, coated**	**Board, coated**	**Board, uncoated**
	**FZ / TR** HW 60/1 74/1 60/2 75/1 70/1 76/1 73/1 77/1 DP 59/1 72/1 **WZ** HW 70/1 **WZ / FA** HW 77/1 **TR / TR** HW 71/1 **WZ / FA** HW 51/1 53/1 51/2 53/2 52/1 **HZ** HW 46/1 **WZ / WZ / FZ** HW 47/1 47/2 **HZ / FA** HW 58/1	**WZ** HW 51/1 51/2 52/1 53/1 53/2 70/1 **WZ / FA** HW 77/1 **FZ / TR** HW 60/1 60/2 74/1 77/1 **HZ** HW 46/1 **WZ / WZ / FZ** HW 47/1 47/2	**WZ** HW 51/1 51/2 52/1 53/1 53/2 69/1 70/1 DP 68/1 **WZ / FA** HW 77/1 **HZ** HW 46/1 **WZ / WZ / FZ** HW 47/1 47/2 **FZ / TR** HW 77/1	**WZ** HW 51/1 51/2 52/1 53/1 53/2 69/1 70/1 DP 68/1 **HZ** HW 46/1 **WZ / WZ / FZ** HW 47/1 47/2 **FZ / TR** HW 60/1 60/2
	**HZ / DZ** HW 55/1 56/1 57/1 57/2 **HZ / FA** HW 58/1 **FZ / TR** HW 60/1 60/2 **FZ** HW 34/1 DP 34/2 35/1 35/2 **HZ** HW 46/1 **WZ / WZ / FZ** HW 47/1 47/2	**HZ / DZ** HW 55/1 56/1 57/1 57/2 **HZ / FA** HW 58/1 **FZ** HW 34/1 DP 34/2 35/1 35/2 **HZ** HW 46/1 **WZ / WZ / FZ** HW 47/1 47/2	**HZ / DZ** HW 55/1 56/1 57/1 57/2 **HZ / FA** HW 58/1 **HZ** HW 46/1 **WZ / WZ / FZ** HW 47/1 47/2	**WZ** HW 51/1 51/2 52/1 53/1 53/2 69/1 70/1 DP 68/1 **HZ** HW 46/1 **WZ / WZ / FZ** HW 47/1 47/2
	**FZ / TR** HW 72/1 73/1 74/1 75/1 76/1 **WZ / FA** HW 77/1 **WZ** HW 69/1 70/1 DP 68/1 **TR / TR** HW 71/1	**FZ / TR** HW 72/1 73/1 74/1 75/1 76/1 **WZ / FA** HW 77/1 **WZ** HW 69/1 70/1 DP 68/1	**WZ** HW 69/1 70/1 DP 68/1 **WZ / FA** HW 77/1	**WZ** HW 69/1 70/1 DP 68/1

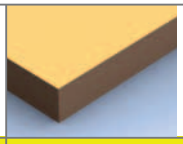
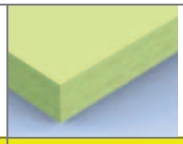
Solid wood
Board, coated
Board, uncoated
Non-ferrous metals
Plastics
Mineral materials
Composites

Selection overview
Combined materials

Operation	 **Laminated wood** Page/Chart	 **Plywood** Page/Chart	 **Light-weight board** Page/Chart	 **Solid core panel** Page/Chart
	Solid wood	**Solid wood**	**Board, coated**	Plastics
	**WZ** **HW** 45/1, 51/1, 51/2, 53/1, 53/2, 69/1, 70/1 **DP** 68/1 **HZ** **HW** 46/1			**FZ / TR** **HW** 60/1, 60/2 **DP** 59/1
	**WZ** **HW** 45/1, 51/1, 51/2, 53/1, 53/2, 69/1, 70/1 **DP** 68/1 **HZ** **HW** 46/1			**FZ / TR** **HW** 60/1, 60/2 **DP** 59/1
	**WZ** **HW** 69/1, 70/1	**WZ** **HW** 54/1		**FZ / TR** **HW** 73/1, 75/1, 76/1 **DP** 59/1, 72/1
			**WZ** **HW** 54/2	

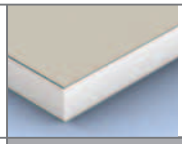
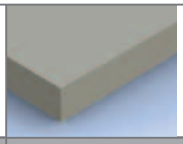
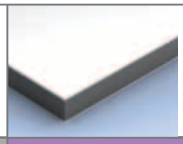
Description of tooth shapes see back cover/fold out page.

Selection overview
Synthetic materials

Operation	 **Plastomers** Page/Chart	 **Duromers** Page/Chart	 **Fibre reinforced plastics** Page/Chart	 **Polymer-compound plastics** Page/Chart
	Plastics	Plastics	Plastics	Plastics
	**WZ** **HW** 53/2 **FZ / TR** **HW** 73/1 74/1 75/1 76/1 **DP** 59/1 **WZ / FA** **HW** 77/1 **FZFA / FZFA** **HW** 101/1	**WZ** **HW** 53/2 **FZ / TR** **HW** 73/1 74/1 75/1 76/1 **DP** 59/1 **WZ / FA** **HW** 77/1 **FZFA / FZFA** **HW** 101/1	**FZ / TR** **HW** 34/1 **DP** 34/2 72/1	**FZ / TR** **HW** 60/1 60/2 73/1 74/1 75/1 76/1 **WZ / FA** **HW** 77/1
	**FZFA / FZFA** **HW** 101/1	**FZ / TR** **HW** 60/1 60/2 96/1 **FZFA / FZFA** **HW** 101/1	**FZ / TR** **HW** 34/1 **DP** 34/2	**FZ / TR** **HW** 60/1 60/2
	**FZ / TR** **HW** 73/1 74/1 75/1 76/1 **WZ / FA** **HW** 77/1	**FZ / TR** **HW** 73/1 74/1 75/1 76/1 **WZ / FA** **HW** 77/1	**FZ / TR** **HW** 72/1	**FZ / TR** **HW** 60/1 60/2 74/1 75/1 76/1 **WZ / FA** **HW** 77/1
	**FZ / TR** **HW** 96/1 97/1 97/2 98/1 98/2 99/1	**FZ / TR** **HW** 96/1 97/1 97/2 98/1 98/2 99/1 100/1		**FZ / TR** **HW** 96/1 97/1 97/2 98/1 98/2 99/1 100/1
	**FZFA / FZFA** **HW** 101/1	**FZFA / FZFA** **HW** 101/1		
	**FZFA / FZFA** **HW** 101/1	**FZFA / FZFA** **HW** 101/1		

Solid wood
Board, coated
Board, uncoated
Non-ferrous metals
Plastics
Mineral materials
Composites

Selection overview
Other materials

Operation	 **Gypsum plaster board** Page/Chart	 **Cement-based board** Page/Chart	 **Alucobond board** Page/Chart	 **Non-ferrous metals** Page/Chart
	Solid surface material	Solid surface material	Composites	Non-ferrous metals
	**FZ / TR** **HW** 60/1, 60/2, 73/1, 75/1, 76/1 **DP** 59/1, 72/1 **WZ** **HW** 52/1, 52/2, 69/1, 70/1 **DP** 68/1	**FZ / TR** **HW** 60/1, 60/2, 73/1, 75/1, 76/1 **DP** 59/1, 72/1	**FZ / TR** **HW** 60/1, 101/1	**FZ / TR** **HW** 102/1
	**FZ / TR** **HW** 60/1, 60/2, 73/1, 75/1, 76/1 **DP** 59/1, 72/1 **WZ** **HW** 52/1, 52/2, 69/1, 70/1 **DP** 68/1 **TR** **HW** 105/1 **DP** 105/2	**FZ / TR** **HW** 60/1, 60/2, 73/1, 75/1, 76/1 **DP** 59/1, 72/1 **TR** **HW** 105/1 **DP** 105/2	**FZ / TR** **HW** 60/2, 100/1, 101/1	**FZ / TR** **HW** 102/1
	**FZ / TR** **HW** 73/1, 75/1, 76/1 **DP** 59/1, 72/1 **WZ** **HW** 52/1, 52/2, 69/1, 70/1 **DP** 68/1	**FZ / TR** **HW** 73/1, 75/1, 76/1 **DP** 59/1, 72/1	**FZ / TR** **HW** 73/1, 75/1, 76/1 **DP** 59/1, 72/1	**FZ / TR** **HW** 102/1
				**FZ / TR** **HW** 96/1, 97/1, 98/2, 100/1
				**FZ / TR** **HW** 96/1, 97/1, 97/2, 98/1, 98/2, 99/1, 100/1

Description of tooth shapes see back cover/fold out page.

D mm	SB mm	BO mm	Z	ZF	SW Deg.	WSS	ID	Page
100	3,2	20	20	KON/FZ	5		**061556**	82
100	3,2	22	20	KON/FZ	5		**061557**	82
120	3,2	20	24	KON/FZ	5		**061552**	82
125	3,1	20	20	KON/FZ	10		**190564**	81,88
125	3,1	20	20	KON/WZ	10		**190584**	78,88
125	3,1	22	20	KON/FZ	10		**190614**	81
125	3,1	22	20	KON/WZ	10		**190617**	78
125	3,2	20	24	KON/WZ	5		**061470**	79,88
125	3,2	22	24	KON/WZ	5		**061507**	79
125	4,4	20	24	KON/FZ	5		**061516**	82,88
125	4,4	22	24	KON/WZ	5		**061474**	79
125	4,4	45	20	KON/WZ	5		**061485**	79,85, 87
125	4,4	45	24	KON/FZ	5		**061518**	82
140	3,2	16	32	KON/WZ	5		**061538**	79
140	4,4	45	24	KON/FZ	5		**061519**	82
150	2,4	30	48	WZ	10		**058450**	52
150	3,2	20	24	KON/WZ	5		**061471**	79
150	3,2	30	24	KON/WZ	5		**061472**	79
150	3,2	30	48	WZ	10		**058300**	52
150	3,5	30	24	WZ	10		**058050**	52
150	3,5	30	30	FZ	10		**058570**	61
150	3,5	30	48	FZ	10		**058700**	61
150	3,5	55	30	FZ	10		**058578**	61
150	4,3	20	24	KON/FZ	10		**190577**	81
150	4,3	20	24	KON/WZ	10		**190585**	78
150	4,3	30	24	KON/FZ	10		**190565**	81
150	4,3	30	24	KON/WZ	10		**190586**	78
150	4,3	45	24	KON/FZ	10		**190578**	81, 87-88
150	4,3	45	24	KON/WZ	10		**190587**	78, 87-88
150	4,4	20	24	KON/WZ	5		**061477**	79
150	4,4	30	24	KON/WZ	5		**061486**	79
150	4,4	45	24	KON/WZ	5		**061530**	79, 87-88
160	1,8	16	48	WZ	10		**060574**	54
160	2,8	16	42	FZ/TR	-5		**060272**	99
160	3,2	16	36	FZ/TR	5		**059856**	97
160	3,2	20	4	P	5		**190302**	105
160	3,2	20	32	KON/WZ	5		**061543**	79
160	4,3	30	30	KON/FZ	10		**190579**	81
160	4,3	30	30	KON/WZ	10		**190588**	78
160	4,3	45	30	KON/FZ	10		**190580**	81,85
160	4,3	45	30	KON/WZ	10		**190589**	78,85
160	4,3	55	30	KON/FZ	10		**190566**	81,92
160	4,3	55	30	KON/WZ	10		**190590**	78,92
160	4,4	30	36	KON/WZ	5		**061495**	79
160	4,4	45	28	KON/WZ	5		**061509**	79,85
160	4,4	55	36	KON/WZ	5		**061487**	79,92
180	1,0	65	24	FZ	20		**057484**	32
180	1,1	60	24	FZ	20		**057485**	32
180	1,1	65	24	FZ	20		**057486**	32
180	1,3	60	32	FZ	20		**057418**	32
180	1,5	60	21	FZ	20		**057443**	32
180	1,5	60	32	FZ	20		**057419**	32
180	1,6	16	56	WZ	10		**060591**	54
180	1,8	60	21	FZ	20		**057444**	32
180	1,8	60	32	FZ	20		**057412**	32
180	2,0	16	56	WZ	10		**060645**	54
180	2,0	16	72	WZ	10		**060592**	54
180	2,2	30	18	FZ	15		**057492**	33

D mm	SB mm	BO mm	Z	ZF	SW Deg.	WSS	ID	Page
180	2,4	16	58	WZ	10		**059665**	54
180	2,4	30	30	WZ	15		**057800**	52
180	2,4	30	58	WZ	10		**058451**	52
180	3,0	30	24	WZ	15		**057980**	52
180	3,2	16	36	KON/WZ	5		**061473**	79
180	3,2	16	42	FZ/TR	5		**059857**	97
180	3,2	20	36	KON/WZ	5		**061493**	79
180	3,2	30	42	FZ/TR	-5		**060114**	98
180	3,2	30	58	WZ	10		**058301**	52
180	3,5	30	30	WZ	10		**058052**	52
180	3,5	30	36	FZ	10		**058572**	61
180	3,5	30	58	FZ	10		**058702**	61
180	3,8	45	36	KON/FZ	5		**061566**	82
180	3,8	45	54	KON/FZ	5		**061568**	82
180	4,3	20	30	KON/FZ	10		**190581**	81,84
180	4,3	20	30	KON/WZ	10		**190591**	78,84
180	4,3	30	30	KON/FZ	10		**190567**	81,86, 88-90
180	4,3	30	30	KON/WZ	10		**190592**	78,86, 88-90
180	4,3	45	30	KON/FZ	10		**190568**	81, 86-88
180	4,3	45	30	KON/WZ	10		**190593**	78, 86-88
180	4,3	50	30	KON/FZ	10		**190582**	81
180	4,3	50	30	KON/WZ	10		**190594**	78
180	4,4	20	30	KON/WZ	5		**061478**	79,84
180	4,4	30	30	KON/FZ	5		**061517**	82,86, 88-90
180	4,4	45	30	KON/WZ	5		**061544**	79,88
180	4,4	45	36	KON/WZ	5		**061553**	79, 86-87
180	4,5	50	36	KON/WZ	5		**061558**	79
180	4,55	30	36	WZ/FA	5		**059192**	83,90
180	4,7	45	30	KON/FZ	10		**190569**	81,87
180	4,7	45	30	KON/WZ	10		**190595**	78,87
180	4,8	45	36	KON/FZ	5		**061526**	82,87
180	5,0	55	30	KON/WZ	5		**061500**	79,85
180	5,0	60	32	FZ	20		**057435**	31
180	6,0	20	30	KON/WZ	5		**061520**	79,84
190	3,2	20	4	P	5		**190303**	105
190	3,4	30	20	WZ	20		**057120**	104
200	1,5	60	21	FZ	20		**057445**	32
200	1,5	60	36	FZ	20		**057421**	32
200	1,8	20	80	FZFA/FZFA	-5		**060274**	100
200	1,8	60	21	FZ	20		**057446**	32
200	2,0	16	64	WZ	10		**059666**	54
200	2,0	30	20	WZ	15		**057454**	33
200	2,0	30	24	FZ	20		**067050**	28
200	2,4	30	18	FZ	15		**057493**	33
200	2,4	30	20	WZ	15		**057455**	33
200	2,4	30	22	FZ	25		**067200**	28
200	2,4	30	22	FZ	25		**067314**	27
200	2,4	30	34	WZ	15		**057801**	52
200	2,4	30	64	WZ	10		**058452**	52
200	3,0	30	24	WZ	15		**057981**	52
200	3,2	18	80	FZ/TR	-5		**060261**	99
200	3,2	20	72	WZ	-5		**065872**	43
200	3,2	30	34	WZ	10		**058053**	52
200	3,2	30	42	FZ	10		**058573**	61
200	3,2	30	48	FZ/TR	5		**059860**	97
200	3,2	30	48	WZ	10		**058380**	52

D mm	SB mm	BO mm	Z	ZF	SW Deg.	WSS	ID	Page
200	3,2	30	60	FZ/TR	-5		**060270**	99
200	3,2	30	60	KON/WZ	5		**061549**	80,91
200	3,2	30	64	FZ	10		**058703**	61
200	3,2	30	64	WZ	10		**058302**	52
200	4,3	20	24	KON/WZ	5		**061522**	79, 90-91
200	4,3	20	30	KON/FZ	10		**190570**	81, 90-91
200	4,3	20	30	KON/WZ	10		**190596**	78, 90-91
200	4,3	30	30	KON/FZ	10		**190571**	81,91
200	4,3	30	30	KON/WZ	10		**190597**	78,91
200	4,3	45	30	KON/FZ	10		**190572**	81,86
200	4,3	45	30	KON/WZ	10		**190598**	78,86
200	4,3	50	30	KON/FZ	10		**190583**	81
200	4,3	50	30	KON/WZ	10		**190599**	78
200	4,3	65	30	KON/FZ	10		**190615**	81
200	4,3	65	30	KON/WZ	10		**190618**	78
200	4,3	80	30	KON/FZ	10		**190616**	81, 84-85
200	4,3	80	30	KON/WZ	10		**190619**	78, 84-85
200	4,4	20	34	KON/WZ	5		**061479**	79, 90-91
200	4,4	30	34	KON/WZ	5		**061489**	80,91
200	4,4	45	34	KON/WZ	5		**061490**	80,86
200	4,4	65	36	KON/WZ	5		**061505**	80, 92-93
200	4,4	80	36	KON/FZ	5		**061542**	82, 84-85
200	4,5	50	44	KON/WZ	5		**061559**	80
200	4,7	45	30	KON/FZ	10		**190573**	81,87
200	4,7	45	30	KON/WZ	10		**190600**	78,87
200	4,7	65	30	KON/FZ	10		**190574**	81,93
200	4,7	65	30	KON/WZ	10		**190601**	78,93
200	4,8	30	36	KON/FZ	5		**061561**	82
200	4,8	45	36	KON/FZ	5		**061527**	82
200	4,8	65	36	KON/WZ	5		**061528**	80,93
200	5,0	60	36	FZ	20		**057436**	31
200	5,2	20	24	KON/WZ	5		**061501**	79,91
200	5,2	40	30	KON/WZ	5		**061571**	80,91
200	5,8	45	34	KON/WZ	5		**061499**	80,87
200	6,2	20	36	KON/WZ	5		**061546**	79,91
200	6,2	45	36	KON/WZ	5		**061547**	80,87
210	2,2	100	36	FZ	3		**090674**	34
210	2,2	115	36	FZ	3		**090697**	34
210	3,2	30	20	FZ	20		**057500**	37
210	3,2	115	36	FZ	3		**090698**	34-35
210	3,4	30	16	FZ	20		**057400**	37
215	4,3	50	36	KON/FZ	10		**190575**	81,85
215	4,3	50	36	KON/WZ	10		**190602**	78,85
215	4,4	50	42	KON/WZ	5		**061508**	80,85
220	1,2	60	27	FZ	20		**057475**	32
220	1,2	60	32	FZ	20		**057463**	32
220	1,2	65	24	FZ	20		**057474**	32
220	1,3	60	24	FZ	25		**057476**	32
220	1,3	60	32	FZ	25		**057478**	32
220	1,3	65	24	FZ	25		**057477**	32
220	1,3	65	32	FZ	25		**057479**	32
220	1,4	60	24	FZ	25		**057480**	32
220	1,4	60	32	FZ	20		**057464**	32
220	1,4	65	24	FZ	25		**057481**	32
220	1,4	65	32	FZ	20		**057465**	32
220	2,0	30	24	FZ	20		**067051**	28
220	2,4	30	24	FZ	25		**067201**	28
220	2,4	30	24	FZ	25		**067315**	27
220	3,2	30	36	KON/FZ	5		**061535**	82,88
220	3,2	30	42	HZ/DZ	-5		**058957**	55
220	3,2	30	42	HZ/DZ	10		**058967**	57
220	3,2	30	42	HZ/FA	10		**058880**	58
220	3,2	30	64	FZ/TR	10		**061375**	60,75
220	3,2	30	64	WZ	10		**060646**	52
220	3,2	30	72	FZ/TR	-5		**060271**	99
220	3,35	30	48	FZ/TR	10		**061536**	83,88
220	4,0	115	36	FZ	3		**190518**	35
220	5,0	115	18	FZ	3		**190519**	35
220	6,5	20	36	KON/WZ	5		**061560**	80,91
225	1,5	60	25	FZ	20		**057447**	32
225	1,5	60	40	FZ	20		**057422**	32
225	1,6	60	32	FZ	25		**057482**	32
225	1,6	65	32	FZ	25		**057483**	32
225	1,8	60	25	FZ	20		**057448**	32
225	2,0	60	25	FZ	20		**057449**	32
225	2,0	60	40	FZ	20		**057416**	32
225	2,4	30	24	WZ	15		**057457**	33
225	2,8	30	18	FZ	15		**057494**	33
225	3,2	30	6	P	5		**190304**	105
225	5,0	30	25	FZ	20		**057441**	31
225	5,0	60	40	FZ	20		**057437**	31
240	3,2	30	54	FZ/TR	10		**061376**	60
250	1,7	30	80	WZ	8		**058520**	53
250	1,7	60	25	FZ	20		**057450**	32
250	1,7	60	36	FZ	20		**057433**	32
250	1,7	65	28	FZ	20		**067055**	29
250	2,0	30	24	FZ	20		**067052**	28
250	2,0	30	100	FZFA/FZFA	-5		**060275**	100
250	2,0	60	25	FZ	20		**057451**	32
250	2,0	60	36	FZ	20		**057434**	32
250	2,0	80	36	WZ	15		**067053**	30
250	2,2	60	36	FZ	3		**190502**	34
250	2,2	90	36	FZ	3		**190504**	34
250	2,2	100	36	FZ	3		**090668**	34
250	2,2	100	48	FZ	10		**061433**	34
250	2,2	115	36	FZ	3		**090695**	34
250	2,4	30	12	FZ	25		**067041**	29
250	2,4	30	24	FZ	25		**067202**	28
250	2,4	30	24	WZ	15		**057458**	33
250	2,4	30	40	WZ	15		**057802**	52
250	2,4	30	80	WZ	10		**058453**	52
250	2,4	30	80	WZ	20		**058456**	54
250	2,4	70	20	FZ	20		**067310**	27
250	2,4	70	24	FZ	20		**067056**	29
250	2,4	70	24	FZ	25		**067203**	28
250	2,4	80	24	FZ	25		**067204**	28
250	2,4	80	24	WZ	15		**057487**	33
250	2,4	80	32	WZ	15		**067054**	30
250	2,4	80	40	FZ	15		**057460**	33
250	2,4	80	40	WZ	15		**057488**	33
250	2,5	60	40	FZ	20		**067032**	29
250	2,8	70	24	FZ	15		**057495**	33
250	3,2	15,88	40	WZ	10		**058054**	52
250	3,2	15,88	60	WZ	10		**058381**	52
250	3,2	15,88	80	WZ	10		**058303**	52
250	3,2	30	18	FZ	20		**057050**	104

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250	3,2	30	18	FZ	20		**057502**	37
250	3,2	30	20	FZ	20		**057300**	38
250	3,2	30	24	WZ	20		**057123**	104
250	3,2	30	30	WZ	15		**057982**	52
250	3,2	30	40	WZ	10		**058055**	52
250	3,2	30	40	WZ	10		**069005**	51
250	3,2	30	48	HZ/DZ	-5		**058972**	55
250	3,2	30	48	HZ/DZ	10		**058971**	57
250	3,2	30	48	WZ	10		**058202**	52
250	3,2	30	60	FZ/TR	10		**061351**	75
250	3,2	30	60	FZ/TR	15		**069088**	74
250	3,2	30	60	TR/TR	15		**069100**	71
250	3,2	30	60	WZ	10		**058382**	52
250	3,2	30	60	WZ	10		**069076**	51
250	3,2	30	80	FZ/TR	-5		**060250**	99
250	3,2	30	80	FZ/TR	5		**059950**	97
250	3,2	30	80	FZ/TR	10		**061377**	60,75
250	3,2	30	80	WZ	-5		**065873**	43
250	3,2	30	80	WZ	10		**058304**	52
250	3,2	30	80	WZ	10		**068251**	51
250	3,2	32	80	FZ/TR	-5		**060251**	99
250	3,2	60	36	FZ	3		**190503**	34
250	3,2	60	48	FZ	10		**058574**	61
250	3,2	70	20	FZ	20		**057302**	38
250	3,2	70	20	WZ	18		**068750**	30
250	3,2	90	36	FZ	3		**190505**	34
250	3,2	100	36	FZ	3		**090669**	34
250	3,2	100	48	FZ	10		**061434**	34
250	3,2	115	36	FZ	3		**090696**	34-35
250	3,4	30	60	FZ/TR	-5		**060134**	98
250	3,4	30	60	FZ/TR	5		**059884**	97
250	3,4	32	60	FZ/TR	-5		**060136**	98
250	3,5	30	18	FZ	25		**067006**	26
250	3,5	30	72	FZ/TR	5		**068405**	60
250	3,5	30	80	WZ	10		**065934**	51
250	4,0	30	18	FZ	20		**057402**	37
250	4,3	30	36	KON/FZ	10		**190576**	81,86, 88
250	4,3	30	36	KON/WZ	10		**190603**	78,86, 88
250	4,4	30	18	FZ	25		**067000**	26
250	4,4	30	42	KON/FZ	5		**061537**	82,86, 88
250	4,5	50	44	KON/WZ	5		**061570**	80
250	4,55	30	48	FZ/TR	10		**061521**	83,86, 88
250	4,55	45	80	WZ	10		**061617**	83,87
250	4,6	50	60	TR	10		**059714**	83
250	5,0	30	25	FZ	20		**057442**	31
250	5,0	60	36	FZ	20		**057438**	31
250	8,0	80	24	FZ	15		**057466**	31
255	2,8	30	48	WZ	-5		**069085**	42
255	2,8	30	60	WZ	-5		**065874**	43
255	2,8	30	80	WZ/WZ/FZ	10		**065888**	47
255	3,2	30	48	WZ	-5		**065350**	42
260	4,0	115	36	FZ	3		**190520**	35
260	4,2	60	20	FZ	20		**057220**	38
260	5,0	115	18	FZ	3		**190521**	35
270	2,4	60	28	FZ	20		**067033**	29
275	3,4	40	72	FZ/TR	-5		**060137**	98
275	3,4	40	72	FZ/TR	5		**059885**	97
280	3,2	30	60	FZ/TR	10		**061353**	74,88

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280	3,2	30	60	TR/TR	15		**069101**	71,88
280	3,8	45	48	KON/FZ	5		**061567**	82
280	4,1	45	84	WZ	10		**061569**	83
280	4,4	30	48	KON/FZ	5		**061540**	82,89
280	4,55	30	60	FZ/TR	15		**061614**	83,89
280	4,55	45	84	WZ	10		**061619**	83, 86-87
280	4,8	45	48	KON/WZ	5		**061564**	80
280	4,8	45	72	KON/WZ	5		**061563**	80
280	4,95	45	84	WZ	10		**061676**	83,87
300	1,7	30	96	WZ	8		**058521**	53
300	2,2	30	120	FZFA/FZFA	-5		**060276**	100
300	2,4	30	48	WZ	15		**057803**	52
300	2,4	30	96	WZ	10		**058454**	52
300	2,4	60	24	FZ	20		**067218**	29
300	2,6	30	20	FZ	20		**067311**	27
300	2,6	30	84	WZ	20		**058457**	54
300	2,6	70	20	FZ	20		**067312**	27
300	2,8	30	30	FZ	25		**067212**	28
300	2,8	70	30	FZ	25		**067213**	28
300	2,8	80	28	WZ/FA	15		**057489**	33
300	2,8	80	30	FZ	25		**067214**	28
300	3,0	30	60	FZFA/FZFA	-5		**761033**	101
300	3,0	30	96	FZFA/FZFA	-5		**761034**	101
300	3,0	30	100	WZ/WZ/FZ	10		**068550**	47
300	3,0	80	28	FZ	20		**067316**	27
300	3,2	15,88	72	WZ	10		**058383**	52
300	3,2	15,88	96	WZ	10		**058310**	52
300	3,2	30	6	P	5		**190305**	105
300	3,2	30	20	FZ	20		**057503**	37
300	3,2	30	20	TR	12		**060309**	105
300	3,2	30	24	FZ	20		**057303**	38
300	3,2	30	28	WZ	20		**057125**	104
300	3,2	30	30	WZ	-5		**057700**	43
300	3,2	30	36	WZ	15		**057983**	52
300	3,2	30	48	WZ	10		**058057**	52
300	3,2	30	48	WZ	10		**069006**	51
300	3,2	30	60	DZ/FZFA	10		**190563**	59
300	3,2	30	60	HZ/FA	10		**058881**	58
300	3,2	30	60	WZ	10		**058204**	52
300	3,2	30	72	FZ/TR	10		**061378**	60,75, 91
300	3,2	30	72	FZ/TR	10		**068406**	60
300	3,2	30	72	TR/TR	15		**069102**	71
300	3,2	30	72	WZ	10		**058384**	52
300	3,2	30	72	WZ	10		**069009**	51
300	3,2	30	96	FZ/TR	-5		**060252**	99
300	3,2	30	96	FZ/TR	5		**059951**	97
300	3,2	30	96	FZ/TR	10		**061379**	60,75
300	3,2	30	96	FZ/TR	10		**068407**	60
300	3,2	30	96	WZ	-6		**065870**	43
300	3,2	30	96	WZ	10		**058311**	52
300	3,2	30	96	WZ	10		**068801**	51
300	3,2	30	120	FZ/TR	-5		**060267**	99
300	3,2	31,75	72	WZ	10		**058388**	52
300	3,2	32	96	FZ/TR	-5		**060253**	99
300	3,2	70	20	FZ	20		**057504**	37
300	3,2	70	24	FZ	15		**057304**	38
300	3,2	70	24	WZ	18		**068751**	30
300	3,4	30	72	FZ/TR	-5		**060138**	98
300	3,4	30	72	FZ/TR	5		**059886**	97
300	3,4	32	72	FZ/TR	-5		**060139**	98

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300	3,4	80	28	FZ	20		**067317**	27
300	3,5	30	14	FZ	20		**057000**	104
300	3,5	30	20	FZ	20		**057051**	104
300	3,5	30	20	FZ	25		**067024**	26
300	3,5	30	20	WZ/FA	15		**065342**	77
300	3,5	30	48	WZ	10		**065931**	51
300	3,5	30	60	FZ/TR	10		**069021**	74
300	3,5	30	60	FZ/TR	10		**090638**	59
300	3,5	30	60	WZ/FA	15		**065343**	77
300	3,5	30	72	FZ/TR	5		**065332**	96
300	3,5	30	72	FZ/TR	5		**065950**	96
300	3,5	30	72	WZ	10		**065937**	51
300	3,5	30	96	WZ	10		**065935**	51
300	3,5	70	20	FZ	25		**067008**	26
300	3,5	80	20	FZ	25		**067029**	26
300	3,5	80	20	FZ	25		**067046**	26
300	4,0	30	20	FZ	20		**057405**	37
300	4,0	70	20	FZ	20		**057406**	37
300	4,2	30	24	FZ	20		**057221**	38
300	4,2	70	24	FZ	20		**057222**	38
300	4,4	30	48	KON/WZ	5		**061555**	80,90
300	4,4	30	48	WZ	15		**059100**	70,88
300	4,4	30	48	WZ	15		**059483**	69
300	4,4	30	60	FZ/TR	15		**068350**	88,90
300	4,4	30	60	FZ/TR	10		**069016**	74
300	4,4	30	60	FZ/TR	15		**059250**	75,88, 90
300	4,4	30	60	FZ/TR	15		**190604**	72,88
300	4,4	30	60	TR/TR	15		**069104**	71,88, 90
300	4,4	30	60	WZ	15		**059484**	69
300	4,4	30	60	WZ	15		**190609**	68,88
300	4,4	50	48	KON/WZ	5		**061510**	80,85
300	4,4	65	48	WZ	15		**059516**	92
300	4,4	65	60	FZ/TR	15		**059667**	75,92
300	4,4	65	60	TR/TR	15		**069105**	71,92
300	4,4	65	72	KON/WZ	5		**061529**	80, 92-93
300	4,4	75	60	FZ/TR	15		**059309**	75,87
300	4,4	75	60	TR/TR	15		**069106**	71
300	4,4	80	48	WZ	15		**059502**	84,92
300	4,4	80	60	FZ/TR	15		**059503**	84,92
300	4,4	80	60	FZ/TR	15		**065338**	73,84, 92
300	4,4	80	60	FZ/TR	15		**190646**	72,84, 92
300	4,4	80	60	TR/TR	15		**069131**	84,92
300	4,4	80	60	WZ	15		**190633**	68,84, 92
300	4,55	30	72	WZ/FA	10		**061618**	83,90
300	4,55	65	72	WZ/FA	10		**059189**	83, 92-93
300	4,55	75	96	FZ/TR	15		**061615**	83, 87-88
300	4,6	50	80	TR	10		**068000**	83,85
300	4,8	65	48	KON/WZ	5		**061565**	80
300	5,0	30	20	FZ	25		**067001**	26
300	5,0	80	20	FZ	25		**067003**	26
300	8,0	80	24	FZ	15		**057467**	31
303	3,2	30	60	HZ/DZ	-5		**058970**	55
303	3,2	30	68	HZ/DZ	10		**068303**	57
303	3,5	30	60	HZ/DZ	10		**058963**	57
303	3,5	30	60	HZ/DZ	10		**065335**	56
303	3,5	30	60	HZ/DZ	10		**065941**	56
303	3,5	30	60	HZ/DZ	10		**068301**	57
305	2,8	30	54	WZ	-5		**069086**	42
305	3,0	30	60	WZ	-5		**065875**	43
305	3,0	30	100	WZ/WZ/FZ	10		**065889**	47
305	3,2	30	54	WZ	-5		**065351**	42
305	4,0	30	24	FZ	20		**057490**	37
305	4,4	30	60	FZ/TR	15		**059678**	75
315	3,2	30	28	TR	12		**060310**	105
315	3,2	30	72	WZ	10		**058393**	52
315	3,2	30	72	WZ	10		**069098**	51
320	3,2	30	84	FZ/TR	5		**059960**	98
320	3,2	70	28	WZ	18		**068753**	30
320	4,4	50	60	FZ/TR	15		**061361**	74
320	4,4	50	60	TR/TR	15		**069108**	71
320	4,4	65	60	FZ/TR	10		**059682**	92
320	4,4	65	60	FZ/TR	15		**059696**	92
320	4,4	65	60	TR/TR	15		**069136**	92
320	4,4	75	60	FZ/TR	15		**061362**	74
325	2,4	60	28	FZ	20		**067042**	29
325	5,0	60	24	FZ	20		**057468**	31
330	3,2	30	96	FZ/TR	-5		**060268**	99
330	3,2	32	96	FZ/TR	-5		**060259**	99
330	3,4	32	68	FZ/TR	-5		**060140**	98
340	4,95	45	80	TR	15		**061606**	83,87
340	5,0	45	108	WZ	10		**061611**	83,87
350	2,8	30	54	WZ	15		**057805**	52
350	2,8	30	96	WZ	20		**058459**	54
350	2,8	30	108	WZ	10		**058458**	53
350	2,8	70	28	FZ	20		**067313**	27
350	3,0	30	30	FZ	25		**067216**	28
350	3,0	30	96	FZFA/FZFA	-5		**761035**	101
350	3,2	25,40	54	WZ	10		**058058**	52
350	3,2	25,40	72	WZ	10		**058205**	52
350	3,2	25,40	84	WZ	10		**058385**	52
350	3,2	25,40	108	WZ	10		**058307**	52
350	3,2	30	28	FZ	20		**057306**	38
350	3,2	30	32	WZ	20		**069525**	104
350	3,2	30	36	WZ	-5		**057701**	43
350	3,2	30	42	WZ	15		**057984**	52
350	3,2	30	54	HZ	10		**058805**	46
350	3,2	30	54	WZ	10		**058059**	52
350	3,2	30	54	WZ	10		**069007**	51
350	3,2	30	60	WZ	-5		**069002**	42
350	3,2	30	72	HZ/DZ	-5		**058960**	55
350	3,2	30	72	HZ/FA	10		**058882**	58
350	3,2	30	72	WZ	10		**058206**	53
350	3,2	30	84	WZ	10		**058386**	53
350	3,2	30	84	WZ	10		**069077**	51
350	3,2	30	108	FZ/TR	-5		**060255**	99
350	3,2	30	108	FZ/TR	5		**059952**	98
350	3,2	30	108	FZ/TR	10		**068409**	60
350	3,2	30	108	WZ	10		**058308**	53
350	3,2	30	108	WZ	10		**068252**	51
350	3,2	70	28	FZ	20		**057307**	38
350	3,4	30	84	FZ/TR	-5		**060141**	98
350	3,4	30	84	FZ/TR	5		**059887**	97
350	3,5	30	12	FZ	20		**066261**	104
350	3,5	30	16	FZ	20		**057001**	104
350	3,5	30	24	FZ	20		**057052**	104
350	3,5	30	24	FZ	20		**057505**	37

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350	3,5	30	24	TR	12		**060311**	105
350	3,5	30	54	WZ	10		**065932**	51
350	3,5	30	60	WZ	-5		**065958**	42
350	3,5	30	60	WZ	-5		**065959**	42
350	3,5	30	72	HZ/DZ	10		**058969**	57
350	3,5	30	72	HZ/DZ	10		**065957**	56
350	3,5	30	84	FZ/TR	5		**061380**	60
350	3,5	30	84	FZ/TR	5		**065333**	96
350	3,5	30	84	FZ/TR	5		**065951**	96
350	3,5	30	84	WZ	10		**065938**	51
350	3,5	30	108	WZ	-5		**065880**	43
350	3,5	30	108	WZ	10		**065936**	51
350	3,5	70	24	FZ	20		**057506**	37
350	3,5	70	28	WZ	18		**068755**	30
350	3,6	40	108	FZ/TR	-5		**060269**	99
350	3,8	30	84	FZ/TR	-5		**060106**	98
350	3,8	32	84	FZ/TR	-5		**060107**	98
350	3,8	40	84	FZ/TR	-5		**060108**	98
350	4,0	30	24	FZ	25		**067015**	26
350	4,2	30	28	FZ	20		**057224**	38
350	4,2	70	28	FZ	20		**057225**	38
350	4,4	30	20	FZ	20		**057407**	37
350	4,4	30	54	WZ	15		**059509**	86
350	4,4	30	54	WZ	15		**059102**	70, 89-90
350	4,4	30	60	FZ/TR	15		**190605**	72,89
350	4,4	30	60	WZ	15		**190610**	68,86, 89,91
350	4,4	30	64	WZ/FA	15		**065345**	77,91
350	4,4	30	72	FZ/TR	15		**059252**	75,86, 89-91
350	4,4	30	72	FZ/TR	15		**069018**	74,86, 89-91
350	4,4	30	72	FZ/TR	15		**190606**	72,86, 91
350	4,4	30	72	TR/TR	15		**069109**	71,86, 89-91
350	4,4	30	72	WZ	15		**059486**	69,84, 91-92
350	4,4	30	72	WZ	15		**190611**	68,86, 91
350	4,4	60	54	WZ	15		**059485**	69,86
350	4,4	60	60	FZ/TR	15		**190654**	72,86
350	4,4	60	60	WZ	15		**190641**	68,86
350	4,4	60	72	FZ/TR	15		**069082**	86
350	4,4	60	72	FZ/TR	15		**059693**	75,86
350	4,4	60	72	FZ/TR	15		**190653**	72,86
350	4,4	60	72	TR/TR	15		**069135**	86
350	4,4	60	72	WZ	15		**059487**	69,86
350	4,4	60	72	WZ	15		**190640**	68,86
350	4,4	70	20	FZ	20		**057408**	37
350	4,4	75	54	WZ	20		**059511**	86
350	4,4	75	60	FZ/TR	15		**190651**	72,86
350	4,4	75	60	WZ	15		**190638**	68,86
350	4,4	75	72	FZ/TR	15		**069094**	86
350	4,4	75	72	FZ/TR	15		**059253**	75,86, 88
350	4,4	75	72	FZ/TR	15		**190652**	72,86
350	4,4	75	72	TR/TR	15		**069110**	71,86, 88
350	4,4	75	72	WZ	15		**059512**	86
350	4,4	75	72	WZ	15		**190639**	68,86
350	4,4	80	54	FZ/TR	15		**059271**	75,84, 92
350	4,4	80	54	WZ	15		**059504**	84,92
350	4,4	80	54	WZ	15		**059103**	70
350	4,4	80	60	FZ/TR	15		**190647**	72,84, 92
350	4,4	80	60	WZ	15		**190634**	68,84, 92
350	4,4	80	72	FZ/TR	15		**059691**	84,92
350	4,4	80	72	FZ/TR	15		**065339**	73,84, 92
350	4,4	80	72	FZ/TR	15		**190648**	72,84, 92
350	4,4	80	72	TR/TR	15		**069132**	84,92
350	4,4	80	72	WZ	15		**190635**	68,84, 92
350	4,55	75	72	FZ/TR	15		**061613**	83,88
350	5,0	30	24	FZ	25		**067004**	26
355	3,0	30	120	WZ/WZ/FZ	10		**065890**	47
355	3,2	30	72	WZ	-5		**065876**	43
355	4,4	30	24	FZ	20		**057491**	37
355	4,4	30	72	WZ	15		**059190**	70
355	4,4	65	72	FZ/TR	15		**059700**	93
355	4,4	75	60	FZ/TR	15		**059275**	75,85, 88
355	4,4	80	72	TR/TR	15		**069111**	71,93
355	4,4	80	72	WZ	15		**059517**	93
355	4,4	80	72	WZ	15		**059191**	70
360	4,4	50	72	FZ/TR	18		**059685**	75
360	4,4	65	72	FZ/TR	18		**059697**	93
360	4,4	65	72	FZ/TR	15		**059683**	74
370	3,8	30	84	FZ/TR	-5		**060127**	98
370	3,8	30	96	FZ/TR	5		**059964**	98
370	3,8	50	96	FZ/TR	5		**059867**	97
370	4,4	30	54	WZ	15		**059488**	69,90
370	4,4	30	72	FZ/TR	15		**059319**	74, 89-90
370	4,4	30	72	TR/TR	15		**069112**	71, 89-90
370	4,4	30	72	WZ	15		**059514**	89
370	4,4	30	72	WZ	15		**059489**	69,90
380	3,8	60	84	TR/TR	18		**059709**	75
380	4,0	30	24	FZ	25		**067047**	26
380	4,0	80	24	FZ	25		**067048**	26
380	4,4	50	72	FZ/TR	18		**059686**	75
380	4,4	50	72	TR/TR	15		**069138**	71
380	4,4	60	72	FZ/TR	18		**059681**	75, 86-87
380	4,4	75	72	FZ/TR	15		**059301**	75
380	4,4	80	72	FZ/TR	18		**059701**	92
380	4,4	80	72	TR/TR	15		**069137**	92
380	4,8	60	54	WZ	15		**059490**	69,87
380	4,8	60	72	FZ/TR	15		**059289**	87
380	4,8	60	72	FZ/TR	15		**065337**	73,87
380	4,8	60	72	FZ/TR	15		**069089**	74,87
380	4,8	60	72	FZ/TR	15		**190607**	72,87
380	4,8	60	72	TR/TR	15		**059704**	74,87
380	4,8	60	72	TR/TR	15		**069114**	71,87
380	4,8	60	72	WZ	15		**059491**	69,87
380	4,8	60	72	WZ	15		**190612**	68,87
380	4,8	60	72	WZ/FA	15		**065353**	77,87
380	4,8	60	84	TR/TR	15		**059314**	75,87

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380	5,0	30	24	FZ	25		**067044**	26
380	5,0	80	24	FZ	25		**067045**	26
400	2,8	30	108	WZ	20		**058460**	54
400	3,2	30	60	HZ	10		**058806**	46
400	3,2	30	60	WZ	-5		**069087**	42
400	3,2	30	84	HZ/FA	10		**058883**	58
400	3,2	30	96	WZ	10		**058387**	53
400	3,2	30	120	WZ	10		**058309**	53
400	3,5	30	28	FZ	20		**057507**	37
400	3,5	30	48	WZ	15		**057986**	53
400	3,5	30	60	WZ	-5		**065352**	42
400	3,5	30	120	WZ	-5		**065881**	43
400	3,5	30	120	WZ	10		**057525**	44
400	3,8	30	28	TR	12		**060312**	105
400	3,8	30	42	WZ	-5		**057702**	43
400	3,8	30	60	WZ	10		**058061**	53
400	3,8	30	60	WZ	10		**069008**	51
400	3,8	30	72	WZ	-5		**065877**	43
400	3,8	30	84	WZ	10		**058225**	53
400	3,8	30	96	FZ/TR	-5		**060110**	98
400	3,8	30	96	FZ/TR	5		**059854**	97
400	3,8	32	96	FZ/TR	-5		**069929**	99
400	3,8	40	96	FZ/TR	-5		**060111**	98
400	3,8	50	96	FZ/TR	-5		**059883**	98
400	3,8	50	96	FZ/TR	5		**059870**	97
400	4,0	30	14	FZ	20		**066262**	104
400	4,0	30	18	FZ	20		**057002**	104
400	4,0	30	20	FZ	25		**067049**	26
400	4,0	30	28	FZ	20		**057053**	104
400	4,0	30	28	FZ	25		**067030**	26
400	4,0	30	36	WZ	20		**057128**	104
400	4,0	30	60	WZ	10		**065933**	51
400	4,0	70	24	WZ	18		**068756**	30
400	4,4	30	24	FZ	20		**057409**	37
400	4,4	30	60	WZ	15		**059510**	86
400	4,4	30	60	WZ	15		**059515**	89
400	4,4	30	60	WZ	15		**059105**	70, 90-91
400	4,4	30	72	FZ/TR	15		**059256**	75,83, 86, 89-91
400	4,4	30	72	FZ/TR	15		**069017**	74,86, 89,91
400	4,4	30	72	FZ/TR	15		**190608**	72,86, 89,91
400	4,4	30	72	TR/TR	15		**069115**	71,86, 89-91
400	4,4	30	72	WZ	15		**059185**	70
400	4,4	30	72	WZ	15		**059492**	69,91
400	4,4	30	72	WZ	15		**190613**	68,86, 89,91
400	4,4	30	72	WZ/FA	15		**065346**	77,91
400	4,4	60	60	WZ	15		**059498**	84
400	4,4	60	72	FZ/TR	15		**059292**	84
400	4,4	60	72	FZ/TR	15		**190645**	72,84
400	4,4	60	72	TR/TR	15		**069129**	84
400	4,4	60	72	WZ	15		**190632**	68,84
400	4,4	75	72	FZ/TR	15		**059260**	75,88
400	4,4	75	72	FZ/TR	15		**059293**	75,85
400	4,4	75	72	FZ/TR	15		**190650**	72,85
400	4,4	75	72	TR/TR	15		**069117**	71,85, 88

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400	4,4	75	72	WZ	15		**190637**	68,85
400	4,4	80	72	FZ/TR	15		**065355**	93
400	4,4	80	72	FZ/TR	15		**059291**	76,93
400	4,4	80	72	FZ/TR	15		**065340**	73,85, 92
400	4,4	80	72	FZ/TR	15		**190649**	72,85, 92
400	4,4	80	72	TR/TR	15		**069133**	85,92
400	4,4	80	72	TR/TR	15		**069118**	71,93
400	4,4	80	72	WZ	15		**059506**	85,92
400	4,4	80	72	WZ	15		**190636**	68,85, 92
400	4,4	80	80	FZ/TR	15		**059454**	76,85, 92
400	5,0	30	28	FZ	25		**067005**	26
420	3,8	30	96	FZ/TR	5		**059855**	97
420	3,8	30	108	FZ/TR	-5		**060257**	99
420	3,8	32	108	FZ/TR	-5		**069927**	99
420	4,8	60	72	FZ/TR	15		**059296**	76
420	4,8	60	84	FZ/TR	15		**059300**	76
420	4,8	80	72	FZ/TR	15		**059695**	92
430	3,5	30	96	FZ/TR	5		**059871**	97
430	4,4	30	72	FZ/TR	15		**059551**	76
430	4,4	30	72	TR/TR	15		**069119**	71,90
430	4,4	30	72	WZ	15		**059431**	70
430	4,4	60	72	FZ/TR	15		**059576**	84
430	4,4	60	72	TR/TR	15		**069130**	84
430	4,4	60	72	WZ	15		**059499**	84
430	4,4	75	72	FZ/TR	15		**059277**	76,85
430	4,4	75	72	TR/TR	15		**069120**	71,85
430	4,4	75	72	WZ	15		**059508**	85
430	4,4	80	72	FZ/TR	15		**059698**	93
430	4,4	80	72	FZ/TR	15		**069090**	74,93
430	4,4	80	72	TR/TR	15		**069121**	71,93
430	4,4	80	72	WZ	15		**059461**	70,93
450	3,0	30	120	WZ	20		**058461**	54
450	3,8	30	34	FZ	20		**057508**	37
450	3,8	30	48	WZ	-5		**057703**	43
450	3,8	30	48	WZ	-5		**069003**	42
450	3,8	30	66	WZ	10		**058062**	53
450	3,8	30	108	FZ/TR	-5		**060258**	99
450	3,8	32	96	FZ/TR	5		**059966**	98
450	4,0	30	20	FZ	20		**057003**	104
450	4,0	30	32	TR	12		**060313**	105
450	4,0	30	34	FZ	20		**057054**	104
450	4,0	30	42	WZ	20		**057129**	104
450	4,0	30	48	WZ	-5		**065945**	42
450	4,0	30	72	WZ	-5		**065878**	43
450	4,0	40	100	FZ/TR	5		**059872**	97
450	4,4	30	24	FZ	25		**067031**	26
450	4,4	30	54	WZ	15		**059480**	70
450	4,4	30	60	FZ/TR	10		**059888**	102
450	4,4	30	72	FZ/TR	15		**059553**	76,90
450	4,4	30	72	TR/TR	15		**069122**	71,90
450	4,4	30	72	WZ	15		**059433**	70,90
450	4,4	60	72	FZ/TR	15		**059677**	76,84
450	4,4	60	72	WZ	15		**059500**	84
450	4,4	80	72	FZ/TR	15		**059692**	85,92
450	4,4	80	72	FZ/TR	15		**065356**	93
450	4,4	80	72	FZ/TR	15		**065341**	73,85,92
450	4,4	80	72	TR/TR	15		**069134**	85,92
450	4,4	80	72	WZ	15		**059507**	85,92

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450	4,4	80	72	WZ	15		**059518**	93
450	4,4	80	72	WZ	15		**059434**	70
450	4,8	30	72	FZ/TR	15		**061616**	83,91
450	4,8	30	72	WZ/FA	15		**065347**	77
450	4,8	30	138	WZ	10		**057526**	44
450	4,8	60	72	FZ/TR	15		**059261**	76,87
450	4,8	60	72	FZ/TR	15		**061354**	74,87
450	4,8	60	72	FZ/TR	15		**065349**	73,87
450	4,8	60	72	TR/TR	15		**069125**	71,87
450	4,8	60	72	TR/TR	20		**059316**	76,87
450	4,8	60	72	WZ	15		**059513**	87
450	4,8	60	72	WZ	20		**059493**	69
450	4,8	60	72	WZ/FA	15		**065354**	87
450	4,8	60	72	WZ/FA	15		**065348**	77
450	4,8	80	72	FZ/TR	18		**059699**	93
450	4,8	80	72	FZ/TR	15		**069097**	74
450	5,0	30	24	FZ	25		**067026**	26
450	5,0	30	28	FZ	20		**057410**	37
450	5,0	30	108	WZ	20		**057524**	44
460	4,4	30	48	WZ	20		**059494**	69,90
460	4,4	30	72	FZ/TR	15		**059303**	76,90
460	4,4	30	72	TR/TR	15		**069126**	71
460	4,4	30	72	WZ	20		**059495**	69,90
470	4,4	75	96	FZ/TR	15		**059584**	76,85
480	4,4	30	72	FZ/TR	15		**059679**	76,91
480	4,4	30	72	WZ	15		**059481**	70,91
480	4,8	60	72	FZ/TR	18		**059688**	76
480	4,8	80	72	FZ/TR	15		**059307**	76,93
480	4,8	80	72	TR/TR	15		**069127**	71,93
480	4,8	80	72	WZ	20		**059496**	69,93
500	3,8	30	72	WZ	10		**058063**	53
500	4,0	30	36	FZ	20		**057509**	37
500	4,0	30	36	TR	12		**060314**	105
500	4,4	30	36	FZ	20		**057055**	104
500	4,4	30	48	WZ	20		**057130**	104
500	4,4	30	54	WZ	-5		**057704**	43
500	4,4	30	54	WZ	-5		**065948**	42
500	4,4	30	54	WZ	-5		**069004**	42
500	4,4	30	72	WZ	-5		**065879**	43
500	4,4	30	120	FZ/TR	5		**059874**	97
500	4,8	30	144	WZ	10		**057528**	44
500	4,8	35	144	WZ	10		**057542**	44
500	4,8	60	72	TR/TR	20		**059317**	76,87
500	5,0	30	32	FZ	20		**057411**	37
500	5,0	30	96	WZ	10		**057534**	44
500	5,2	30	60	FZ/TR	15		**059286**	76
500	5,2	30	60	WZ	15		**059442**	70
500	5,2	30	120	WZ	20		**057516**	44
500	5,2	60	60	FZ/TR	15		**059577**	84
500	5,2	60	60	WZ	15		**059501**	84
500	5,2	80	60	WZ	15		**059443**	70
500	5,5	30	28	FZ	20		**057993**	36
510	4,8	80	72	FZ/TR	18		**059689**	76
520	4,4	30	72	FZ/TR	18		**059690**	76,91
520	4,4	30	72	WZ	20		**059497**	69,91
520	4,6	30	144	WZ	10		**057529**	44
520	4,8	30	72	TR/TR	15		**069139**	71,91
520	4,8	60	72	TR/TR	18		**059705**	76
520	4,8	60	84	TR/TR	15		**059658**	76
520	4,8	70	72	FZ/TR	18		**059707**	76
530	5,2	30	60	FZ/TR	15		**059287**	76,91
530	5,2	30	60	WZ	15		**059444**	70,91

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540	4,8	60	72	FZ/TR	15		**059659**	76
550	4,2	30	84	WZ	10		**058075**	53
550	4,4	30	54	WZ	20		**057131**	104
550	4,4	30	120	FZ/TR	5		**059891**	97
550	5,0	30	96	WZ	10		**057535**	44
550	5,2	30	60	WZ	15		**059445**	70
550	5,2	30	120	WZ	20		**057517**	44
550	5,2	30	160	WZ	10		**057530**	44
550	5,2	80	48	WZ	15		**059482**	70
550	5,2	80	60	WZ	15		**059446**	70
550	5,5	30	36	FZ	20		**057994**	36
550	5,5	40	48	WZ	15		**059457**	70
570	4,8	60	60	FZ/TR	18		**059706**	76
600	5,4	30	172	WZ	10		**057531**	44
600	5,8	30	96	WZ	10		**057536**	44
600	5,8	60	72	FZ/TR	22		**059392**	76,87
600	5,9	30	48	WZ	20		**057537**	45
600	6,0	30	36	FZ	20		**057995**	36
600	6,0	30	120	WZ	20		**057518**	44
620	5,5	40	36	FZFA/FZFA	10		**059889**	102
620	5,5	40	60	FZ/TR	5		**059890**	102
630	5,0	30	62	WZ	20		**057514**	45
630	5,4	30	180	WZ	10		**057543**	44
670	5,8	60	42	FZ/TR	22		**059393**	76,87
680	6,2	40	60	FZ/TR	22		**059394**	76,91
680	6,2	40	60	WZ	22		**059398**	70,91
700	5,9	30	72	WZ	20		**057538**	45
700	6,0	30	48	FZ	20		**057997**	36
700	6,2	80	60	FZ/TR	22		**059395**	76,84
700	6,2	80	60	WZ	22		**059399**	70,84
720	6,5	40	60	FZ/TR	22		**059396**	76,91
720	6,5	40	60	WZ	22		**059400**	70
730	6,2	60	60	FZ/TR	22		**059397**	76,87
730	6,2	60	60	WZ	22		**059401**	70,87
735	5,9	30	72	WZ	20		**057539**	45
760	5,9	30	72	WZ	20		**057540**	45
800	5,9	30	72	WZ	20		**057541**	45

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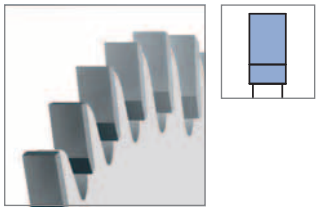
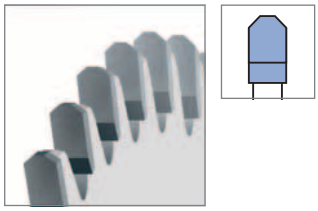
Plastics
Mineral materials
Composites

Application	For splitting or edging timber, for cutting lamellos on horizontal and vertical spindles.
Workpiece material	Soft and hardwood, wet, frozen, dry or long fibre materials.
Machine	Edging, single blade, multi blade sawblades as well as sawblades with either one or two spindles. Circular saw benches or moulders.

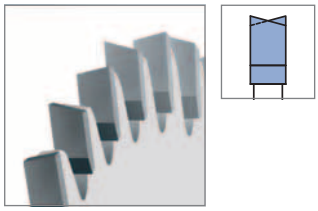
Tooth shape



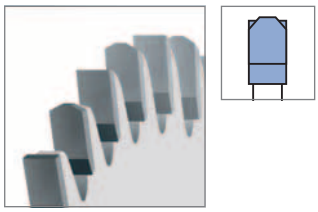
FZ (square teeth):
For multi purpose application – particularly suitable for wet and dry wood.



TR (trapezoidal teeth)*:
Recommended for cutting dry wood with minimum marking.



WZ (alternative top bevel teeth):
Ideal for long-fibred wood.
Higher quality on the exit surface.



FZ/TR (square/trapezoidal teeth)*:
Ideal for cutting synthetic materials (thermo plastics).

* An FZ tooth shape is adapted to give the sawblade a TR or FZ/TR tooth shape.

Feed speed [m/min]

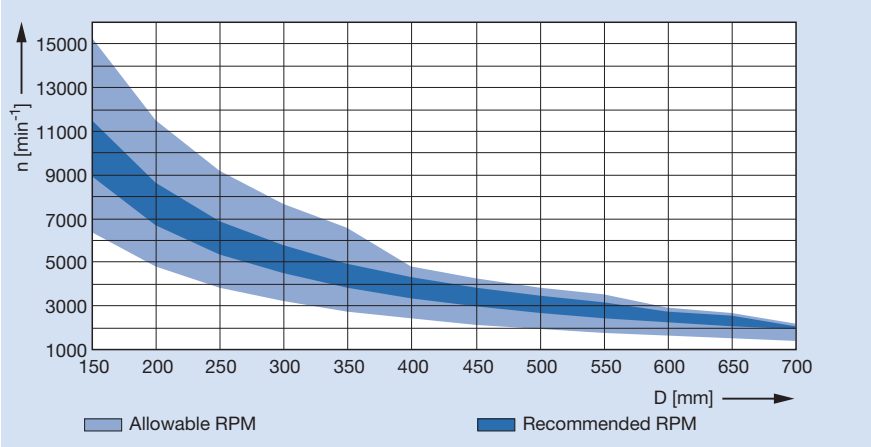
$V_f = f_z \cdot n \cdot Z/1000$

Recommended tooth feed rate f_z (in mm)

The tooth feed rate depends on the cutting width; the larger the kerf the higher the possible tooth progression.

SB	Dry			Wet		
	Hardwood	Softwood	Exotic wood	Hardwood	Softwood	Exotic wood
1.2 – 1.4	0.11 – 0.13	0.13 – 0.15				
1.4 – 1.8	0.13 – 0.15	0.15 – 0.18	0.10 – 0.12			
1.8 – 2.2	0.15 – 0.20	0.18 – 0.25	0.12 – 0.15			
2.2 – 2.8	0.20 – 0.25	0.25 – 0.40	0.15 – 0.20	0.20 – 0.30	0.30 – 0.50	0.13 – 0.16
2.8	0.25 – 0.40	0.40 – 0.75	0.20 – 0.40	0.30 – 0.50	0.50 – 1.00	0.16 – 0.25

RPM diagram

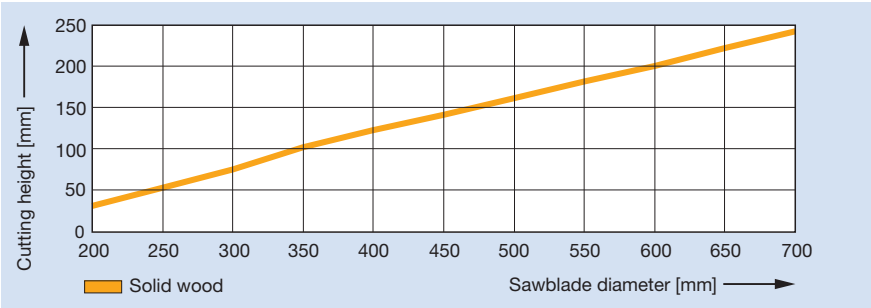


Sawblades with wiper teeth

Areas of application

For cutting solid wood with high tension (twisted fibres) and cutting heights ≥ 40 mm.

Cutting height diagram



Cutting along grain –
the cutting height a_e depends on the sawblade diameter D and the workpiece material.

Design

External and internal wiper teeth:
– For larger cutting heights in wet and dry wood with improved chip clearance.

Internal wiper teeth:
– For higher accuracy in dry wood.

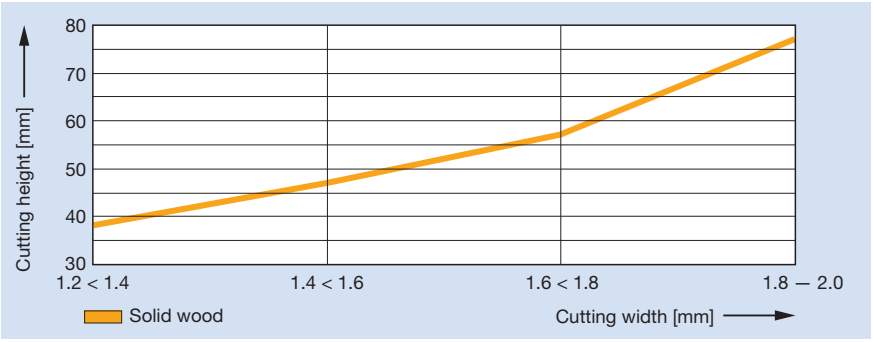
External wiper teeth:
– Only for sawblades up to a diameter of D = 250 mm.

Thin kerf sawblades

Application area

- Sawmill industry (laminating strips, lumber, etc.).
- Solid board production (lamellos and core materials for multiple layer panels, etc.).
- Parquet flooring industry (for core and surface materials, lamellos).
- Moulding products (mouldings, lippings, rulers, etc.).
- Sport industry (skis, table tennis rackets, etc.).

Cutting height diagram



Thin kerf circular sawblades –
Cutting height depends on the sawblade cutting width SB.

Technical notes

Recommendations:
- Mount thin kerf sawblades on hydro sleeves.
- Check the sawblade clamping flange diameter.
- Check the cutting height and the tooth progression (feed rate).
- Resharpen and clean resin residues regularly.

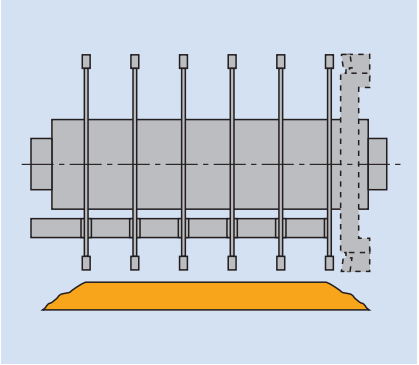
Advantages

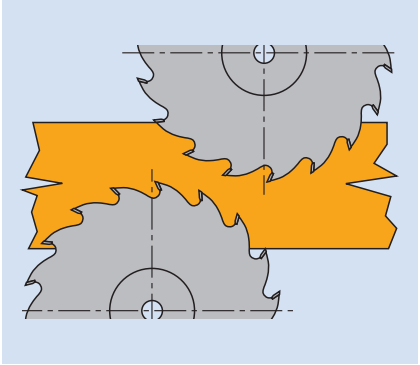
- Environmentally friendly use of resources.
- Reduced chips and dust.
- Optimised timber usage.
- More strips from workpiece with standard cuts.

Single or multi spindle multi blade machines without automatic feed			Multi spindle machines with automatic feed
Thin kerf circular sawblades			Ultra thin circular sawblades
D mm	200 – 300	> 300 – 500	180 – 250
SB mm	1.8 – 2.8	2.8 – 3.6	1.2 – 2.0

Machine types

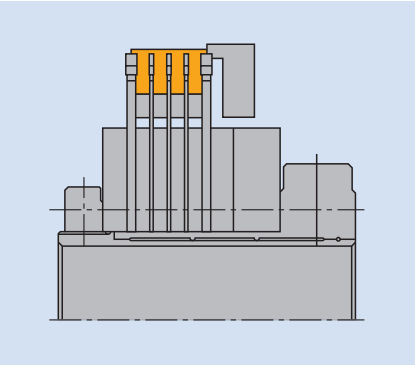
Single or multi spindle multi blade machines without automatic feed

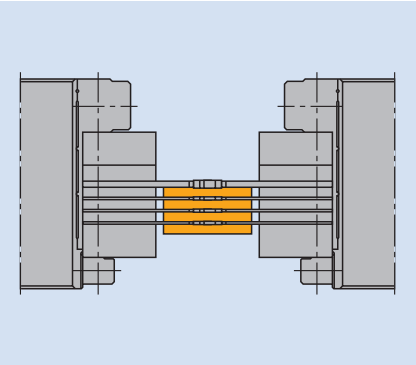




To avoid bending the sawblade, we recommend using wide sawblades or hoggers on the motorside. Riving knives are recommended when cutting thin lamella; a split machine table is necessary.

Multi spindle machines with automatic feed (for horizontal and vertical cutting)



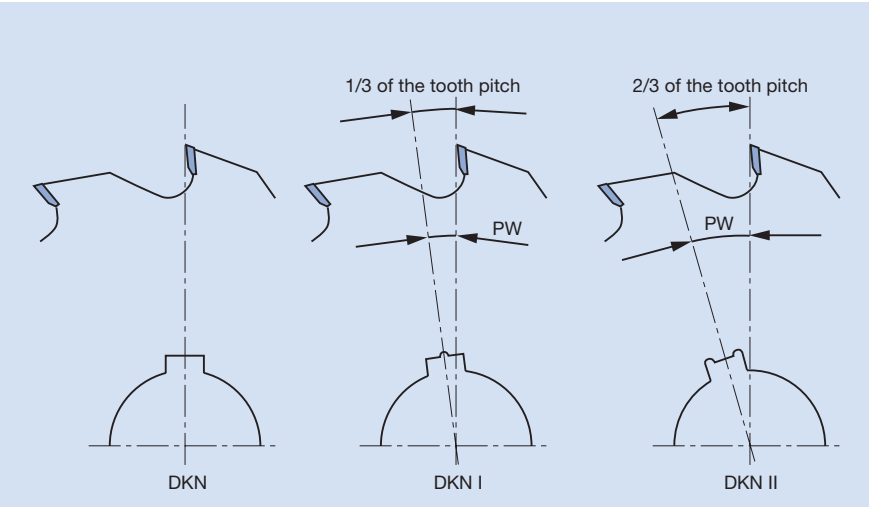


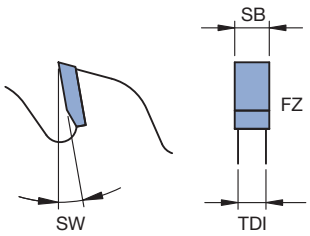
The saw spindle should have high precision bearings for accuracy.

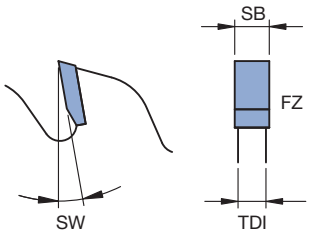
Precise and stable feeding devices needed for bent, curved or twisted materials.
– Accurate adjustment of spindle and guide needed when sawing vertically (top and bottom side spindles).

– For horizontal cutting, the thickness of riving knives depends on the cutting width of the sawblades. The riving knives must be aligned 100% horizontal.

Position of double keyways for spiral arrangement of circular sawblades







Circular sawblades with wiper teeth with internal and external wiper teeth

Application:
For cutting along grain - shoulder cuts and middle cuts.

Machine:
Straight line edger, single and multi blade, single and double spindle machines.

Workpiece material:
Softwood and hardwood, wet, frozen, dry and long fibre materials (poplar, balsa etc.).

Technical information:
With two internal and external wiper teeth (over D-280 mm). Large lateral tooth overhang for cutting wet and frozen wood.

Square cuts and shoulder cuts
WK 100-2-43

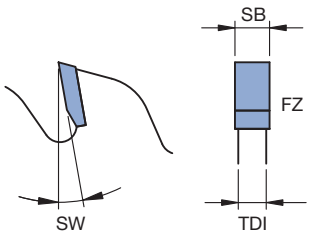
Machine	D mm	SB mm	TDI mm	BO mm	$BO_{max.}$ mm	DKN mm	$FLD_{max.}$ mm	Z	ZF	SW Degree	WSS	ID	
	250	4,4	2,8	30	80		130	18	FZ	25	■	**067000**	●
	300	5,0	3,2	30	80		130	20	FZ	25	■	**067001**	●
Raimann	300	5,0	3,2	80		23/90	110	20	FZ	25	■	**067003**	●
	350	5,0	3,2	30	100		130	24	FZ	25	■	**067004**	●
	380	5,0	3,2	30	100		140	24	FZ	25	■	**067044**	●
	380	5,0	3,2	80			140	24	FZ	25	■	**067045**	●
	400	5,0	3,2	30	120		150	28	FZ	25	■	**067005**	●
	450	5,0	3,2	30	120		160	24	FZ	25	■	**067026**	●

Application:
For cutting along grain - middle cuts.

Middle cuts
WK 100-2-18, WK 100-2-43

Machine	D mm	SB mm	TDI mm	BO mm	$BO_{max.}$ mm	DKN mm	$FLD_{max.}$ mm	Z	ZF	SW Degree	WSS	ID	
	250	3,5	2,2	30	80		130	18	FZ	25	■	**067006**	●
	300	3,5	2,2	30	80		110	20	FZ	25	■	**067024**	●
Raimann	300	3,5	2,2	70		21/83	110	20	FZ	25	■	**067008**	●
Raimann Costa Storti	300	3,5	2,2	80		23/90 13/89 13/89	110	20	FZ	25	■	**067029**	●
	300	3,5	2,2	80		13/89 13/89	140	20	FZ	25	■	**067046**	●
	350	4,0	2,8	30	100		130	24	FZ	25	■	**067015**	●
	380	4,0	2,8	30	100		140	24	FZ	25	■	**067047**	●
	380	4,0	2,8	80		19/89 19/89	140	24	FZ	25	■	**067048**	●
	400	4,0	2,8	30	120		140	20	FZ	25	■	**067049**	●
	400	4,0	2,8	30	120		150	28	FZ	25	■	**067030**	●
	450	4,4	3,0	30	120		160	24	FZ	25	■	**067031**	●

● available ex stock
□ available at short notice
Instruction manual visit www.leitz.org



Lamellae cuts - horizonal spindles - wiper teeth

Application:
For thin cuts on horizonal spindles.

Machine:
Straight line edger, single and multi blade machines and four side moulders.

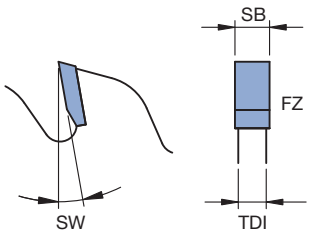
Workpiece material:
Softwood and hardwood with wood moisture content of 10 % to 18 %.

Technical information:
With curved, internal and external wiper teeth. Curved wiper teeth for improved kerf clearance and improved chip ejection. Higher energy efficiency and wood yield by reduced cutting width and tool body's special coating to reduce friction and resin build up.

Circular sawblade with curved internal and external wiper teeth
WK 100-2-19, WK 150-2-19

D mm	SB mm	TDI mm	BO mm	DKN mm	NLA mm	Z	ZF	SW Degree	WSS	ID	
200	2,4	1,6	30			22	FZ	25	■	**067314**	●
220	2,4	1,6	30			24	FZ	25	■	**067315**	●
250	2,4	1,6	70	21/83		20	FZ	20	■	**067310**	●
300	2,6	1,8	30		KNL	20	FZ	20	■	**067311**	●
300	2,6	1,8	70	21/83		20	FZ	20	■	**067312**	●
300	3,0	2,0	80	18,5/87	4/6,6/95 2/13/100	28	FZ	20	■	**067316**	●
300	3,4	2,2	80	18,5/87	4/6,6/95 2/13/100	28	FZ	20	■	**067317**	●
350	2,8	1,8	70	21/83		28	FZ	20	■	**067313**	●

HW



Lamellae cuts - horizontal spindle - internal wiper teeth

Application:
For thin cuts on horizonal spindles.

Machine:
Straight line edger, single and multi blade machines and four side moulders.

Workpiece material:
Softwood and hardwood, dry up to 10 % wood moisture content.

Technical information:
With internal wiper teeth. Higher energy efficiency and wood yield by reduced cutting widths.

Circular sawblades with internal wiper teeth
WK 100-2-44, WK 100-4, WK 100-4-44

Machine	D mm	SB mm	TDI mm	BO mm	$BO_{max.}$ mm	DKN mm	$FLD_{max.}$ mm	Z	ZF	SW Degree	WSS	ID	
	200	2,4	1,6	30	60		100	22	FZ	25	■	**067200**	●
	200	2,0	1,4	30				24	FZ	20	■	**067050**	●
	220	2,0	1,4	30				24	FZ	20	■	**067051**	●
	220	2,4	1,6	30	80		120	24	FZ	25	■	**067201**	●
	250	2,0	1,4	30				24	FZ	20	■	**067052**	●
	250	2,4	1,6	30	90		120	24	FZ	25	■	**067202**	●
Raimann Torwegge	250	2,4	1,6	70		21/83	120	24	FZ	25	■	**067203**	●
Costa	250	2,4	1,6	80		13/89	120	24	FZ	25	■	**067204**	●
	300	2,8	1,8	30	100		140	30	FZ	25	■	**067212**	●
Raimann	300	2,8	1,8	70		21/83	140	30	FZ	25	■	**067213**	●
Costa	300	2,8	1,8	80		13/89	140	30	FZ	25	■	**067214**	●
	350	3,0	2,0	30	110		150	30	FZ	25	■	**067216**	●

● available ex stock
□ available at short notice
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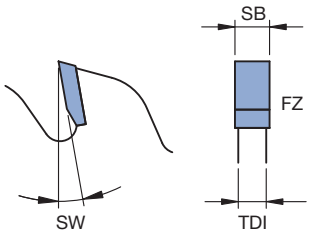


Lamellae cuts - vertical spindle

Application:
For thin cuts on vertical spindles.

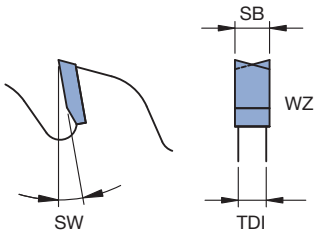
Machine:
Straight line edger, single and multi blade machines and four side moulders.

Workpiece material:
Softwood and hardwood, dry up to 10 % wood moisture content.

Technical information:
With two external (D < 250 mm) or two external and two internal wiper teeth. Higher energy efficiency and wood yield by reduced cutting widths and tool body's special coating to reduce friction and resin biuld up.

Circular sawblades with external and internal wiper teeth, coated
WK 100-2-43

D mm	SB mm	TDI mm	BO mm	$BO_{max.}$ mm	NLA mm	$FLD_{max.}$ mm	Z	ZF	SW Degree	WSS	ID	
250	2,4	1,6	30	80	3/10/75	100	12	FZ	25	■	**067041**	●
250	2,5	1,8	60	80	3/10/75	120	40	FZ	20	■	**067032**	●
250	1,7	1,5	65	80	3/11/80	100	28	FZ	20	■	**067055**	●
250	2,4	1,6	70	80		100	24	FZ	20	■	**067056**	●
270	2,4	1,6	60	80	3/10/75	120	28	FZ	20	■	**067033**	●
300	2,4	1,6	60	80	3/10/75	120	24	FZ	20	■	**067218**	●
325	2,4	1,6	60	80	3/10/75	130	28	FZ	20	■	**067042**	●



Circular sawblades with internal and external wiper teeth

Application:
For cutting along grain - middle cuts.

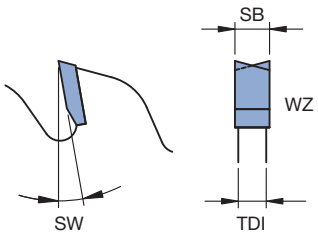
Machine:
Straight line edger, single and multi blade, single and double spindle machines.

Workpiece material:
Softwood and hardwood, dry up to 15 % wood moisture content and long fibre materials (poplar, balsa etc.) up to 110 mm cutting height.

Technical information:
With two external and two or four internal (over D-350 mm) wiper teeth.

Middle cuts - dry
WK 150-2-43

D mm	SB mm	TDI mm	BO mm	$BO_{max.}$ mm	DKN mm	Z	ZF	SW Degree	WSS	ID	
250	3,2	2,2	70		20,6/83	20	WZ	18	■	**068750**	●
300	3,2	2,2	70	80	20,6/83	24	WZ	18	■	**068751**	●
320	3,2	2,2	70	80	20,6/83	28	WZ	18	■	**068753**	●
350	3,5	2,5	70	100	20,6/83	28	WZ	18	■	**068755**	●
400	4,0	2,8	70	100	20,6/83	24	WZ	18	■	**068756**	●



Lamellae cuts - horizontal spindle - external wiper teeth

Application:
For thin cuts on horizonal spindles.

Machine:
Straight line edger, single and multi blade machines and four side moulders.

Workpiece material:
Softwood, dry up to 10 % wood moisture content.

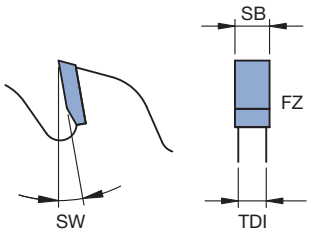
Technical information:
With two external wiper teeth. Increased cutting performance and reduced resin build up by tool body special coating.

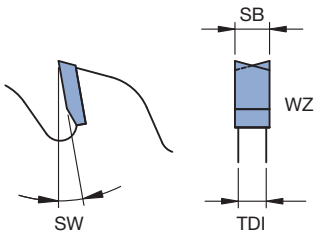
Circular sawblades with external wiper teeth
WK 150-4

D mm	SB mm	TDI mm	BO mm	DKN mm	Z	ZF	SW Degree	WSS	ID	
250	2,4	1,6	80	19/90 19/90	32	WZ	15	■	**067054**	●
250	2,0	1,4	80	19/90 19/90	36	WZ	15	■	**067053**	●

● available ex stock
□ available at short notice
Instruction manual visit www.leitz.org

HW





Lamellae cuts - shoulder cuts

Application:
For shoulder cuts in sets with middle cut sawblades.

Machine:
Four side moulders with/without automatic workpiece feed on single or double, horizontal or vertical spindles.

Workpiece material:
Softwood and hardwood, dry up to 10 % wood moisture content, quality category 0 to 1.

Technical information:
For set assembled with thin kerf circular sawblades for middle cuts. Increased cutting performance and reduced resin build up by tool body special coating.

Shoulder cuts
WK 100-2-21

D mm	SB mm	TDI mm	BO mm	$BO_{max.}$ mm	NLA mm	DKN mm	FLD mm	Z	ZF	SW Degree	WSS	ID	
180	5,0	4	60		3/10/75		100	32	FZ	20	■	**057435**	●
200	5,0	4	60		3/10/75		120	36	FZ	20	■	**057436**	●
225	5,0	4	30	110	3/10/75		120	25	FZ	20	■	**057441**	●
225	5,0	4	60		3/10/75		120	40	FZ	20	■	**057437**	●
250	5,0	4	30	120	3/10/75		140	25	FZ	20	■	**057442**	●
250	5,0	4	60		3/10/75		140	36	FZ	20	■	**057438**	●
250	8,0	6	80		4/7/95 2/13/100	13/89	100	24	FZ	15	■	**057466**	●
300	8,0	6	80		4/7/95 2/13/100	13/89	100	24	FZ	15	■	**057467**	●
325	5,0	4	60		3/10/75		120	24	FZ	20	■	**057468**	●

Clamping elements see section 8.

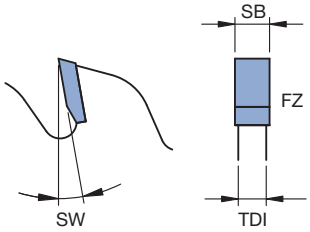
Technical information:
For sets assembled with thin kerf circular sawblades for middle cuts. Special tooth geometry for low cutting forces at low feed speeds. Increased cutting performance and reduced resin build up by tool body special coating.

Shoulder cuts - reduced number of teeth
WK 150-2, WK 150-2-21

D mm	SB mm	TDI mm	BO mm	NLA mm	FLD mm	Z	ZF	SW Degree	WSS	ID	
200	3,8	3	60	3/10/75 3/11/80	100	12+12	WZ	20	■	**057469**	●
220	3,8	3	60	3/10/75 3/11/80	120	12+12	WZ	20	■	**057470**	●
220	3,8	3	60	3/10/75	120	6+6+6+6	WZ	20	■	**057461**	●
220	3,8	3	65	3/11/80	120	12+12	WZ	20	■	**057471**	●
220	3,8	3	65	3/11/80	120	6+6+6+6	WZ	20	■	**057462**	●
225	3,8	3	60	3/10/75 3/11/80	120	12+12	WZ	20	■	**057472**	●
250	3,8	3	60	3/10/75 3/11/80	120	12+12	WZ	20	■	**057473**	●

HW

Low Noise



Lamellae cuts - middle cuts

Application:
For cutting panels and strips on horizontal and vertical spindles.

Machine:
Four side moulders with/without automatic workpiece feed on single or double, horizontal or vertical spindles.

Workpiece material:
Softwood and hardwood, dry up to 10 % wood moisture content, quality category 0 to 1.

Technical information:
Noise reduced design by uneven number of teeth or irregular tooth pitch. Increased cutting performance and reduced resin build up by tool body special coating.

Middle cuts
WK 100-2, WK 100-2-21

D mm	SB mm	TDI mm	BO mm	$BO_{max.}$ mm	NLA mm	FLD mm	Z	ZF	SW Degree	WSS	ID	
180	1,5	1,0	60	70	3/10/75	100	21	FZ	20	■	**057443**	●
180	1,8	1,2	60	70	3/10/75	100	21	FZ	20	■	**057444**	●
180	1,1	0,8	60		3/10/75	140	24	FZ	20	■	**057485**	●
180	1,3	0,8	60	70	3/10/75	100	32	FZ	20	■	**057418**	●
180	1,5	1,0	60	70	3/10/75	100	32	FZ	20	■	**057419**	●
180	1,8	1,3	60	70	3/10/75	100	32	FZ	20	■	**057412**	●
180	1,0	0,8	65		3/11/80	140	24	FZ	20	■	**057484**	●
180	1,1	0,8	65		3/11/80	140	24	FZ	20	■	**057486**	●
200	1,5	1,0	60	80	3/10/75	120	21	FZ	20	■	**057445**	●
200	1,8	1,2	60	80	3/10/75	120	21	FZ	20	■	**057446**	●
200	1,5	1,0	60	80	3/10/75	120	36	FZ	20	■	**057421**	●
220	1,3	0,9	60	80	3/10/75	120	24	FZ	25	■	**057476**	●
220	1,4	1,0	60	80	3/10/75	120	24	FZ	25	■	**057480**	●
220	1,2	0,9	60	80	3/10/75	120	27	FZ	20	■	**057475**	●
220	1,2	0,8	60	80	3/10/75	120	32	FZ	20	■	**057463**	●
220	1,3	0,9	60	80	3/10/75	120	32	FZ	25	■	**057478**	●
220	1,4	1,0	60	80	3/10/75	120	32	FZ	20	■	**057464**	●
220	1,2	0,9	65	80	3/11/80	120	24	FZ	20	■	**057474**	●
220	1,3	0,9	65	80	3/11/80	120	24	FZ	25	■	**057477**	●
220	1,4	1,0	65	80	3/11/80	120	24	FZ	25	■	**057481**	●
220	1,3	0,9	65	80	3/11/80	120	32	FZ	25	■	**057479**	●
220	1,4	1,0	65	80	3/11/80	120	32	FZ	20	■	**057465**	●
225	1,5	1,0	60	110	3/10/75	120	25	FZ	20	■	**057447**	●
225	1,8	1,2	60	110	3/10/75	120	25	FZ	20	■	**057448**	●
225	2,0	1,4	60	110	3/10/75	120	25	FZ	20	■	**057449**	●
225	1,6	1,2	60	110	3/10/75	130	32	FZ	25	■	**057482**	●
225	1,5	1,0	60	110	3/10/75	120	40	FZ	20	■	**057422**	●
225	2,0	1,4	60	110	3/10/75	120	40	FZ	20	■	**057416**	●
225	1,6	1,2	65	110	3/11/80	130	32	FZ	25	■	**057483**	●
250	1,7	1,2	60	120	3/10/75	140	25	FZ	20	■	**057450**	●
250	2,0	1,4	60	120	3/10/75	140	25	FZ	20	■	**057451**	●
250	1,7	1,2	60	120	3/10/75	140	36	FZ	20	■	**057433**	●
250	2,0	1,4	60	120	3/10/75	140	36	FZ	20	■	**057434**	●

Clamping elements see section 8.

● available ex stock
□ available at short notice
Instruction manual visit www.leitz.org

HW

Low Noise

Lamellae cuts - horizontal spindle

Application:
Designed for middle cuts on horizontal spindles.

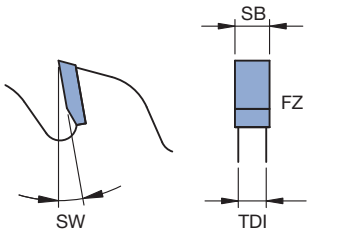
Machine:
Single and multi blade, single and double spindle machines and four side moulders.

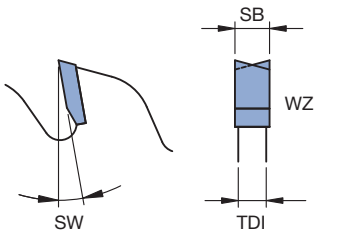
Workpiece material:
Softwood and hardwood, dry up to 10 % wood moisture content.

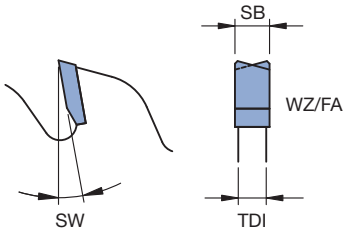
Technical information:
AS LowNoise UT design - noise reduction up to 5 dB(A). Tool body with irregular tooth pitch. Increased cutting performance and reduced resin build up by tool body special coating.

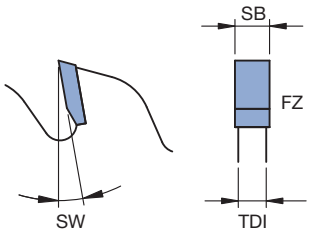
Circular sawblades - AS LowNoise UT
WK 151-2-21, WK 150-4-21

D mm	SB mm	TDI mm	BO mm	DKN mm	NLA mm	Z	ZF	SW Degree	WSS	ID	
180	2,2	1,4	30		3/10/75	18	FZ	15	■	**057492**	●
200	2,4	1,6	30		3/10/75	18	FZ	15	■	**057493**	●
200	2,0	1,2	30		3/10/75	20	WZ	15	■	**057454**	●
200	2,4	1,6	30		3/10/75	20	WZ	15	■	**057455**	●
225	2,8	2,0	30		3/10/75	18	FZ	15	■	**057494**	●
225	2,4	1,6	30		3/10/75	24	WZ	15	■	**057457**	●
250	2,4	1,6	30		3/10/75	24	WZ	15	■	**057458**	●
250	2,8	2,0	70	21/80		24	FZ	15	■	**057495**	●
250	2,4	1,6	80	19/90 19/90		24	WZ	15	■	**057487**	●
250	2,4	1,6	80	19/90 19/90		40	WZ	15	■	**057488**	●
250	2,4	1,6	80	23x90		40	FZ	15	■	**057460**	●
300	2,8	1,8	80	19/90	2/13/100 4/7/95	28	WZ/FA	15	■	**057489**	●









Middle cuts

Application:
For cutting panels along grain in flooring production.

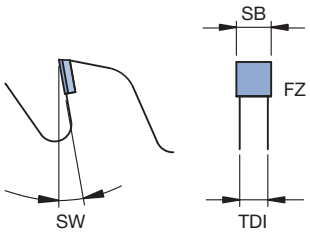
Machine:
For multi blade machines made by Paul, I.S.E., Becker etc.

Workpiece material:
Coated (HPL/CPL) particle boards and fibre boards (MDF/HDF).

Technical information:
Optimised tool body for increased run time. Sawblades BO = 115 mm for Hydro-Duo clamping sleeve ID **030555** or BO = 100 mm for clamping flange TR 810-0.

Circular sawblades - HW tipped
WK 800-2

D mm	SB mm	TDI mm	BO mm	DKN mm	Z	ZF	SW Degree	WSS	ID	
250	2,2	1,6	100	13/109	48	FZ	10	■■	**061433**	●
250	3,2	2,2	100	13/109	48	FZ	10	■■	**061434**	●



Middle cuts

Application:
For cutting panels along grain in flooring production.

Machine:
For multi blade machines made by Paul, I.S.E., Becker etc.

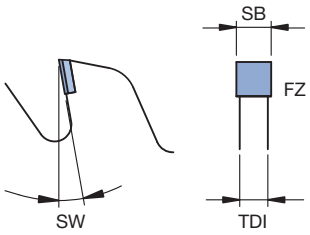
Workpiece material:
Coated (HPL/CPL) particle boards and fibre boards (MDF/HDF).

Technical information:
Optimised tool body for increase run time. Sawblades BO = 115 mm for Hydro-Duo clamping sleeve ID **030555** or BO = 100 mm for clamping flange TR 810-0. Tip height 5.5 mm.

Circular sawblades - DP tipped
WK 800-2

D mm	SB mm	TDI mm	BO mm	DKN mm	Z	ZF	SW Degree	WSS	ID	
210	2,2	1,6	100	13/109	36	FZ	3	■■	**090674**	□
210	2,2	1,6	115	8/7/131	36	FZ	3	■■	**090697**	●
210	3,2	2,2	115	8/7/131	36	FZ	3	■■	**090698**	□
250	2,2	1,6	60		36	FZ	3	■■	**190502**	□
250	3,2	2,2	60		36	FZ	3	■■	**190503**	□
250	2,2	1,6	90	8/7/106	36	FZ	3	■■	**190504**	□
250	3,2	2,2	90	8/7/106	36	FZ	3	■■	**190505**	□
250	2,2	1,6	100	13/109	36	FZ	3	■■	**090668**	□
250	3,2	2,2	100	13/109	36	FZ	3	■■	**090669**	□
250	2,2	1,6	115	8/7/131	36	FZ	3	■■	**090695**	●
250	3,2	2,2	115	8/7/131	36	FZ	3	■■	**090696**	●

● available ex stock
□ available at short notice
Instruction manual visit www.leitz.org



Square cuts

Application:
For cutting panels along grain in flooring production.

Machine:
Multi blade machines made by Paul, I.S.E., Becker etc.

Technical information:
Cutting width can be extended in 5 mm steps to max. 32 mm with extensions. Sawblades BO = 115 mm for Hydro-Duo clamping sleeve ID **030555**; tip height 5.5 mm.

Hogger for shoulder cuts D-210/220 mm, SB-12 mm, DP tipped
WK 800 2

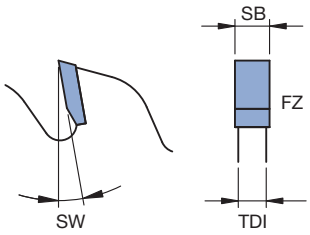
exist. of	D mm	SB mm	BO mm	Z	ZF	SW Degree	WSS	ID	
Hogging circular sawblade	210	3,2	115	36	FZ	3	■■	**090698**	□
Extension	220	5,0	115	18	FZ	3	■■	**190519**	□
Hogging part	220	4,0	115	36	FZ	3	■■	**190518**	□

Cutting width extended in 5 mm steps up to 32 mm with extension parts.

Hogger for shoulder cuts D-250/260 mm, SB-12 mm, DP tipped
WK 800 2

exist. of	D mm	SB mm	BO mm	Z	ZF	SW Degree	WSS	ID	
Hogging circular sawblade	250	3,2	115	36	FZ	3	■■	**090696**	●
Extension	260	5,0	115	18	FZ	3	■■	**190521**	□
Hogging part	260	4,0	115	36	FZ	3	■■	**190520**	□

Cutting width extended in 5 mm steps up to 32 mm with extension parts.



Square cuts

Application:
For cross cutting large heights.

Machine:
Straight line edger, single and multi blade, single and double spindle machines.

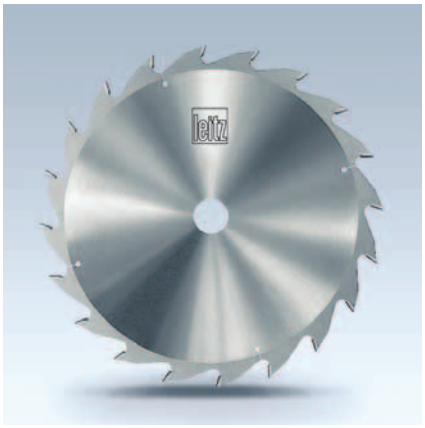
Workpiece material:
Softwood and hardwood, wet, dry and long fibre materials (poplar, balsa etc.).

Technical information:
With four large tooth gullets.

Circular sawblades with 4 large gullets
WK 100-2-07

D mm	SB mm	TDI mm	BO mm	$BO_{max.}$ mm	FLD mm	Z	ZF	SW Degree	WSS	ID	
500	5,5	3,6	30	100	140	28	FZ	20	■	**057993**	●
550	5,5	3,6	30	100	140	36	FZ	20	■	**057994**	●
600	6,0	4,0	30	100	160	36	FZ	20	■	**057995**	●
700	6,0	4,0	30	100	200	48	FZ	20	■	**057997**	●

● available ex stock
□ available at short notice
Instruction manual visit www.leitz.org



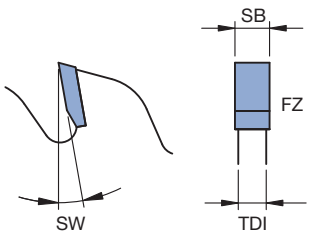
Middle and shoulder cuts

Application:
For cutting along grain - shoulder and middle cuts.

Machine:
Straight line edger, single and multi blade, single and double spindle machines and table saws.

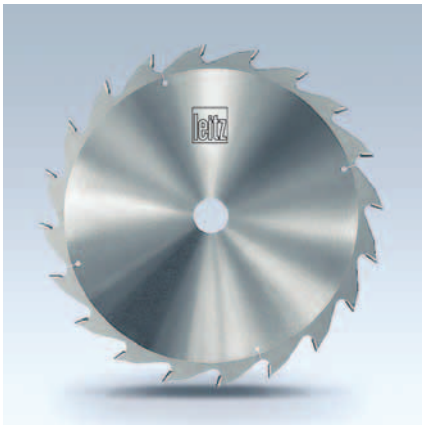
Workpiece material:
Softwood and hardwood, wet and dry.

Technical information:
Large gullet and large, lateral tooth clearance for cuts in wet wood. Solid tool body design for middle cuts.



Circular sawblades with reinforced tool body and large gullet
WK 100-2-01

D mm	SB mm	TDI mm	BO mm	$BO_{max.}$ mm	DKN mm	FLD mm	Z	ZF	SW Degree	WSS	ID
210	3,4	2,2	30	90		100	16	FZ	20	■	**057400** ●
250	4,0	2,6	30	90		100	18	FZ	20	■	**057402** ●
300	4,0	2,6	30	100		120	20	FZ	20	■	**057405** ●
300	4,0	2,6	70		21/83	120	20	FZ	20	■	**057406** ●
305	4,0	2,6	30	120		120	24	FZ	20	■	**057490** ●
350	4,4	3,0	30	100		120	20	FZ	20	■	**057407** ●
350	4,4	3,0	70		21/83	120	20	FZ	20	■	**057408** ●
355	4,4	3,0	30	120		120	24	FZ	20	■	**057491** ●
400	4,4	3,0	30	100		140	24	FZ	20	■	**057409** ●
450	5,0	3,2	30	100		140	28	FZ	20	■	**057410** ●
500	5,0	3,2	30	100		140	32	FZ	20	■	**057411** ●



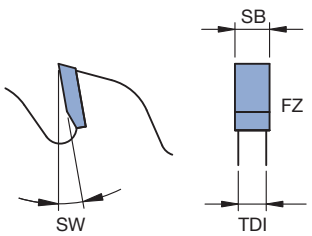
Middle cuts

Application:
For cutting along grain - middle cuts.

Machine:
Straight line edger, single and multi blade, single and double spindle machines and table saws.

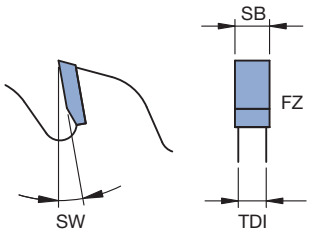
Workpiece material:
Softwood and hardwood, dry up to 15 % wood moisture content.

Technical information:
Optimised design for middle cuts. Large gullet.



Circular sawblades with large gullet
WK 100-2-10

D mm	SB mm	TDI mm	BO mm	$BO_{max.}$ mm	DKN mm	FLD mm	Z	ZF	SW Degree	WSS	ID
210	3,2	2,2	30	90		100	20	FZ	20	■	**057500** ●
250	3,2	2,2	30	90		100	18	FZ	20	■	**057502** ●
300	3,2	2,2	30	100		120	20	FZ	20	■	**057503** ●
300	3,2	2,2	70		21/83	120	20	FZ	20	■	**057504** ●
350	3,5	2,2	30	100		120	24	FZ	20	■	**057505** ●
350	3,5	2,2	70		21/83	120	24	FZ	20	■	**057506** ●
400	3,5	2,2	30	100		140	28	FZ	20	■	**057507** ●
450	3,8	2,5	30	100		140	34	FZ	20	■	**057508** ●
500	4,0	2,8	30	100		140	36	FZ	20	■	**057509** ●



Circular sawblades with internal cooling slots

Application:
For cutting along grain - shoulder and middle cuts.

Machine:
Straight line edger, single and multi blade, single and double spindle machines.

Workpiece material:
Softwood and hardwood, wet and dry.

Technical information:
Tool body with four internal cooling slots. Large lateral tooth clearance for cuts in wet wood.

Shoulder and middle cuts
WK 100-4-16

D mm	SB mm	TDI mm	BO mm	$BO_{max.}$ mm	DKN mm	$FLD_{max.}$ mm	Z	ZF	SW Degree	WSS	ID	
260	4,2	2,6	60		14,5/71	120	20	FZ	20	■	**057220**	●
300	4,2	2,6	30	100		120	24	FZ	20	■	**057221**	●
300	4,2	2,6	70		20,6/83	120	24	FZ	20	■	**057222**	●
350	4,2	2,6	30	100		120	28	FZ	20	■	**057224**	●
350	4,2	2,6	70		20,6/83	120	28	FZ	20	■	**057225**	●

Application:
For cutting along grain - middle cuts.

Workpiece material:
Softwood and hardwood, dry up to 15 % wood moisture content.

Technical information:
Tool body with four internal cooling slots.

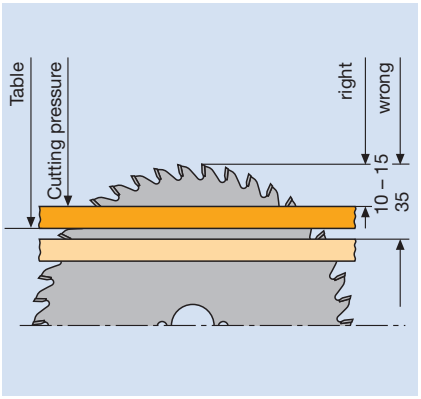
Middle cuts
WK 100-4-39

D mm	SB mm	TDI mm	BO mm	$BO_{max.}$ mm	DKN mm	$FLD_{max.}$ mm	Z	ZF	SW Degree	WSS	ID	
250	3,2	2,2	30	80		100	20	FZ	20	■	**057300**	●
250	3,2	2,2	70		20,6/83	100	20	FZ	20	■	**057302**	●
300	3,2	2,2	30	100		120	24	FZ	20	■	**057303**	●
300	3,2	2,2	70		20,6/83	120	24	FZ	15	■	**057304**	●
350	3,2	2,2	30	100		120	28	FZ	20	■	**057306**	●
350	3,2	2,2	70		20,6/83	120	28	FZ	20	■	**057307**	●

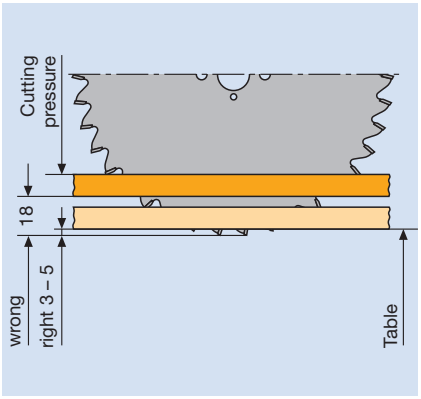
● available ex stock
□ available at short notice
Instruction manual visit www.leitz.org

Application area	For trim, cross, mitre and sizing cuts.
Workpiece material	Solid wood, with or without coating, plywood, glulam, solid surface materials.
Machine	Combined table, mitre, radial, underfloor and optimising saws.

Application

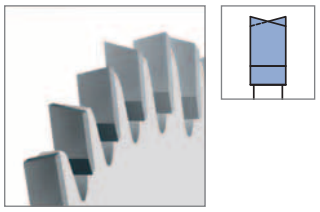


The cutting force of sawblades with a positive cutting angle and the spindle below the workpiece or for sawblades with a negative cutting angle and the spindle above the workpiece. Press the material onto the table.

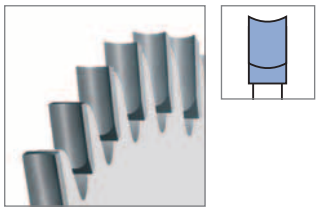


On radial saws, the use of sawblades with a negative cutting angle cutting against the feed is obligatory (see EN 1870-17). The negative cutting angle presses the material onto the table.

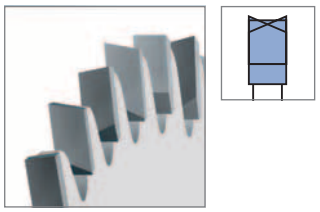
Tooth shape



WZ (alternative top bevel teeth):
Multi purpose tooth shape, economical to purchase and maintain – suitable for solid wood and wood derived materials.



HZ (hollow tooth):
Recommended for veneered wood derived materials and glulam; tear free cutting edges and high cut quality.



WZ/WZ/FZ (alternative/square teeth):
Tooth shape for solid wood, glulam and coated or veneered wood derived materials; tear free cutting edges and high cut quality. Combinations of tooth forms (WZre, WZli, WZre, WZli, FZ).

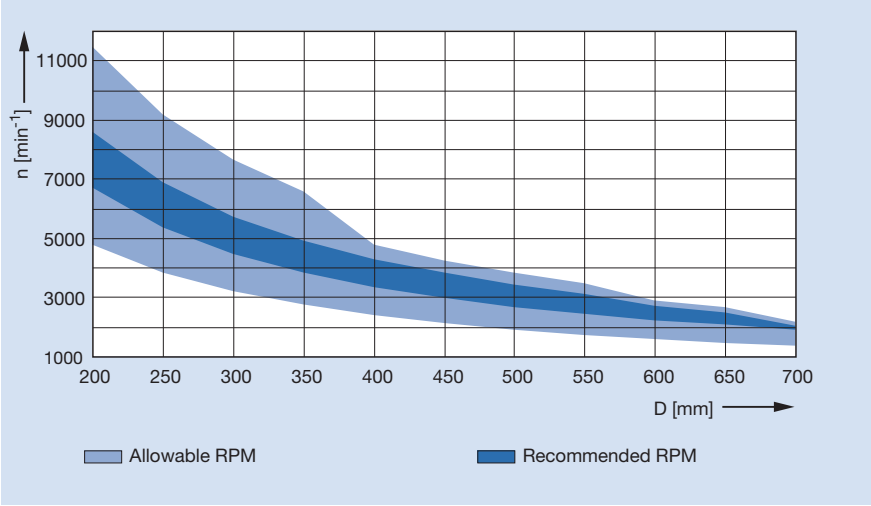
Recommended tooth feed rate f_z (in mm)

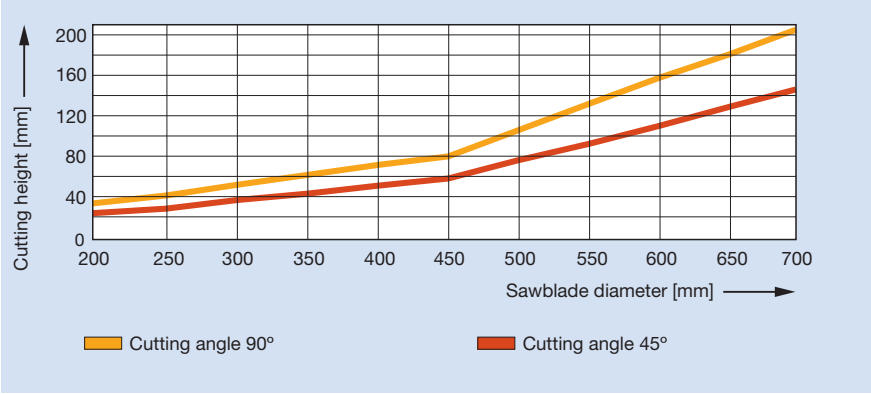
WZ: 0.17 – 0.15 mm
HZ: 0.05 – 0,.08 mm
WZ/WZ/FZ: 0.02 – 0.05 mm

$V_f = f_z \cdot n \cdot Z/1000$

Application data

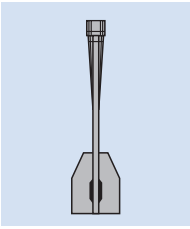
RPM diagram



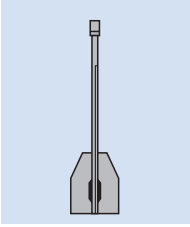


Cutting across grain –
the cutting height a_e depends on the sawblade diameter D and the cutting angle.

Low noise sawblades

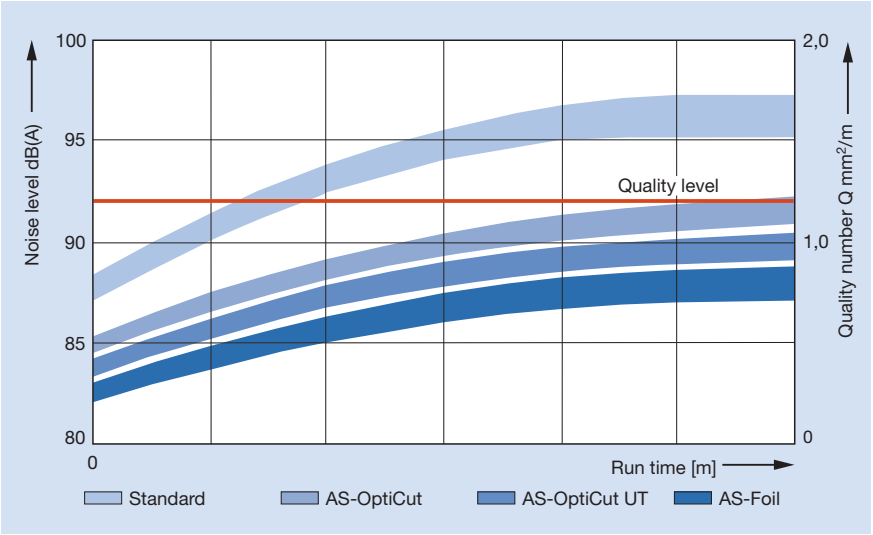


Sawblade without noise damping.



Sawblade with laminated noise damping.

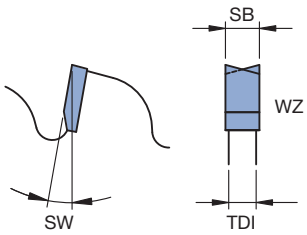
Comparison of the noise reduction of different designs of sawblades and edge quality Q depending on the run time.



Advantages of low noise sawblades

- Optimum noise reduction.
- Longer performance time from vibration damping.
- High cut quality, less wear and down time.
- Quiet running because of the high stability of the tool body.
- Reduced noise level of up to 10 dB(A) – 50% noise reduction – compared to standard sawblades.
- Increase in noise level due to blunting hardly noticeable.
- Better operator working conditions from lower noise exposure.
- Can be resharpened on all popular makes of automatic saw sharpening machines.

HW



Trimming cut from the top - *Excellent*

Application:
For noise reduced trimming and cross cutting.

Machine:
Circular sawing machines for cross, trim, mitre cutting and double end tenoners.

Workpiece material:
Softwood and hardwood, wet and dry.

Technical information:
With negative hook angle for cutting with feed, recommended for manually operated machines. **AS LowNoise foil** design - noise reduction during operation by up to 10 dB(A). Vibration damped composite tool body with steel foil.

AS LowNoise foil - circular sawblades with negative hook angle
WK 180-3-01

D mm	SB mm	TDI mm	BO mm	NLA mm	Foil	Z	ZF	SW Degree	WSS	ID	
255	3,2	2,2	30	KNL	left	48	WZ	-5	■	**065350**	●
305	3,2	2,2	30	KNL	left	54	WZ	-5	■	**065351**	●
350	3,5	2,5	30	KNL	left	60	WZ	-5	■	**065958**	●
350	3,5	2,5	30	KNL	right	60	WZ	-5	■	**065959**	□
400	3,5	2,5	30	KNL	left	60	WZ	-5	■	**065352**	●
450	4,0	2,8	30	KNL	left	48	WZ	-5	■	**065945**	●
500	4,4	3,0	30	KNL	left	54	WZ	-5	■	**065948**	□

Trimming cut from the top - *Premium*

Application:
For noise reduced trimming and cross cutting.

Machine:
Circular sawing machines for cross, trim, mitre cutting and double end tenoners.

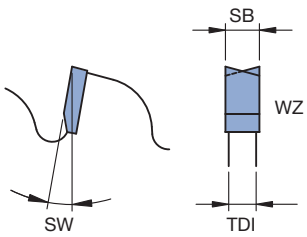
Workpiece material:
Softwood and hardwood, wet and dry.

Technical information:
With negative hook angle for cutting with feed, recommended for manually operated machines. **AS OptiCut UT** design - noise reduction during free running by up to 8 dB(A). Tool body with vibration damping laser ornaments and irregular tooth pitch.

AS OptiCut UT - circular sawblades with negative hook angle
WK 180-3-51

D mm	SB mm	TDI mm	BO mm	NLA mm	Z	ZF	SW Degree	WSS	ID	
255	2,8	2,0	30	KNL	48	WZ	-5	■	**069085**	●
305	2,8	2,0	30	KNL	54	WZ	-5	■	**069086**	●
350	3,2	2,2	30	KNL	60	WZ	-5	■	**069002**	●
400	3,2	2,2	30	KNL	60	WZ	-5	■	**069087**	●
450	3,8	2,8	30	KNL	48	WZ	-5	■	**069003**	●
500	4,4	3,2	30	KNL	54	WZ	-5	■	**069004**	●

● available ex stock
□ available at short notice
Instruction manual visit www.leitz.org



Trimming cut from the top

Application:
For trimming and cross cutting.

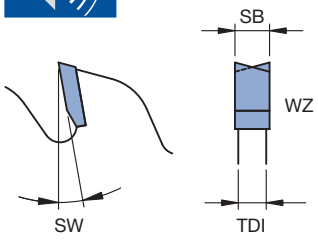
Machine:
Circular sawing machines for cross, trim, mitre cutting and double end tenoners.

Workpiece material:
Softwood and hardwood, wet and dry.

Technical information:
With negative hook angle and medium number of teeth for cutting with feed, recommended for manual machines.

Circular sawblades - cutting height 90 mm, with negative hook angle
WK 160-2, WK 160-2-01, WK 160-2-10

D mm	SB mm	TDI mm	BO mm	NLA mm	Z	ZF	SW Degree	WSS	ID	
200	3,2	2,6	20	KNL	72	WZ	-5	■	**065872**	●
250	3,2	2,6	30	KNL	80	WZ	-5	■	**065873**	●
255	2,8	2,0	30	KNL	60	WZ	-5	■	**065874**	●
300	3,2	2,2	30	KNL	30	WZ	-5	■	**057700**	●
300	3,2	2,6	30	KNL	96	WZ	-6	■	**065870**	●
305	3,0	2,2	30	KNL	60	WZ	-5	■	**065875**	●
350	3,2	2,2	30	KNL	36	WZ	-5	■	**057701**	●
350	3,5	2,8	30	KNL	108	WZ	-5	■	**065880**	●
355	3,2	2,4	30	KNL	72	WZ	-5	■	**065876**	●
400	3,8	2,8	30	KNL	42	WZ	-5	■	**057702**	●
400	3,8	2,8	30	KNL	72	WZ	-5	■	**065877**	●
400	3,5	2,8	30	KNL	120	WZ	-5	■	**065881**	●
450	3,8	2,8	30	KNL	48	WZ	-5	■	**057703**	●
450	4,0	2,8	30	KNL	72	WZ	-5	■	**065878**	●
500	4,4	3,0	30	KNL	54	WZ	-5	■	**057704**	●
500	4,4	3,0	30	KNL	72	WZ	-5	■	**065879**	●



Trimming cuts - at high feed rate - *Premium*

Application:
For noise reduced trim and cross cutting even in wet wood. Cycle times of 0.3 to 1.0 sec.

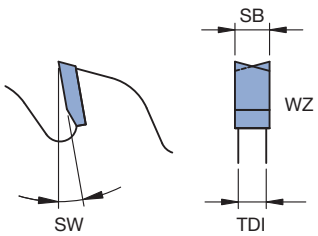
Machine:
Cross cutting, trimming and optimising machines.

Workpiece material:
Softwood and hardwood, wet and dry.

Technical information:
With large lateral tooth clearance and high number of teeth. **AS OptiCut UT** design - noise reduction during free running by up to 8 dB(A). Tool body with irregular tooth pitch.

Circular sawblades - AS OptiCut UT
WK 150-2

D mm	SB mm	TDI mm	BO mm	NLA mm	Z	ZF	SW Degree	WSS	ID	
450	4,8	3,5	30	2/15/63	138	WZ	10	■	**057526**	●
500	5,0	3,2	30	2/15/63	96	WZ	10	■	**057534**	●
500	4,8	3,5	30	2/15/63	144	WZ	10	■	**057528**	●
500	4,8	3,5	35	2/10/60	144	WZ	10	■	**057542**	●
520	4,6	3,4	30	2/15/63	144	WZ	10	■	**057529**	●
550	5,0	3,2	30	2/15/63	96	WZ	10	■	**057535**	●
550	5,2	3,2	30	2/15/63	160	WZ	10	■	**057530**	●
600	5,8	4,0	30	2/15/63	96	WZ	10	■	**057536**	●
600	5,4	4,0	30	2/15/63	172	WZ	10	■	**057531**	●
630	5,4	4,4	30	2/10/60	180	WZ	10	■	**057543**	●



Trimming cuts - at high feed rate

Application:
For trim and cross cutting even in wet wood. Cycle times of 0.3 to 1.0 sec.

Machine:
Trimming, cross cutting and optimising machines.

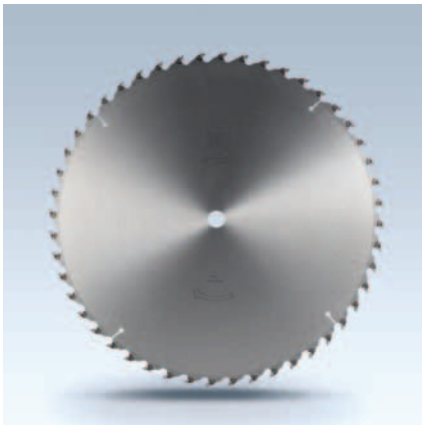
Workpiece material:
Softwood and hardwood, wet and dry.

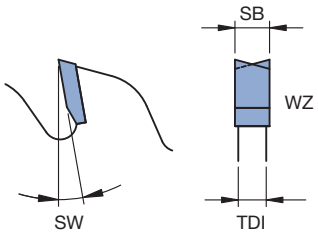
Technical information:
With large lateral tooth clearance and high number of teeth.

Circular sawblades
WK 150-2, WK 150-2-11

D mm	SB mm	TDI mm	BO mm	NLA mm	Z	ZF	SW Degree	WSS	ID	
400	3,5	2,8	30	2/15/63	120	WZ	10	■	**057525**	●
450	5,0	3,2	30	2/15/63	108	WZ	20	■	**057524**	●
500	5,2	3,2	30		120	WZ	20	■	**057516**	●
550	5,2	3,2	30		120	WZ	20	■	**057517**	●
600	6,0	4,0	30		120	WZ	20	■	**057518**	●

● available ex stock
□ available at short notice
Instruction manual visit www.leitz.org





Trimming and cutting across grain

Application:
For cross cutting, trimming and angled cuts on 5-axis machining centres.

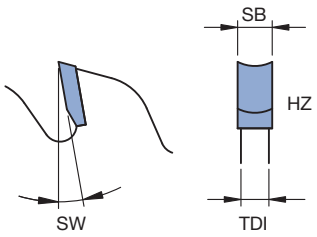
Machine:
Cross cutting, trimming and CNC controlled machines.

Workpiece material:
Softwood and hardwood, wet and dry or laminated solid wood.

Technical information:
With large lateral tooth clearance.

Circular sawblades
WK 150-2-09

D mm	SB mm	TDI mm	BO mm	NLA mm	Z	ZF	SW Degree	WSS	ID	
600	5,9	4,0	30		48	WZ	20	■	**057537**	●
630	5,0	3,6	30	1/10/160	62	WZ	20	■	**057514**	●
700	5,9	4,0	30		72	WZ	20	■	**057538**	●
735	5,9	4,4	30	4/8,3/90 2/15/415	72	WZ	20	■	**057539**	●
760	5,9	4,4	30	4/8,3/90 2/15/415	72	WZ	20	■	**057540**	●
800	5,9	4,4	30	4/8,3/90 2/15/415 12/9/140	72	WZ	20	■	**057541**	●



Cross cuts

Application:
For cross cutting and sizing with tear free cuts at medium cutting heights.

Machine:
Table saws, cross cut and mitre saws.

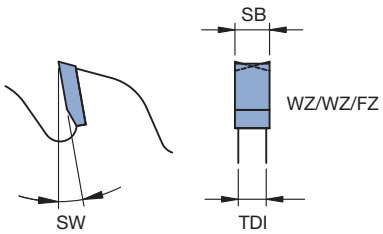
Workpiece material:
Solid wood, dry, plastic and paper coated and veneered wood materials or laminated wood.

Technical information:
Hollow ground tooth shape.

Circular sawblades
WK 206-2

D mm	SB mm	TDI mm	BO mm	NLA mm	Z	ZF	SW Degree	WSS	ID	
350	3,2	2,2	30	KNL	54	HZ	10		**058805**	●
400	3,2	2,2	30	KNL	60	HZ	10		**058806**	●

● available ex stock
□ available at short notice
Instruction manual visit www.leitz.org



Cross cuts - *Premium*

Application:
For noise reduced cross cutting and sizing with tear free cuts at low cutting heights.

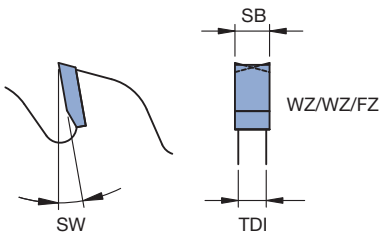
Machine:
Table saws, cross cut and mitre saws.

Workpiece material:
Softwood and hardwood, dry, plastic and paper coated and veneered wood materials or laminated wood.

Technical information:
Special tooth shape for high cut quality. High number of teeth with alternate shear angle. **AS OptiCut** design - noise reduction during free running by up to 5 dB(A). Tool body with vibration damping laser ornaments.

Circular sawblades - AS OptiCut
WK 179-2-50

D mm	SB mm	TDI mm	BO mm	NLA mm	Z	ZF	SW Degree	WSS	ID
300	3,0	2,2	30	KNL	100	WZ/WZ/FZ	10	■■■	**068550** ●



Cross cuts

Application:
For cross cutting and sizing with tear free cuts at low cutting heights.

Machine:
Table saws, cross cut and mitre saws.

Workpiece material:
Softwood and hardwood, wet or dry, plastic and paper coated and veneered wood materials or laminated wood.

Technical information:
Special tooth shape for high trim quality. High number of teeth with alternate shear angle.

Circular sawblades
WK 159-2

D mm	SB mm	TDI mm	BO mm	NLA mm	Z	ZF	SW Degree	WSS	ID
255	2,8	2,0	30	KNL	80	WZ/WZ/FZ	10	■■■	**065888** ●
305	3,0	2,2	30	KNL	100	WZ/WZ/FZ	10	■■■	**065889** ●
355	3,0	2,2	30	KNL	120	WZ/WZ/FZ	10	■■■	**065890** ●

■ Solid wood
■ Board, coated
■ Board, uncoated
■ Non-ferrous metals
■ Plastics
■ Mineral materials
■ Composites

Working process

For cross cutting and sizing; grooving and cutting also possible if safety regulations are followed.

Workpiece materials

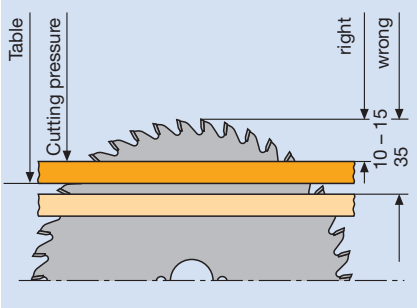
Solid wood, wood derived materials, synthetic materials and light metals.

Machines

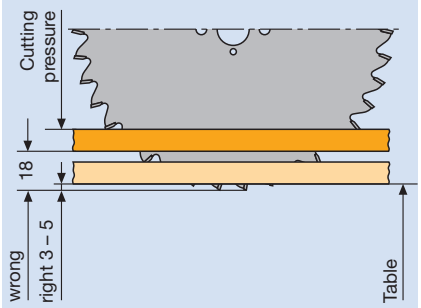
Table saws, sizing machines with/without scoring saw, vertical panel sizing saws and twin saw dimensions saws.

Application

Suitable for cutting from below against the feed. On vertical panel sizing machines and twin saw dimension saws cutting from either below or above against the feed.



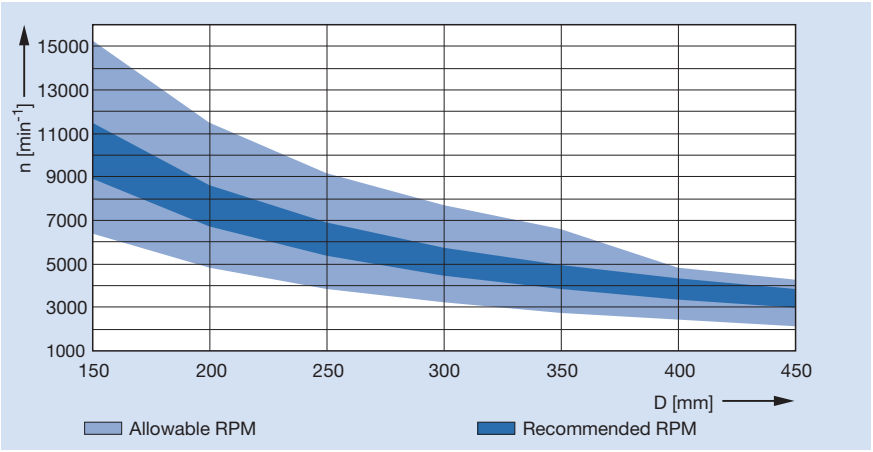
The positive cutting angle presses the material onto the table for sawblades with a positive cutting angle and the spindle below the workpiece.



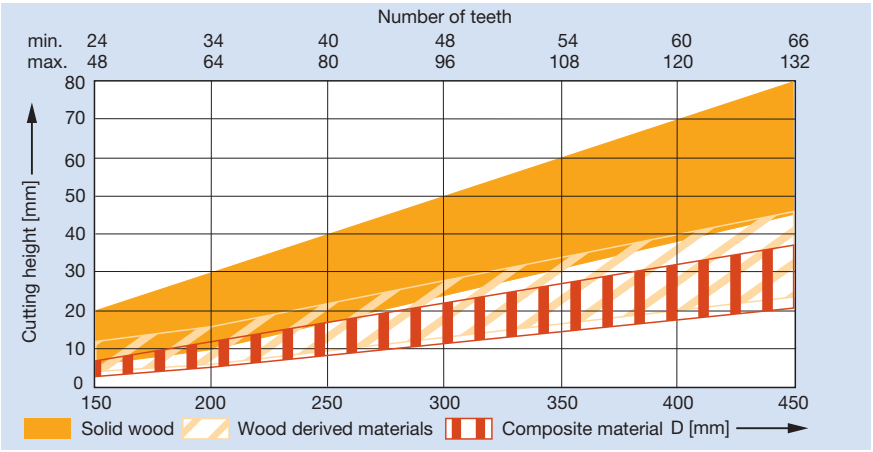
The negative cutting angle presses the material onto the table for sawblades with a negative cutting angle and the spindle above the workpiece.

On radial saw machines, sawblades must be used (see EN1870-17) with a negative cutting angle against the feed.

RPM diagram

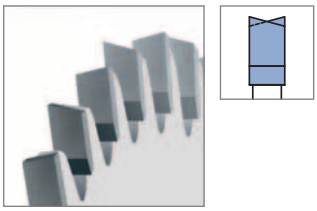


Cutting height diagram

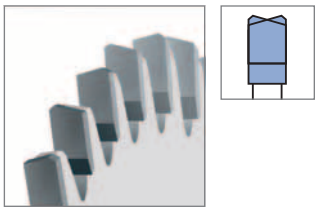


Sizing sawblades – cutting height a_e depending on sawblade diameter D and workpiece material.

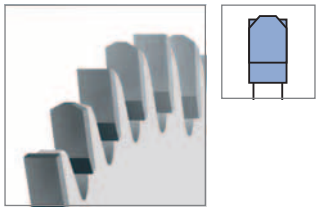
Tooth shape



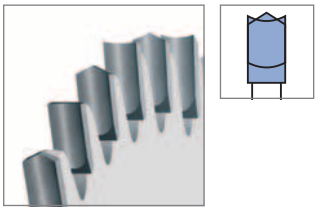
WZ (alternative top bevel teeth):
Multi purpose tooth shape, economical to purchase and maintain. Ideal for chipboard, veneered chipboard, solid wood, block board, plywood.



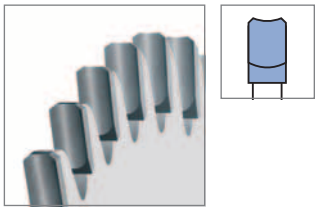
WZ/FA (alternative top bevel teeth with bevel):
Tooth shape for demanding abrasive materials such as acrylic glass (PMMA), plastic coated chipboard and hardboard to a finish cut quality.



FZ/TR (square/trapezoidal teeth):
Tooth shape for plastic and foil coated wood derived materials.
TR/TR (trapezoidal/trapezoidal teeth):
Best tooth shape for cutting hard and abrasive coatings – can be altered from the existing FZ/TR shape.

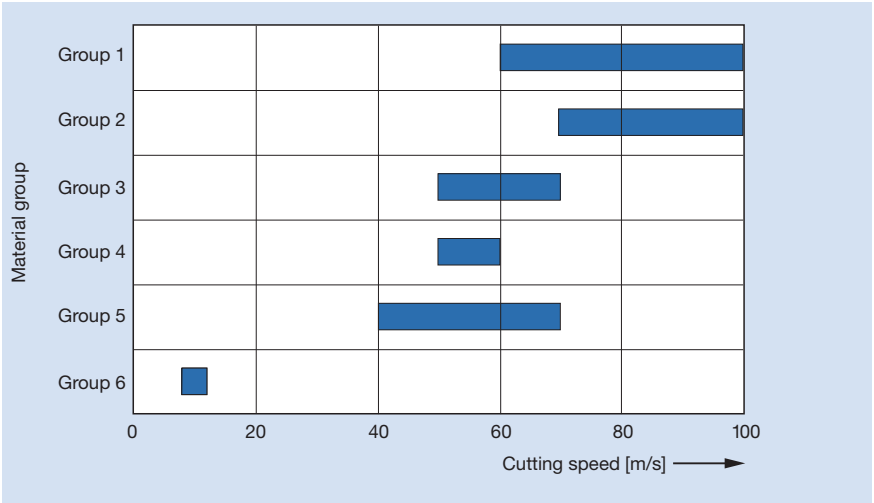


HZ/DZ (hollow face/inverted V teeth):
Tooth shape for high cutting quality on plastic coated materials, with high upper and lower edge quality on machines without a scoring saw.



HZ/FA (bevelled hollow face teeth):
Same applications as WZ/FA and FZ/TR, but with higher cutting quality. Use for cuts in abrasive coatings on machines without a scoring saw.

Cutting speeds



Group 1: Solid wood, uncoated, veneered, synthetic and HPL coated chipboard and fibre materials and cement compound wood-derived materials, cast aluminium alloys and glulam.
Group 2: Hard paper.
Group 3: Plaster material.
Group 4: Thermoplastic.
Group 5: Duro plastic.
Group 6: Fibre cement board.

Recommended feed rate f_z (in mm)

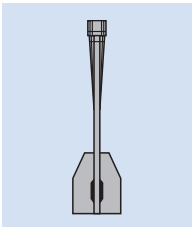
$V_f = f_z \cdot n \cdot Z/1000$

Scoring sawblades

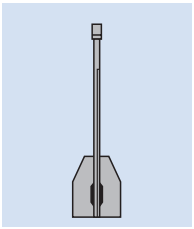
Material	Tooth progression in mm
Softwood across grain	0.10 – 0.20
Hardwood across grain	0.05 – 0.10
OSB board	0.10 – 0.20
Veneered board, block board	0.03 – 0.10
Plastic coated chipboard	0.03 – 0.06
HPL coated chipboard	0.02 – 0.10
Plywood	0.05 – 0.10
Aluminium alloy	0.03 – 0.10
Hard fibreboard	0.03 – 0.08
Cement-based wood-derived material	0.02 – 0.05
Glulam	0.02 – 0.06
Plaster material	0.10 – 0.20
Thermoplastics	0.05 – 0.10
Duroplastics	0.02 – 0.05

A scoring saw is recommended for high cut quality on both sides of coated panels. The scoring saw cutting width is slightly larger than the width of the main sawblade so the exiting tooth of the main sawblade does not touch the bottom surface cut edge. As precise, flat workpiece positioning is only possible with pressure clamping, split scoring sawblades are used on table and panel saws.

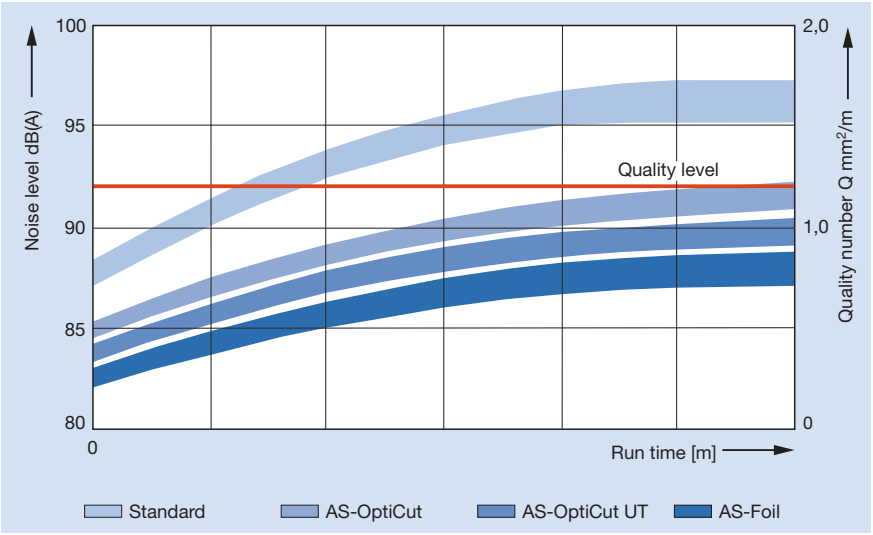
Low noise sawblades



Sawblade without noise damping.



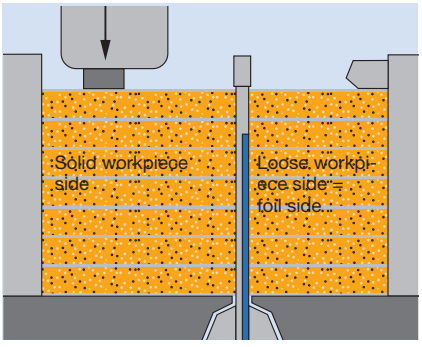
Sawblade with laminated noise damping.



Comparison of the noise reduction of different designs of sawblades and edge quality Q depending on the run time.

Advantages of low noise sawblades

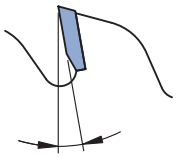
- Optimum noise reduction.
- Longer performance time from vibration damping.
- Improved cut quality, less wear and down time.
- Quiet running because of the high stability of the tool body.
- Reduced noise level of up to 10 dB(A) – 50% noise reduction – compared to standard sawblades.
- Increase in noise level due to blunting hardly noticeable.
- Better operator working conditions from lower noise exposure.
- Can be resharpened on all popular makes of automatic saw sharpening machines.

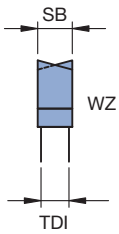


Determination of foil side

HW

Low Noise





Sizing cuts - *Excellent*

Application:
For noise reduced cross cutting in solid wood and sizing in wood derived materials.

Machine:
Circular sawing machine for sizing, cross cutting, multi blade sawing and table saws.

Workpiece material:
Softwood and hardwood, dry and uncoated wood derived materials.

Technical information:
Stable tool body tooth shape. **AS LowNoise foil** design - noise reduction during operation by up to 10 dB(A). Vibration damped composite tool body by steel foil.

Circular sawblades - AS LowNoise foil left
WK 870-3-01, WK 870-3-02, WK 870-3

D mm	SB mm	TDI mm	BO mm	NLA mm	Z	ZF	SW Degree	WSS	ID
250	3,5	2,5	30	KNL	80	WZ	10		**065934** ●
300	3,5	2,5	30	KNL	48	WZ	10		**065931** ●
300	3,5	2,5	30	KNL	72	WZ	10		**065937** ●
300	3,5	2,5	30	KNL	96	WZ	10		**065935** ●
350	3,5	2,5	30	KNL	54	WZ	10		**065932** ●
350	3,5	2,5	30	KNL	84	WZ	10		**065938** ●
350	3,5	2,5	30	KNL	108	WZ	10		**065936** ●
400	4,0	2,8	30	KNL	60	WZ	10		**065933** ●

Sizing cuts - *Premium*

Application:
For noise reduced cross cutting in solid wood and sizing in wood derived materials.

Machine:
Circular sawing machine for sizing, cross cutting, multi blade sawing and table saws.

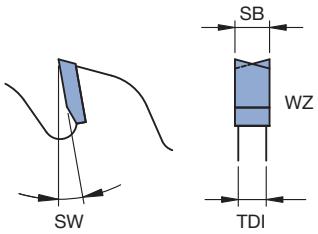
Workpiece material:
Softwood and hardwood, dry and uncoated wood derived materials.

Technical information:
Stable tool body tooth shape. **AS OptiCut UT** design - noise reduction during free running by up to 8 dB(A). Tool body with vibration damping laser ornaments and irregular tooth pitch.

Circular sawblades - AS OptiCut UT
WK 870-2-50, WK 870-2-51, WK 870-2-52

D mm	SB mm	TDI mm	BO mm	NLA mm	Z	ZF	SW Degree	WSS	ID
250	3,2	2,2	30	KNL	40	WZ	10		**069005** ●
250	3,2	2,2	30	KNL	60	WZ	10		**069076** ●
250	3,2	2,2	30	KNL	80	WZ	10		**068251** ●
300	3,2	2,2	30	KNL	48	WZ	10		**069006** ●
300	3,2	2,2	30	KNL	72	WZ	10		**069009** ●
300	3,2	2,2	30	KNL	96	WZ	10		**068801** ●
315	3,2	2,2	30	KNL	72	WZ	10		**069098** ●
350	3,2	2,2	30	KNL	54	WZ	10		**069007** ●
350	3,2	2,2	30	KNL	84	WZ	10		**069077** ●
350	3,2	2,2	30	KNL	108	WZ	10		**068252** ●
400	3,8	2,8	30	KNL	60	WZ	10		**069008** ●

HW



Sizing cuts

Application:
For cross cutting in solid wood and sizing in wood derived materials.

Machine:
Circular sawing machine for sizing, cross cutting, multi blade sawing and table saws.

Workpiece material:
Softwood and hardwood, dry and uncoated wood derived materials.

Technical information:
Stable tool body tooth shape.

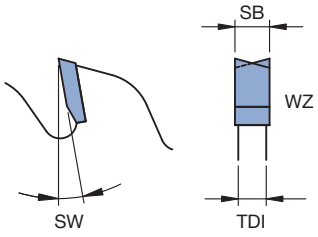
Circular sawblades
WK 850-2, WK 850-2-01, WK 850-2-02, WK 850-2-03, WK 850-2-10, WK 850-3-02, WK 150-2-03, WK 150-2-07

D mm	SB mm	TDI mm	BO mm/in	NLA mm	Z	ZF	SW Degree	WSS	ID	
150	3,5	2,5	30	KNL	24	WZ	10		058050	●
150	3,2	2,2	30		48	WZ	10		058300	●
150	2,4	1,6	30		48	WZ	10		058450	●
180	3,0	2,0	30		24	WZ	15		057980	●
180	3,5	2,5	30	KNL	30	WZ	10		058052	●
180	2,4	1,6	30		30	WZ	15		057800	●
180	3,2	2,2	30		58	WZ	10		058301	●
180	2,4	1,6	30		58	WZ	10		058451	●
200	3,0	2,0	30		24	WZ	15		057981	●
200	3,2	2,2	30	KNL	34	WZ	10		058053	●
200	2,4	1,6	30		34	WZ	15		057801	●
200	3,2	2,2	30		48	WZ	10		058380	●
200	3,2	2,2	30		64	WZ	10		058302	●
200	2,4	1,6	30		64	WZ	10		058452	●
220	3,2	2,2	30	2/7/42	64	WZ	10		060646	●
250	3,2	2,2	15,88/5/8“		40	WZ	10		058054	●
250	3,2	2,2	15,88/5/8“		60	WZ	10		058381	●
250	3,2	2,2	15,88/5/8“		80	WZ	10		058303	●
250	3,2	2,2	30		30	WZ	15		057982	●
250	3,2	2,2	30	KNL	40	WZ	10		058055	●
250	2,4	1,6	30	KNL	40	WZ	15		057802	●
250	3,2	2,2	30	KNL	48	WZ	10		058202	●
250	3,2	2,2	30	KNL	60	WZ	10		058382	●
250	3,2	2,2	30	KNL	80	WZ	10		058304	●
250	2,4	1,6	30	KNL	80	WZ	10		058453	●
300	3,2	2,2	15,88/5/8“		72	WZ	10		058383	●
300	3,2	2,2	15,88/5/8“		96	WZ	10		058310	●
300	3,2	2,2	30	KNL	36	WZ	15		057983	●
300	3,2	2,2	30	KNL	48	WZ	10		058057	●
300	2,4	1,6	30	KNL	48	WZ	15		057803	●
300	3,2	2,2	30	KNL	60	WZ	10		058204	●
300	3,2	2,2	30	KNL	72	WZ	10		058384	●
300	3,2	2,2	30	KNL	96	WZ	10		058311	●
300	2,4	1,6	30	KNL	96	WZ	10		058454	●
300	3,2	2,2	31,75/1/4“		72	WZ	10		058388	□
315	3,2	2,2	30	KNL	72	WZ	10		058393	●
350	3,2	2,2	25,40/1“		54	WZ	10		058058	●
350	3,2	2,2	25,40/1“	KNL	72	WZ	10		058205	●
350	3,2	2,2	25,40/1“		84	WZ	10		058385	●
350	3,2	2,2	25,40/1“		108	WZ	10		058307	●
350	3,2	2,2	30	KNL	42	WZ	15		057984	●
350	3,2	2,2	30	KNL	54	WZ	10		058059	●
350	2,8	2,0	30	KNL	54	WZ	15		057805	●

● available ex stock
□ available at short notice
Instruction manual visit www.leitz.org

D mm	SB mm	TDI mm	BO mm/in	NLA mm	Z	ZF	SW Degree	WSS	ID	
350	3,2	2,2	30	KNL	72	WZ	10	■■	**058206**	●
350	3,2	2,2	30	KNL	84	WZ	10	■■	**058386**	●
350	3,2	2,2	30	KNL	108	WZ	10	■■■■	**058308**	●
350	2,8	2,0	30	KNL	108	WZ	10	■■■■	**058458**	●
400	3,5	2,5	30	KNL	48	WZ	15	■■	**057986**	●
400	3,8	2,8	30	KNL	60	WZ	10	■■	**058061**	●
400	3,8	2,8	30	KNL	84	WZ	10	■■	**058225**	●
400	3,2	2,2	30	KNL	96	WZ	10	■■	**058387**	●
400	3,2	2,2	30	KNL	120	WZ	10	■■■■	**058309**	●
450	3,8	2,8	30	KNL	66	WZ	10	■■	**058062**	●
500	3,8	2,8	30	KNL	72	WZ	10	■■	**058063**	●
550	4,2	3,2	30	KNL	84	WZ	10	■■	**058075**	●

HW



Sizing cuts - reduced cutting width

Application:
For cutting along grain and across grain and sizing with reduced cutting width.

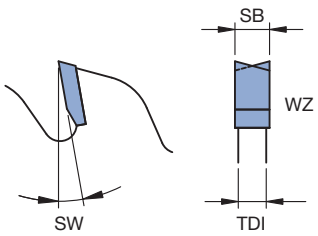
Machine:
Circular sawing machine for sizing, cross cutting and table saws.

Workpiece material:
Softwood and hardwood, dry, veneered wood derived materials resp. laminated wood and plastics (acrylic glass - PMMA).

Technical information:
Reduced cutting width. Lower cutting and feed forces required.

Circular sawblades - extreme thin kerf
WK 850-2-22

D mm	SB mm	TDI mm	BO mm	NLA mm	Z	ZF	SW Degree	WSS	ID	
250	1,7	1,0/2,4	30	KNL	80	WZ	8	■■■■	**058520**	●
300	1,7	1,0/2,4	30	KNL	96	WZ	8	■■■■	**058521**	●



Cutting stacks of veneered panels

Application:
For cutting along grain and across grain and sizing with reduced cutting width.

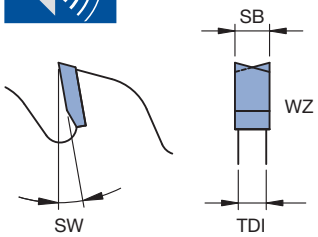
Machine:
Circular saw machines for sizing and cutting veneer and table saws.

Workpiece material:
Veneer stacks up to 40 mm cutting height.

Technical information:
Reduced cutting width and tool body width. ID **060592** with tooth shape: grouped teeth (1 teeth left WZ, 5 teeth right WZ).

Circular sawblades
WK 250-2, WK 259-2, WK 850-2

D mm	SB mm	TDI mm	BO mm	NLA mm	Z	ZF	SW Degree	WSS	ID	
160	1,8	1,0/2,5	16	1/6/33	48	WZ	10	■	**060574**	●
180	1,6	1,0/2,5	16	1/6/33	56	WZ	10	■	**060591**	●
180	2,0	1,4	16		56	WZ	10	■	**060645**	●
180	2,4	1,6	16		58	WZ	10	■	**059665**	●
180	2,0	1,2	16	1/6/33	72	WZ	10	■	**060592**	●
200	2,0	1,4	16		64	WZ	10	■	**059666**	●



Cutting honeycomb panels

Application:
For noise reduced sizing with reduced cutting width.

Machine:
Circular saw machines for sizing and cutting veneer and table saws.

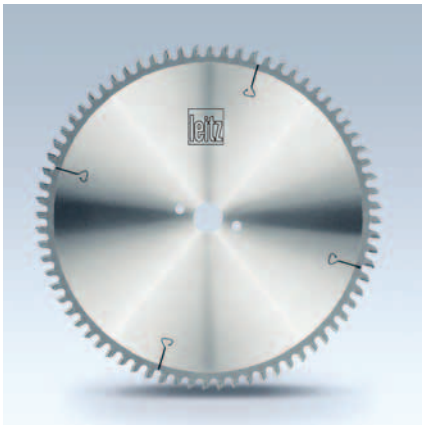
Workpiece material:
Light building panels or honeycomb panels.

Technical information:
Reduced cutting width. Special cutting geometry to prevent delamination of board structure. **AS OptiCut UT** design. Tool body with irregular tooth pitch. Increased cutting performance and reduced resin build up by tool body special coating. Riving knife width must be adjusted to suit saw.

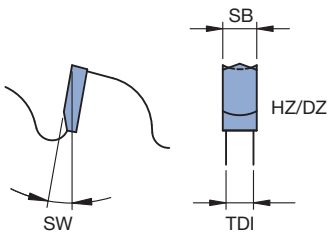
Circular sawblades - AS OptiCut UT, thin kerf
WK 850-2-10

D mm	SB mm	TDI mm	BO mm	NLA mm	Z	ZF	SW Degree	WSS	ID	
250	2,4	1,6	30	KNL	80	WZ	20	■■	**058456**	●
300	2,6	1,8	30	KNL	84	WZ	20	■■	**058457**	●
350	2,8	2,0	30	KNL	96	WZ	20	■■	**058459**	●
400	2,8	2,0	30	KNL	108	WZ	20	■■	**058460**	●
450	3,0	2,2	30	KNL	120	WZ	20	■■	**058461**	●

● available ex stock
□ available at short notice
Instruction manual visit www.leitz.org



HW



Sizing cuts without scoring saw

Application:
For sizing without scoring sawblade.

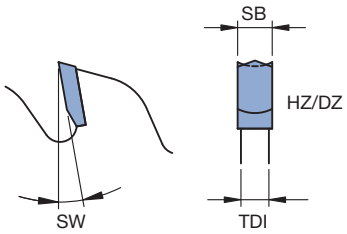
Machine:
Vertical circular sawing machines for sizing and table saws without scoring saw.

Workpiece material:
Plastic coated particle boards and fibre boards (MDF, HDF, WF etc.).

Technical information:
Negative cutting angle. If the saw spindle is positioned above the workpiece, the cutting pressure presses the workpiece onto the table.

Circular sawblades with negative hook angle
WK 864-2-04

Machine	D mm	SB mm	TDI mm	BO mm	NLA mm	Z	ZF	SW Degree	WSS	ID	
Holz Her	220	3,2	2,2	30	2/7/42	42	HZ/DZ	-5	■	**058957**	●
Haffner Striebig	250	3,2	2,2	30	KNL	48	HZ/DZ	-5	■	**058972**	●
Haffner Holz Her Striebig	303	3,2	2,2	30	KNL	60	HZ/DZ	-5	■	**058970**	●
Altendorf	350	3,2	2,2	30	KNL	72	HZ/DZ	-5	■	**058960**	●



Sizing cuts without scoring saw - *Excellent*

Application:
For noise reduced sizing without scoring sawblade.

Machine:
Vertical circular sawing machines for sizing and table saws without scoring saw.

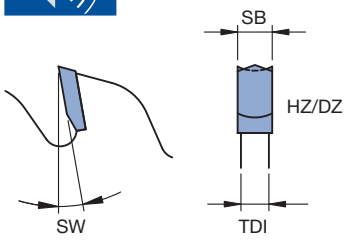
Workpiece material:
Plastic coated particle boards and fibre boards (MDF, HDF, WF etc.).

Technical information:
If the saw spindle is positioned below the workpiece, the cutting pressure presses the workpiece onto the table. **AS LowNoise foil** design - noise reduction during operation by up to 10 dB(A). Vibration damped composite tool body with steel foil.

Circular sawblades - AS LowNoise foil
WK 874-2

Machine	D mm	SB mm	TDI mm	BO mm	NLA mm	Dampfoil	Z	ZF	SW Degree	WSS	ID	
Striebig	303	3,5	2,5	30	KNL	left	60	HZ/DZ	10	■	**065941**	●
Striebig	303	3,5	2,5	30	KNL	right	60	HZ/DZ	10	■	**065335**	●
Altendorf Kölle Martin	350	3,5	2,5	30	KNL	left	72	HZ/DZ	10	■	**065957**	●

● available ex stock
□ available at short notice
Instruction manual visit www.leitz.org



Sizing cuts without scoring saw - *Premium*

Application:
For noise reduced sizing without scoring sawblade.

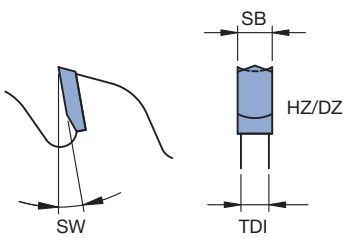
Machine:
Vertical circular sawing machines for sizing and table saws without scoring saw.

Workpiece material:
Plastic coated particle boards and fibre boards (MDF, HDF, WF etc.).

Technical information:
If the saw spindle is positioned below the workpiece, the cutting pressure presses the workpiece onto the table. **AS OptiCut** and **AS OptiCut UT** design - noise reduced design up to 8 dB(A) during free running. Tool body with vibration damping laser ornaments and irregular tooth pitch.

Circular sawblades - AS OptiCut / AS OptiCut UT
WK 874-2-50

Machine	D mm	SB mm	TDI mm	BO mm	NLA mm	Z	ZF	SW Degree	WSS	ID	
Striebig	303	3,5	2,4	30	KNL	60	HZ/DZ	10	■	**068301**	●
Striebig	303	3,2	2,4	30	KNL	68	HZ/DZ	10	■	**068303**	●



Sizing cuts without scoring saw

Application:
For sizing without scoring sawblade.

Machine:
Vertical circular sawing machines for sizing and table saws without scoring saw.

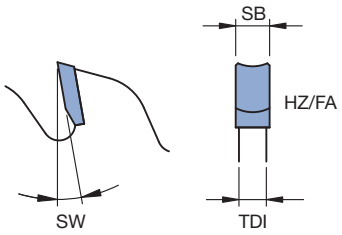
Workpiece material:
Paper and plastic coated particle boards and fibre boards (MDF, HDF, WF etc.).

Technical information:
Positive hook angle. If the saw spindle is positioned under the workpiece, the cutting pressure presses the workpiece onto the table.

Circular sawblades
WK 854-2

Machine	D mm	SB mm	TDI mm	BO mm	NLA mm	Z	ZF	SW Degree	WSS	ID	
Striebig	220	3,2	2,2	30		42	HZ/DZ	10	■	**058967**	●
Elektra Beckum Striebig	250	3,2	2,2	30	KNL	48	HZ/DZ	10	■	**058971**	●
Scheppach Striebig	303	3,5	2,4	30	KNL	60	HZ/DZ	10	■	**058963**	●
	350	3,5	2,5	30	KNL	72	HZ/DZ	10	■	**058969**	●

HW



Sizing cuts with/without scoring saw

Application:
For sizing with/without scoring sawblade.

Machine:
Table saws and circular sawing machines for sizing, cross cutting and panel sizing with/without scoring saw.

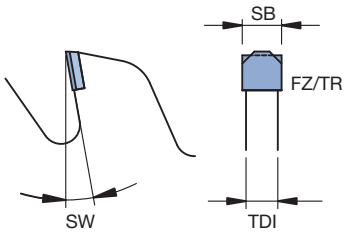
Workpiece material:
HPL and plastic coated wood derived materials.

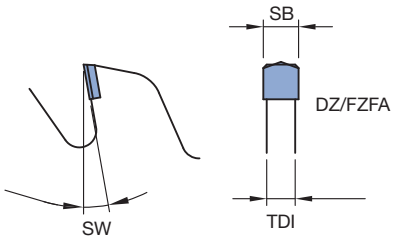
Technical information:
If the saw spindle is positioned below the workpiece, the cutting pressure presses the workpiece onto the table. Tooth shape suitable for hard coatings (e.g. HPL).

Circular sawblades
WK 807-2

D mm	SB mm	TDI mm	BO mm	NLA mm	Z	ZF	SW Degree	WSS	ID	
220	3,2	2,2	30	2/7/42	42	HZ/FA	10	■	**058880**	●
300	3,2	2,2	30	KNL	60	HZ/FA	10	■	**058881**	●
350	3,2	2,2	30	KNL	72	HZ/FA	10	■	**058882**	●
400	3,2	2,2	30	KNL	84	HZ/FA	10	■	**058883**	●

● available ex stock
□ available at short notice
Instruction manual visit www.leitz.org





Sizing cuts with scoring saw - *Excellent* DP

Application:
For noise reduced sizing with scoring sawblade.

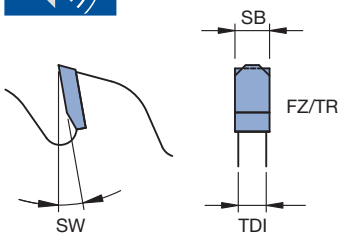
Machine:
Table saws and circular sawing machines for sizing, cross cutting and panel sizing with scoring saw.

Workpiece material:
Plastic coated wood derived materials, composite materials and plastic panels.

Technical information:
Stable tool body tooth shape. **Diamaster PRO** design with 4.5 mm tip height.

Circular sawblades - Diamaster PRO
WK 852-2-DP, WK 858-2-DP

D mm	SB mm	TDI mm	BO mm	NLA mm	Z	ZF	SW Degree	WSS	ID	
300	3,5	2,5	30	KNL	60	FZ/TR	10	■■■	**090638**	●
300	3,2	2,2	30	KNL	60	DZ/FZFA	10	■■■	**190563**	●



Sizing cuts with scoring saw - *Premium*

Application:
For noise reduced sizing with/without scoring sawblade.

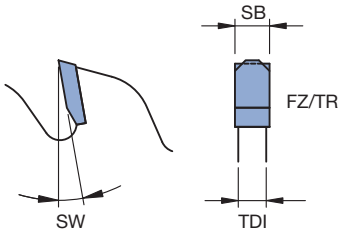
Machine:
Table saws and circular sawing machines for sizing, cross cutting and panel sizing with/without scoring saw.

Workpiece material:
Uncoated wood derived materials, laminated material panels (HPL, Trespa, multiplex), polymer bound materials (Corian) and thermosets.

Technical information:
If the saw spindle is positioned below the workpiece, the cutting pressure presses the workpiece onto the table. **AS OptiCut** design - noise reduction during free running by up to 5 dB(A). Tool body with vibration damping laser ornaments.

Circular sawblades - AS OptiCut
WK 872-2-60

D mm	SB mm	TDI mm	BO mm	NLA mm	Z	ZF	SW Degree	WSS	ID	
250	3,5	2,5	30	KNL	72	FZ/TR	5		**068405**	●
300	3,2	2,2	30	KNL	72	FZ/TR	10		**068406**	●
300	3,2	2,2	30	KNL	96	FZ/TR	10		**068407**	●
350	3,2	2,2	30	KNL	108	FZ/TR	10		**068409**	●



Sizing cut with scoring saw

Application:
For sizing single panels or panels stacks with scoring sawblade.

Machine:
Table saws and circular sawing machines for sizing, cross cutting and panel sizing with scoring saw.

Workpiece material:
Paper and plastic coated particle boards and fibre boards (MDF, HDF etc.) and plastic panels.

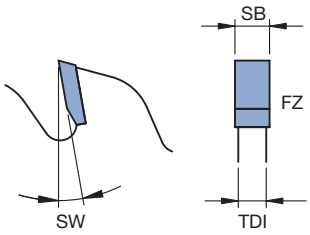
Technical information:
Stable tool body tooth shape.

Circular sawblades
WK 852-2-10

Machine	D mm	SB mm	TDI mm	BO mm	NLA mm	Z	ZF	SW Degree	WSS	ID	
Reich	220	3,2	2,2	30	KNL	64	FZ/TR	10		**061375**	●
Scheer	240	3,2	2,2	30	KNL	54	FZ/TR	10		**061376**	●
	250	3,2	2,2	30	KNL	80	FZ/TR	10		**061377**	●
	300	3,2	2,2	30	2/7/42 2/10/60	72	FZ/TR	10		**061378**	●
Striebig	300	3,2	2,2	30	KNL	96	FZ/TR	10		**061379**	●
	350	3,5	2,6	30	KNL	84	FZ/TR	5		**061380**	●

● available ex stock
□ available at short notice
Instruction manual visit www.leitz.org

HW



Sizing cut, scoring, hogging

Application:
For sizing and as scoring sawblade with feed or for assembly on hogger/segment hogger.

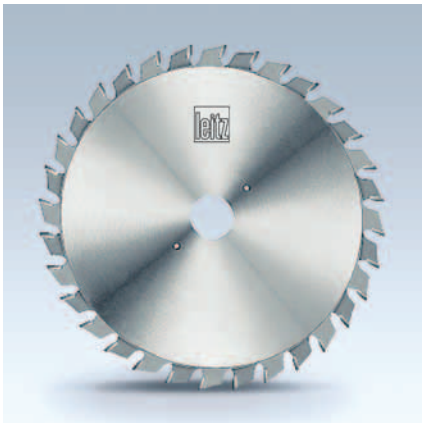
Machine:
Table saws and circular sawing machines for sizing, cross cutting and panel sawing with/without scoring saw.

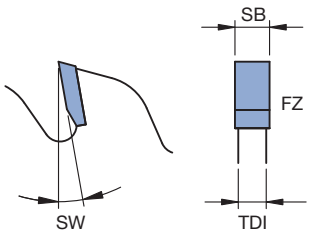
Workpiece material:
Paper and plastic coated and veneered particle boards and fibre boards (MDF, HDF etc.) resp. laminated wood.

Technical information:
Also suitable for assembly on hogger/segment hogger. Design without pinholes for special applications.

Scoring sawblades and sawblades for mounting on hogger
WK 800-2-01, WK 800-2-03

D mm	SB mm	TDI mm	BO mm	Z	ZF	SW Degree	WSS	ID
150	3,5	2,5	30	30	FZ	10	■■	**058570** ●
150	3,5	2,5	30	48	FZ	10	■■	**058700** ●
150	3,5	2,5	55	30	FZ	10	■■	**058578** ●
180	3,5	2,5	30	36	FZ	10	■■	**058572** ●
180	3,5	2,5	30	58	FZ	10	■■	**058702** ●
200	3,2	2,2	30	42	FZ	10	■■	**058573** ●
200	3,2	2,2	30	64	FZ	10	■■	**058703** ●
250	3,2	2,2	60	48	FZ	10	■■	**058574** ●





Circular sawblades for scoring, adjustable - DP

Application:
For scoring with feed, scoring depth 1.50 - 2.00 mm.

Machine:
Sizing circular sawing machines with scoring saw without pressure beam.

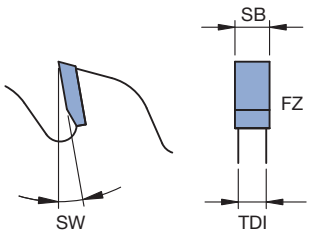
Workpiece material:
Plastic coated particle boards and fibre boards (MDF, HF, WF etc.) composite materials (gypsum plasterboards and mineral wool slabs).

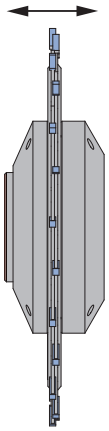
Technical information:
Two piece design adjustable with spacers. Reinforced tool body design.

Adjustable circular sawblades for scoring, in two piece design
SK 199-2

Machine	D mm	SB mm	BO mm	Z	ZF	SW Degree	$n_{max.}$ min^{-1}	WSS	ID	
SCM	120	2,8 - 3,6	20	12+12	FZ	10	18900	■■	**190562**	●
Altendorf Martin	120	2,8 - 3,6	22	12+12	FZ	10	18900	■■	**061451**	●
	120	2,8 - 3,8	22	12+12	FZ	10	19000	■■■	**090692**	●

● available ex stock
□ available at short notice
Instruction manual visit www.leitz.org





Scoring sawblades, stepless adjustable

Application:
For scoring with feed on machines equipped with scoring saw designed for this tool, scoring depth 1.50 - 2.00 mm.

Machine:
Sizing sawing machines with scoring saw without pressure beam.

Workpiece material:
Paper and plastic coated and veneered wood derived materials, laminated wood.

Technical information:
Two piece design, stepless adjustable once installed.

Circular sawblade set - stepless adjustable, assembled on sleeve
SK 199-2

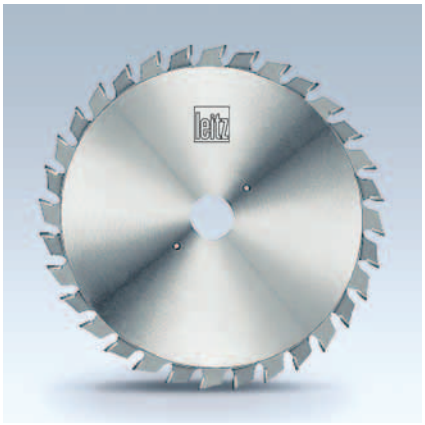
Machine	D mm	SB mm	BO mm	Z	ZF	SW Degree	$n_{max.}$ min^{-1}	WSS	ID	
Altendorf	120	2,8 - 3,8	15	12+12	FZ	12	18900	■■■	**061450**	●
Martin	120	2,8 - 3,6	22	12+12	FZ	12	18900	■■■	**061452**	
Martin	125	2,8 - 3,6	22	12+12	FZ	12	18900	■■■	**061454**	
Panhans	125	2,8 - 3,8	22	12+12	FZ	12	18300	■■■	**061416**	

Spare sawblades:

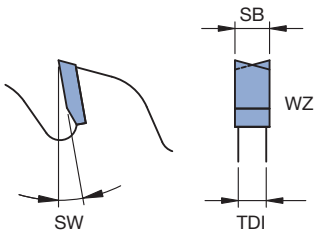
BEZ	QAL	ABM mm	ID	
Scoring sawblade, 2 part design	HW	D125,d48,Z12/12,FZ	**061445**	●
Scoring sawblade, 2 part design	HW	D120,d48,Z12/12,FZ	**061446**	●
Scoring sawblade, 2 part design, Martin	HW	D120,d26,Z12/12,FZ	**061453**	●
Scoring sawblade, 2 part design, Martin	HW	D125,d26,Z12/12,FZ	**061455**	●

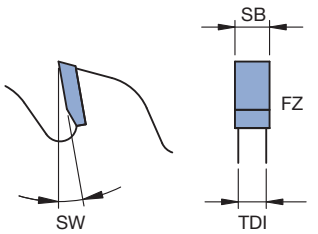
Spare parts:

BEZ	ABM mm	ID	
Allen screw	M6x10	**006034**	●
Countersink screw	M4x6	**007042**	●
Double-thread allen screw	M6X0.5	**007830**	●
Allen Key	SW 2.5	**005472**	●
Allen Key	SW 3	**005444**	●



HW





Scoring sawblades, adjustable

Application:
For scoring with feed, scoring depth 1.50 - 2.00 mm.

Machine:
Sizing sawing machines with scoring saw without pressure beam.

Workpiece material:
Paper and plastic coated and veneered wood derived materials, laminated wood.

Technical information:
Two piece design adjustable with spacers.

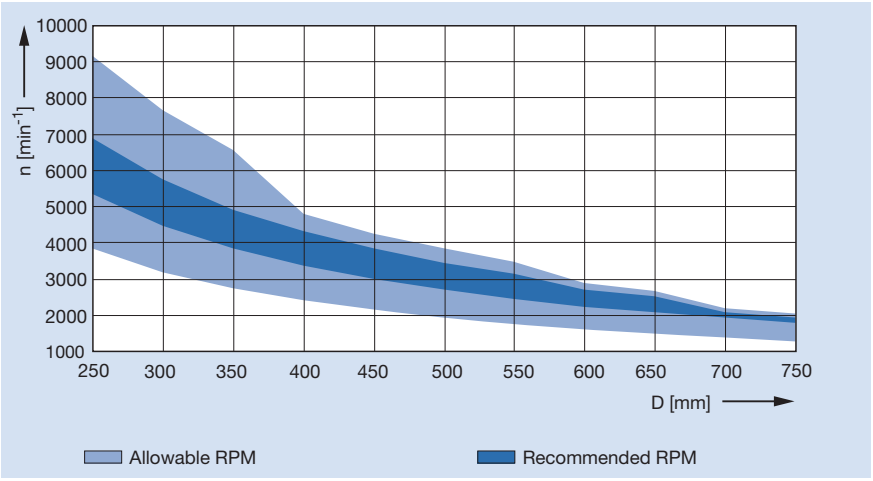
Circular sawblade set - adjustable with spacers
SK 199-2

Machine	D mm	SB mm	BO mm	Z	ZF	SW Degree	$n_{max.}$ min^{-1}	WSS	ID	
Putsch-Meniconi	70	2,8 - 3,6	20	8+8	WZ	8	32000	■■■	**061460**	●
Robland	80	2,8 - 3,6	20	10+10	FZ	8	28200	■■■	**061441**	●
Schelling	100	2,8 - 3,6	20	10+10	FZ	8	22600	■■■	**061409**	●
Altendorf Martin Mrozek Panhans	100	2,8 - 3,6	22	10+10	FZ	8	22600	■■■	**061400**	●
SCM	120	2,8 - 3,6	20	12+12	FZ	12	18900	■■■	**061402**	●
Altendorf Martin Mrozek	120	2,8 - 3,6	22	12+12	FZ	12	18900	■■■	**061401**	●
Martin (electr. SB adjustment)	120	2,8 - 3,6	22	12+12	FZ	12	18900	■■■	**061456**	●
Felder SCM	125	2,8 - 3,6	20	12+12	FZ	12	18300	■■■	**061449**	●
Giben Mayer-Lombach	125	4,0 - 4,8	45	20+20	FZ	10	18300	■■■	**061407**	
Bäuerle	160	2,8 - 3,6	30	16+16	FZ	12	14300	■■■	**061408**	
Schelling	180	4,0 - 4,8	20	20+20	FZ	12	12700	■■■	**061447**	●
Kölle	180	3,0 - 3,8	30	18+18	FZ	12	12700	■■■	**061406**	
SCM	200	4,3 - 5,2	20	30+30	FZ	10	11400	■■■	**061414**	●
Schelling	220	4,0 - 4,8	20	24+24	FZ	12	10400	■■■	**061448**	●

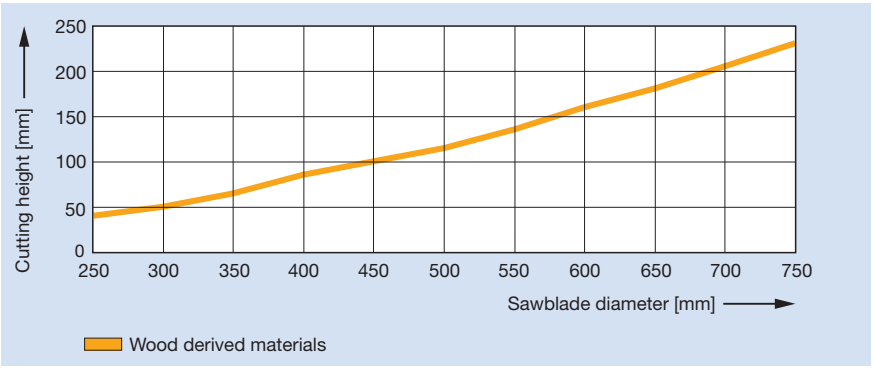
● available ex stock
□ available at short notice
Instruction manual visit www.leitz.org

Working process	For sizing single boards or boards in stacks.
Workpiece materials	Solid wood, wood derived materials and plastic.
Machines	Table saws and panel sizing saws with pressure clamping beam.
Type of application	Scoring sawblades cut with the feed main sawblades cut against the feed.

RPM diagram

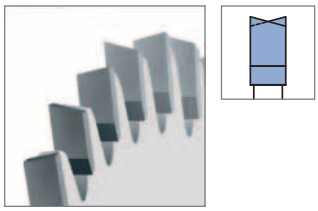


Cutting height diagram

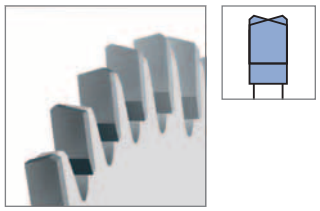


Horizontal panel sizing sawblades –
The cutting height depends on the sawblade diameter D and the workpiece material.

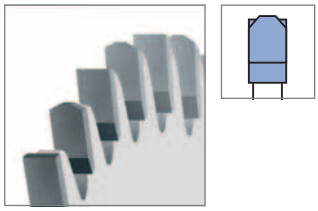
Tooth shape



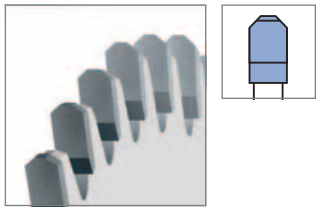
WZ (alternative top bevel teeth):
Multi purpose tooth shape, economical to purchase and maintain. Ideal for chip-board, veneered chipboard, solid wood, block board, plywood and similar materials.



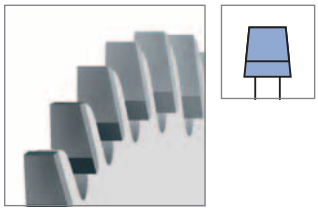
WZ/FA (alternative top bevel teeth with bevel): Tooth shape for delicate and abrasive materials such as acrylic glass (PMMA), plastic coated chipboard and hard fibreboard to a finish cut quality. High performance – boards in stacks at high feed rate.



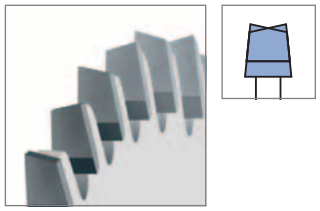
FZ/TR (square/trapezoidal teeth):
Tooth shape for plastic coated and foil coated wood derived materials.



TR/TR (trapezoidal/trapezoidal teeth):
Tooth shape for especially abrasive materials such as HPL or CPL coated wood derived materials.



KON/FZ (flat teeth – conical):
For scoring sawblades.
Prevents splitting of the cut edge by the main sawblade as it passes through the bottom surface of the panel.



KON/WZ (alternative top bevel teeth – conical): For scoring sawblades.
Prevents splitting of the cut edge by the main sawblade as it passes through the bottom surface of the panel with low cutting pressure.

Recommended feed rate f_z (in mm)

$V_f = f_z \cdot n \cdot Z/1000$

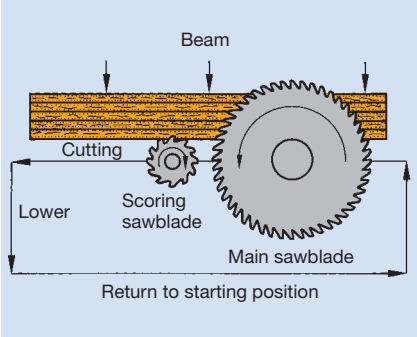
Material	Tooth progression in mm
OSB	0.10 – 0.20
Veneered boards, block boards	0.03 – 0.10
Plastic coated chipboards	0.03 – 0.06
HPL coated chipboards	0.02 – 0.10
Plywood	0.05 – 0.10
Aluminium alloys	0.03 – 0.10
Hard fibreboards	0.03 – 0.08
Cement compounded wood derived materials	0.02 – 0.05
Glulam	0.02 – 0.06
Plaster materials	0.10 – 0.20
Thermoplastics	0.05 – 0.10
Duroplastics	0.02 – 0.05
Aluminium castings	0.01 – 0.04

Scoring sawblades

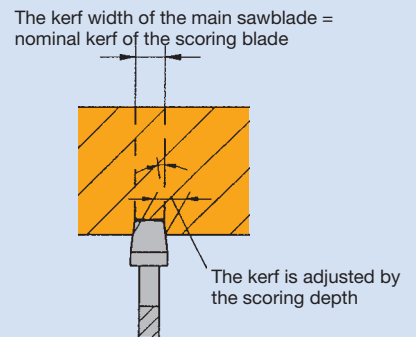
A scoring saw is recommended for a high cut edge quality on both sides of coated panels. The scoring sawblade cutting width (kerf) is slightly larger than the width (kerf) of the main sawblade so the exiting tooth of the main sawblade does not touch the bottom surface cut edge.

As precise, flat workpiece positioning is only possible with pressure clamping, split scoring sawblades are used on table and panel saw.

Schematic representation

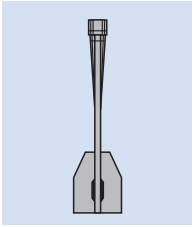


Panel sizing machine with scoring saw and top pressure beam.

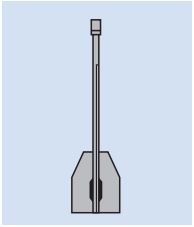


Setting of conical scoring sawblade. The cutting width (kerf) has to be matched to the cutting width (kerf) of the main saw during maintenance of the tools.

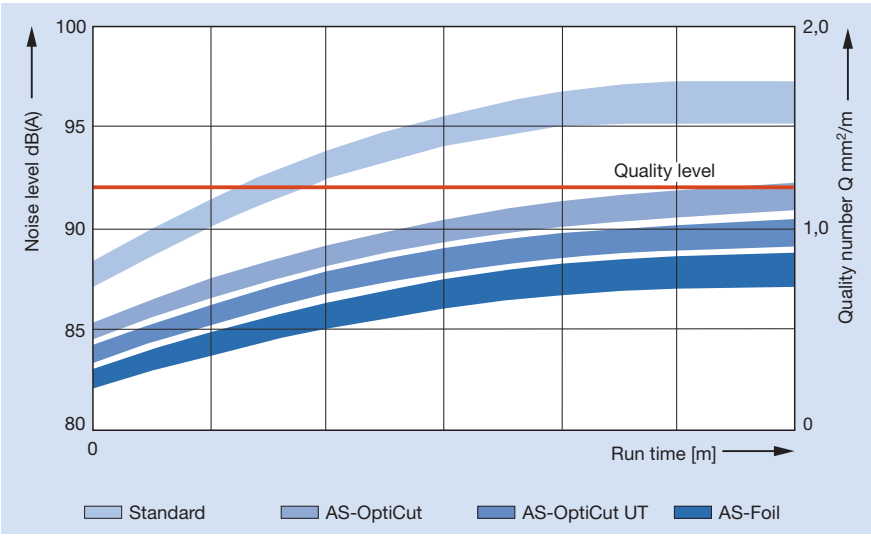
Low noise sawblades



Sawblade without noise damping.

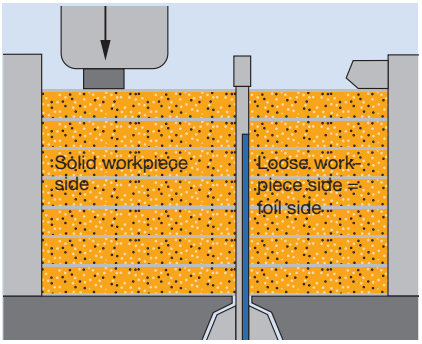


Sawblade with laminated noise damping.



Comparison of the efficiency of noise reduction for different designs of sawblades and edge quality Q depending on the performance.

Advantages of low noise sawblades

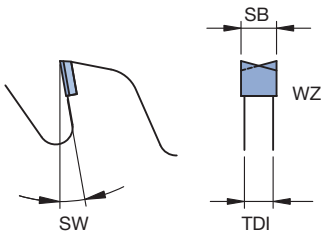


Determination of the foil side

- Optimum noise reduction.
- Longer performance time from vibration damping.
- High cut quality, less wear and down time.
- Quiet running because of the high stability of the tool body.
- Reduced noise level of up to 10 dB(A) – 50% noise reduction – compared to standard sawblades.
- Increase in noise level due to due to blunting hardly audible.
- Better operator working conditions due to lower noise exposure.
- Can be resharpened on all popular makes of automatic saw sharpening machines.

DP

Low Noise



Sizing cuts - for wood derived materials - *Excellent* DP

Application:
For noise reduced sizing cuts with scoring sawblades.

Machine:
Panel sizing systems with scoring saw and pressure beams.

Workpiece material:
Uncoated and veneered wood derived materials and laminated wood.

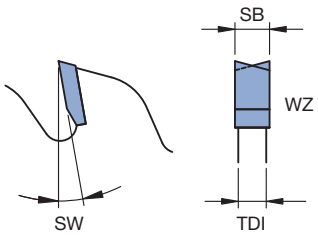
Technical information:
Solid tool body tooth shape. **AS LowNoise UT** design - Noise reduction during free running by up to 6 dB(A). Tool body with vibration damping irregular tooth pitch. **Diamaster PLUS** with 6.0 mm tip height.

Circular sawblades - AS LowNoise UT - Diamaster PLUS
WK 250-2

D mm	SB mm	TDI mm	BO mm	NLA mm	Z	ZF	SW Degree	WSS	ID	
300	4,4	3,2	30	2/10/ 60	60	WZ	15	■■	**190609**	●
300	4,4	3,2	80	2/14/110 2/7/110	60	WZ	15	■■	**190633**	□
350	4,4	3,2	30	2/10/ 60	60	WZ	15	■■	**190610**	●
350	4,4	3,2	30	2/10/ 60	72	WZ	15	■■	**190611**	●
350	4,4	3,2	60	2/14/100	60	WZ	15	■■	**190641**	□
350	4,4	3,2	60	2/14/100	72	WZ	15	■■	**190640**	□
350	4,4	3,2	75		60	WZ	15	■■	**190638**	□
350	4,4	3,2	75		72	WZ	15	■■	**190639**	□
350	4,4	3,2	80	4/9/100 2/14/110 2/7/110	60	WZ	15	■■	**190634**	□
350	4,4	3,2	80	4/9/100 2/14/110 2/7/110	72	WZ	15	■■	**190635**	□
380	4,8	3,5	60	2/14/100 2/14/125	72	WZ	15	■■	**190612**	●
400	4,4	3,2	30	2/10/ 60	72	WZ	15	■■	**190613**	●
400	4,4	3,2	60	2/11/85	72	WZ	15	■■	**190632**	□
400	4,4	3,2	75		72	WZ	15	■■	**190637**	□
400	4,4	3,2	80	4/9/100 2/14/110 2/7/110	72	WZ	15	■■	**190636**	□

● available ex stock
□ available at short notice
Instruction manual visit www.leitz.org

HW



Sizing cuts - wood derived materials - *Premium*

Application:
For noise reduced sizing single boards and stacks of boards with scoring sawblades.

Machine:
Panel sizing systems with scoring saw and pressure beams.

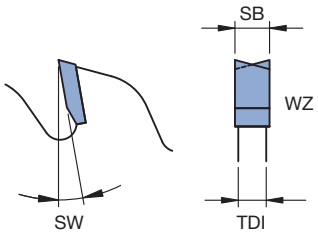
Workpiece material:
Uncoated and veneered wood derived materials and laminated wood.

Technical information:
Solid tool body tooth shape. **AS LowNoise UT** design - noise reduction during free running by up to 6 dB(A). Tool body with vibration damping irregular tooth pitch.

Circular sawblades - AS LowNoise UT
WK 270-2-87

D mm	SB mm	TDI mm	BO mm	NLA mm	Z	ZF	SW Degree	WSS	ID	
300	4,4	3,0	30	KNL	48	WZ	15	■■	**059483**	●
300	4,4	3,0	30	KNL	60	WZ	15	■■	**059484**	●
350	4,4	3,2	30	2/10/ 60	72	WZ	15	■■	**059486**	●
350	4,4	3,2	60	2/14/100	54	WZ	15	■■	**059485**	●
350	4,4	3,2	60	2/14/100	72	WZ	15	■■	**059487**	□
370	4,4	3,2	30	2/13/ 94	54	WZ	15	■■	**059488**	●
370	4,4	3,2	30	2/13/ 94	72	WZ	15	■■	**059489**	●
380	4,8	3,5	60	2/14/100	54	WZ	15	■■	**059490**	●
380	4,8	3,5	60	2/14/100	72	WZ	15	■■	**059491**	●
400	4,4	3,2	30	2/10/ 60	72	WZ	15	■■	**059492**	●
450	4,8	3,5	60	2/14/100	72	WZ	20	■■	**059493**	●
460	4,4	3,2	30	2/13/ 94	48	WZ	20	■■	**059494**	●
460	4,4	3,2	30	2/13/ 94	72	WZ	20	■■	**059495**	●
480	4,8	3,5	80	2/9/130 4/9/120	72	WZ	20	■■	**059496**	●
520	4,4	3,2	30	2/13/94	72	WZ	20	■■	**059497**	●

HW



Sizing cuts - wood derived materials

Application:
For sizing single boards and stacks of boards with scoring sawblades.

Machine:
Panel sizing systems with scoring saw and pressure beam.

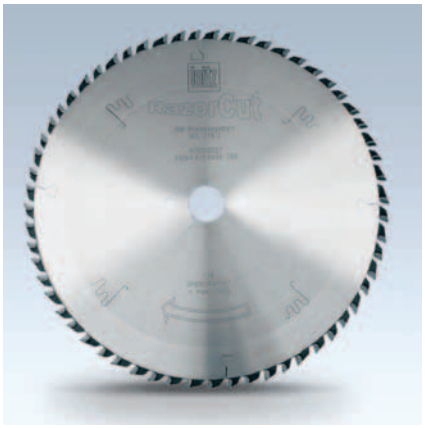
Workpiece material:
Uncoated, veneered, paper and plastic coated particle boards and fibre boards and laminated wood.

Technical information:
Solid tool body tooth shape. At feed speeds of Vf > 40 m/min change the tooth shape from WZ to WZ/FA.

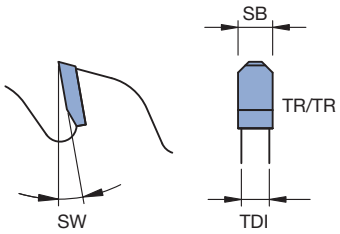
Circular sawblades
WK 850-2, WK 250-2-36, WK 250-2-37

Machine	D mm	SB mm	TDI mm	BO mm	NLA mm	Z	ZF	SW Degree	WSS	ID	
Höfer	300	4,4	3,0	30		48	WZ	15	■■	**059100**	●
Höfer Schelling	350	4,4	3,2	30		54	WZ	15	■■	**059102**	●
	350	4,4	3,2	80		54	WZ	15	■■	**059103**	●
	355	4,4	3,2	30	KNL	72	WZ	15	■■	**059190**	●
	355	4,4	3,2	80		72	WZ	15	■■	**059191**	●
Höfer Panhans Schelling	400	4,4	3,2	30		60	WZ	15	■■	**059105**	●
	400	4,4	3,2	30	KNL	72	WZ	15	■■	**059185**	●
	430	4,4	3,2	30	KNL	72	WZ	15	■■	**059431**	●
Selco	430	4,4	3,2	80	2/9/130 4/19/120	72	WZ	15	■■	**059461**	●
	450	4,4	3,2	30	KNL	54	WZ	15	■■	**059480**	●
	450	4,4	3,2	30		72	WZ	15	■■	**059433**	●
Schwabedissen	450	4,4	3,2	80		72	WZ	15	■■	**059434**	●
Schelling	480	4,4	3,2	30		72	WZ	15	■■	**059481**	●
	500	5,2	3,5	30	KNL	60	WZ	15	■■	**059442**	●
	500	5,2	3,5	80		60	WZ	15	■■	**059443**	●
Schelling	530	5,2	3,5	30		60	WZ	15	■■	**059444**	●
	550	5,2	3,5	30	KNL	60	WZ	15	■■	**059445**	●
	550	5,5	3,5	40		48	WZ	15	■■	**059457**	●
	550	5,2	3,5	80		48	WZ	15	■■	**059482**	●
	550	5,2	3,5	80		60	WZ	15	■■	**059446**	●
Schelling	680	6,2	4,2	40		60	WZ	22	■■	**059398**	●
Anthon	700	6,2	4,4	80	1/17/110	60	WZ	22	■■	**059399**	●
Schelling	720	6,5	4,5	40	2/14/140 2/14/114	60	WZ	22	■■	**059400**	●
Holzma	730	6,2	4,2	60	2/11/148 2/19/120	60	WZ	22	■■	**059401**	●

● available ex stock
□ available at short notice
Instruction manual visit www.leitz.org



HW



Sizing cuts in finish cut quality - *Excellent*

Application:
For noise reduced sizing to finish cut quality with scoring sawblades.

Machine:
Panel sizing systems with scoring saw and pressure beam.

Workpiece material:
Plastic coated particle boards and fibre boards (MDF, HDF, WF etc.).

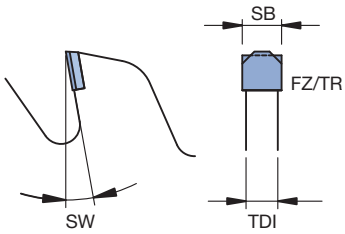
Technical information:
Special cutting geometry for perfect cut faces and tear free cut edges.
AS OptiCut UT design - noise reduction during free running by up to 8 dB(A).
Tool body with laser ornaments and irregular tooth pitch. Increased cutting performance and reduced resin build up by tool body special coating.

Circular sawblades - RazorCut design
WK 878-2-87

Machine	D mm	SB mm	TDI mm	BO mm	NLA mm	Z	ZF	SW Degree	WSS	ID	
Striebig	250	3,2	2,2	30	KNL	60	TR/TR	15	■■	**069100**	●
	280	3,2	2,2	30	2/10/60	60	TR/TR	15	■■	**069101**	●
Höfer, Panhans Langzauner	300	4,4	3,0	30	2/10/60	60	TR/TR	15	■■	**069104**	●
Striebig	300	3,2	2,2	30	KNL	72	TR/TR	15	■■	**069102**	●
Selco	300	4,4	3,0	65	2/9/110	60	TR/TR	15	■■	**069105**	●
Homag	300	4,4	3,0	75		60	TR/TR	15	■■	**069106**	●
	320	4,4	3,2	50	3/15/80	60	TR/TR	15	■■	**069108**	●
Höfer, Panhans Langzauner Schelling	350	4,4	3,2	30	2/10/60	72	TR/TR	15	■■	**069109**	●
Homag	350	4,4	3,2	75		72	TR/TR	15	■■	**069110**	□
Selco	355	4,4	3,2	80	2/9/130 4/19/120	72	TR/TR	15	■■	**069111**	●
	370	4,4	3,2	30	2/10/60	72	TR/TR	15	■■	**069112**	●
Giben	380	4,4	3,2	50	3/13/80	72	TR/TR	15	■■	**069138**	●
Holzma	380	4,8	3,5	60	2/14/100	72	TR/TR	15	■■	**069114**	●
Höfer, Panhans Schelling	400	4,4	3,2	30	2/10/60	72	TR/TR	15	■■	**069115**	●
Giben, Homag	400	4,4	3,2	75	4/15/105	72	TR/TR	15	■■	**069117**	□
Selco	400	4,4	3,2	80	2/9/130 4/19/120	72	TR/TR	15	■■	**069118**	□
Schelling	430	4,4	3,2	30		72	TR/TR	15	■■	**069119**	●
Giben	430	4,4	3,2	75	4/15/105	72	TR/TR	15	■■	**069120**	□
	430	4,4	3,2	80	2/9/130 4/19/120	72	TR/TR	15	■■	**069121**	●
	450	4,4	3,2	30		72	TR/TR	15	■■	**069122**	●
Holzma	450	4,8	3,6	60	2/14/125	72	TR/TR	15	■■	**069125**	●
Schelling	460	4,4	3,2	30	2/13/94	72	TR/TR	15	■■	**069126**	●
Selco	480	4,8	3,5	80	2/9/130 4/19/120	72	TR/TR	15	■■	**069127**	●
Schelling	520	4,8	3,5	30	2/13/94	72	TR/TR	15	■■	**069139**	●

DP

Low Noise



Sizing cuts - wood derived materials - *Excellent* DP

Application:
For noise reduced sizing of single boards and stacks of boards with scoring sawblades.

Machine:
Panel sizing systems with scoring saw and pressure beam.

Workpiece material:
Plastic coated particle boards and fibre boards (MDF, HDF, WF etc.), composite materials (fibre reinforced gypsum plasterboards and cement boards) and plastic boards (GFK, CFK etc.).

Technical information:
Solid tool body tooth shape. **AS LowNoise UT** design - noise reduction during free running by up to 6 dB(A). Tool body with vibration damping irregular tooth pitch. **Diamaster PLUS** design with 6.0 mm tip height.

Circular sawblades - AS LowNoise UT, Diamaster PLUS
WK 852-2

D mm	SB mm	TDI mm	BO mm	NLA mm	Z	ZF	SW Degree	WSS	ID	
300	4,4	3,2	30	2/10/ 60	60	FZ/TR	15	■■	**190604**	●
300	4,4	3,2	80		60	FZ/TR	15	■■	**190646**	□
350	4,4	3,2	30	2/10/ 60	60	FZ/TR	15	■■	**190605**	●
350	4,4	3,2	30	2/10/ 60	72	FZ/TR	15	■■	**190606**	●
350	4,4	3,2	60	2/14/100	60	FZ/TR	15	■■	**190654**	□
350	4,4	3,2	60	2/14/100	72	FZ/TR	15	■■	**190653**	□
350	4,4	3,2	75		60	FZ/TR	15	■■	**190651**	□
350	4,4	3,2	75		72	FZ/TR	15	■■	**190652**	□
350	4,4	3,2	80	4/9/100 2/14/110 2/7/110	60	FZ/TR	15	■■	**190647**	□
350	4,4	3,2	80	4/9/100 2/14/110 2/7/110	72	FZ/TR	15	■■	**190648**	□
380	4,8	3,5	60	2/14/100 2/14/125	72	FZ/TR	15	■■	**190607**	●
400	4,4	3,2	30	2/10/ 60	72	FZ/TR	15	■■	**190608**	●
400	4,4	3,2	60	2/11/85	72	FZ/TR	15	■■	**190645**	□
400	4,4	3,2	75	4/15/105 2/7/110	72	FZ/TR	15	■■	**190650**	□
400	4,4	3,2	80	4/9/100 2/14/110 2/7/110	72	FZ/TR	15	■■	**190649**	□

● available ex stock
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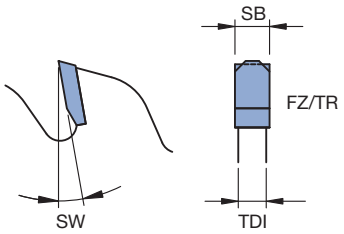
Instruction manual visit www.leitz.org

HW

Low Noise



Sizing cuts - wood derived materials - *Excellent*

Application:
For noise reduced sizing single boards and stacks of boards with scoring sawblades.

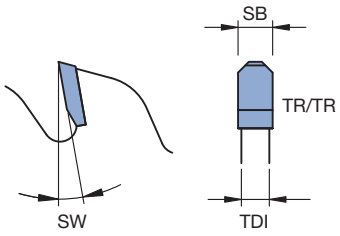
Machine:
Panel sizing systems with scoring saw and pressure beam.

Workpiece material:
Plastic coated particle boards and fibre boards (MDF, HF, WF etc.) composite materials (fibre reinforced gypsum plasterboards) and plastic boards.

Technical information:
Solid tool body tooth shape. **AS LowNoise foil** design - noise reduction during operation by up to 10 dB(A). Vibration damped composite tool body with steel foil.

Circular sawblades - AS LowNoise foil right
WK 872-3, WK 852-2

Machine	D mm	SB mm	TDI mm	BO mm	NLA mm	Z	ZF	SW Degree	WSS	ID	
SCM	300	4,4	2,8	80	2/14/110 2/7/110	60	FZ/TR	15	■■	**065338**	●
Gabbiani SCM	350	4,4	3,0	80	2/14/110 2/7/110	72	FZ/TR	15	■■	**065339**	●
Holzma	380	4,8	3,5	60	2/14/100	72	FZ/TR	15	■■	**065337**	●
SCM	400	4,4	3,0	80	2/14/110 2/7/110	72	FZ/TR	15	■■	**065340**	●
Holzma	450	4,8	3,5	60	2/14/125	72	FZ/TR	15	■■	**065349**	●
Gabbiani SCM	450	4,4	3,0	80	2/14/110 2/7/110	72	FZ/TR	15	■■	**065341**	●



Sizing in finish cut quality - *Premium*

Application:
For noise reduced sizing in finish cut quality of single boards and stacks of boards with scoring sawblades.

Machine:
Panel sizing systems with scoring saw and pressure beam.

Workpiece material:
Plastic coated particle boards and fibre boards (MDF, HF, WF etc.) and plastic boards.

Technical information:
Special cutting geometry for perfect cut surfaces and tear free cut edges.
AS OptiCut UT design - noise reduction during free running by up to 8 dB(A).
Tool body with laser ornaments and irregular tooth pitch.

Circular sawblades - AS OptiCut UT (Type 1) and AS LowNoise UT (Type 2)
WK 852-2, WK 852-2-10, WK 852-2-37, WK 872-2-87

D mm	SB mm	TDI mm	BO mm	NLA mm	Z	ZF	Type	SW Degree	WSS	ID	
250	3,2	2,2	30	KNL	60	FZ/TR	1	15	■■	**069088**	●
280	3,2	2,2	30	2/10/60	60	FZ/TR	2	10	■■	**061353**	●
300	3,5	2,5	30	KNL	60	FZ/TR	1	10	■■	**069021**	●
300	4,4	3,0	30	KNL	60	FZ/TR	1	10	■■	**069016**	●
320	4,4	3,2	50	3/15/80	60	FZ/TR	2	15	■■	**061361**	●
320	4,4	3,2	75	3/13/95	60	FZ/TR	2	15	■■	**061362**	●
350	4,4	3,2	30	2/10/60	72	FZ/TR	1	15	■■	**069018**	●
360	4,4	3,2	65	2/9/110	72	FZ/TR		15	■■	**059683**	●
370	4,4	3,2	30	2/10/60	72	FZ/TR	2	15	■■	**059319**	●
380	4,8	3,5	60	2/14/100	72	FZ/TR	2	15	■■	**069089**	●
380	4,8	3,5	60	2/14/100 2/14/125	72	TR/TR	2	15	■■	**059704**	●
400	4,4	3,2	30	2/10/60	72	FZ/TR	1	15	■■	**069017**	●
430	4,4	3,2	80	2/9/130 4/19/120	72	FZ/TR	1	15	■■	**069090**	●
450	4,8	3,6	60	2/14/125	72	FZ/TR	2	15	■■	**061354**	●
450	4,8	3,6	80	2/9/130 4/19/120	72	FZ/TR	2	15	■■	**069097**	●

● available ex stock
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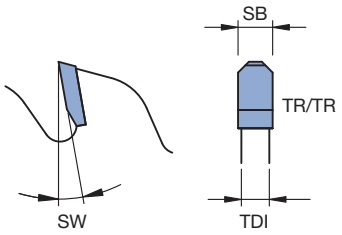
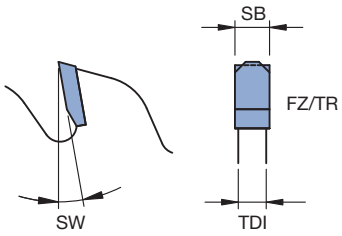
HW





Sizing cuts - in wood derived materials

Application:
For sizing single boards and stacks of boards with scoring sawblades.

Machine:
Panel sizing systems with scoring saw and pressure beams.

Workpiece material:
Plastic coated particle boards and fibre boards (MDF, HDF, WF etc.), composite materials (fibre reinforced gypsum plasterboards) and plastic boards.

Technical information:
Solid tool body tooth shape. Tooth shape FZ/TR and TR/TR. The tooth shape TR/TR recommended when cutting hard coatings.

Circular sawblades
WK 852-2, WK 852-2-35, WK 852-2-36, WK 852-2-37, WK 858-2, WK 858-2-35

Machine	D mm	SB mm	TDI mm	BO mm	NLA mm	Z	ZF	SW Degree	WSS	ID	
Reich	220	3,2	2,2	30	KNL	64	FZ/TR	10		**061375**	●
Striebig	250	3,2	2,2	30	KNL 2/7/42	60	FZ/TR	10		**061351**	●
	250	3,2	2,2	30	KNL	80	FZ/TR	10		**061377**	●
Höfer Langzauner Panhans	300	4,4	3,0	30	2/10/60	60	FZ/TR	15		**059250**	●
	300	3,2	2,2	30	2/7/42 2/10/60	72	FZ/TR	10		**061378**	●
Striebig	300	3,2	2,2	30	KNL	96	FZ/TR	10		**061379**	●
Selco	300	4,4	3,0	65	2/9/110	60	FZ/TR	15		**059667**	●
Homag	300	4,4	3,0	75		60	FZ/TR	15		**059309**	●
Diverse	305	4,4	3,0	30		60	FZ/TR	15		**059678**	●
Höfer Langzauner Panhans Schelling	350	4,4	3,2	30	2/10/60	72	FZ/TR	15		**059252**	●
Holzma	350	4,4	3,2	60	2/14/100	72	FZ/TR	15		**059693**	●
Homag	350	4,4	3,2	75		72	FZ/TR	15		**059253**	●
Gabbiani	350	4,4	3,2	80	2/14/110 4/9/100	54	FZ/TR	15		**059271**	●
Giben Homag	355	4,4	3,2	75		60	FZ/TR	15		**059275**	●
Giben	360	4,4	3,2	50	6/13/ 80 2/13/ 80	72	FZ/TR	18		**059685**	●
Holzma	380	3,8	3,0	60	14/100 14/125	84	TR/TR	18		**059709**	●
Giben	380	4,4	3,2	50	6/13/ 80 2/13/ 80	72	FZ/TR	18		**059686**	●
Holzma	380	4,4	3,2	60	2/14/100	72	FZ/TR	18		**059681**	●
Holzma	380	4,8	3,5	60	2/14/100	84	TR/TR	15		**059314**	●
Giben Holz Her	380	4,4	3,2	75	3/15/75	72	FZ/TR	15		**059301**	●
Höfer Panhans Scheer Schelling	400	4,4	3,2	30	2/10/60	72	FZ/TR	15		**059256**	●
Homag	400	4,4	3,2	75		72	FZ/TR	15		**059260**	●
Giben	400	4,4	3,2	75	4/15/105	72	FZ/TR	15		**059293**	●

1.4 Panel sizing
1.4.2 Panel sizing sawblades FZ/TR - TR/TR

Machine	D mm	SB mm	TDI mm	BO mm	NLA mm	Z	ZF	SW Degree	WSS	ID	
Selco	400	4,4	3,2	80	2/9/130 4/19/120	72	FZ/TR	15	■■	**059291**	●
Gabbiani	400	4,4	3,2	80	2/14/110 4/9/100	80	FZ/TR	15	■■	**059454**	●
Holzma	420	4,8	3,5	60		72	FZ/TR	15	■■	**059296**	●
Holzma	420	4,8	3,5	60		84	FZ/TR	15	■■	**059300**	●
Schelling	430	4,4	3,2	30		72	FZ/TR	15	■■	**059551**	●
Giben	430	4,4	3,2	75	4/15/105	72	FZ/TR	15	■■	**059277**	●
Diverse	450	4,4	3,2	30		72	FZ/TR	15	■■	**059553**	●
Anthon	450	4,4	3,2	60	2/11/85	72	FZ/TR	15	■■	**059677**	□
Holzma	450	4,8	3,5	60	2/14/125	72	FZ/TR	15	■■	**059261**	●
Holzma	450	4,8	3,5	60	2/14/125	72	TR/TR	20	■■	**059316**	●
Schelling	460	4,4	3,2	30	2/13/94	72	FZ/TR	15	■■	**059303**	●
Giben	470	4,4	3,2	75	4/15/105	96	FZ/TR	15	■■	**059584**	●
Schelling	480	4,4	3,2	30		72	FZ/TR	15	■■	**059679**	●
Holzma	480	4,8	3,5	60	2/19/120	72	FZ/TR	18	■■	**059688**	●
Selco	480	4,8	3,5	80	2/9/130 4/19/120	72	FZ/TR	15	■■	**059307**	●
Schelling	500	5,2	3,5	30		60	FZ/TR	15	■■	**059286**	●
Holzma	500	4,8	3,5	60	2/11/115	72	TR/TR	20	■■	**059317**	●
Selco	510	4,8	3,5	80	2/ 9/130 4/19/120	72	FZ/TR	18	■■	**059689**	●
Schelling	520	4,4	3,2	30	2/13/94	72	FZ/TR	18	■■	**059690**	●
Holzma	520	4,8	3,5	60	2/19/120 2/11/115	72	TR/TR	18	■■	**059705**	●
Holzma	520	4,8	3,5	60	2/11/115 2/19/120	84	TR/TR	15	■■	**059658**	●
Selco	520	4,8	3,5	70	2/11/130	72	FZ/TR	18	■■	**059707**	●
Schelling	530	5,2	3,5	30		60	FZ/TR	15	■■	**059287**	●
Holzma	540	4,8	3,5	60	2/11/115 2/19/120	72	FZ/TR	15	■■	**059659**	●
Holzma	570	4,8	3,5	60	2/19/120 2/11/115	60	FZ/TR	18	■■	**059706**	●
Holzma	600	5,8	4	60	2/11/115 2/19/120	72	FZ/TR	22	■■	**059392**	●
Holzma	670	5,8	4,2	60	2/11/148 2/19/120	42	FZ/TR	22	■■	**059393**	●
Schelling	680	6,2	4,2	40		60	FZ/TR	22	■■	**059394**	●
Anthon	700	6,2	4,2	80	1/17/110	60	FZ/TR	22	■■	**059395**	●
Schelling	720	6,5	4,5	40	2/14/140 2/14/114	60	FZ/TR	22	■■	**059396**	●
Holzma	730	6,2	4,2	60	2/11/148 2/19/120	60	FZ/TR	22	■■	**059397**	●

● available ex stock
□ available at short notice
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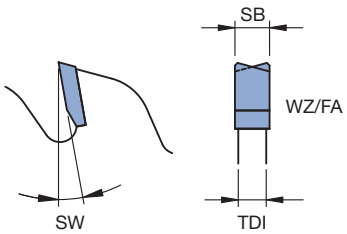


Sizing cuts in finish cut quality - *Excellent*

Application:
For noise reduced sizing in finish cut quality single boards and stacks of boards with scoring sawblades.

Machine:
Panel sizing systems with scoring saw and pressure beam.

Workpiece material:
Paper and plastic coated or veneered particle boards and fibre boards (MDF, HDF, WF etc.) and plastics.

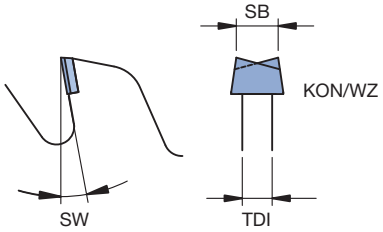
Technical information:
Special cutting geometry for perfect cut surfaces and tear free cut edges.
AS LowNoise foil design - noise reduction during operation by up to 10 dB(A).
Vibration damping composite tool body with steel foil.

Circular sawblades - AS LowNoise foil
WK 871-2, WK 871-3

D mm	SB mm	TDI mm	BO mm	NLA mm	Dampfoil	Z	ZF	SW Degree	WSS	ID	
300	3,5	2,5	30	KNL	right	20	WZ/FA	15		**065342**	●
300	3,5	2,5	30	KNL	right	60	WZ/FA	15		**065343**	●
350	4,4	3,2	30	2/10/60	right	64	WZ/FA	15		**065345**	●
380	4,8	3,5	60	2/14/100	left	72	WZ/FA	15		**065353**	●
400	4,4	3,2	30	2/10/60	right	72	WZ/FA	15		**065346**	●
450	4,8	3,5	30	KNL	right	72	WZ/FA	15		**065347**	●
450	4,8	3,5	60	2/14/125	left left	72	WZ/FA	15		**065348**	●

DP

Low Noise



Scoring sawblades - *Excellent* DP

Application:
For noise reduced scoring with feed with scoring depths of 2.00 - 2.50 mm.

Machine:
Panel sizing systems with scoring saw and pressure beam.

Workpiece material:
Paper and plastic coated or veneered particle and fibre boards or laminated wood and composite materials (gypsum plasterboards and mineral wool slabs).

Technical information:
The cutting width of the scoring sawblade must be 0.10 mm less than the cutting width of the main sawblade. **AS LowNoise** design - noise reduction during free running by up to 3 dB(A). Tool body with irregular tooth pitch. **Diamaster PLUS** design with 6.0 mm tip height.

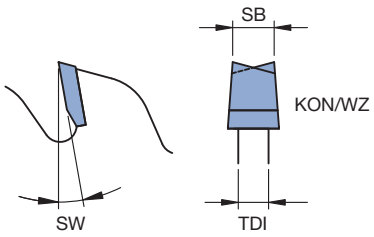
Circular sawblades - AS LowNoise UT - Diamaster PLUS
WK 856-2

D mm	SB mm	TDI mm	BO mm	NLA mm	Z	ZF	SW Degree	$n_{max.}$ min^{-1}	WSS	ID	
125	3,1	2,5	20		20	KON/WZ	10	18300		**190584**	●
125	3,1	2,5	22		20	KON/WZ	10	18300		**190617**	□
150	4,3	3,2	20		24	KON/WZ	10	15200		**190585**	●
150	4,3	3,2	30		24	KON/WZ	10	15200		**190586**	□
150	4,3	3,2	45		24	KON/WZ	10	15200		**190587**	□
160	4,3	3,5	30		30	KON/WZ	10	14300		**190588**	●
160	4,3	3,2	45	3/11/ 70	30	KON/WZ	10	14300		**190589**	□
160	4,3	3,5	55	3/ 7/ 66	30	KON/WZ	10	14300		**190590**	□
180	4,3	3,5	20	2/10/ 60	30	KON/WZ	10	12700		**190591**	●
180	4,3	3,5	30	2/10/60	30	KON/WZ	10	12700		**190592**	□
180	4,3	3,5	45		30	KON/WZ	10	12700		**190593**	□
180	4,7	3,5	45		30	KON/WZ	10	12700		**190595**	●
180	4,3	3,2	50	3/13/80	30	KON/WZ	10	12700		**190594**	□
200	4,3	3,5	20		30	KON/WZ	10	11400		**190596**	●
200	4,3	3,5	30	2/10/ 60	30	KON/WZ	10	11400		**190597**	□
200	4,3	3,5	45		30	KON/WZ	10	11400		**190598**	□
200	4,7	3,5	45		30	KON/WZ	10	11400		**190600**	□
200	4,3	3,2	50	3/13/ 80	30	KON/WZ	10	11400		**190599**	□
200	4,3	3,5	65	2/ 9/100 2/ 9/110	30	KON/WZ	10	11400		**190618**	□
200	4,7	3,5	65	2/ 9/110	30	KON/WZ	10	11400		**190601**	□
200	4,3	3,5	80	2/14/110	30	KON/WZ	10	11400		**190619**	□
215	4,3	3,2	50	3/15/ 80	36	KON/WZ	10	10600		**190602**	□
250	4,3	3,5	30	2/10/ 60	36	KON/WZ	10	9100		**190603**	□

● available ex stock
□ available at short notice
Instruction manual visit www.leitz.org

HW

Low Noise



Scoring sawblades

Application:
For scoring with feed with scoring depths of 1.50 - 2.00 mm.

Machine:
Panel sizing systems with scoring saw and pressure beam.

Workpiece material:
Paper and plastic coated or veneered particle and fibre boards or laminated wood and composite materials (gypsum plasterboards and mineral wool slabs).

Technical information:
The cutting width of the scoring sawblade must be identical to the cutting width of the main sawblade. If type UT, **AS OptiCut UT** design is used - noise reduction during free running by up to 3 dB(A). Tool body with irregular tooth pitch.

Circular sawblades
WK 856-2, WK 856-2-01, WK 856-2-05

Machine	D mm	SB mm	TDI mm	BO mm	NLA mm	Z	ZF	SW Degree	Type	$n_{max.}$ min^{-1}	WSS	ID
Panhans	125	3,2	2,5	20		24	KON/WZ	5		18300	■■■■	**061470** ●
	125	3,2	2,5	22		24	KON/WZ	5		18300	■■■■	**061507** ●
Martin	125	4,4	3,5	22		24	KON/WZ	5		18300	■■■■	**061474** ●
Giben Homag Mayer	125	4,4	3,5	45		20	KON/WZ	5		18300	■■■■	**061485** ●
Scheer	140	3,2	2,5	16	1/6/33	32	KON/WZ	5		16300	■■■■	**061538** ●
	150	3,2	2,5	20		24	KON/WZ	5		15200	■■■■	**061471** ●
Schelling	150	4,4	3,5	20		24	KON/WZ	5		15200	■■■■	**061477** ●
SCM	150	3,2	2,5	30		24	KON/WZ	5		15200	■■■■	**061472** ●
Irion Mayer SCM Steton	150	4,4	3,5	30		24	KON/WZ	5		15200	■■■■	**061486** ●
Homag	150	4,4	3,5	45		24	KON/WZ	5		15200	■■■■	**061530** ●
Lang-zauner	160	3,2	2,5	20		32	KON/WZ	5		14300	■■■■	**061543** ●
Steton	160	4,4	3,5	30		36	KON/WZ	5		14300	■■■■	**061495** ●
Giben	160	4,4	3,2	45	3/11/70	28	KON/WZ	5		14300	■■■■	**061509** ●
Gabbiani SCM	160	4,4	3,5	55	3/7/66	36	KON/WZ	5		14300	■■■■	**061487** ●
Scheer	180	3,2	2,5	16	1/6/33	36	KON/WZ	5		12700	■■■■	**061473** ●
Anthon Höfer Schelling	180	4,4	3,5	20		30	KON/WZ	5		12700	■■■■	**061478** ●
Anthon	180	6,0	4,0	20		30	KON/WZ	5		12700	■■■■	**061520** ●
Höfer	180	3,2	2,5	20		36	KON/WZ	5		12700	■■■■	**061493** ●
Homag	180	4,4	3,5	45		30	KON/WZ	5		12700	■■■■	**061544** ●
Anthon	180	4,4	3,5	45		36	KON/WZ	5	UT	12700	■■■■	**061553** ●
Giben	180	4,5	3,2	50	3/13/80	36	KON/WZ	5		12700	■■■■	**061558** ●
Giben	180	5,0	3,5	55		30	KON/WZ	5		12700	■■■■	**061500** ●
Schelling	200	4,3	4,5	20		24	KON/WZ	5		11400	■■■■	**061522** ●
Schelling	200	5,2	3,5	20		24	KON/WZ	5		11400	■■■■	**061501** ●
Höfer Lang-zauner Schelling	200	4,4	3,5	20		34	KON/WZ	5		11400	■■■■	**061479** ●
Schelling	200	6,2	4,5	20		36	KON/WZ	5		11400	■■■■	**061546** ●

1.4 Panel sizing
1.4.4 Scoring sawblades Kon/WZ

Machine	D mm	SB mm	TDI mm	BO mm	NLA mm	Z	ZF	SW Degree	Type	n max. min^{-1}	WSS	ID	
Scheer	200	4,4	3,5	30		34	KON/WZ	5		11400		**061489**	●
Scheer	200	3,2	2,5	30		60	KON/WZ	5		11400		**061549**	●
Schelling	200	5,2	3,5	40		30	KON/WZ	5		11400		**061571**	●
Holzma	200	4,4	3,5	45		34	KON/WZ	5		11400		**061490**	●
Holzma	200	5,8	4,6	45		34	KON/WZ	5		11400		**061499**	●
Holzma	200	6,2	4,2	45		36	KON/WZ	5		11400		**061547**	●
	200	4,5	3,2	50	3/13/80	44	KON/WZ	5	UT	11400		**061559**	●
Selco	200	4,4	3,5	65	2/9/100 2/9/110	36	KON/WZ	5		11400		**061505**	●
Selco	200	4,8	3,5	65	2/9/110	36	KON/WZ	5		11400		**061528**	●
Giben	215	4,4	3,2	50	3/15/80	42	KON/WZ	5		10600		**061508**	●
Schelling	220	6,5	4,5	20		36	KON/WZ	5		10400		**061560**	●
Giben	250	4,5	3,2	50	3/13/80	44	KON/WZ	5		9100		**061570**	●
Holzma	280	4,8	3,5	45		48	KON/WZ	5		8100		**061564**	●
Holzma	280	4,8	3,5	45		72	KON/WZ	5		8100		**061563**	●
Schelling	300	4,4	3,2	30		48	KON/WZ	5		7600		**061555**	●
Giben	300	4,4	3,2	50	3/15/80	48	KON/WZ	5		7600		**061510**	●
Selco	300	4,8	3,5	65	2/9/110	48	KON/WZ	5		7600		**061565**	●
Selco	300	4,4	3,5	65	2/9/100 2/9/110	72	KON/WZ	5		7600		**061529**	●

● available ex stock
□ available at short notice
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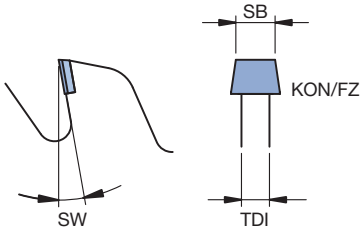


Scoring sawblades - *Excellent* DP

Application:
For noise reduced scoring with feed with scoring depths of 2.00 - 2.50 mm.

Machine:
Panel sizing systems with scoring saw and pressure beam.

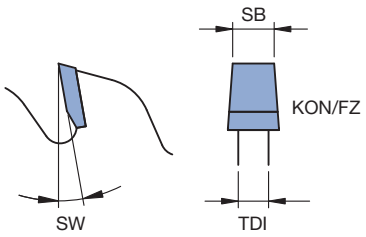
Workpiece material:
Plastic coated particle boards and fibre boards or composite materials (gypsum plasterboards and mineral wool slabs).

Technical information:
The cutting width of the scoring sawblade must be 0.10 mm less than the cutting width of the main sawblade. **AS LowNoise UT** design - noise reduction during free running by up to 3 dB(A). Tool body with irregular tooth pitch. **Diamaster PLUS** design with 6.0 mm tip height.

Circular sawblades - AS LowNoise UT design - Diamaster PLUS
WK 804-2

D mm	SB mm	TDI mm	BO mm	NLA mm	Z	ZF	SW Degree	$n_{max.}$ min^{-1}	WSS	ID	
125	3,1	2,5	20		20	KON/FZ	10	18300		**190564**	●
125	3,1	2,5	22		20	KON/FZ	10	18300		**190614**	□
150	4,3	3,2	20		24	KON/FZ	10	15200		**190577**	●
150	4,3	3,2	30		24	KON/FZ	10	15200		**190565**	●
150	4,3	3,2	45		24	KON/FZ	10	15200		**190578**	□
160	4,3	3,5	30		30	KON/FZ	10	14300		**190579**	●
160	4,3	3,2	45	3/11/ 70	30	KON/FZ	10	14300		**190580**	
160	4,3	3,5	55	3/ 7/ 66	30	KON/FZ	10	14300		**190566**	●
180	4,3	3,5	20	2/10/ 60	30	KON/FZ	10	12700		**190581**	●
180	4,3	3,5	30	2/10/ 60	30	KON/FZ	10	12700		**190567**	●
180	4,3	3,5	45		30	KON/FZ	10	12700		**190568**	●
180	4,7	3,5	45		30	KON/FZ	10	12700		**190569**	●
180	4,3	3,2	50	3/13/ 80	30	KON/FZ	10	12700		**190582**	
200	4,3	3,5	20		30	KON/FZ	10	11400		**190570**	●
200	4,3	3,5	30	2/10/ 60	30	KON/FZ	10	11400		**190571**	●
200	4,3	3,5	45		30	KON/FZ	10	11400		**190572**	●
200	4,7	3,5	45		30	KON/FZ	10	11400		**190573**	●
200	4,3	3,2	50	3/13/ 80	30	KON/FZ	10	11400		**190583**	□
200	4,3	3,5	65	2/ 9/100 2/ 9/110	30	KON/FZ	10	11400		**190615**	□
200	4,7	3,5	65	2/ 9/110	30	KON/FZ	10	11400		**190574**	●
200	4,3	3,5	80	2/14/110	30	KON/FZ	10	11400		**190616**	□
215	4,3	3,2	50	3/15/ 80	36	KON/FZ	10	10600		**190575**	●
250	4,3	3,5	30	2/10/ 60	36	KON/FZ	10	9100		**190576**	●

HW



Scoring sawblades

Application:
For scoring with feed with scoring depths of 1.50 - 2.00 mm.

Machine:
Panel sizing systems with scoring saw and pressure beam.

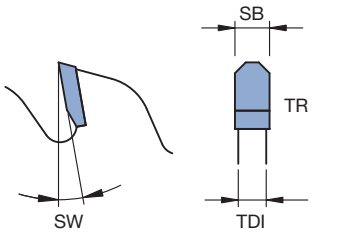
Workpiece material:
Plastic coated particle boards and fibre boards composite materials (gypsum plasterboards and mineral wool slabs).

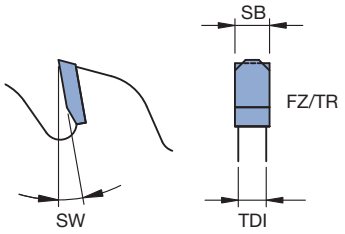
Technical information:
The cutting width of the scoring sawblade must be identical to the cutting width of the main sawblade. If type UT, **AS LowNoise UT** design is used - noise reduction during free running by up to 3 dB(A). Tool body with irregular tooth pitch.

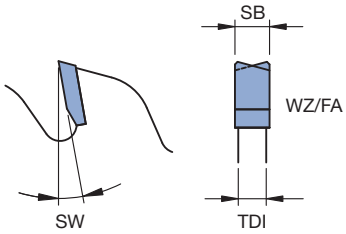
Circular sawblades
WK 804-2

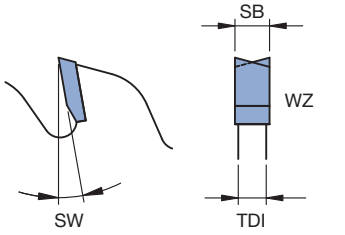
Machine	D mm	SB mm	TDI mm	BO mm	NLA mm	Z	ZF	SW Degree	Type	$n_{max.}$ min^{-1}	WSS	ID	
SCM	100	3,2	2,5	20		20	KON/FZ	5		22900		**061556**	●
	100	3,2	2,5	22		20	KON/FZ	5		22900		**061557**	●
	120	3,2	2,5	20		24	KON/FZ	5		19000		**061552**	●
Panhans	125	4,4	3,5	20		24	KON/FZ	5		18300		**061516**	●
Holz Her	125	4,4	3,5	45		24	KON/FZ	5		18300		**061518**	□
Holz Her	140	4,4	3,5	45	1/8/58	24	KON/FZ	5		16300		**061519**	
Panhans Teuto-matic	180	4,4	3,5	30	2/10/60	30	KON/FZ	5		12700		**061517**	●
Holzma	180	4,8	3,5	45		36	KON/FZ	5	UT	12700		**061526**	●
Holzma	180	3,8	3,5	45		36	KON/FZ	5		12700		**061566**	●
Holzma	180	3,8	3,0	45		54	KON/FZ	5		12700		**061568**	●
Scheer	200	4,8	3,5	30	2/10/60	36	KON/FZ	5	UT	11400		**061561**	●
Holzma	200	4,8	3,5	45		36	KON/FZ	5	UT	11400		**061527**	●
SCM	200	4,4	3,5	80	2/14/110	36	KON/FZ	5	UT	11400		**061542**	●
Panhans	220	3,2	2,5	30		36	KON/FZ	5		10400		**061535**	●
Panhans	250	4,4	3,5	30	2/10/60	42	KON/FZ	5		9100		**061537**	●
Panhans	280	4,4	3,0	30	2/10/60	48	KON/FZ	5		8100		**061540**	●
Holzma	280	3,8	3,0	45		48	KON/FZ	5		8100		**061567**	●

● available ex stock
□ available at short notice
Instruction manual visit www.leitz.org









Scoring sawblades - profiles for softforming and postforming

Application:
For scoring with feed at high feed rates and deep cutting depths.

Machine:
Panel sizing systems with soft and postforming scoring saws.

Workpiece material:
Paper and plastic coated particle boards and fibre boards (MDF, HDF, WF etc.).

Technical information:
Tooth shape to machine manufacturers' specifications.

Circular sawblades - TR tooth shape

WK 803-2-37

Machine	D mm	SB mm	TDI mm	BO mm	NLA mm	Z	ZF	SW Degree	n max. min^{-1}	WSS	ID
Giben	250	4,6	3,2	50	3/13/80	60	TR	10		■	**059714** ●
Giben	300	4,6	3,2	50	3/15/80	80	TR	10	7600	■	**068000** ●
Holzma	340	4,95	3,5	45		80	TR	15	6700	■	**061606** ●

Circular sawblades - FZ/TR tooth shape

WK 852-2, WK 852-2-37

Machine	D mm	SB mm	TDI mm	BO mm	NLA mm	Z	ZF	SW Degree	n max. min^{-1}	WSS	ID
Panhans	220	3,35	2,5	30		48	FZ/TR	10	10400	■	**061536** ●
Panhans	250	4,55	3,5	30	2/10/60	48	FZ/TR	10	9100	■	**061521** ●
Panhans	280	4,55	3	30	2/10/60	60	FZ/TR	15	8100	■	**061614** ●
Homag Esp.	300	4,55	3,2	75		96	FZ/TR	15	7600	■	**061615** ●
Homag	350	4,55	3,2	75		72	FZ/TR	15	6500	■	**061613** ●
Höfer Panhans Scheer Schelling	400	4,4	3,2	30	2/10/60	72	FZ/TR	15	4700	■■	**059256** ●
Scheer	450	4,8	3,5	30	2/10/60	72	FZ/TR	15	4200	■	**061616** ●

Circular sawblades - WZ/FA tooth shape

WK 251-2, WK 851-2

Machine	D mm	SB mm	TDI mm	BO mm	NLA mm	Z	ZF	SW Degree	n max. min^{-1}	WSS	ID
Panhans	180	4,55	3,5	30		36	WZ/FA	5	12700	■	**059192** ●
Schelling	300	4,55	3,2	30		72	WZ/FA	10	7600	■	**061618** ●
Selco	300	4,55	3,2	65	2/9/110	72	WZ/FA	10	7600	■	**059189** ●

Circular sawblades - WZ tooth shape

WK 850-2

Machine	D mm	SB mm	TDI mm	BO mm	Z	ZF	SW Degree	n max. min^{-1}	WSS	ID
Homag	250	4,55	3,2	45	80	WZ	10	9100	■	**061617** ●
Holzma	280	4,55	3,2	45	84	WZ	10	8100	■	**061619** ●
Holzma	280	4,95	3,5	45	84	WZ	10	8100	■	**061676** ●
Holzma	280	4,1	3,5	45	84	WZ	10		■	**061569** ●
Holzma	340	5,0	3,5	45	108	WZ	10	6700	■	**061611** ●

Machine – Type	Tool Type	ABM mm	Z	QAL	ZF	System	ID	
Anthon – LN (90)	Scoring sawblade	180x4,4/3,5x20	30	HW	KON/WZ		**061478**	●
	Scoring sawblade	180x4,3/5,1x20	30	DP	KON/FZ	AS LowNoise UT	**190581**	●
	Scoring sawblade	180x4,3/5,1x20	30	DP	KON/WZ	AS LowNoise UT	**190591**	●
	Main sawblade	400x4,4x60	60	HW	WZ		**059498**	□
	Main sawblade	400x4,4x60	72	DP	WZ	AS LowNoise UT	**190632**	□
	Main sawblade	400x4,4x60	72	HW	FZ/TR		**059292**	●
	Main sawblade	400x4,4x60	72	HW	TR/TR	RazorCut	**069129**	□
	Main sawblade	400x4,4x60	72	DP	FZ/TR	AS LowNoise UT	**190645**	□
Anthon – LNA (100), LN (120)	Scoring sawblade	180x4,4/3,5x20	30	HW	KON/WZ		**061478**	●
	Scoring sawblade	180x4,3/5,1x20	30	DP	KON/FZ	AS LowNoise UT	**190581**	●
	Scoring sawblade	180x4,3/5,1x20	30	DP	KON/WZ	AS LowNoise UT	**190591**	●
	Main sawblade	430x4,4x60	72	HW	WZ		**059499**	□
	Main sawblade	430x4,4x60	72	HW	FZ/TR		**059576**	□
	Main sawblade	430x4,4x60	72	HW	TR/TR	RazorCut	**069130**	□
	Main sawblade	450x4,4x60	72	HW	WZ		**059500**	□
	Main sawblade	450x4,4/3,2x60	72	HW	FZ/TR		**059677**	□
Anthon – Porta 100	Main sawblade	400x4,4x60	60	HW	WZ		**059498**	□
	Main sawblade	400x4,4x60	72	DP	WZ	AS LowNoise UT	**190632**	□
	Main sawblade	400x4,4x60	72	HW	FZ/TR		**059292**	●
	Main sawblade	400x4,4x60	72	HW	TR/TR	RazorCut	**069129**	□
	Main sawblade	400x4,4x60	72	DP	FZ/TR	AS LowNoise UT	**190645**	□
Anthon – Porta 150	Main sawblade	500x5,2x60	60	HW	WZ		**059501**	□
	Main sawblade	500x5,2x60	60	HW	FZ/TR		**059577**	□
Anthon – LNB (200), LNC (210)	Scoring sawblade	180x6/7,1x20	30	HW	KON/WZ		**061520**	●
	Main sawblade	700x6,2x80	60	HW	WZ		**059399**	●
	Main sawblade	700x6,2x80	60	HW	FZ/TR		**059395**	●
Gabbiani – Galaxy 90	Scoring sawblade	200x4,4/3,5x80	36	HW	KON/FZ	AS LowNoise UT	**061542**	●
	Scoring sawblade	200x4,3/5,1x80	30	DP	KON/FZ	AS LowNoise UT	**190616**	□
	Scoring sawblade	200x4,3/5,1x80	30	DP	KON/WZ	AS LowNoise UT	**190619**	□
	Main sawblade	300x4,4x80	48	HW	WZ		**059502**	□
	Main sawblade	300x4,4x80	60	DP	WZ	AS LowNoise UT	**190633**	□
	Main sawblade	300x4,4x80	60	HW	FZ/TR		**059503**	□
	Main sawblade	300x4,4/2,8x80	60	HW	FZ/TR	AS LowNoise foil	**065338**	●
	Main sawblade	300x4,4x80	60	HW	TR/TR	RazorCut	**069131**	□
	Main sawblade	300x4,4x80	60	DP	FZ/TR	AS LowNoise UT	**190646**	□
Gabbiani – Galaxy 85	Scoring sawblade	200x4,4/3,5x80	36	HW	KON/FZ	AS LowNoise UT	**061542**	●
	Scoring sawblade	200x4,3/5,1x80	30	DP	KON/FZ	AS LowNoise UT	**190616**	□
	Scoring sawblade	200x4,3/5,1x80	30	DP	KON/WZ	AS LowNoise UT	**190619**	□
	Main sawblade	350x4,4x80	54	HW	WZ		**059504**	□
	Main sawblade	350x4,4x30	72	HW	WZ	AS LowNoise UT	**059486**	●
	Main sawblade	350x4,4x80	60	DP	WZ	AS LowNoise UT	**190634**	□
	Main sawblade	350x4,4x80	72	DP	WZ	AS LowNoise UT	**190635**	□
	Main sawblade	350x4,4/3,2x80	54	HW	FZ/TR		**059271**	●
	Main sawblade	350x4,4x80	72	HW	FZ/TR		**059691**	□
	Main sawblade	350x4,4/3,0x80	72	HW	FZ/TR	AS LowNoise foil	**065339**	●
	Main sawblade	350x4,4x80	72	HW	TR/TR	RazorCut	**069132**	□
	Main sawblade	350x4,4x80	60	DP	FZ/TR	AS LowNoise UT	**190647**	□
	Main sawblade	350x4,4x80	72	DP	FZ/TR	AS LowNoise UT	**190648**	□

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Machine – Type	Tool Type	ABM mm	Z	QAL	ZF	System	ID	
Gabbiani – Galaxy 115	Scoring sawblade	200x4,4/3,5x80	36	HW	KON/FZ	AS LowNoise UT	**061542**	●
	Scoring sawblade	200x4,3/5,1x80	30	DP	KON/FZ	AS LowNoise UT	**190616**	□
	Scoring sawblade	200x4,3/5,1x80	30	DP	KON/WZ	AS LowNoise UT	**190619**	□
	Main sawblade	400x4,4x80	72	HW	WZ	AS LowNoise UT	**059506**	□
	Main sawblade	400x4,4x80	72	DP	WZ	AS LowNoise UT	**190636**	□
	Main sawblade	400x4,4/3,2x80	80	HW	FZ/TR		**059454**	●
	Main sawblade	400x4,4/3,0x80	72	HW	FZ/TR	AS LowNoise foil	**065340**	●
	Main sawblade	400x4,4x80	72	HW	TR/TR	RazorCut	**069133**	□
	Main sawblade	400x4,4x80	72	DP	FZ/TR	AS LowNoise UT	**190649**	□
Gabbiani – Galaxy 140, Elite	Scoring sawblade	200x4,4/3,5x80	36	HW	KON/FZ	AS LowNoise UT	**061542**	●
	Scoring sawblade	200x4,3/5,1x80	30	DP	KON/FZ	AS LowNoise UT	**190616**	□
	Scoring sawblade	200x4,3/5,1x80	30	DP	KON/WZ	AS LowNoise UT	**190619**	□
	Main sawblade	450x4,4x80	72	HW	WZ		**059507**	□
	Main sawblade	450x4,4x80	72	HW	FZ/TR		**059692**	□
	Main sawblade	450x4,4/3,0x80	72	HW	FZ/TR	AS LowNoise foil	**065341**	●
	Main sawblade	450x4,4x80	72	HW	TR/TR	RazorCut	**069134**	□
Giben – MK, Gamma, N, ST, SE, Trend	Scoring sawblade	125x4,4/3,2x45	20	HW	KON/WZ		**061485**	●
	Main sawblade	355x4,4/3,2x75	60	HW	FZ/TR		**059275**	●
Giben – G 2000 Starmatic	Scoring sawblade	125x4,4/3,2x45	20	HW	KON/WZ		**061485**	●
	Main sawblade	400x4,4x75	72	DP	WZ	AS LowNoise UT	**190637**	□
	Main sawblade	400x4,4/3,2x75	72	HW	FZ/TR		**059293**	●
	Main sawblade	400x4,4x75	72	HW	TR/TR	RazorCut	**069117**	□
	Main sawblade	400x4,4x75	72	DP	FZ/TR	AS LowNoise UT	**190650**	□
Giben – Prismatic 101	Scoring sawblade	160x4,4/3,2x45	28	HW	KON/WZ		**061509**	●
	Scoring sawblade	160x4,3/5,1x45	30	DP	KON/FZ	AS LowNoise UT	**190580**	
	Scoring sawblade	160x4,3/5,1x45	30	DP	KON/WZ	AS LowNoise UT	**190589**	□
	Main sawblade	400x4,4x75	72	DP	WZ	AS LowNoise UT	**190637**	□
	Main sawblade	400x4,4/3,2x75	72	HW	FZ/TR		**059293**	●
	Main sawblade	400x4,4x75	72	HW	TR/TR	RazorCut	**069117**	□
	Main sawblade	400x4,4x75	72	DP	FZ/TR	AS LowNoise UT	**190650**	□
Giben – Prismatic 201	Scoring sawblade	215x4,4/3,2x50	42	HW	KON/WZ		**061508**	●
	Scoring sawblade	215x4,3/5,1x50	36	DP	KON/FZ	AS LowNoise UT	**190575**	●
	Scoring sawblade	215x4,3/5,1x50	36	DP	KON/WZ	AS LowNoise UT	**190602**	□
	Scoring sawblade	300x4,4/3,2x50	48	HW	KON/WZ		**061510**	●
	Postf. scoring sawblade	300x4,6x50	80	HW	TR		**068000**	●
	Main sawblade	400x4,4x75	72	DP	WZ	AS LowNoise UT	**190637**	□
	Main sawblade	400x4,4/3,2x75	72	HW	FZ/TR		**059293**	●
	Main sawblade	400x4,4x75	72	HW	TR/TR	RazorCut	**069117**	□
	Main sawblade	400x4,4x75	72	DP	FZ/TR	AS LowNoise UT	**190650**	□
	Main sawblade	430x4,4x75	72	HW	WZ		**059508**	□
	Main sawblade	430x4,4/3,2x75	72	HW	FZ/TR		**059277**	●
	Main sawblade	430x4,4x75	72	HW	TR/TR	RazorCut	**069120**	□
Giben – Prismatic 2, 3	Scoring sawblade	215x4,4/3,2x50	42	HW	KON/WZ		**061508**	●
	Scoring sawblade	215x4,3/5,1x50	36	DP	KON/FZ	AS LowNoise UT	**190575**	●
	Scoring sawblade	215x4,3/5,1x50	36	DP	KON/WZ	AS LowNoise UT	**190602**	□
	Scoring sawblade	300x4,4/3,2x50	48	HW	KON/WZ		**061510**	●
	Postf. scoring sawblade	300x4,6x50	80	HW	TR		**068000**	●
	Main sawblade	470x4,4/3,2x75	96	HW	FZ/TR		**059584**	●
Giben – Matic H 150	Scoring sawblade	180x5,0/3,5x55	30	HW	KON/WZ		**061500**	●

Machine – Type	Tool Type	ABM mm	Z	QAL	ZF	System	ID	
Holz Her – Cut 85/82	Scoring sawblade	180x4,4/3,5x30	30	HW	KON/FZ		**061517**	●
	Scoring sawblade	180x4,3/5,1x30	30	DP	KON/FZ	AS LowNoise UT	**190567**	●
	Scoring sawblade	180x4,3/5,1x30	30	DP	KON/WZ	AS LowNoise UT	**190592**	□
	Postf. scoring sawblade	250x4,55x30	48	HW	FZ/TR		**061521**	●
	Main sawblade	350x4,4x30	54	HW	WZ		**059509**	□
	Main sawblade	350x4,4x30	60	DP	WZ	AS LowNoise UT	**190610**	●
	Main sawblade	350x4,4x30	72	DP	WZ	AS LowNoise UT	**190611**	●
	Main sawblade	350x4,4/3,2x30	72	HW	FZ/TR		**059252**	●
	Main sawblade	350x4,4x30	72	HW	FZ/TR	AS OptiCut UT	**069018**	●
	Main sawblade	350x4,4x30	72	HW	TR/TR	RazorCut	**069109**	●
	Main sawblade	350x4,4x30	72	DP	FZ/TR	AS LowNoise UT	**190606**	●
Holz Her – Cut 110	Scoring sawblade	250x4,4/3,5x30	42	HW	KON/FZ		**061537**	●
	Scoring sawblade	250x4,3/5,1x30	36	DP	KON/FZ	AS LowNoise UT	**190576**	●
	Scoring sawblade	250x4,3/5,1x30	36	DP	KON/WZ	AS LowNoise UT	**190603**	□
	Postf. scoring sawblade	250x4,55x30	48	HW	FZ/TR		**061521**	●
	Main sawblade	400x4,4x30	60	HW	WZ		**059510**	□
	Main sawblade	400x4,4x30	72	DP	WZ	AS LowNoise UT	**190613**	●
	Main sawblade	400x4,4/3,2x30	72	HW	FZ/TR		**059256**	●
	Main sawblade	400x4,4x30	72	HW	FZ/TR	AS OptiCut UT	**069017**	●
	Main sawblade	400x4,4x30	72	HW	TR/TR	RazorCut	**069115**	●
	Main sawblade	400x4,4x30	72	DP	FZ/TR	AS LowNoise UT	**190608**	●
Holzma – 180	Scoring sawblade	180x4,4/3,5x45	36	HW	KON/WZ	AS OptiCut UT	**061553**	●
	Scoring sawblade	180x4,3/5,1x45	30	DP	KON/FZ	AS LowNoise UT	**190568**	●
	Scoring sawblade	180x4,3/5,1x45	30	DP	KON/WZ	AS LowNoise UT	**190593**	□
	Main sawblade	380x4,4/3,2x60	72	HW	FZ/TR		**059681**	●
Holzma – 230/250	Scoring sawblade	200x4,4/5,5x45	34	HW	KON/WZ		**061490**	●
	Scoring sawblade	200x4,3/5.1x45	30	DP	KON/FZ	AS LowNoise UT	**190572**	●
	Scoring sawblade	200x4,3/5,1x45	30	DP	KON/WZ	AS LowNoise UT	**190598**	□
	Postf. scoring sawblade	280x4,55x45	84	HW	WZ		**061619**	●
	Main sawblade	350x4,4x75	54	HW	WZ	AS LowNoise UT	**059511**	□
	Main sawblade	350x4,4x75	72	HW	WZ	AS LowNoise UT	**059512**	□
	Main sawblade	350x4,4x75	60	DP	WZ	AS LowNoise UT	**190638**	□
	Main sawblade	350x4,4x75	72	DP	WZ	AS LowNoise UT	**190639**	□
	Main sawblade	350x4,4/3,2x75	72	HW	FZ/TR		**059253**	●
	Main sawblade	350x4,4x75	72	HW	FZ/TR	AS OptiCut UT	**069094**	□
	Main sawblade	350x4,4x75	72	HW	TR/TR	RazorCut	**069110**	□
	Main sawblade	350x4,4x75	60	DP	FZ/TR	AS LowNoise UT	**190651**	□
	Main sawblade	350x4,4x75	72	DP	FZ/TR	AS LowNoise UT	**190652**	□
Holzma – 350	Scoring sawblade	180x4,4/3,5x45	36	HW	KON/WZ	AS OptiCut UT	**061553**	●
	Scoring sawblade	180x4,3/5,1x45	30	DP	KON/FZ	AS LowNoise UT	**190568**	●
	Scoring sawblade	180x4,3/5,1x45	30	DP	KON/WZ	AS LowNoise UT	**190593**	□
	Postf. scoring sawblade	280x4,55x45	84	HW	WZ		**061619**	●
	Main sawblade	350x4,4x60	54	HW	WZ	AS LowNoise UT	**059485**	●
	Main sawblade	350x4,4x60	72	HW	WZ	AS LowNoise UT	**059487**	□
	Main sawblade	350x4,4x60	60	DP	WZ	AS LowNoise UT	**190641**	□
	Main sawblade	350x4,4x60	72	DP	WZ	AS LowNoise UT	**190640**	□
	Main sawblade	350x4,4x60	72	HW	FZ/TR		**059693**	●
	Main sawblade	350x4,4x60	72	HW	FZ/TR	AS OptiCut UT	**069082**	●
	Main sawblade	350x4,4x60	72	HW	TR/TR	RazorCut	**069135**	□
	Main sawblade	350x4,4x60	60	DP	FZ/TR	AS LowNoise UT	**190654**	□
	Main sawblade	350x4,4x60	72	DP	FZ/TR	AS LowNoise UT	**190653**	□

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Machine – Type	Tool Type	ABM mm	Z	QAL	ZF	System	ID	
Holzma – 380,82	Scoring sawblade	180x4,4/3,5x45	36	HW	KON/WZ	AS OptiCut UT	**061553**	●
	Scoring sawblade	180x4,3/5,1x45	30	DP	KON/FZ	AS LowNoise UT	**190568**	●
	Scoring sawblade	180x4,3/5,1x45	30	DP	KON/WZ	AS LowNoise UT	**190593**	□
	Scoring sawblade	180x4,8/3,5x45	36	HW	KON/FZ		**061526**	●
	Scoring sawblade	180x4,7/5,5x45	30	DP	KON/FZ	AS LowNoise UT	**190569**	●
	Scoring sawblade	180x4,7/5,5x45	30	DP	KON/WZ	AS LowNoise UT	**190595**	●
	Postf. scoring sawblade	280x4,55x45	84	HW	WZ		**061619**	●
	Postf. scoring sawblade	280x4,95x45	84	HW	WZ		**061676**	●
	Main sawblade	380x4,8x60	54	HW	WZ	AS LowNoise UT	**059490**	●
	Main sawblade	380x4,8x60	72	HW	WZ	AS LowNoise UT	**059491**	●
	Main sawblade	380x4,8x60	72	DP	WZ	AS LowNoise UT	**190612**	●
	Main sawblade	380x4,4/3,2x60	72	HW	FZ/TR		**059681**	●
	Main sawblade	380x4,8x60	72	HW	FZ/TR		**059289**	●
	Main sawblade	380x4,8/3,5x60	72	HW	TR/TR	AS LowNoise UT	**059704**	●
	Main sawblade	380x4,8/3,5x60	72	HW	FZ/TR	AS LowNoise foil	**065337**	●
	Main sawblade	380x4,8x60	72	HW	FZ/TR	AS LowNoise UT	**069089**	●
	Main sawblade	380x4,8x60	72	HW	TR/TR	RazorCut	**069114**	●
	Main sawblade	430x4,4x80	72	HW	WZ/FA	AS LowNoise foil	**065353**	●
	Main sawblade	380x4,8/3,5x60	84	HW	TR/TR		**059314**	●
	Main sawblade	380x4,8x60	72	DP	FZ/TR	AS LowNoise UT	**190607**	●
Holzma – 510, HPP 11	Scoring sawblade	180x4,8/3,5x45	36	HW	KON/FZ		**061526**	●
	Scoring sawblade	180x4,7/5,5x45	30	DP	KON/FZ	AS LowNoise UT	**190569**	●
	Scoring sawblade	180x4,7/5,5x45	30	DP	KON/WZ	AS LowNoise UT	**190595**	●
	Postf. scoring sawblade	340x4,9x45	80	HW	TR		**061606**	●
	Postf. scoring sawblade	340x5x45	108	HW	WZ		**061611**	●
	Main sawblade	450x4,8x60	72	HW	WZ	AS LowNoise UT	**059513**	□
	Main sawblade	450x4,8/3,5x60	72	HW	FZ/TR		**059261**	●
	Main sawblade	450x4,8/3,5x60	72	HW	TR/TR		**059316**	●
	Main sawblade	450x4,8x60	72	HW	FZ/TR	AS LowNoise UT	**061354**	●
	Main sawblade	450x4,8x60	72	HW	TR/TR	RazorCut	**069125**	●
	Main sawblade	450x4,8/3,5x60	72	HW	FZ/TR	AS LowNoise foil	**065349**	●
	Main sawblade	450x4,8x60	72	HW	WZ/FA	AS LowNoise foil	**065354**	□
Holzma – 33, HPP 42	Scoring sawblade	200x5,8/4,6x45	34	HW	KON/WZ		**061499**	●
	Main sawblade	600x5,8x60	72	HW	FZ/TR		**059392**	●
Holzma – 66, HPP 61	Scoring sawblade	200x6,2/4,2x45	36	HW	KON/WZ		**061547**	●
	Main sawblade	670x5,8x60	42	HW	FZ/TR		**059393**	●
	Main sawblade	730x6,2x60	60	HW	WZ		**059401**	●
	Main sawblade	730x6,2x60	60	HW	FZ/TR		**059397**	●
Holzma – 22	Scoring sawblade	180x4,8/3,5x45	36	HW	KON/FZ		**061526**	●
	Scoring sawblade	200x4,7/5,5x45	30	DP	KON/WZ	AS LowNoise UT	**190600**	□
	Scoring sawblade	200x4,7/5,5x45	30	DP	KON/FZ	AS LowNoise UT	**190573**	●
	Postf. scoring sawblade	340x5x45	108	HW	WZ		**061611**	●
	Main sawblade	500x4,8/3,5x60	72	HW	TR/TR		**059317**	●
Homag – CV's	Scoring sawblade	125x4,4/3,2x45	20	HW	KON/WZ		**061485**	●
	Postf. scoring sawblade	300x4,55x75	96	HW	FZ/TR		**061615**	●
	Main sawblade	300x4,4/3,2x75	60	HW	FZ/TR		**059309**	●
Homag – CH 3	Scoring sawblade	125x4,4/3,2x45	20	HW	KON/WZ		**061485**	●
	Main sawblade	300x4,4/3,2x75	60	HW	FZ/TR		**059309**	●
Homag – CT 04/40	Scoring sawblade	150x4,4/3,5x45	24	HW	KON/WZ		**061530**	●
	Scoring sawblade	150x4,3/5,1x45	24	DP	KON/FZ	AS LowNoise UT	**190578**	□
	Scoring sawblade	150x4,3/5,1x45	24	DP	KON/WZ	AS LowNoise UT	**190587**	□
	Postf. scoring sawblade	250x4,55x45	80	HW	WZ		**061617**	●
	Main sawblade	300x4,4/3,2x75	60	HW	FZ/TR		**059309**	●

■ Solid wood ■ Plastics
■ Board, coated ■ Mineral materials
■ Board, uncoated ■ Composites
■ Non-ferrous metals

Machine – Type	Tool Type	ABM mm	Z	QAL	ZF	System	ID	
Homag – CH 04	Scoring sawblade	180x4,4/3,5x45	30	HW	KON/WZ		**061544**	
	Scoring sawblade	180x4,3/5,1x45	30	DP	KON/FZ	AS LowNoise UT	**190568**	
	Scoring sawblade	180x4,3/5,1x45	30	DP	KON/WZ	AS LowNoise UT	**190593**	
	Postf. scoring sawblade	300x4,55x75	96	HW	FZ/TR		**061615**	
	Main sawblade	355x4,4/3,2x75	60	HW	FZ/TR		**059275**	
Homag – CT 06/10	Scoring sawblade	150x4,4/3,5x45	24	HW	KON/WZ		**061530**	●
	Scoring sawblade	150x4,3/5,1x45	24	DP	KON/FZ	AS LowNoise UT	**190578**	□
	Scoring sawblade	150x4,3/5,1x45	24	DP	KON/WZ	AS LowNoise UT	**190587**	□
	Main sawblade	350x4,4/3,2x75	72	HW	FZ/TR		**059253**	●
	Main sawblade	350x4,4x75	72	HW	TR/TR	RazorCut	**069110**	□
Homag – CH 08/12	Scoring sawblade	150x4,4/3,5x45	24	HW	KON/WZ		**061530**	●
	Scoring sawblade	150x4,3/5,1x45	24	DP	KON/FZ	AS LowNoise UT	**190578**	□
	Scoring sawblade	150x4,3/5,1x45	24	DP	KON/WZ	AS LowNoise UT	**190587**	□
	Main sawblade	400x4,4/3,2x75	72	HW	FZ/TR		**059260**	●
	Main sawblade	400x4,4x75	72	HW	TR/TR	RazorCut	**069117**	□
Homag – CH 30/06	Postf. scoring sawblade	350x4,55x75	72	HW	FZ/TR		**061613**	●
	Main sawblade	350x4,4/3,2x75	72	HW	FZ/TR		**059253**	●
	Main sawblade	350x4,4x75	72	HW	TR/TR	RazorCut	**069110**	□
Homag – CHP Court 85	Postf. scoring sawblade	350x4,55x75	72	HW	FZ/TR		**061613**	●
	Main sawblade	400x4,4/3,2x75	72	HW	FZ/TR		**059260**	●
	Main sawblade	400x4,4x75	72	HW	TR/TR	RazorCut	**069117**	□
Panhans – Euro 5, (SF, Compact, Ecopan)	Scoring sawblade	125x3,2/2,5x20	24	HW	KON/WZ		**061470**	●
	Scoring sawblade	125x3,1/3,9x20	20	DP	KON/FZ	AS LowNoise UT	**190564**	●
	Scoring sawblade	125x3,1/3,9x20	20	DP	KON/WZ	AS LowNoise UT	**190584**	●
	Scoring sawblade	125x4,4/3,5x20	24	HW	KON/FZ		**061516**	●
	Scoring sawblade	220x3,2/2,5x30	36	HW	KON/FZ		**061535**	●
	Postf. scoring sawblade	220x3,35x30	48	HW	FZ/TR		**061536**	●
	Main sawblade	280x3,2/2,2x30	60	HW	FZ/TR	AS LowNoise UT	**061353**	●
	Main sawblade	280x3,2x30	60	HW	TR/TR	RazorCut	**069101**	●
	Main sawblade	300x4,4/3,0x30	48	HW	WZ		**059100**	●
	Main sawblade	300x4,4x30	60	DP	WZ	AS LowNoise UT	**190609**	●
	Main sawblade	300x4,4/3,0x30	60	HW	FZ/TR		**059250**	●
	Main sawblade	300x4,4x30	60	HW	FZ/TR	AS OptiCut UT	**068350**	●
	Main sawblade	300x4,4x30	60	HW	TR/TR	RazorCut	**069104**	●
	Main sawblade	300x4,4x30	60	DP	FZ/TR	AS LowNoise UT	**190604**	●
Panhans – Euro10, 693/SH 70	Scoring sawblade	125x4,4/3,5x20	24	HW	KON/FZ		**061516**	●
	Scoring sawblade	180x4,4/3,5x30	30	HW	KON/FZ		**061517**	●
	Scoring sawblade	180x4,3/5,1x30	30	DP	KON/FZ	AS LowNoise UT	**190567**	●
	Scoring sawblade	180x4,3/5,1x30	30	DP	KON/WZ	AS LowNoise UT	**190592**	□
	Main sawblade	300x4,4/3,0x30	48	HW	WZ		**059100**	●
	Main sawblade	300x4,4x30	60	DP	WZ	AS LowNoise UT	**190609**	●
	Main sawblade	300x4,4/3,0x30	60	HW	FZ/TR		**059250**	●
	Main sawblade	300x4,4x30	60	HW	FZ/TR	AS OptiCut UT	**068350**	●
	Main sawblade	300x4,4x30	60	HW	TR/TR	RazorCut	**069104**	●
	Main sawblade	300x4,4x30	60	DP	FZ/TR	AS LowNoise UT	**190604**	●
Panhans – Euro 10SF	Scoring sawblade	250x4,4/3,5x30	42	HW	KON/FZ		**061537**	●
	Scoring sawblade	250x4,3/5,1x30	36	DP	KON/FZ	AS LowNoise UT	**190576**	●
	Scoring sawblade	250x4,3/5,1x30	36	DP	KON/WZ	AS LowNoise UT	**190603**	□
	Postf. scoring sawblade	250x4,55x30	48	HW	FZ/TR		**061521**	●
	Main sawblade	300x4,4/3,0x30	48	HW	WZ		**059100**	●
	Main sawblade	300x4,4x30	60	DP	WZ	AS LowNoise UT	**190609**	●
	Main sawblade	300x4,4/3,0x30	60	HW	FZ/TR		**059250**	●
	Main sawblade	300x4,4x30	60	HW	FZ/TR	AS OptiCut UT	**068350**	●
	Main sawblade	300x4,4x30	60	HW	TR/TR	RazorCut	**069104**	●
	Main sawblade	300x4,4x30	60	DP	FZ/TR	AS LowNoise UT	**190604**	●

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Machine – Type	Tool Type	ABM mm	Z	QAL	ZF	System	ID	
Panhans – Euro 12, 30	Scoring sawblade	180x4,4/3,5x30	30	HW	KON/FZ		**061517**	●
	Scoring sawblade	180x4,3/5,1x30	30	DP	KON/FZ	AS LowNoise UT	**190567**	●
	Scoring sawblade	180x4,3/5,1x30	30	DP	KON/WZ	AS LowNoise UT	**190592**	□
	Main sawblade	350x4,4/3,2x30	54	HW	WZ		**059102**	●
	Main sawblade	350x4,4x30	60	DP	WZ	AS LowNoise UT	**190610**	●
	Main sawblade	350x4,4/3,2x30	72	HW	FZ/TR		**059252**	●
	Main sawblade	350x4,4x30	72	HW	FZ/TR	AS OptiCut UT	**069018**	●
	Main sawblade	350x4,4x30	72	HW	TR/TR	RazorCut	**069109**	●
	Main sawblade	350x4,4x30	60	DP	FZ/TR	AS LowNoise UT	**190605**	●
Panhans – Euro 12 SF	Scoring sawblade	280x4,4/3,0x30	48	HW	KON/FZ		**061540**	●
	Postf. scoring sawblade	280x4,55x30	60	HW	FZ/TR		**061614**	●
	Main sawblade	350x4,4/3,2x30	54	HW	WZ		**059102**	●
	Main sawblade	350x4,4x30	60	DP	WZ	AS LowNoise UT	**190610**	●
	Main sawblade	350x4,4/3,2x30	72	HW	FZ/TR		**059252**	●
	Main sawblade	350x4,4x30	72	HW	FZ/TR	AS OptiCut UT	**069018**	●
	Main sawblade	350x4,4x30	72	HW	TR/TR	RazorCut	**069109**	●
	Main sawblade	350x4,4x30	60	DP	FZ/TR	AS LowNoise UT	**190605**	●
Panhans – Euro 32	Scoring sawblade	180x4,4/3,5x30	30	HW	KON/FZ		**061517**	●
	Scoring sawblade	180x4,3/5,1x30	30	DP	KON/FZ	AS LowNoise UT	**190567**	●
	Scoring sawblade	180x4,3/5,1x30	30	DP	KON/WZ	AS LowNoise UT	**190592**	□
	Main sawblade	370x4,4x30	72	HW	WZ	AS LowNoise UT	**059514**	□
	Main sawblade	370x4,4/3,2x30	72	HW	FZ/TR	AS LowNoise UT	**059319**	●
	Main sawblade	370x4,4x30	72	HW	TR/TR	RazorCut	**069112**	●
Panhans – 693/SH 110	Scoring sawblade	180x4,4/3,5x30	30	HW	KON/FZ		**061517**	●
	Scoring sawblade	180x4,3/5,1x30	30	DP	KON/FZ	AS LowNoise UT	**190567**	●
	Scoring sawblade	180x4,3/5,1x30	30	DP	KON/WZ	AS LowNoise UT	**190592**	□
	Main sawblade	400x4,4x30	60	HW	WZ		**059515**	□
	Main sawblade	400x4,4x30	72	DP	WZ	AS LowNoise UT	**190613**	●
	Main sawblade	400x4,4/3,2x30	72	HW	FZ/TR		**059256**	●
	Main sawblade	400x4,4x30	72	HW	FZ/TR	AS OptiCut UT	**069017**	●
	Main sawblade	400x4,4x30	72	HW	TR/TR	RazorCut	**069115**	●
	Main sawblade	400x4,4x30	72	DP	FZ/TR	AS LowNoise UT	**190608**	●
Panhans – Eurostar 2 XL, Polystar	Scoring sawblade	180x4,4/3,5x30	30	HW	KON/FZ		**061517**	●
	Scoring sawblade	180x4,3/5,1x30	30	DP	KON/FZ	AS LowNoise UT	**190567**	●
	Scoring sawblade	180x4,3/5,1x30	30	DP	KON/WZ	AS LowNoise UT	**190592**	□
	Scoring sawblade	280x4,4/3,0x30	48	HW	KON/FZ		**061540**	●
	Postf. scoring sawblade	280x4,55x30	60	HW	FZ/TR		**061614**	●
	Main sawblade	370x4,4x30	72	HW	WZ	AS LowNoise UT	**059514**	□
	Main sawblade	370x4,4/3,2x30	72	HW	FZ/TR	AS LowNoise UT	**059319**	●
	Main sawblade	370x4,4x30	72	HW	TR/TR	RazorCut	**069112**	●
Panhans – Eurostar 2 XXL	Scoring sawblade	180x4,4/3,5x30	30	HW	KON/FZ		**061517**	●
	Scoring sawblade	180x4,3/5,1x30	30	DP	KON/FZ	AS LowNoise UT	**190567**	●
	Scoring sawblade	180x4,3/5,1x30	30	DP	KON/WZ	AS LowNoise UT	**190592**	□
	Scoring sawblade	280x4,4/3,0x30	48	HW	KON/FZ		**061540**	●
	Postf. scoring sawblade	280x4,55x30	60	HW	FZ/TR		**061614**	●
	Main sawblade	400x4,4x30	60	HW	WZ		**059515**	□
	Main sawblade	400x4,4x30	72	DP	WZ	AS LowNoise UT	**190613**	●
	Main sawblade	400x4,4/3,2x30	72	HW	FZ/TR		**059256**	●
	Main sawblade	400x4,4x30	72	HW	FZ/TR	AS OptiCut UT	**069017**	●
	Main sawblade	400x4,4x30	72	HW	TR/TR	RazorCut	**069115**	●
	Main sawblade	400x4,4x30	72	DP	FZ/TR	AS LowNoise UT	**190608**	●

Machine – Type	Tool Type	ABM mm	Z	QAL	ZF	System	ID	
Panhans – Polypan 47	Scoring sawblade	180x4,4/3,5x30	30	HW	KON/FZ		**061517**	●
	Scoring sawblade	180x4,3/5,1x30	30	DP	KON/FZ	AS LowNoise UT	**190567**	●
	Scoring sawblade	180x4,3/5,1x30	30	DP	KON/WZ	AS LowNoise UT	**190592**	□
	Postf. scoring sawblade	300x4,55x30	72	HW	WZ/FA		**061618**	●
	Main sawblade	350x4,4/3,2x30	72	HW	FZ/TR		**059252**	●
	Main sawblade	350x4,4x30	72	HW	FZ/TR	AS OptiCut UT	**069018**	●
	Main sawblade	350x4,4x30	72	HW	TR/TR	RazorCut	**069109**	●
Panhans – S 45	Postf. scoring sawblade	180x4,55x30	36	HW	WZ/FA		**059192**	●
	Main sawblade	300x4,4/3,0x30	60	HW	FZ/TR		**059250**	●
	Main sawblade	300x4,4x30	60	HW	FZ/TR	AS OptiCut UT	**068350**	●
	Main sawblade	300x4,4x30	60	HW	TR/TR	RazorCut	**069104**	●
	Main sawblade	350x4,4/3,2x30	72	HW	FZ/TR		**059252**	●
	Main sawblade	350x4,4x30	72	HW	FZ/TR	AS OptiCut UT	**069018**	●
	Main sawblade	350x4,4x30	72	HW	TR/TR	RazorCut	**069109**	●
Schelling – FXH, FH 4, FK 4	Scoring sawblade	300x4,4/3,2x30	48	HW	KON/WZ		**061555**	●
	Postf. scoring sawblade	300x4,55x30	72	HW	WZ/FA		**061618**	●
	Main sawblade	350x4,4/3,2x30	54	HW	WZ		**059102**	●
	Main sawblade	350x4,4/3,2x30	72	HW	FZ/TR		**059252**	●
	Main sawblade	350x4,4x30	72	HW	TR/TR	RazorCut	**069109**	●
Schelling – FMH	Scoring sawblade	200x4,3/4,5x20	24	HW	KON/WZ		**061522**	●
	Scoring sawblade	200x4,4/3,5x20	34	HW	KON/WZ		**061479**	●
	Scoring sawblade	200x4,3/5,1x20	30	DP	KON/FZ	AS LowNoise UT	**190570**	●
	Scoring sawblade	200x4,3/5,1x20	30	DP	KON/WZ	AS LowNoise UT	**190596**	●
	Main sawblade	370x4,4x30	72	HW	WZ	AS LowNoise UT	**059489**	●
	Main sawblade	350x4,4/3,2x30	54	HW	WZ		**059102**	●
	Main sawblade	350x4,4/3,2x30	72	HW	FZ/TR		**059252**	●
	Main sawblade	350x4,4x30	72	HW	TR/TR	RazorCut	**069109**	●
	Main sawblade	370x4,4/3,2x30	72	HW	FZ/TR	AS LowNoise UT	**059319**	●
	Main sawblade	370x4,4x30	72	HW	TR/TR	RazorCut	**069112**	●
	Main sawblade	370x4,4x30	54	HW	WZ	AS LowNoise UT	**059488**	●
Schelling – FW, AW, AK	Scoring sawblade	200x4,3/4,5x20	24	HW	KON/WZ		**061522**	●
	Scoring sawblade	200x4,4/3,5x20	34	HW	KON/WZ		**061479**	●
	Scoring sawblade	200x4,3/5,1x20	30	DP	KON/FZ	AS LowNoise UT	**190570**	●
	Scoring sawblade	200x4,3/5,1x20	30	DP	KON/WZ	AS LowNoise UT	**190596**	●
	Main sawblade	400x4,4/3,2x30	60	HW	WZ		**059105**	●
	Main sawblade	400x4,4/3,2x30	72	HW	FZ/TR		**059256**	●
	Main sawblade	400x4,4x30	72	HW	TR/TR	RazorCut	**069115**	●
	Main sawblade	430x4,4x30	72	HW	TR/TR	RazorCut	**069119**	●
Schelling – AL	Scoring sawblade	200x4,4/3,5x20	34	HW	KON/WZ		**061479**	●
	Scoring sawblade	200x4,3/4,5x20	24	HW	KON/WZ		**061522**	●
	Scoring sawblade	200x4,3/5,1x20	30	DP	KON/FZ	AS LowNoise UT	**190570**	●
	Scoring sawblade	200x4,3/5,1x20	30	DP	KON/WZ	AS LowNoise UT	**190596**	●
	Main sawblade	450x4,4x30	72	HW	WZ		**059433**	●
	Main sawblade	450x4,4x30	72	HW	FZ/TR		**059553**	●
	Main sawblade	450x4,4x30	72	HW	TR/TR	RazorCut	**069122**	●
Schelling – FH 6, FM 6, FK 6	Scoring sawblade	200x4,4/3,5x20	34	HW	KON/WZ		**061479**	●
	Scoring sawblade	200x4,3/4,5x20	24	HW	KON/WZ		**061522**	●
	Scoring sawblade	200x4,3/5,1x20	30	DP	KON/FZ	AS LowNoise UT	**190570**	●
	Scoring sawblade	200x4,3/5,1x20	30	DP	KON/WZ	AS LowNoise UT	**190596**	●
	Main sawblade	460x4,4x30	48	HW	WZ	AS LowNoise UT	**059494**	●
	Main sawblade	460x4,4x30	72	HW	WZ	AS LowNoise UT	**059495**	●
	Main sawblade	460x4,4/3,2x30	72	HW	FZ/TR		**059303**	●

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Machine – Type	Tool Type	ABM mm	Z	QAL	ZF	System	ID	
Schelling – FL	Scoring sawblade	200x4,4/3,5x20	34	HW	KON/WZ		**061479**	
	Scoring sawblade	200x4,3/4,5x20	24	HW	KON/WZ		**061522**	
	Scoring sawblade	200x4,3/5,1x20	30	DP	KON/FZ	AS LowNoise UT	**190570**	
	Scoring sawblade	200x4,3/5,1x20	30	DP	KON/WZ	AS LowNoise UT	**190596**	
	Main sawblade	480x4,4/3,2x30	72	HW	WZ		**059481**	
	Main sawblade	480x4,4x30	72	HW	FZ/TR		**059679**	
Schelling – FH 8, FM 6+	Scoring sawblade	200x4,4/3,5x20	34	HW	KON/WZ		**061479**	●
	Scoring sawblade	200x4,3/4,5x20	24	HW	KON/WZ		**061522**	●
	Scoring sawblade	200x4,3/5,1x20	30	DP	KON/FZ	AS LowNoise UT	**190570**	●
	Scoring sawblade	200x4,3/5,1x20	30	DP	KON/WZ	AS LowNoise UT	**190596**	●
	Scoring sawblade	200x5,2x40	30	HW	KON/WZ		**061571**	●
	Main sawblade	520x4,4x30	72	HW	WZ	AS LowNoise UT	**059497**	●
	Main sawblade	520x4,4x30	72	HW	FZ/TR		**059690**	●
	Main sawblade	520x4,8x30	72	HW	TR/TR	RazorCut	**069139**	●
Schelling – FP	Scoring sawblade	200x5,2/3,5x20	24	HW	KON/WZ		**061501**	●
	Main sawblade	530x5,2x30	60	HW	FZ/TR		**059287**	●
	Main sawblade	530x5,2/3,5x30	60	HW	WZ		**059444**	●
Schelling – AS	Scoring sawblade	200x6,2/4,5x20	36	HW	KON/WZ		**061546**	●
	Scoring sawblade	220x6,5/4,5x20	36	HW	KON/WZ		**061560**	●
	Main sawblade	680x6,2x40	60	HW	WZ		**059398**	●
	Main sawblade	680x6,2x40	60	HW	FZ/TR		**059394**	●
	Main sawblade	720x6,5x40	60	HW	FZ/TR		**059396**	●
Scheer – PA 6000/5500	Scoring sawblade	200x4,4/3,5x30	34	HW	KON/WZ		**061489**	●
	Scoring sawblade	200x4,3/5,1x30	30	DP	KON/WZ	AS LowNoise UT	**190597**	□
	Scoring sawblade	200x4,3/5.1x30	30	DP	KON/FZ	AS LowNoise UT	**190571**	●
	Main sawblade	350x4,4/3,2x30	72	HW	FZ/TR		**059252**	●
	Main sawblade	350x4,4x30	72	DP	FZ/TR	AS LowNoise UT	**190606**	●
	Main sawblade	350x4,4x30	72	HW	FZ/TR	AS OptiCut UT	**069018**	●
	Main sawblade	350x4,4x30	64	HW	WZ/FA	AS LowNoise foil	**065345**	●
	Main sawblade	350x4,4x30	72	HW	TR/TR	RazorCut	**069109**	●
	Main sawblade	350x4,4x30	72	HW	WZ	AS LowNoise UT	**059486**	●
	Main sawblade	350x4,4x30	60	DP	WZ	AS LowNoise UT	**190610**	●
	Main sawblade	350x4,4x30	72	DP	WZ	AS LowNoise UT	**190611**	●
Scheer – PA 7000	Postf. scoring sawblade	450x4,8x30	72	HW	FZ/TR		**061616**	●
Scheer – FM 14	Scoring sawblade	200x4,4/3,5x30	34	HW	KON/WZ		**061489**	●
	Scoring sawblade	200x4,3/5,1x30	30	DP	KON/WZ	AS LowNoise UT	**190597**	□
	Scoring sawblade	200x4,3/5.1x30	30	DP	KON/FZ	AS LowNoise UT	**190571**	●
	Main sawblade	400x4,4/3,2x30	72	HW	FZ/TR		**059256**	●
	Main sawblade	400x4,4x30	72	DP	FZ/TR	AS LowNoise UT	**190608**	●
	Main sawblade	400x4,4x30	72	HW	FZ/TR	AS OptiCut UT	**069017**	●
	Main sawblade	400x4,4x30	72	HW	WZ/FA	AS LowNoise foil	**065346**	●
	Main sawblade	400x4,4x30	72	HW	TR/TR	RazorCut	**069115**	●
	Main sawblade	400x4,4/3,2x30	60	HW	WZ		**059105**	●
	Main sawblade	400x4,4x30	72	HW	WZ	AS LowNoise UT	**059492**	●
	Main sawblade	400x4,4x30	72	DP	WZ	AS LowNoise UT	**190613**	●
Scheer – FM 16/PA 4500	Scoring sawblade	200x3,2/2,5x30	60	HW	KON/WZ		**061549**	●
	Main sawblade	300x3,2x30	72	HW	FZ/TR		**061378**	●

Machine – Type	Tool Type	ABM mm	Z	QAL	ZF	System	ID	
SCM – Prima 50	Scoring sawblade	160x4,4/3,5x55	36	HW	KON/WZ		**061487**	●
	Scoring sawblade	160x4,3/5,1x55	30	DP	KON/FZ	AS LowNoise UT	**190566**	●
	Scoring sawblade	160x4,3/5,1x55	30	DP	KON/WZ	AS LowNoise UT	**190590**	□
	Main sawblade	300x4,4x80	48	HW	WZ		**059502**	□
	Main sawblade	300x4,4x80	60	DP	WZ	AS LowNoise UT	**190633**	□
	Main sawblade	300x4,4x80	60	HW	FZ/TR		**059503**	□
	Main sawblade	300x4,4/2,8x80	60	HW	FZ/TR	AS LowNoise foil	**065338**	●
	Main sawblade	300x4,4x80	60	HW	TR/TR	RazorCut	**069131**	□
	Main sawblade	300x4,4x80	60	DP	FZ/TR	AS LowNoise UT	**190646**	□
SCM – Impact 85 K	Scoring sawblade	160x4,4/3,5x55	36	HW	KON/WZ		**061487**	●
	Scoring sawblade	160x4,3/5,1x55	30	DP	KON/FZ	AS LowNoise UT	**190566**	●
	Scoring sawblade	160x4,3/5,1x55	30	DP	KON/WZ	AS LowNoise UT	**190590**	□
	Main sawblade	350x4,4x80	54	HW	WZ		**059504**	□
	Main sawblade	350x4,4x30	72	HW	WZ	AS LowNoise UT	**059486**	●
	Main sawblade	350x4,4x80	60	DP	WZ	AS LowNoise UT	**190634**	□
	Main sawblade	350x4,4x80	72	DP	WZ	AS LowNoise UT	**190635**	□
	Main sawblade	350x4,4/3,2x80	54	HW	FZ/TR		**059271**	●
	Main sawblade	350x4,4x80	72	HW	FZ/TR		**059691**	□
	Main sawblade	350x4,4/3,0x80	72	HW	FZ/TR	AS LowNoise foil	**065339**	●
	Main sawblade	350x4,4x80	72	HW	TR/TR	RazorCut	**069132**	□
	Main sawblade	350x4,4x80	60	DP	FZ/TR	AS LowNoise UT	**190647**	□
	Main sawblade	350x4,4x80	72	DP	FZ/TR	AS LowNoise UT	**190648**	□
SCM – Impact 105 C/D, Plus 105 C/D/P	Scoring sawblade	160x4,4/3,5x55	36	HW	KON/WZ		**061487**	●
	Scoring sawblade	160x4,3/5,1x55	30	DP	KON/FZ	AS LowNoise UT	**190566**	●
	Scoring sawblade	160x4,3/5,1x55	30	DP	KON/WZ	AS LowNoise UT	**190590**	□
	Main sawblade	380x4,4x80	72	HW	FZ/TR		**059701**	□
	Main sawblade	380x4,4x80	72	HW	TR/TR	RazorCut	**069137**	□
SCM – Plus 125 C/D/P	Scoring sawblade	160x4,4/3,5x55	36	HW	KON/WZ		**061487**	●
	Scoring sawblade	160x4,3/5,1x55	30	DP	KON/FZ	AS LowNoise UT	**190566**	●
	Scoring sawblade	160x4,3/5,1x55	30	DP	KON/WZ	AS LowNoise UT	**190590**	□
	Main sawblade	400x4,4x80	72	HW	WZ	AS LowNoise UT	**059506**	□
	Main sawblade	400x4,4x80	72	DP	WZ	AS LowNoise UT	**190636**	□
	Main sawblade	400x4,4/3,2x80	80	HW	FZ/TR		**059454**	●
	Main sawblade	400x4,4/3,0x80	72	HW	FZ/TR	AS LowNoise foil	**065340**	●
	Main sawblade	400x4,4x80	72	HW	TR/TR	RazorCut	**069133**	□
	Main sawblade	400x4,4x80	72	DP	FZ/TR	AS LowNoise UT	**190649**	□
	Main sawblade	450x4,4x80	72	HW	WZ		**059507**	□
	Main sawblade	450x4,4x80	72	HW	FZ/TR		**059692**	□
	Main sawblade	450x4,4/3,0x80	72	HW	FZ/TR	AS LowNoise foil	**065341**	●
	Main sawblade	450x4,4x80	72	HW	TR/TR	RazorCut	**069134**	□
	Main sawblade	420x4,8x80	72	HW	FZ/TR		**059695**	□
Selco – EB 70 (L)	Scoring sawblade	200x4,4/3,5x65	36	HW	KON/WZ		**061505**	●
	Scoring sawblade	300x4,4/3,5x65	72	HW	KON/WZ		**061529**	●
	Postf. scoring sawblade	300x4,55x65	72	HW	WZ/FA		**059189**	●
	Main sawblade	300x4,4/3,0x65	60	HW	FZ/TR		**059667**	●
	Main sawblade	300x4,4x65	60	HW	TR/TR	RazorCut	**069105**	●
	Main sawblade	300x4,4x65	48	HW	WZ		**059516**	□
Selco – EB 70 (kit 80), 75, 80	Scoring sawblade	200x4,4/3,5x65	36	HW	KON/WZ		**061505**	●
	Scoring sawblade	300x4,4/3,5x65	72	HW	KON/WZ		**061529**	●
	Postf. scoring sawblade	300x4,55x65	72	HW	WZ/FA		**059189**	●
	Main sawblade	320x4.4x65	60	HW	FZ/TR		**059682**	●
	Main sawblade	320x4,4x65	60	HW	FZ/TR	AS LowNoise UT	**059696**	□
	Main sawblade	320x4,4x65	60	HW	TR/TR	RazorCut	**069136**	□

● available ex stock
□ available at short notice
Instruction manual visit www.leitz.org

Machine – Type	Tool Type	ABM mm	Z	QAL	ZF	System	ID	
Selco – EB 90	Scoring sawblade	200x4,4/3,5x65	36	HW	KON/WZ		**061505**	●
	Scoring sawblade	300x4,4/3,5x65	72	HW	KON/WZ		**061529**	●
	Postf. scoring sawblade	300x4,55x65	72	HW	WZ/FA		**059189**	●
	Main sawblade	355x4,4x80	72	HW	TR/TR	RazorCut	**069111**	●
	Main sawblade	355x4,4x80	72	HW	WZ		**059517**	□
Selco – EB 95	Scoring sawblade	200x4,4/3,5x65	36	HW	KON/WZ		**061505**	●
	Scoring sawblade	300x4,4/3,5x65	72	HW	KON/WZ		**061529**	●
	Postf. scoring sawblade	300x4,55x65	72	HW	WZ/FA		**059189**	●
	Main sawblade	355x4,4x65	72	HW	FZ/TR		**059700**	□
Selco – EB100	Scoring sawblade	200x4,4/3,5x65	36	HW	KON/WZ		**061505**	●
	Scoring sawblade	300x4,4/3,5x65	72	HW	KON/WZ		**061529**	●
	Postf. scoring sawblade	300x4,55x65	72	HW	WZ/FA		**059189**	●
	Main sawblade	360x4,4x65	72	HW	FZ/TR		**059697**	□
Selco – EB/EBT 110, 108, 120, WN 125, 200, WN 600/132, 512, WN 600/145, WN 600/162	Scoring sawblade	200x4,4/3,5x65	36	HW	KON/WZ		**061505**	●
	Scoring sawblade	300x4,4/3,5x65	72	HW	KON/WZ		**061529**	●
	Postf. scoring sawblade	300x4,55x65	72	HW	WZ/FA		**059189**	●
	Main sawblade	400x4,4/3,2x80	72	HW	FZ/TR		**059291**	●
	Main sawblade	400x4,4x80	72	HW	TR/TR	RazorCut	**069118**	□
	Main sawblade	400x4,4x80	72	HW	FZ/TR	AS LowNoise foil	**065355**	□
Selco – EB/EBT 120, WN 125	Scoring sawblade	200x4,4/3,5x65	36	HW	KON/WZ		**061505**	●
	Scoring sawblade	300x4,4/3,5x65	72	HW	KON/WZ		**061529**	●
	Postf. scoring sawblade	300x4,55x65	72	HW	WZ/FA		**059189**	●
	Main sawblade	430x4,4x80	72	HW	FZ/TR		**059698**	□
	Main sawblade	430x4,4x80	72	HW	FZ/TR	AS OptiCut UT	**069090**	●
	Main sawblade	430x4,4x80	72	HW	TR/TR	RazorCut	**069121**	●
	Main sawblade	430x4,4/3,2x80	72	HW	WZ		**059461**	●
Selco – WN 600/132, WN 200	Scoring sawblade	200x4,8/3,5x65	36	HW	KON/WZ		**061528**	●
	Scoring sawblade	200x4,7/5,5x65	30	DP	KON/WZ	AS LowNoise UT	**190601**	□
	Scoring sawblade	200x4,7/5,5x65	30	DP	KON/FZ	AS LowNoise UT	**190574**	●
	Postf. scoring sawblade	300x4,55x65	72	HW	WZ/FA		**059189**	●
	Main sawblade	450x4,8x80	72	HW	FZ/TR		**059699**	□
	Main sawblade	450x4,4x80	72	HW	FZ/TR	AS LowNoise foil	**065356**	□
	Main sawblade	450x4,4x80	72	HW	WZ		**059518**	□
Selco – WN 600/145, WN 512	Scoring sawblade	200x4,8/3,5x65	36	HW	KON/WZ		**061528**	●
	Scoring sawblade	200x4,7/5,5x65	30	DP	KON/WZ	AS LowNoise UT	**190601**	□
	Scoring sawblade	200x4,7/5,5x65	30	DP	KON/FZ	AS LowNoise UT	**190574**	●
	Postf. scoring sawblade	300x4,55x65	72	HW	WZ/FA		**059189**	●
	Main sawblade	480x4,8/3,5x80	72	HW	FZ/TR		**059307**	●
	Main sawblade	480x4,8x80	72	HW	TR/TR	RazorCut	**069127**	●
	Main sawblade	480x4,8x80	72	HW	WZ	AS LowNoise UT	**059496**	●

Working process

For splitting, mitre cutting and sizing. Spray lubrication recommended when machining non-ferrous metal profiles.

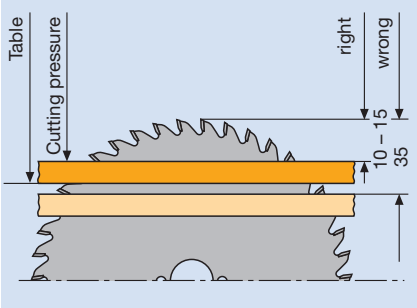
Workpiece materials

Non-ferrous and plastic profiles, composites, insulating material and aluminium compound materials.

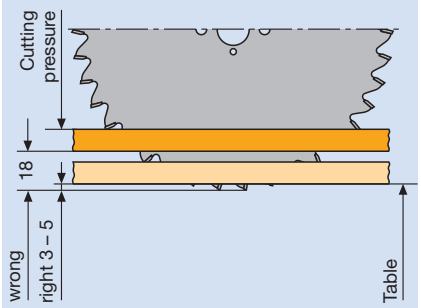
Machines

Splitting, trimming, mitre joint, double cross cutting and sizing machines.

Application

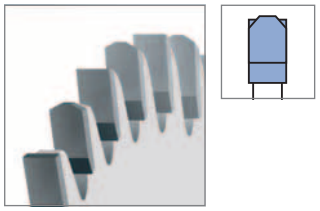


Positive cutting angle:
The positive cutting angle presses the workpiece onto the table.
For circular sawblades with the tooth shape FZ/TR and the spindle below the workpiece for cross and mitre cutting with material thickness > 2.5 mm.

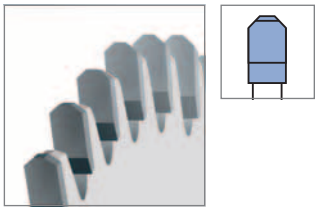


Negative cutting angle:
The negative cutting angle presses the workpiece onto the table.
For circular sawblades with the tooth shape FZ/TR and the spindle above the workpieces for cross and mitre cutting with material thickness < 2.5 mm.

Tooth shape



FZ/TR (square/trapezoidal teeth):
Tooth shape for non-ferrous metals and plastic profiles and boards.

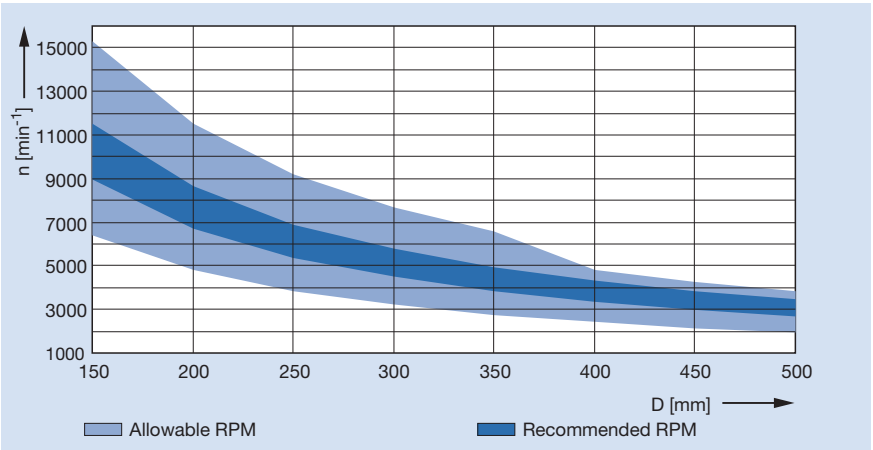


TR/TR (trapezoidal/trapezoidal teeth):
Tooth shape for better cutting quality with non-ferrous and plastic profiles.
If altered from the standard FZ/TR shape.

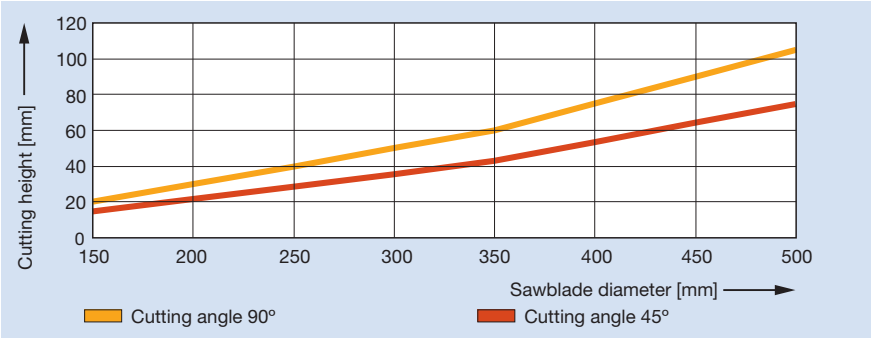
Recommended feed rate f_z (in mm)

$V_f = n \cdot Z \cdot f_z/1000$
Profile thickness < 2.5 mm, f_z = 0.02 – 0.05 mm
Profile thickness > 2.5 mm, f_z = 0.05 – 0.15 mm

RPM diagram

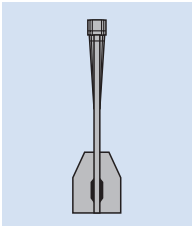


Cutting height diagram

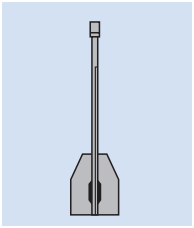


Mitre cut –
the cutting height depends on the sawblade diameter D and the cutting angle.

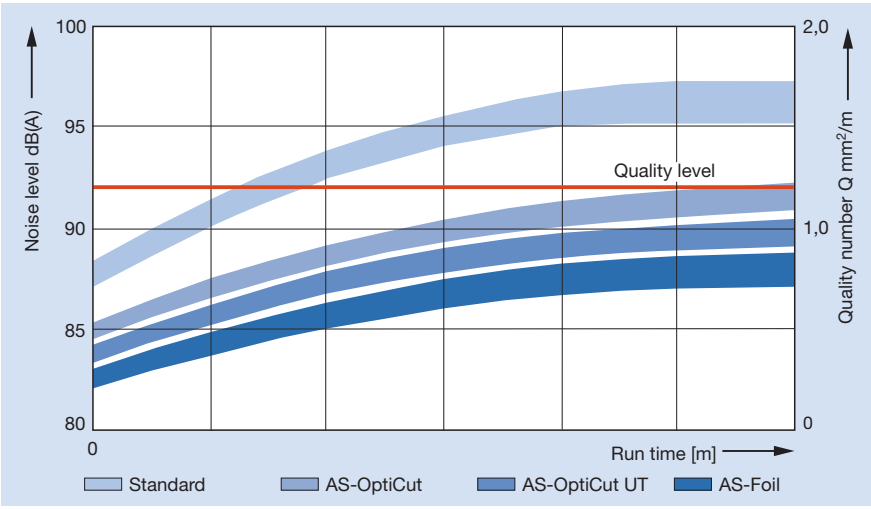
Low noise sawblades



Sawblade without noise damping.

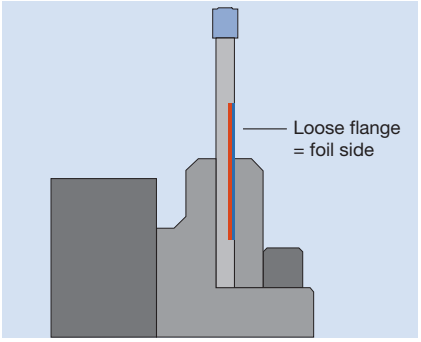


Sawblade with laminated noise damping.



Comparison of the noise reduction of different designs of sawblades and edge quality Q depending on the run time.

Advantages of low noise sawblades

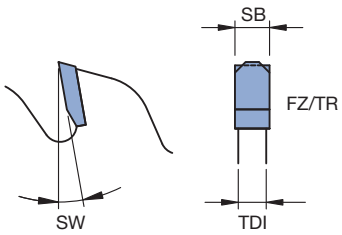


Determination of the foil side

- Optimum noise reduction.
- Longer performance time from vibration damping.
- High cut quality, less wear and down time.
- Quiet running because of the high stability of the tool body.
- Reduced noise level of up to 10 dB(A) – 50% noise reduction – compared to standard sawblades.
- Increase in noise level due to blunting hardly noticeable.
- Better operator working conditions from lower noise exposure.
- Can be resharpened on all popular makes of automatic saw sharpening machines.
- Note: Choose the sawblade so the foil is on the side of the workpiece not under pressure.

HW

Low Noise



Cross cut and mitre sawblades - hollow profile from below - *Excellent*

Application:
For noise reduced cutting, mitre cutting and sizing. Spray lubrication is recommended when machining non-ferrous parts.

Machine:
Circular sawing machines for cross cutting, trimming, mitre cutting, double cross cutting and sizing.

Workpiece material:
Non-ferrous and plastic profiles (wall thickness > 5 mm), polymer material boards (Corian, Varicor, Noblan etc.) up to 20 mm thickness.

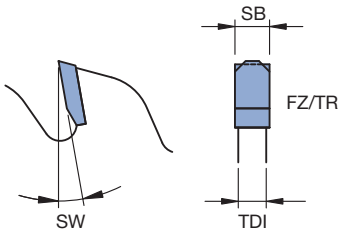
Technical information:
AS LowNoise foil design - noise reduction during operation of up to 10 dB(A). Vibration damped tool body with steel foil.

Circular sawblades - AS LowNoise foil - wall thickness > 5 mm
WK 372-3

D mm	SB mm	TDI mm	BO mm	Dampfoil	Z	ZF	SW Degree	WSS	ID	
300	3,5	2,8	30	left	72	FZ/TR	5		**065950**	●
300	3,5	2,8	30	right	72	FZ/TR	5		**065332**	●
350	3,5	2,8	30	left	84	FZ/TR	5		**065951**	●
350	3,5	2,8	30	right	84	FZ/TR	5		**065333**	●

● available ex stock
□ available at short notice
Instruction manual visit www.leitz.org

HW



wigo Cross cut and mitre sawblades - hollow profiles from below

Application:
For cutting, mitre cutting and sizing. Spray lubrication is recommended when machining non-ferrous parts.

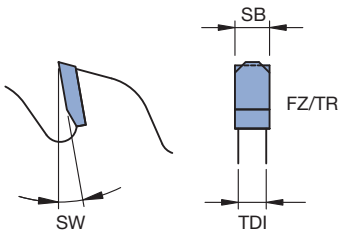
Machine:
Circular sawing machines for cross cutting, trimming, mitre cutting, double cross cutting and sizing and panel sizing systems.

Workpiece material:
Non-ferrous and plastic profiles (wall thickness > 5 mm), polymer material boards (Corian, Varicor, Noblan etc.) and non-ferrous panels up to 20 mm thickness.

Technical information:
Reinforced tool body for higher, single side stress resistance. Tool body tooth shape in noise reduced design.

Circular sawblades - wall thickness > 5 mm
WK 452-2-36

Machine	D mm	SB mm	TDI mm	BO mm	NLA mm	Z	ZF	SW Degree	WSS	ID	
Ulmia	160	3,2	2,6	16		36	FZ/TR	5		**059856**	●
	180	3,2	2,6	16		42	FZ/TR	5		**059857**	●
Eisele Elu/DeWalt Eumenia Haffner	200	3,2	2,6	30		48	FZ/TR	5		**059860**	●
Makita	250	3,4	2,8	30		60	FZ/TR	5		**059884**	●
Eisele	275	3,4	2,8	40	2/9/55 4/12/64	72	FZ/TR	5		**059885**	●
	300	3,4	2,8	30		72	FZ/TR	5		**059886**	●
	350	3,4	2,8	30		84	FZ/TR	5		**059887**	●
Kaltenbach	370	3,8	3,2	50	4/15/80	96	FZ/TR	5		**059867**	●
Rapid	400	3,8	3,2	30		96	FZ/TR	5		**059854**	●
Kaltenbach	400	3,8	3,2	50	4/15/80	96	FZ/TR	5		**059870**	●
Rapid	420	3,8	3,2	30		96	FZ/TR	5		**059855**	●
Rapid	430	3,5	2,8	30		96	FZ/TR	5		**059871**	●
Eisele	450	4,0	3,4	40	2/12/80 4/12/64	100	FZ/TR	5		**059872**	●
Rapid	500	4,4	3,8	30		120	FZ/TR	5		**059874**	●
	550	4,4	3,8	30		120	FZ/TR	5		**059891**	●



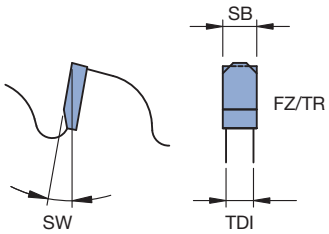
Workpiece material:
Non-ferrous profiles and plastic profiles (wall thickness 2.00 to 5 mm), polymer material boards (Corian, Varicor, Noblan etc.) up to 12 mm thickness.

Technical information:
Tool body tooth shape in noise reduced design.

Circular sawblades - wall thickness 2-5 mm
WK 452-2, WK 452-2-37

Machine	D mm	SB mm	TDI mm	BO mm	Z	ZF	SW Degree	WSS	ID	
Elektra Beckum, Elu/DeWalt Haffner, Mafell Makita, Metabo PHM, Rapid Scheppach	250	3,2	2,6	30	80	FZ/TR	5		**059950**	●
	300	3,2	2,6	30	96	FZ/TR	5		**059951**	●

Machine	D mm	SB mm	TDI mm	BO mm	Z	ZF	SW Degree	WSS	ID	
Rapid	320	3,2	2,6	30	84	FZ/TR	5	■■	**059960**	●
Rapid	350	3,2	2,6	30	108	FZ/TR	5	■■	**059952**	●
Rapid	370	3,8	3,2	30	96	FZ/TR	5	■■	**059964**	●
	450	3,8	3,2	32	96	FZ/TR	5	■■	**059966**	●



Cross cut and mitre sawblades - hollow profile from above

Application:
For cutting and mitre cutting. Spray lubrication is recommended when machining non-ferrous parts. The negative hook angle is suited to cutting from above.

Machine:
Circular sawing machines for cross cutting, trimming, mitre cutting and double cross cutting.

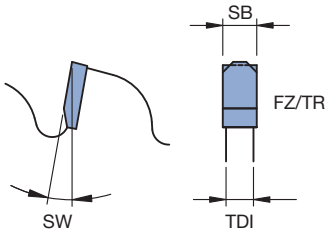
Workpiece material:
Non-ferrous profiles and plastic profiles (wall thickness > 5 mm).

Technical information:
The negative hook angle is suited for cutting from above. Reinforced tool body for higher, single side stress resistance. Tool body tooth shape in noise reduced design.

Circular sawblades - wall thickness > 5 mm
WK 462-2-36

Machine	D mm	SB mm	TDI mm	BO mm	NLA mm	Z	ZF	SW Degree	WSS	ID	
	180	3,2	2,6	30		42	FZ/TR	-5	■■	**060114**	●
Elek. Beckum, Elu/DeWalt Mafell, Makita Metabo, PHM Scheppach	250	3,4	2,8	30		60	FZ/TR	-5	■■	**060134**	●
	250	3,4	2,8	32		60	FZ/TR	-5	■■	**060136**	●
	275	3,4	2,8	40	2/10/55	72	FZ/TR	-5	■■	**060137**	●
	300	3,4	2,8	30		72	FZ/TR	-5	■■	**060138**	●
	300	3,4	2,8	32		72	FZ/TR	-5	■■	**060139**	●
Elu/DeWalt	330	3,4	2,8	32	2/8/45	68	FZ/TR	-5	■■	**060140**	●
Haffner	350	3,4	2,8	30		84	FZ/TR	-5	■■	**060141**	●
	350	3,8	3,2	30		84	FZ/TR	-5	■■	**060106**	●
	350	3,8	3,2	32		84	FZ/TR	-5	■■	**060107**	●
	350	3,8	3,2	40	2/10/55 2/11/63	84	FZ/TR	-5	■■	**060108**	●
Elu/DeWalt	370	3,8	3,2	30		84	FZ/TR	-5	■■	**060127**	●
	400	3,8	3,2	30		96	FZ/TR	-5	■■	**060110**	●
Eisele	400	3,8	3,2	40	2/12/80 4/12/64	96	FZ/TR	-5	■■	**060111**	●
Kaltenbach	400	3,8	3,2	50	4/15/80	96	FZ/TR	-5	■■	**059883**	●

● available ex stock
□ available at short notice
Instruction manual visit www.leitz.org



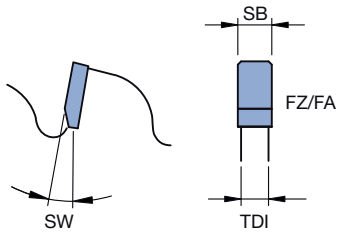
Workpiece material:
Non-ferrous profiles and plastic profiles (wall thickness 2.00 to 5.00 mm).

Technical information:
The negative hook angle is suited to cutting from above. Tool body tooth shape in noise reduced design.

Circular sawblades - wall thickness 2-5 mm
WK 462-2, WK 462-2-37

Machine	D mm	SB mm	TDI mm	BO mm	NLA mm	Z	ZF	SW Degree	WSS	ID	
Ulmia	160	2,8	2,2	16		42	FZ/TR	-5	■■	**060272**	●
Fezer	200	3,2	2,6	18		80	FZ/TR	-5	■■	**060261**	●
Ulmia	200	3,2	2,6	30		60	FZ/TR	-5	■■	**060270**	●
Haffner Reich	220	3,2	2,6	30		72	FZ/TR	-5	■■	**060271**	●
Elek. Beckum, Elu/DeWalt Mafell, Metabo PHM, Scheppach	250	3,2	2,6	30		80	FZ/TR	-5	■■	**060250**	●
Elu/DeWalt Fezer	250	3,2	2,6	32	2/8/45	80	FZ/TR	-5	■■	**060251**	●
Elek. Beckum, Elu/DeWalt Fezer, Lurem Rapid, Scheppach Ulmia	300	3,2	2,6	30		96	FZ/TR	-5	■■	**060252**	●
Fezer Rapid Ulmia	300	3,2	2,6	30		120	FZ/TR	-5	■■	**060267**	●
	300	3,2	2,6	32		96	FZ/TR	-5	■■	**060253**	●
Haffner	330	3,2	2,6	30		96	FZ/TR	-5	■■	**060268**	●
	330	3,2	2,6	32		96	FZ/TR	-5	■■	**060259**	●
Haffner Ulmia	350	3,2	2,6	30		108	FZ/TR	-5	■■	**060255**	●
Graule	350	3,6	3,0	40	2/9/55 4/12/64	108	FZ/TR	-5	■■	**060269**	●
	400	3,8	3,2	32	2/11/63	96	FZ/TR	-5	■■	**069929**	●
Elu/DeWalt MGS	420	3,8	3,2	30		108	FZ/TR	-5	■■	**060257**	●
	420	3,8	3,2	32		108	FZ/TR	-5	■■	**069927**	●
Rapid	450	3,8	3,2	30		108	FZ/TR	-5	■■	**060258**	●

HW



Cross cut and mitre sawblades - hollow profile from above

Application:
For cutting and mitre cutting with reduced cutting width. Spray lubrication is recommended when machining non-ferrous parts. The negative hook angle suited to cutting from above.

Machine:
Circular sawing machines for cross cutting, trimming, mitre cutting and double cross cutting.

Workpiece material:
Non-ferrous profiles and plastic profiles (wall thickness 1.0 to 2.0 mm).

Technical information:
The negative hook angle is suited to cutting from above. Reduced cutting width and tool body thickness. Tool body tooth shape in noise reduced design. Increased cutting performance by tool body special coating.

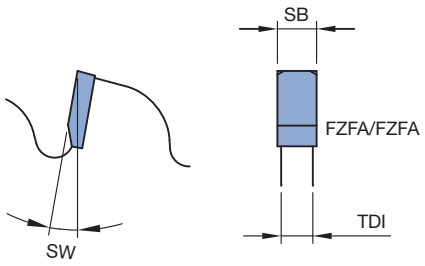
Circular sawblades - wall thickness 1,0 - 2,0 mm
WK 467-2

D mm	SB mm	TDI mm	BO mm	NLA mm	Z	ZF	SW Degree	WSS	ID	
200	1,8	1,4	20	2/10/60	80	FZFA/FZFA	-5	■■	**060274**	●
250	2,0	1,6	30	2/ 7/42	100	FZFA/FZFA	-5	■■	**060275**	●
300	2,2	1,8	30	2/ 9/46	120	FZFA/FZFA	-5	■■	**060276**	●

● available ex stock
□ available at short notice
Instruction manual visit www.leitz.org



HW



Sizing in finish cut quality - *Excellent*

Application:
For noise reduced sizing and cross cutting. Finish cut quality suitable for subsequent polishing after machining acrylic glass.

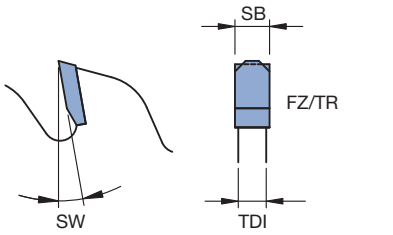
Machine:
Table saws and circular sawing machines for sizing.

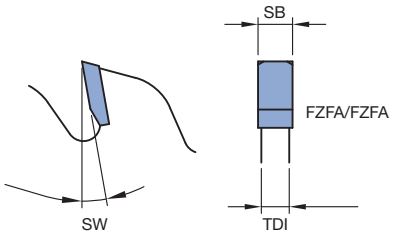
Workpiece material:
Plastics (transparent thermoplastics, e.g. PMMA, PC), plastic/aluminium composte materials (e.g. Alucobond).

Technical information:
GlossCut design - noise reduction during free running by up to 4 dB(A). Tool body with vibration damping laser ornaments and special tooth geometry.

Circular sawblades - GlossCut
WK 377-2

D mm	SB mm	TDI mm	BO mm	NLA mm	Z	ZF	SW Degree	WSS	ID	
300	3,0	2,4	30	2/7/42 2/10/60	60	FZFA/FZFA	-5	■■	**761033**	●
300	3,0	2,4	30	2/7/42 2/10/60	96	FZFA/FZFA	-5	■■	**761034**	●
350	3,0	2,4	30	2/7/42 2/10/60	96	FZFA/FZFA	-5	■■	**761035**	●





Sizing cuts

Application:
For sizing. Spray lubrication is recommended when machining non-ferrous parts.

Machine:
Panel sizing systems.

Workpiece material:
Non-ferrous boards and non-ferrous sheet metal stacks up to 150 mm thickness.

Technical information:
Reinforced tool body for higher, single side stress resistance. **AS LowNoise foil UT** design - noise reduction during operation by up to 10 dB(A). Vibration damped composite tool body with steel foil and irregular tooth pitch.

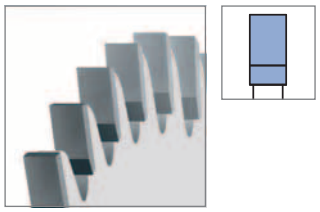
Circular sawblades - 150 mm cutting height
WK 452-2, WK 457-2, WK 472-2

Machine	D mm	SB mm	TDI mm	BO mm	NLA mm	Type	Z	ZF	SW Degree	WSS	ID	
Schelling	450	4,4	3,5	30	2/13/94		60	FZ/TR	10	■	**059888**	●
Schelling	620	5,5	4,5	40	2/13/114 2/13/140		36	FZFA/ FZFA	10	■	**059889**	●
Schelling	620	5,5	4,5	40	2/13/114 2/13/140	AS foil UT	60	FZ/TR	5	■	**059890**	●

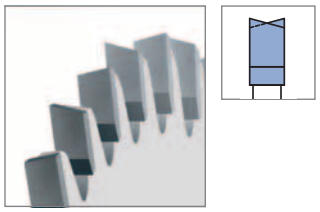
● available ex stock
□ available at short notice
Instruction manual visit www.leitz.org

Application	Multi purpose applications in solid wood and wood derived materials.
Workpiece material	Solid wood, coated and uncoated timber products, glulam.
Machine	Table saws, portable saws, cross cut saws.

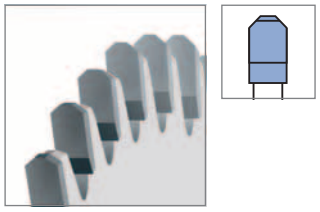
Tooth shape



FZ (square teeth):
Multi purpose tooth shape, suited for cutting along grain in wet and dry wood.

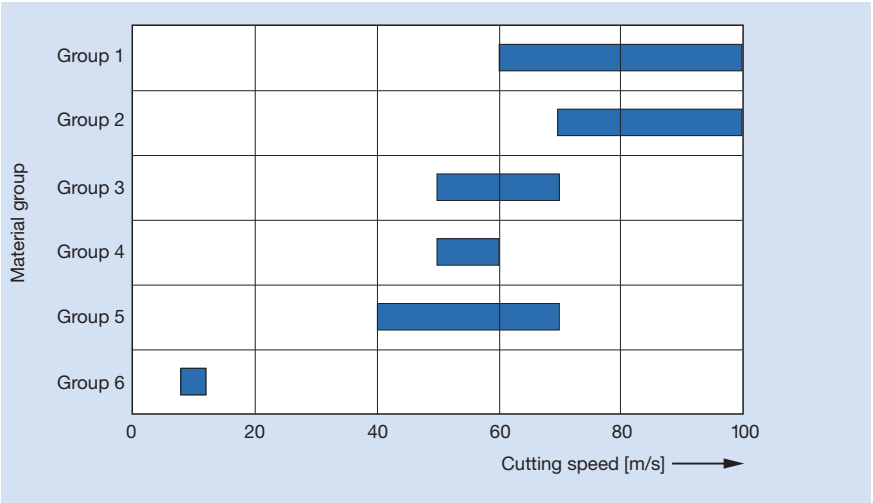


WZ (alternative top bevel teeth):
Multi purpose tooth shape, economical to purchase and maintain – medium cut quality.

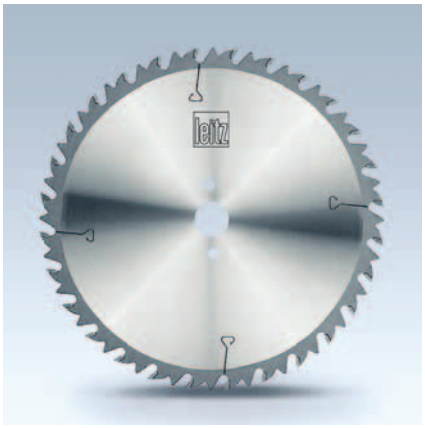


TR (trapezoidal teeth): Stable tooth shape, suitable for use on construction sites and when cutting contaminated materials (e. g. wood with concrete, etc.).

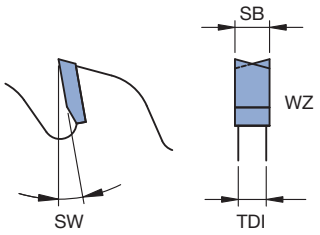
Cutting speeds



Group 1: Solid wood, uncoated, veneered, synthetic and HPL coated chipboard and fibre materials and cement compound wood derived materials, cast aluminium alloys and glulam.
Group 2: Hard paper.
Group 3: Plaster material.
Group 4: Thermoplastic.
Group 5: Duro plastic.
Group 6: Fibre cement board.



HW



Universal sizing cuts

Application:
For multi purpose application.

Machine:
Table saws, circular sawing machines for trimming, cross cutting and sizing.

Workpiece material:
Softwood and hardwood, wet and dry, uncoated wood derived materials.

Technical information:
Tool body's tooth shape with chip thickness limitation.

Circular sawblades
WK 150-4, WK 150-4-GA

D mm	SB mm	TDI mm	BO mm	NLA mm	Z	ZF	SW Degree	WSS	ID	
190	3,4	2,2	30		20	WZ	20	■■	**057120**	●
250	3,2	2,2	30		24	WZ	20	■■	**057123**	●
300	3,2	2,2	30	2/10/60	28	WZ	20	■■	**057125**	●
350	3,2	2,2	30	2/10/60	32	WZ	20	■■	**069525**	●
400	4,0	2,8	30	2/10/60	36	WZ	20	■■	**057128**	●
450	4,0	2,8	30	2/10/60	42	WZ	20	■■	**057129**	●
500	4,4	2,8	30		48	WZ	20	■■	**057130**	●
550	4,4	3,0	30		54	WZ	20	■■	**057131**	●

Sizing solid wood - length cut

Application:
For cutting along grain.

Machine:
Circular table saws.

Workpiece material:
Softwood and hardwood, dry up to 15 % wood moisture content and plastomers*.

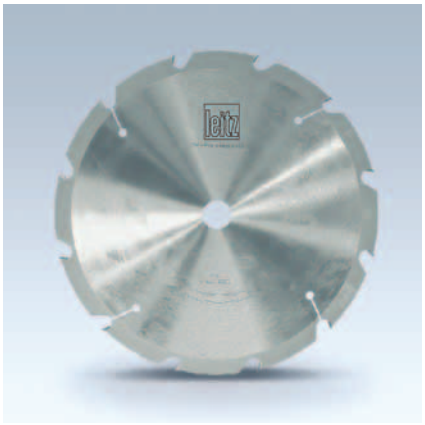
Technical information:
Tool body's tooth shape with chip thickness limitation. Low feed forces for high cutting heights. High hook angle.

Circular sawblades with chip thickness limitation
WK 100-4-01, WK 100-4-02, WK 100-3-01

D mm	SB mm	TDI mm	BO mm	NLA mm	Z	ZF	SW Degree	WSS	ID	
250	3,2	2,2	30		18	FZ	20	■■	**057050**	●
300	3,5	2,4	30	2/10/60	14	FZ	20	■■	**057000**	●
300	3,5	2,4	30	2/10/60	20	FZ	20	■■	**057051**	●
350	3,5	2,4	30		12	FZ	20	■■	**066261**	●
350	3,5	2,4	30	2/10/60	16	FZ	20	■■	**057001**	●
350	3,5	2,4	30	2/10/60	24	FZ	20	■■	**057052**	●
400	4,0	2,8	30		14	FZ	20	■■	**066262**	●
400	4,0	2,8	30	2/10/60	18	FZ	20	■■	**057002**	●
400	4,0	2,8	30	2/10/60	28	FZ	20	■■	**057053**	●
450	4,0	2,8	30	2/10/60	20	FZ	20	■■	**057003**	●
450	4,0	2,8	30	2/10/60	34	FZ	20	■■	**057054**	●
500	4,4	2,8	30		36	FZ	20	■■	**057055**	●

* The tooth shape FZ/TR recommended for cutting plastomers.

● available ex stock
□ available at short notice
Instruction manual visit www.leitz.org



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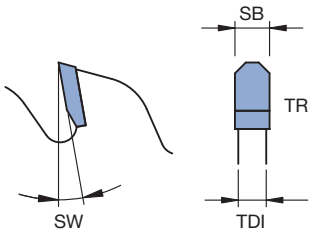


Universal sizing cuts

Application:
For universal and robust use on building sites.

Machine:
Circular sawing machines in the building industry.

Workpiece material:
Panels and timbers with small concrete and metal inclusions, wood wool (e.g. Heraklith), gypsum plasterboard and form work panel of veneer, gas aerated slabs, Styrodur slabs, roundwood and squared timbers.

Technical information:
Tool body tooth shape round, close and stable for the tough requirements in construction industy.

Circular sawblades
WK 903-3

Machine	D mm	SB mm	TDI mm	BO mm	Z	ZF	SW Degree	WSS	ID
Avola	300	3,2	2,2	30	20	TR	12	■■■■	**060309** ●
Avola	315	3,2	2,2	30	28	TR	12	■■■■	**060310** ●
Avola	350	3,5	2,5	30	24	TR	12	■■■■	**060311** ●
Avola Elektra Beckum Mafell Scheppach	400	3,8	2,8	30	28	TR	12	■■■■	**060312** ●
Avola Elektra Beckum Mafell	450	4,0	3,0	30	32	TR	12	■■■■	**060313** ●
Avola Scheppach	500	4,0	3,0	30	36	TR	12	■■■■	**060314** ●

DP

Cutting to size fibre cement building slabs and front panels DP

Application:
For cutting and sizing.

Machine:
Portable circular sawing machines, sizing sawing machines and radial cross cutting sawing machines.

Workpiece material:
Fibre cement building slabs and front panels.

Technical information:
Stabilised, low vibration tool body, stable tool body tooth shape. The tool body with diameter 160 mm has 4 internal cooling slots. Diamaster PRO version with 4.5 mm tip height.

Circular sawblades - Diamaster PRO
WK 808-2-DP

D mm	SB mm	TDI mm	BO mm	Z	ZF	WSS	ID
160	3,2	2,4	20	4	P	■	**190302** ●
190	3,2	2,4	20	4	P	■	**190303** ●
225	3,2	2,4	30	6	P	■	**190304** ●
300	3,2	2,4	30	6	P	■	**190305** ●

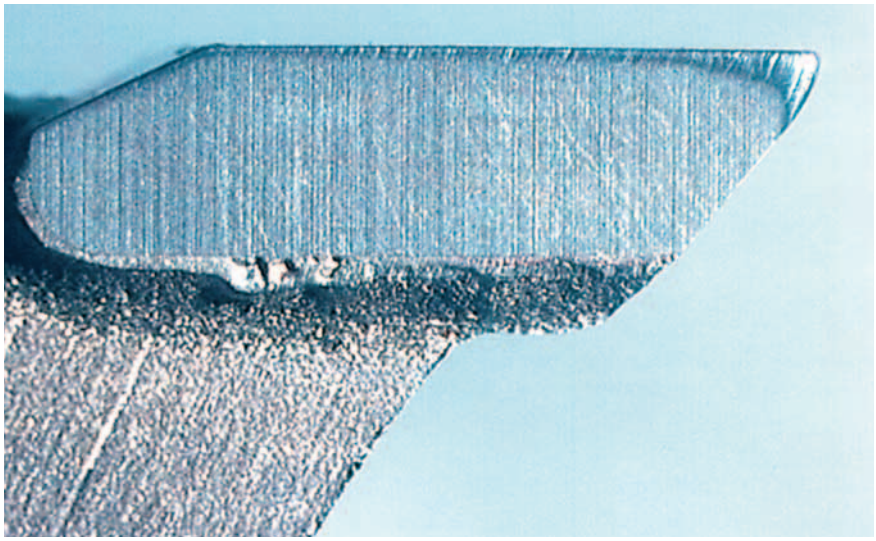
	Possible cause	Action
Sawblade wobbles	– Thickness of tool is too low.	Select a sawblade with a larger kerf or a smaller diameter or increase flange diameter.
	– Insufficient tooth projection over tool body (sawblade jams in the cut, runs hot, tension lost).	Select a sawblade with a higher lateral tooth projection.
	– Resin/chips on the flanges.	Clean flanges.
	– Flange run out tolerance too high.	Check and correct flange.
	– Defective motor spindle bearing.	Replace motor spindle bearing.
	– Tooth pitch and gullet too small.	Select a sawblade with a higher tooth pitch.
	– Unbalanced sawblade.	Balance the sawblade.
	– Blunt cutting edges.	Resharpen the sawblade.
	– Wrong sawblade tensioning.	Correct sawblade tensioning.
Wavy cut	– Irregular tooth pitch or one sided cut.	Correct sharpening machine adjustment, resharpen the sawblade.
	– Irregular tooth thickness.	Check and correct sawblade kerf.
	– Sawblade is blunt resin build up.	Clean and resharpen the sawblade.
	– Position of fence not parallel to feed direction.	Check and adjust position.
	– One sided load from edge cutting.	Use edging sawblades (hogger).
	– Cutting speed too low.	Select a larger sawblade diameter or increase RPM.
	– Wrong sawblade tensioning.	Correct sawblade tensioning.
Jamming of sawblade in cut	– Slot in saw bed is too big, insufficient chip flow, causing jamming between the saw and slot.	Replace saw bed.
	– Riving knife width is too thin.	Replace riving knife.
	– Gullet too small.	Select sawblade with larger gullet.
Curved cut when double edging	– Sawblades sharpened one sided.	Resharpen sawblade (correct kerf of sawblade and sharpening machine adjustment).
	– Resin and glue on rollers.	Clean and, if necessary, resharpen rollers.
	– Differences in wood thickness.	Improvements necessary at customer.
	– Too high cutting forces on one side.	Optimise cutting force division.
	– Worn conveyor belt guide.	Check and adjust chain guide.
	– Short and uneven workpieces.	Comply with minimum workpiece length required by the machine manufacturer‘s instructions.
	– When machining short workpieces and when transporting piece by piece.	Pay attention to angular cut off work pieces.

Problem	Possible cause	Action
Exceeded tolerances of horizontally cut lamellas	– Sawblade tensioning not suitable for horizontal application.	Check the sawblade tensioning.
	– High resin build up on tool, tool runs very hot from friction in cut.	Clean sawblades and check if blunt.
	– Thickness and position of riving knife not adjusted to the dimensions of strips and the sawblade kerf.	Use riving knife dimension matching the sawblade kerf. Adjust riving knife spacing to correspond to the thickness of strips.
Tear outs in workpieces coated on both sides when machining without scoring saw	– Sawblade projection over workpiece too small or too big.	Check and adjust sawblade projection.
	– Tooth shape or number of teeth not suitable for the application.	Select a sawblade suitable for the application.
	– Concentric running tolerances of the sawblade too high.	Have the sawblade checked by Leitz service.
	– The flange used on the machine does not correspond to the guidelines for flange diameter and concentric running tolerances.	Check flanges and, if necessary, clean them. If there is a wrong ratio of sawblade diameter to flange diameter, adjust accordingly.
Tear outs on the panel coating when cutting in stacks	– Tool is blunt.	Resharpen main sawblade.
	– Pressure beam cannot press evenly on uneven workpieces.	Check pressing force of pressure beam.
Tear outs where the tool leaves the workpiece when cutting in stacks	– The kerf of the scoring sawblade is too small for the main sawblade in use.	Adjust kerf of scoring sawblade to main sawblade accordingly.

Rounding of cutting edge
Mechanical and chemical wear cause rounding of main and minor cutting edges of a saw tooth.

In wet solid wood (e.g. green wood) chemical wear is approximately the same as mechanical wear.

When using tungsten carbide grades with special binding agents, chemical wear can be reduced. In the woodworking sector, dry wood is machined and mechanical wear dominates.

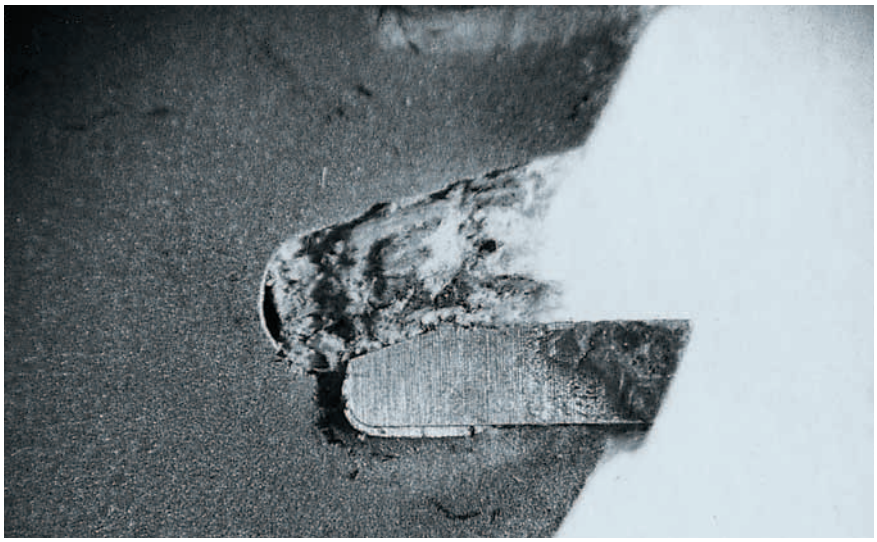


Worn HW saw tooth.

Cutting edge chips and cutting edge fracture
Hard foreign objects in the workpiece cause cutting edge chips and a deterioration of cut quality as well as increased shear forces. Mineral particles in wood derived materials are often the reason for cutting edge chips.

Saw teeth and pieces of the saw body can break off when, due to blunt cutting edges, the feed rate and cutting forces increase considerably.

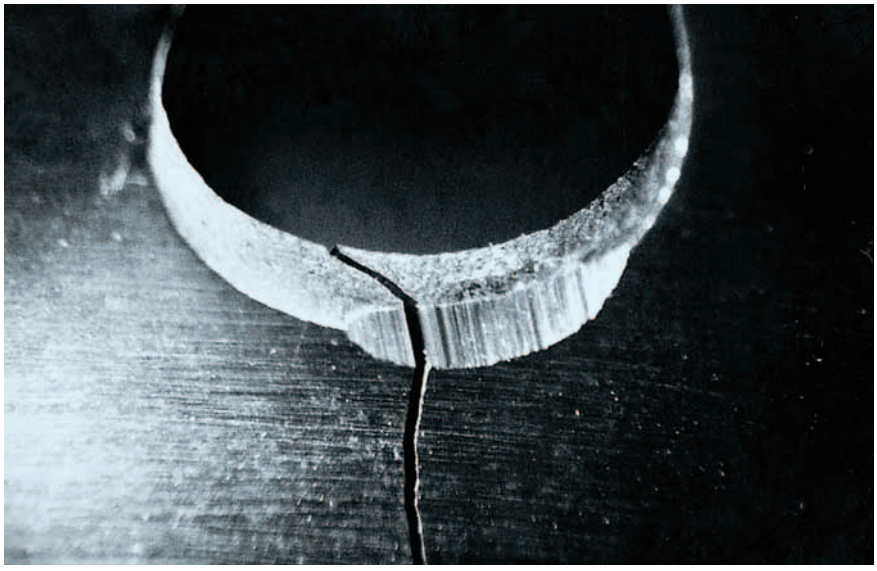
A too high tooth feed can lead to choking of the lower part of the sawblade gullet and the tooth breaking off the saw body.



Choked gullet.

Cracking of tool body
Vibrations are caused by high loads on the cutting edges and the tool body (e.g. increased bluntness, high tooth feed or one sided stress). This can cause vibration cracks in the gullet or wiper slots.

High one sided stress, e.g. when edge cutting, leads to bending, chipping or cracking of the tool body.

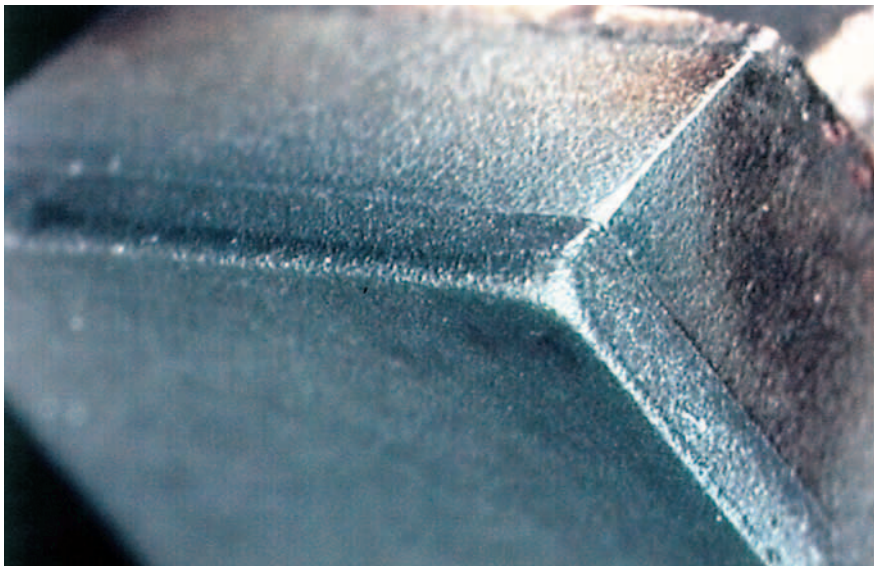


Fracture in the saw body.

Cutting edge rounding of DP
Mechanical wear of uniform workpiece materials causes rounding of the main and minor cutting edges. Apart from rounding, slight chips caused by foreign objects can occur when machining certain wood derived materials.

Rounding of the minor cutting edges can lead to reduced performance time and to deterioration in the cut and edge quality.

Action:
– Additional lateral eroding to the tooth relief angle.
This leads to:
– lower lateral tooth projection.
– loss of cutting width.
– higher resharpening costs.



Worn DP saw tooth.

Cutting edge chips and cutting edge fracture
Hard mineral or metallic objects lead to cutting edge chips and to a deterioration in the cut quality.

Cutting edge chips can also be caused by inefficient dust extraction (chip flow).

Extreme bluntness and chips lead to high cutting forces and consequently cracks in the saw body material.

The condition of cutting edges and saw bodies must be checked regularly. When the performance time is up, the tools must be resharpened by experts.

Cutting edge fracture of a DP saw tooth.

Inquiry/order form special tools – sawing

Customer details: Customer number: (if known) ☐☐☐☐☐☐☐☐

☐ Inquiry ☐ Order

Delivery date: (not binding) ☐☐ CW

Company:

Street:

Post code/place:

Country:

Phone/fax:

Contact person:

Signature:

Date:

Inquiry/order no.:

Tool ID: (if known)

No. of pieces:

Workpiece material: (for type, quality and machining method, see selection overview) Quality:

Machining method:

Cutting height: mm

Cutting method: ☐ single piece ☐ in stacks

Cutting quality: ☐ rough (rough sawn) ☐ fine (cut to size quality) ☐ ultra fine (finish cut quality)

Solid wood: ☐ along grain ☐ across grain

Panel materials: ☐ sizing ☐ square cutting

Machine

Manufacturer:

Type:

Model:

RPM: min^{-1}

Type of feed: ☐ MAN (Hand) ☐ MEC (Mech)

Feed rate: m min^{-1}

Flange diameter: mm

Motor power: kW

Cutting direction: ☐ against feed (GGL) ☐ with feed (GLL)

Tool: (must be completed)

Diameter: mm

Cutting width: mm

Bore: mm

Keyway/double keyway: mm

Pinholes:

Use: ☐ Single tool ☐ Tool set

Cutting material: ☐ Stellite ☐ HW (TC) ☐ DP (DIA)

(Complete if sawblade design is known)

Number of teeth:

Shape of teeth:

Tool body thickness: mm

Tool body shape (as per drawing): (enter number)

Additional elements of saw body (as per drawing): (enter number)

Standard design: ☐

Low noise design: ☐ with laser ornaments ☐ UT ☐ with damping foil

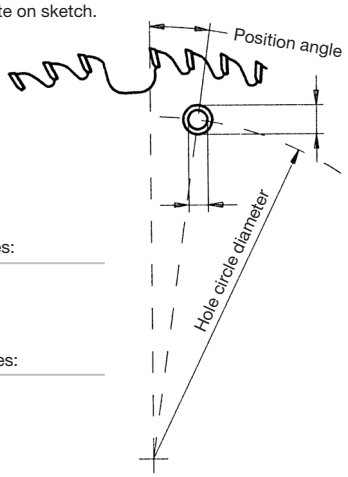
Direction of rotation (as per drawing): ☐ left hand rotation (LL) ☐ right hand rotation (RL)

Recessed tool body: Hub diameter: mm

Hub thickness: mm

Position of hub: ☐ Side 1 ☐ Side 2

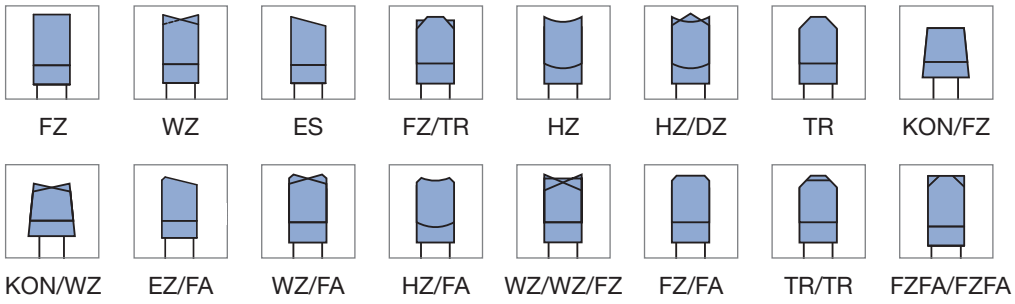
Bore – note on sketch:
Cut out teeth – note on sketch.

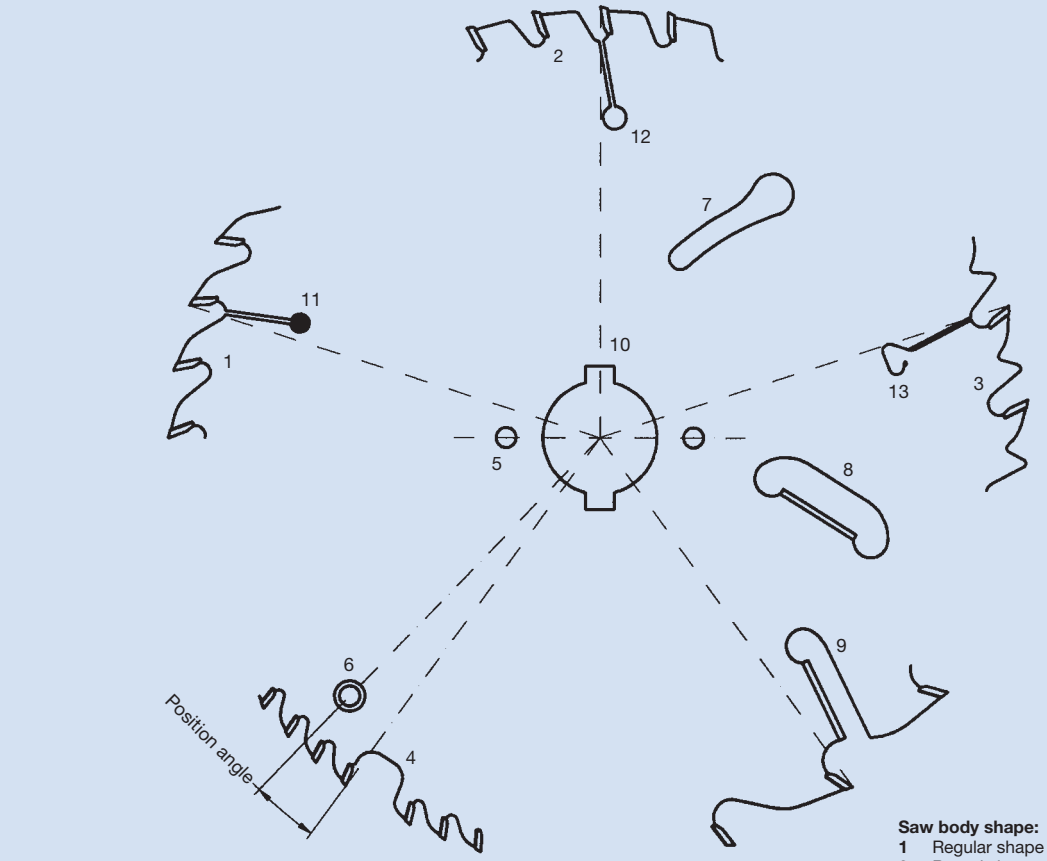


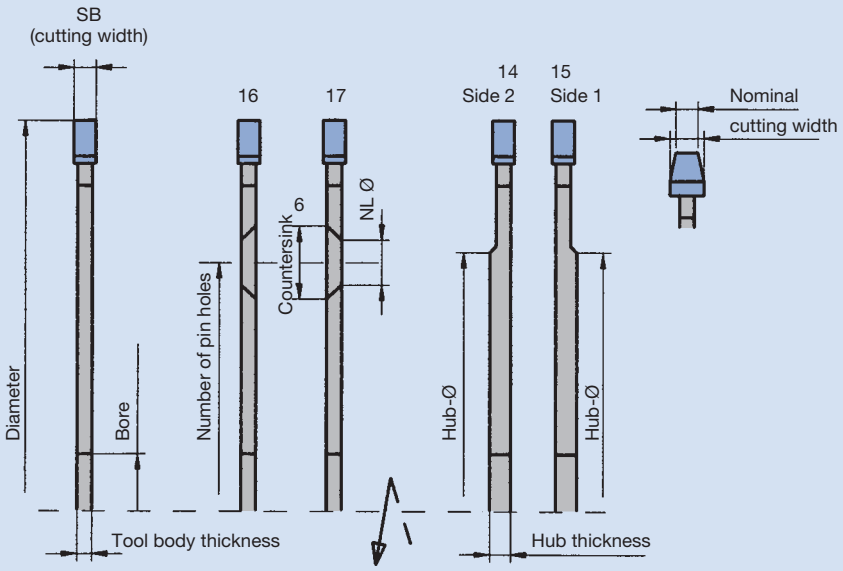
Number of pinholes:

Number of recesses:

Tooth shapes







Saw body shape:
1 Regular shape
2 Round shape
3 Limitor

Cut out:
4 Tooth cut out

Pinholes:
5 Pinhole
6 Pinhole with countersink

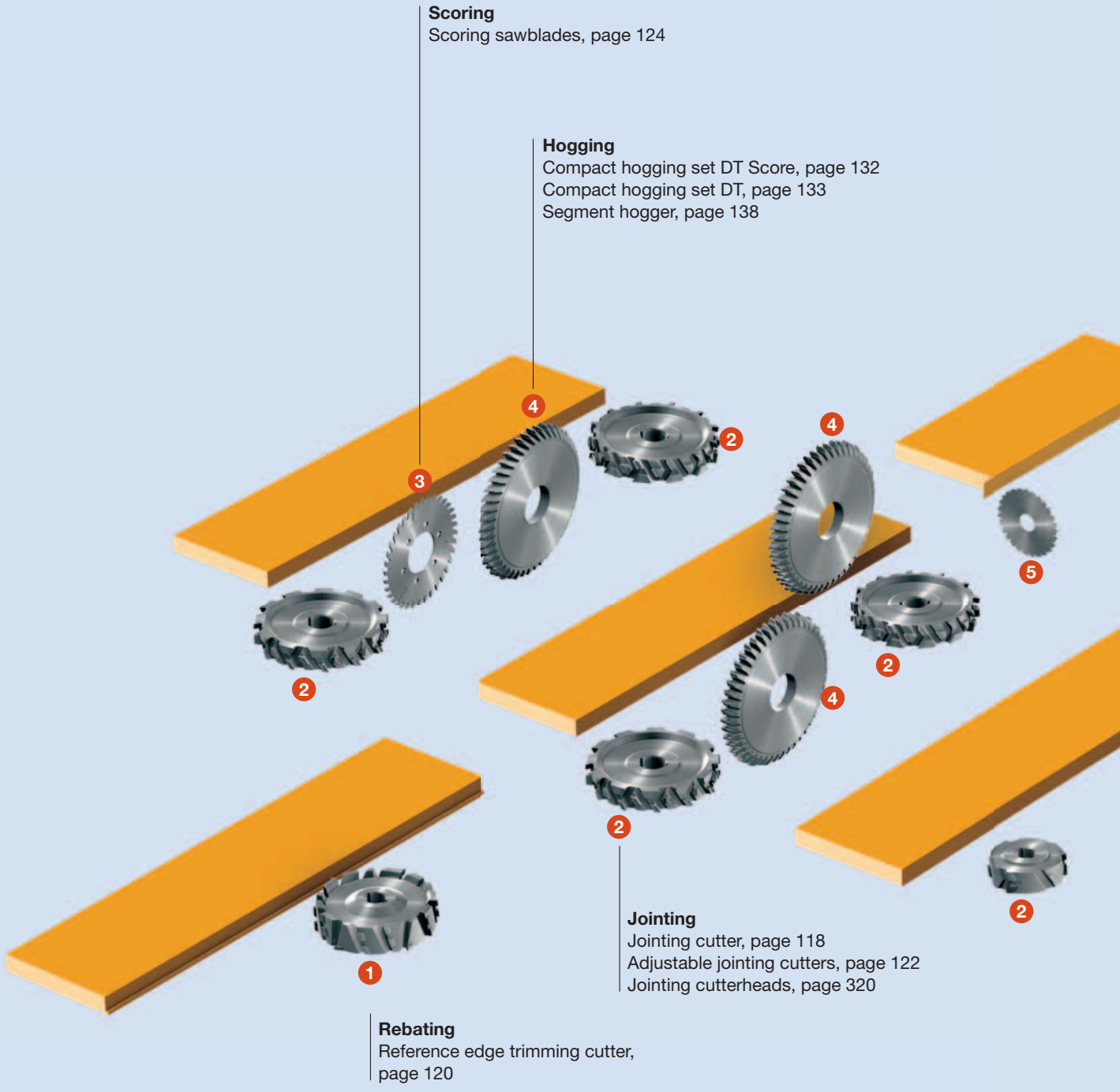
Additional elements in the saw body:
7 Cooling element
8 Wiper slot with HW cutting edge inside
9 Wiper slot with HW cutting edge outside
10 Keyway or double keyway

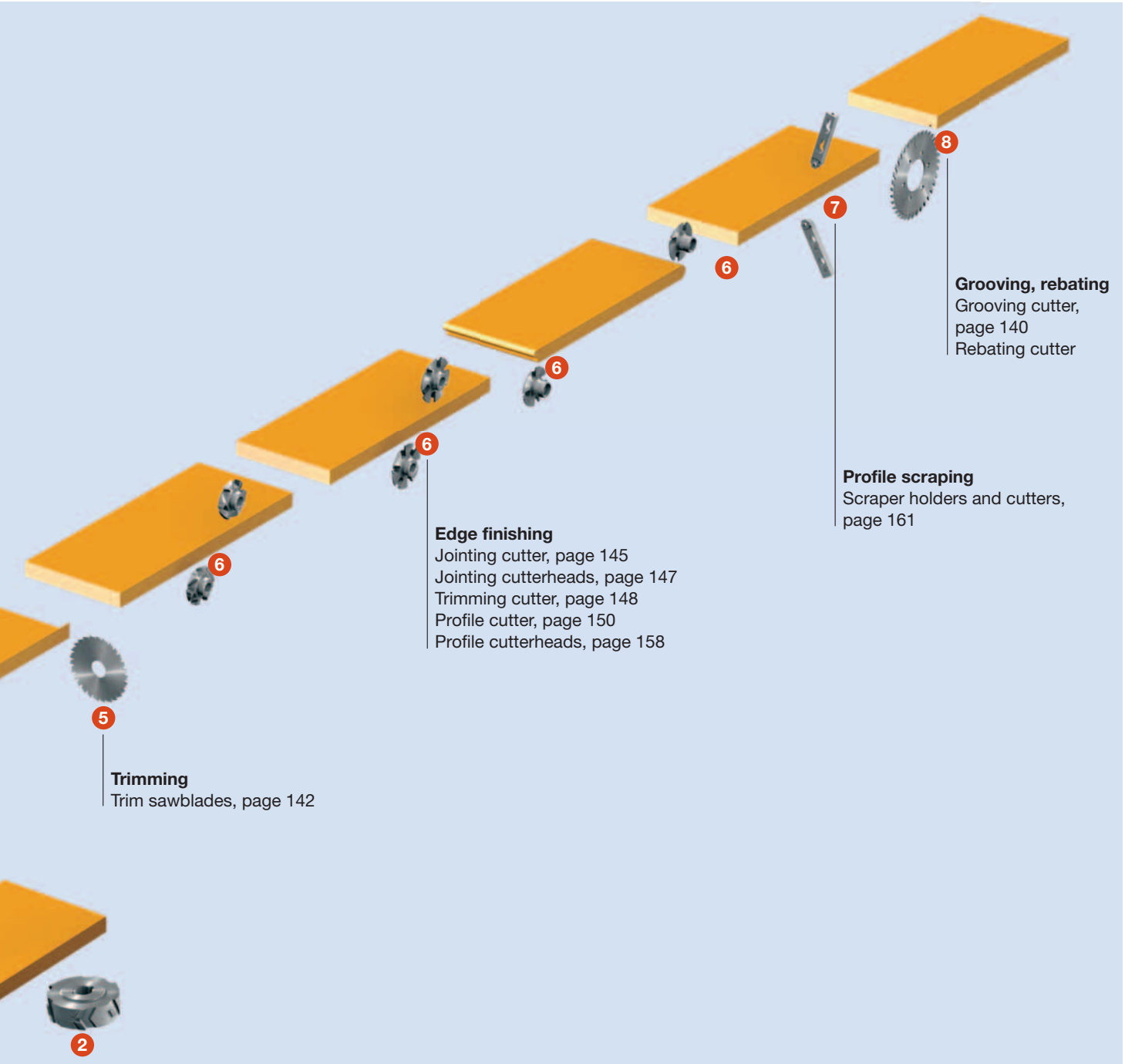
Expansion slots:
11 Expansion slot shape A, with rivets
12 Expansion slot shape A
13 Expansion slot shape D

Position of hub:
14 Position of hub, side 2
15 Position of hub, side 1

Direction of rotation:
16 Right hand rotation
17 Left hand rotation

2. Panel processing


Scoring
Scoring sawblades, page 124
Hogging
Compact hogging set DT Score, page 132
Compact hogging set DT, page 133
Segment hogger, page 138
Jointing
Jointing cutter, page 118
Adjustable jointing cutters, page 122
Jointing cutterheads, page 320
Rebating
Reference edge trimming cutter, page 120

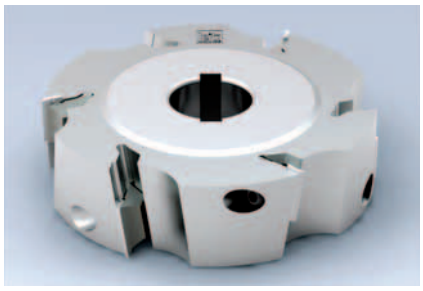


Grooving, rebating
Grooving cutter, page 140
Rebating cutter

Profile scraping
Scraper holders and cutters, page 161

Edge finishing
Jointing cutter, page 145
Jointing cutterheads, page 147
Trimming cutter, page 148
Profile cutter, page 150
Profile cutterheads, page 158

Trimming
Trim sawblades, page 142

Type of operation	Production of final sized panels with tear out free edges. Jointing tools cut only on the periphery and do not have side relief!
Workpiece material	Soft and hardwood; Glulam, chipboard with and without coating.
Machines	Spindle moulders: Note: The use of diamond tools is not recommended on spindle moulders. Edge banding machines; double end tenoners. Four-side moulders.
Application	Tools used in power cut and climb cut on jump spindles along and across the grain. Diamond tipped or carbide tipped cutterheads are used depending on the material. Jump spindles: Jointing in power cut and climb cut to protect the front and back edges when sizing edge banded panels on single sided or double end tenoning machines. Power cut: All panel materials with either paper or plastic coating. Climb cut: to avoid splitting and tear out on material edges. Only allowed on mechanical feed machines. Dust collection difficult when climb cutting.
Tool Designs	 Cutterhead with alternative shear angle: Suitable for all coated and uncoated panel materials. Tools with a shear angle create a slightly bowed surface on the workpiece edge. ProfilCut tools (special production) or diamond tipped cutterheads are recommended for perfectly straight surfaces.  Diamond tipped cutterhead with alternative shear angle: S Type: with symmetrical alternative shear. These tools create a slightly hollow surface on the material and the edge banding shows a very small glue line. The tool must be adjusted to the board material thickness. Tool can be used in RH or LH rotation. AS type: with asymmetrical shear cutting edges. 1 cutting edge cutting from bottom to top, all other cutting edges cutting from top to bottom. The advantage is the tool does not need to be adjusted to the board thickness. 2-part design with alternative shear angle: Suitable for high quantities and for boards of nearly the same workpiece thickness. The advantage of the 2-part design is that the tools can be re-adjusted when the cutting edge is dull increasing the tool run time.

Dust collection

Diamaster Pro Low Noise tools made in DFC design for dust flow control system and for the i-system.

Chip removal

$a_{e\ max}$ 5 mm for DFC and i-system tools

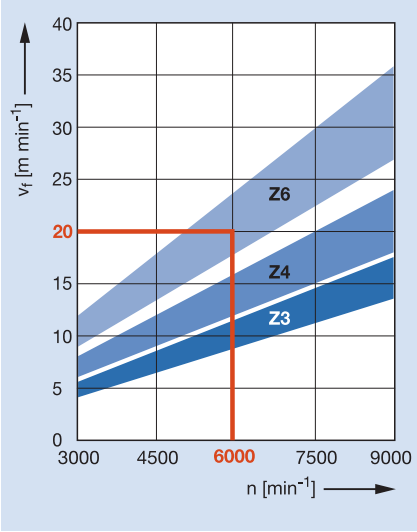
Noise reduction

Diamaster Pro design tools with reduced cutting edge projection and staggered, shear cut tips reduce noise levels. Noise reduction only guaranteed on machines with suitable dust extraction hoods. See chapter Jointing Cutters Low Noise.

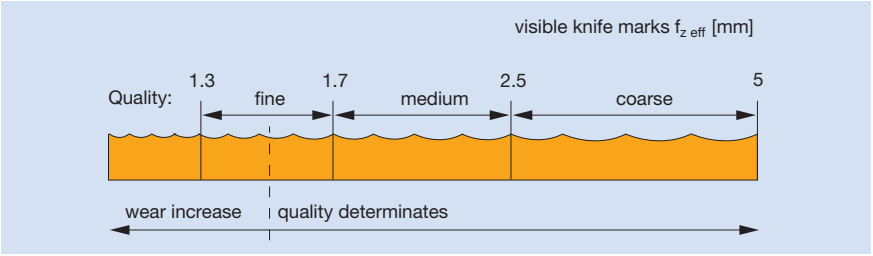
Resharpening area

Diamaster tools have a standard resharpening area of 3,5 mm and can be resharpened between 10 and 12 times, depending on the wear.
Diamaster Pro tools have a 3 mm tip height and can be resharpened 1-2 times.
Note: Diamaster Pro tools are recommended for machines with limited spindle adjustment.

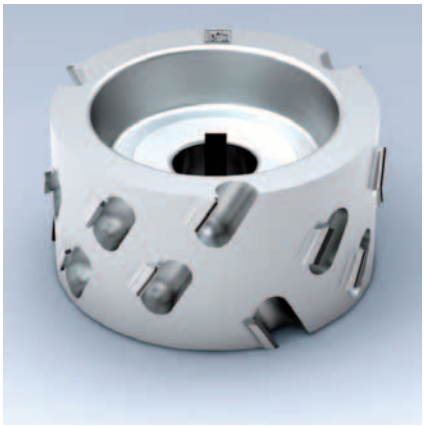
Feed speed related to RPM and number of teeth Z

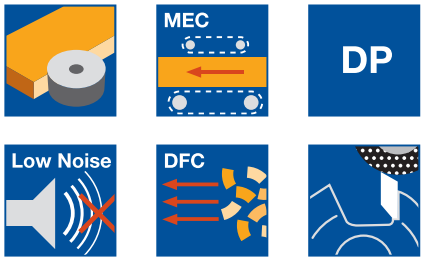


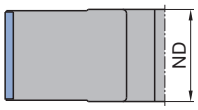
Relation between surface quality and length of cutter marks $f_{z\ eff}$



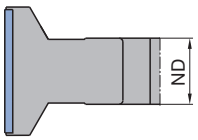
For tools with multiple cutting edges only the marks of one knife can be seen on the surface (one-knife finish).
Z2 and Z4 tools produce with the same machine setting the same surface quality.
High numbers of teeth are required for a high cutting performance.



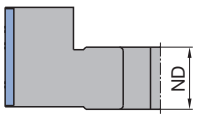




Position of boss (NAL) 1



Position of boss (NAL) 2



Position of boss (NAL) 3

Jointing/milling cutter

Application:
For low noise jointing of workpiece edges with feed and against feed (jump cutting).

Machine:
Edge processing machines, copy shaping machines etc.

Workpiece material:
Particle and fibre materials (MDF etc.) uncoated, veneered, plastic and paper coated, fibre reinforced plastics (glass fibre reinforced, carbon fibre reinforced plastic etc.).

Technical information:
Composite tool with alternate shear angle for tear free jointed edges and straight edge surfaces. Low noise design with noise reduction of up to 5dB(A). Efficient chip clearance (>95%). Tool with S edge arrangement can be used on the left hand and right hand sides and produces surfaces for tightly sealed edge banding. 1.5 mm resharpening area.

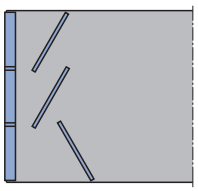
Diamaster PRO
WF 230-2-DP

Machine	D mm	SB mm	ND mm	BO mm	NAL	$n_{max.}$ min^{-1}	Z	Type	ID LL		ID RL	
Felder	60	64	64	25 DKN	2	18000	2x6	AS	**192000**	●	**192001**	●
Holz Her	70	54	31	30 DKN	2	18000	2x5	AS	**090881**	●	**090882**	●
Holz Her	70	48	41	30 DKN	3	18000	2x4	AS	**192046**	●	**192047**	●
Holz Her	70	64	41	30 DKN	3	18000	2x6	AS	**192048**	●	**192049**	●
Holz Her	100	48	25	30 DKN	2	17100	2x4	AS*	**090877**	●	**090878**	●
Holz Her	100	63	25	30 DKN	2	17100	2x6	AS*	**090879**	●	**090880**	●
Homag	125	34	36	30 DKN	1	13600	3x2	S	**090836**	●	**090836**	●

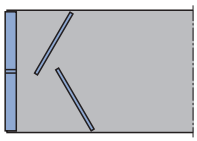
Technical information:
Higher number of teeth Z4 for feed rates up to 30 m/min.
4.0 mm resharpening area allows a high number of sharpens. Shear angle 40° for complex applications.

Diamaster PLUS
WF 230-2

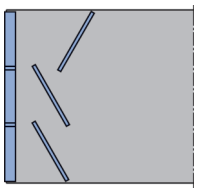
Machine	D mm	SB mm	ND mm	BO mm	NAL	$n_{max.}$ min^{-1}	Z	Type	ID LL		ID RL	
Homag, IMA, Biesse	125	34	36	30 DKN	1	13600	4x3	AS	**192050**	●	**192051**	●
Homag, IMA, Biesse	125	43	40	30 DKN	2	13600	4x4	AS	**192052**	●	**192053**	●
Homag, IMA, Biesse	125	63	40	30 DKN	2	13600	4x6	AS	**192054**	●	**192055**	●



Type AS = asymmetric tip arrangement

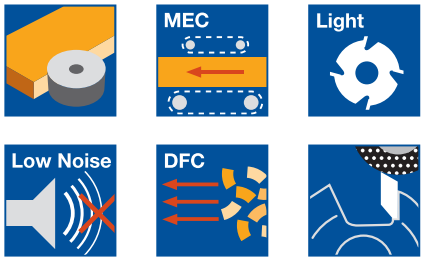


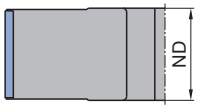
Type S = symmetric tip arrangement



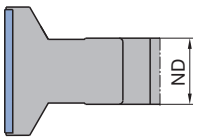
Type AS* = asymmetric edge arrangement. Order for left hand rotation right hand tools and for right hand rotation, left hand tools.

● available ex stock
□ available at short notice
Instruction manual visit www.leitz.org

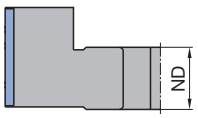




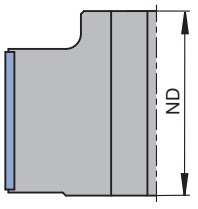
Position of boss (NAL) 1



Position of boss (NAL) 2



Position of boss (NAL) 3



Position of boss (NAL) 4

WhisperCut jointing/milling cutter - cutterhead design

Application:
For tear free and low noise jointing of workpiece edges side with feed and against feed (jump cutting).

Machine:
Edge processing machines, copy shaping machines, double end tenoners etc.

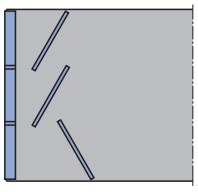
Workpiece material:
Particle and fibre materials (MDF etc.) uncoated, veneered, plastic and paper coated, fibre reinforced plastics (glass fibre reinforced, carbon fibre reinforced plastic etc.).

Technical information:
DP tipped cutterhead with alternate shear angle for tear free edges. Tool with knife arrangement S can be used left and right and produces hollow cut for tight closing edge banding. Low noise design with up to 5dB(A) noise reduction and efficient chip collection (>95%) by DFC. Significant weight reduction by aluminium tool body. Tool body can be used several times by replaceable knives. 0.6 mm resharpening area.

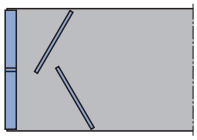
Diamaster WhisperCut - DFC, LowNoise, aluminium tool body
WM 230-2-01

Machine	D mm	SB mm	ND mm	BO mm	NAL	$n_{max.}$ min^{-1}	Z	Type	ID LL		ID RL	
Biesse	80	43	53	30 DKN	4	17100	3x4	S	**192086**	●	**192086**	●
Biesse	80	65	53	30 DKN	4	17100	3x6	S	**192087**	●	**192087**	●
Biesse	100	43	75	30 DKN	4	15300	3x4	S	**192088**	●	**192088**	●
Biesse	100	65	75	30 DKN	4	15300	3x6	S	**192089**	●	**192089**	●
Brandt	100	85	85	30 DKN	3	15300	3x8	AS	**090889**		**090890**	
Brandt	100	105	85	30 DKN	3	15300	3x10	AS	**090891**		**090892**	
Brandt	100	43,6	40,6	30 DKN	3	15300	3x4	AS	**090885**	●	**090886**	●
Brandt	100	65,2	40,6	30 DKN	3	15300	3x6	AS	**090887**	●	**090888**	●
Cehisa	100	54	25	20 DKN	2	15300	2x5	AS	**192078**	●	**192079**	●
Hebrock, EBM	100	43	61	30 DKN	4	15300	2x4	AS	**192080**	●	**192081**	●
Homag, Biesse	125	43	40	30 DKN	2	13700	3x4	S	**075627**	●	**075627**	●
Homag, Biesse	125	65	40	30 DKN	2	13700	3x6	S	**075626**	●	**075626**	●
IMA	100	32	36	30 DKN	1	15300	3x4	AS	**192090**	●	**192091**	●
IMA	125	32	34	30 DKN	1	13700	3x4	AS	**192092**	●	**192093**	●
IMA	125	43	42	30 DKN	2	13700	3x5	AS	**192094**	●	**192095**	●
IMA	125	63	42	30 DKN	3	13700	3x7	AS	**192096**	●	**192097**	●
IMA Advantage	125	43	57	30 DKN	4	13700	3x5	AS	**192098**	●	**192099**	●
IMA Advantage	125	65	57	30 DKN	4	13700	3x7	AS	**192100**	●	**192101**	●
Ott	85	43	45	30 DKN	3	16600	3x4	AS	**192076**	●	**192077**	●
Stefani, Holz Her	100	43	25	30 DKN	2	15300	2x4	AS	**192082**	●	**192083**	●
Stefani, Holz Her	100	65	25	30 DKN	2	15300	2x6	AS	**192084**	●	**192085**	●
Stefani, IDM	100	43,6	40,6	30 DKN	3	15300	3x4	AS	**090885**	●	**090886**	●
Stefani, IDM	100	65,2	40,6	30 DKN	3	15300	3x6	AS	**090887**	●	**090888**	●

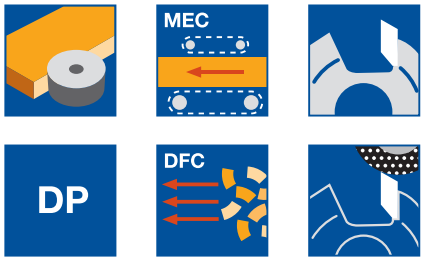
Knife replacement only by Leitz service department.

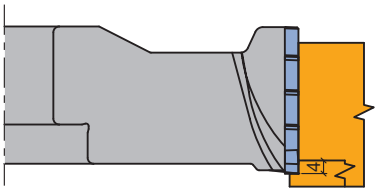


Type AS = asymmetric tip arrangement



Type S = symmetric tip arrangement





Reference rebate cutter

Jointing/milling cutter

Application:
For jointing/milling rebates in panel edges.

Machine:
Edge processing machines and double end tenoner.

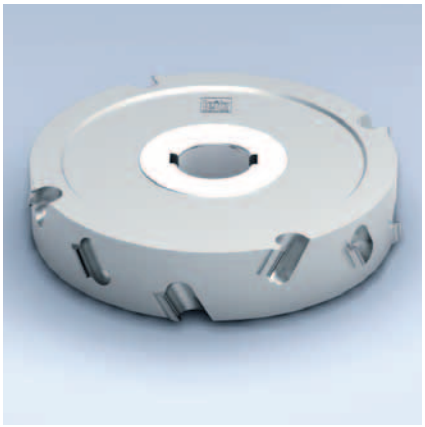
Workpiece material:
Particle and fibre materials (MDF etc.) uncoated, veneered, plastic and paper coated.

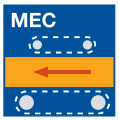
Technical information:
Tool with alternate shear angle for tear free edges. DFC design for chip flow and efficient chip clearance (>95%). 1.5 mm resharpening area.

Diamaster PLUS - DFC
WF 499-2-DP

D mm	SB mm	ND mm	BO mm	$n_{max.}$ min^{-1}	Z	ID LL	ID RL
150	35,6	45	30 DKN	11400	5x4	**090854**	**090855**
150	44,2	45	30 DKN	11400	5x5	**090856** □	**090857** □
150	65,4	66	30 DKN	11400	5x7	**090858**	**090859**
180	35,6	45	30 DKN	9500	5x4	**090860**	**090861**
180	44,2	45	30 DKN	9500	5x5	**090862** □	**090863** □
180	65,4	66	30 DKN	9500	5x7	**090864**	**090865**

● available ex stock
□ available at short notice
Instruction manual visit www.leitz.org



Protection milling/jump cutting

Application:
For tear free jointing with feed and against feed (e.g. jump cutting).

Machine:
Edge processing machines and double end tenoners.

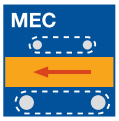
Workpiece material:
Particle and fibre materials (MDF etc.) uncoated, veneered, plastic and paper coated, fibre reinforced plastics (glass fibre reinforced, carbon fibre reinforced plastic etc.).

Technical information:
Tool with alternate shear angle for tear free edges and jointed edge. Low noise design with noise reduction of up to 5dB(A) and efficient chip clearance (>95%).
1.5 mm resharpening area.

Diamaster PRO - DFC, Low Noise
WF 230-2-DP

Machine	D mm	SB mm	ND mm	BO mm	NAL	$n_{max.}$ min^{-1}	Z	Type	ID LL		ID RL	
Homag, IMA	180	34	42	35 DKN	1	9500	4x3	AS	**090851**	●	**090852**	●
Homag, IMA	180	43	46	35 DKN	1	9500	4x4	AS	**090841**	●	**090842**	●
Homag, IMA	180	63	46	35 DKN	3	9500	4x6	AS	**090839**	●	**090840**	●
	200	34	25	60*	2	8500	4x3	AS	**090897**	●	**090898**	●

* for mounting on hydro or flanged sleeve


Protection milling/jump cutting

Application:
For tear free jointing with feed and against feed (e.g. jump cutting).

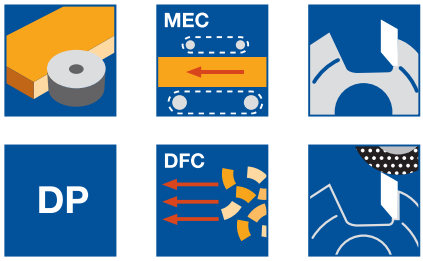
Machine:
Edge processing machines and double end tenoners.

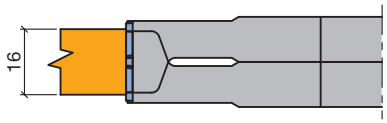
Workpiece material:
Particle and fibre materials (MDF etc.) uncoated, veneered, plastic and paper coated, fibre reinforced plastics (glass fibre reinforced, carbon fibre reinforced plastic etc.).

Technical information:
Tool with large, alternate shear angle for tear free edges and straight jointed edge.
4.0 mm resharpening area.

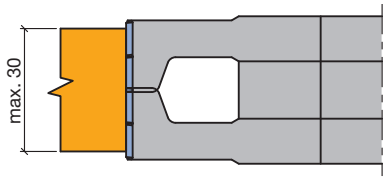
Diamaster PLUS
WF 230-2

Machine	D mm	SB mm	ND mm	BO mm	NAL	$n_{max.}$ min^{-1}	Z	Type	ID LL		ID RL	
Homag, IMA	180	34	34	35 DKN	2	9500	6x3	AS	**090847**		**090848**	
Homag, IMA	180	43	46	35 DKN	1	9500	6x4	AS	**192056**	●	**192057**	●
Homag, IMA	180	63	46	35 DKN	3	9500	6x6	AS	**192058**		**192059**	
Homag, IMA	180	34	34	35 DKN	2	9500	8x3	AS	**192060**	●	**192061**	●
Homag, IMA	180	43	46	35 DKN	1	9500	8x4	AS	**192062**		**192063**	
Homag, IMA	180	63	46	35 DKN	3	9500	8x6	AS	**192064**		**192065**	

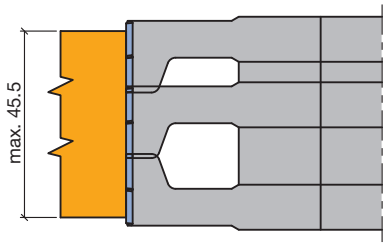




Minimum cutting width



Maximum cutting width



Maximum cutting width with extension part

Jointing cutter - adjustable

Application:
For tear free jointing with feed and against feed.

Machine:
Edge processing machines and double end tenoners.

Workpiece material:
Particle and fibre materials (MDF etc.) uncoated, veneered, plastic and paper coated, fibre reinforced plastics (glass fibre reinforced, carbon fibre reinforced plastic etc.).

Technical information:
Tool with alternate shear angle for tear free edges and straight jointed edge. Adjustment of cutterset by means of spacers (adjustment 0.1 mm). Several single performance times per sharpening interval. 4.0 mm resharpening area.

Cutterset Diamaster PLUS
SF 511-2-DP

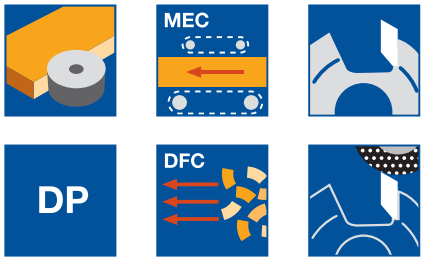
D mm	SB mm	BO mm	$BO_{max.}$ mm	$n_{max.}$ min^{-1}	Z	ID LL	ID RL
200	16 - 30	35 DKN	60	8500	4x4	**192010**	**192010**
200	16 - 30	35 DKN	60	8500	6x4	**192011**	**192011**
200	16 - 30	35 DKN	60	8500	8x4	**192066**	**192066**

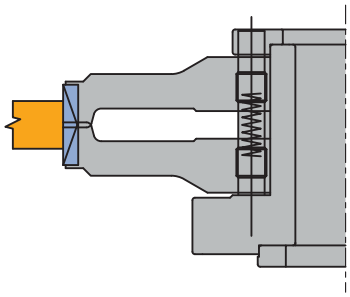
Extension parts Diamaster PLUS
WF 511-2-DP

D mm	SB mm	BO mm	$n_{max.}$ min^{-1}	Z	ID LL	ID RL
200	16,5	35 DKN	8500	4x2	**192067**	**192067**
200	16,5	35 DKN	8500	6x2	**192068**	**192068**
200	16,5	35 DKN	8500	8x2	**192069**	**192069**

A cutting width extension of 15.0 mm is possible with each extension part.

● available ex stock
□ available at short notice
Instruction manual visit www.leitz.org





Jointing cutter - adjustable synchronously

Application:
For tear free jointing with feed and against feed.

Machine:
Edge processing machines and double end tenoners.

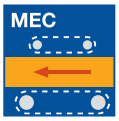
Workpiece material:
Particle and fibre materials (MDF etc.) uncoated, veneered, plastic and paper coated, fibre reinforced plastics (glass fibre reinforced, carbon fibre reinforced plastic etc.).

Technical information:
Tool with alternate shear angle for tear free jointing edge and straight jointed edges. Tool mounted on hydro sleeve. Stepless synchronous adjustment of tool set. Several single performance times per sharpening interval. 4.0 mm resharpening area.

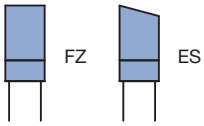
Cutterset Diamaster PLUS
SF 511-2-DP

D mm	SB mm	BO mm	V_f m min^{-1}	$n_{max.}$ min^{-1}	Z	ID LL	ID RL
200	16 - 30	40	35	8500	6x4	**192104**	**192105**
200	16 - 30	40	45	8500	8x4	**192106**	**192107**
200	16 - 30	40	55	8500	10x4	**192108**	**192109**
240	16 - 30	40	65	8500	12x4	**192070**	**192071**
240	16 - 30	40	80	8500	14x4	**192072**	**192073**

Recommended feed rate for 6.000 min^{-1} for veneered or coated particle and fibre materials.
Z=4 25 m min^{-1}
Z=6 35 m min^{-1}
Z=8 45 m min^{-1}
Z=10 55 m min^{-1}
Z=12 65 m min^{-1}
Z=14 80 m min^{-1}



HW



Scoring sawblade, 1-part design

Application:
For tear free scoring with feed.

Machine:
Double end tenoner with scoring saws and hoggers on edge banding machines.

Workpiece material:
Paper, plastic coated and veneered particle and fibre materials (MDF, HDF, WF etc.) or laminated wood and composite materials (gypsum plaster and mineral wool boards).

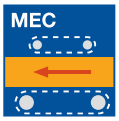
Technical information:
For multi purpose mounting on flanged sleeves. Scoring depth 1.5 to 2.0 mm.
For machining veneered chipboard material and fibre material, tooth shape **ES*** recommended.

For mounting on flanged sleeve
WK 800-2-01, WK 800-2-03

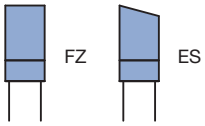
Machine	D mm	SB mm	TDI mm	BO mm	Z	ZF	QAL	$n_{max.}$ min^{-1}	ID	
Bäuerle, OCMAC	150	3,5	2,5	30	30	FZ	HW	15200	**058570**	●
Bäuerle, OCMAC	150	3,5	2,5	30	48	FZ	HW	15200	**058700**	●
Gabbiani, Celaschi, SCM	150	3,5	2,5	55	30	FZ	HW	15200	**058578**	●
	180	3,5	2,5	30	36	FZ	HW	12700	**058572**	●
	180	3,5	2,5	30	58	FZ	HW	12700	**058702**	●
	200	3,2	2,2	30	42	FZ	HW	11400	**058573**	●
	200	3,2	2,2	30	64	FZ	HW	11400	**058703**	●
	250	3,2	2,2	60	48	FZ	HW	9100	**058574**	●

* Please indicate tooth shape on order

● available ex stock
□ available at short notice
Instruction manual visit www.leitz.org



HW



Scoring sawblade, 1-part design

Application:
For tear free scoring with feed.

Machine:
Double end tenoner with scoring saws and hoggers on edge banding machines.

Workpiece material:
Paper, plastic coated and veneered particle and fibre materials (MDF, HDF, WF etc.) or laminated wood and composite materials (gypsum plaster and mineral wool boards).

Technical information:
Tool mounted on flanged sleeve. For high concentricity, sawblade and flanged sleeve are mounted as a unit directly on the motor spindle. Scoring depth 1.5 to 2.0 mm. For machining veneered chipboard material and fibre material or glulam tooth shape **ES*** recommended.

Mounted on flanged sleeve type TB 300-0
AK 410-0

Machine	D mm	BO mm	DKN mm	Z	ZF	QAL	$n_{max.}$ min^{-1}	ID LL		ID RL	
Homag, IMA	180	30	8/38,6	36	FZ	HW	12700	**063846**	●	**063847**	●
Homag, IMA	180	30	8/38,6	48	FZ	HW	12700	**063848**	●	**063849**	●
Homag, IMA	180	30	8/38,6	58	FZ	HW	12700	**063809**	●	**063810**	●

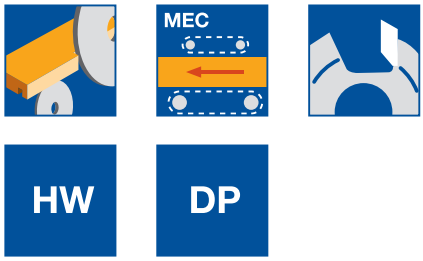
* Please indicate tooth shape on order

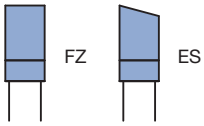
Spare sawblades:

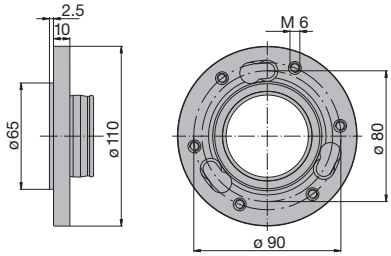
D mm	SB mm	TDI mm	BO mm	NLA mm	Z	ZF	QAL	ID LL		ID RL	
180	3,2	2,2	65	6/6/90	36	FZ	HW	**063855**	●	**063856**	●
180	3,2	2,2	65	6/6/90	48	FZ	HW	**063857**	●	**063858**	●
180	3,2	2,2	65	6/6/90	58	FZ	HW	**063859**	●	**063860**	●
180	3,2	2,2	65	6/6/90	24	FZ	DP	**190660**		**190661**	
180	3,2	2,2	65	6/6/90	36	FZ	DP	**190662**		**190663**	
180	3,2	2,2	65	6/6/90	48	FZ	DP	**190664**		**190665**	

Spare parts:

BEZ	ABM mm	ID	
Countersink screw, Torx® 20	M6x10	**006083**	●







Tool flange type 110/2 for scoring saws

Scoring sawblade, 1-part design

Application:
For tear free scoring with feed.

Machine:
Double end tenoner with scoring saws and hoggers on edge banding machines.

Workpiece material:
Paper, plastic coated and veneered particle and fibre materials (MDF, HDF, WF etc.) or laminated wood and composite materials (gypsum plaster and mineral wool boards).

Technical information:
Tool mounted coupling flange type 110/2 suitable for quick clamping element type 110. High concentricity. Scoring depth 1.5 to 2.0 mm. For machining veneered chipboard material and fibre material or glulam tooth shape **ES*** recommended.

Mounted on quick change flange type 110/2
AK 410-0

Machine	D mm	BO mm	Z	ZF	QAL	$n_{max.}$ min^{-1}	ID LL		ID RL	
Homag, IMA	180	65	36	FZ	HW	12700	**066066**	●	**066067**	●
Homag, IMA	180	65	48	FZ	HW	12700	**066068**	●	**066069**	●
Homag, IMA	180	65	58	FZ	HW	12700	**066070**	●	**066071**	●

* Please indicate tooth shape on order

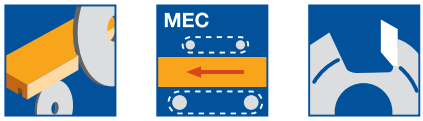
Spare sawblades:

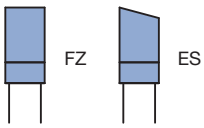
D mm	SB mm	TDI mm	BO mm	NLA mm	Z	ZF	QAL	ID LL		ID RL	
180	3,2	2,2	65	6/6/90	36	FZ	HW	**063855**	●	**063856**	●
180	3,2	2,2	65	6/6/90	48	FZ	HW	**063857**	●	**063858**	●
180	3,2	2,2	65	6/6/90	58	FZ	HW	**063859**	●	**063860**	●
180	3,2	2,2	65	6/6/90	24	FZ	DP	**190660**		**190661**	
180	3,2	2,2	65	6/6/90	36	FZ	DP	**190662**		**190663**	
180	3,2	2,2	65	6/6/90	48	FZ	DP	**190664**		**190665**	

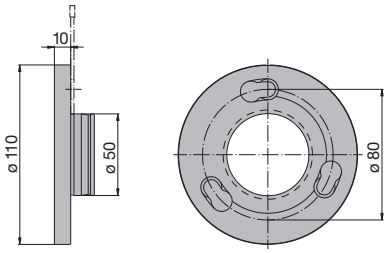
Spare parts:

BEZ	ABM mm	ID	
Countersink screw, Torx® 20	M6x10	**006083**	●

● available ex stock
□ available at short notice
Instruction manual visit www.leitz.org







Tool flange type 110/3 for clamping saws with a saw body thickness of 1.8 to 2.2 mm

Scoring sawblade, 1-part design

Application:
For tear free scoring with feed.

Machine:
Double end tenoner with scoring saws and hoggers on edge banding machines.

Workpiece material:
Paper, plastic coated and veneered particle and fibre materials (MDF, HDF, WF etc.) or laminated wood and composite materials (gypsum plaster and mineral wool boards).

Technical information:
Scoring sawblades for clamping with flange 110/3 for quick clamping sleeve Type 10. High concentricity. Scoring depth 1.5 up to 2.0 mm. For processing veneered chipboard material and fibre material or gluelam tooth shape **ES*** recommended.

Mounting on quick change flange Type 110/3
WK 800-2-01

D mm	SB mm	TDI mm	BO mm	NLA mm	Z	ZF	QAL	ID LL		ID RL	
180	3,2	2,2	50	3/22/80	36	FZ	HW	**063867**	●	**063867**	●
180	3,2	2,2	50	3/22/80	48	FZ	HW	**063868**	●	**063868**	●
180	3,2	2,2	50	3/22/80	58	FZ	HW	**063869**	●	**063869**	●
180	3,2	2,2	50	3/22/80	24	FZ	DP	**190657**		**190657**	
180	3,2	2,2	50	3/22/80	36	FZ	DP	**190658**		**190658**	
180	3,2	2,2	50	3/22/80	48	FZ	DP	**190659**		**190659**	

* Please indicate tooth shape on order

Process

Hogging along and across the grain, Sizing.

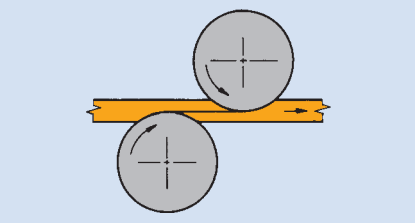
Workpiece materials

Chipboard and fibre materials (MDF) uncoated, with plastic or veneer coating.

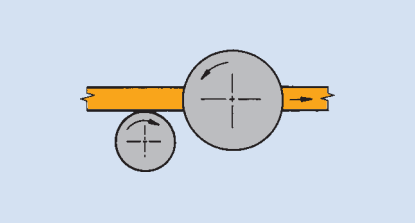
Machines

Single sided, double sided machines and double end tenoners.

Application

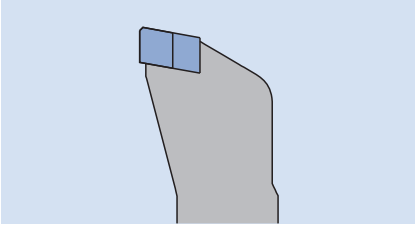


Double hogging
Both hoggers cut with feed.

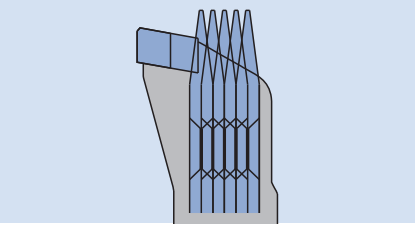


Scoring/hogging
Scoring saw cuts with feed, hogger against feed.

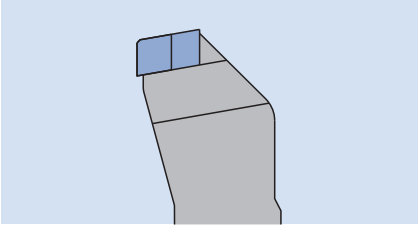
Tooth shape



Decreasing bevel:
Multi purpose machining for first pass (along grain) or second pass (across grain). Suitable for hogging widths on MDF from 1.5 mm to 8.5 mm.



Decreasing bevel with extension*:
Knife extension is recommended when hogging veneered wood derived materials with a thin veneer overhang of over 8 mm**. The extension breaks up the veneer strips preventing the extractions pipes clogging.



Increasing bevel: On request.
Machining across grain.

* In combination with decreasing tooth shape and cutting width more than 10 mm.
** The standard design has 6 knife seatings and 12 knives giving a cutting width of 12 mm.

Technical characteristics

- Assembled hogger body on hydro-sleeve for direct spindle mounting or on standard sleeve or quick clamping sleeve with/without hydro clamping.
- DFC-gullet design guides the chips away from the workpiece edge to the rear of the tool

f_z (in mm)

$$f_z = \frac{v_f \cdot 1000}{Z \cdot n} \qquad Z = \frac{v_f \cdot 1000}{f_z \cdot n} \qquad V_f = \frac{f_z \cdot Z \cdot n}{1000}$$

Applications: Double-hogging
Recommended tooth feed rate

Plywood	DT, DT Score, f_z [mm]
Length	0.50 – 1.20
Cross	0.25 – 0.75
Wood and derived material	
Without coating	0.50 – 1.20
Veneered	0.10 – 0.30
Plastic coated	0.30 – 0.40
Paper coated	0.15 – 0.30
Honeycomb	0.05 – 0.10

Solid hogger – DT and DT Score

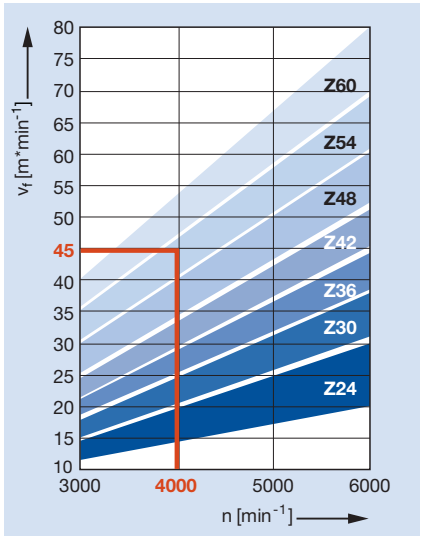
Both sizing processes “double hogging” and “scoring/hogging” require two basic hogging types with different cutting geometry: **Diamaster DT** – Double hogging with feed and negative rake angle **Diamaster DT Score** – Scoring/cutting with feed/ against feed with positive cutting angle.

More complex tooth shapes for applications, where cutter wear causes tear outs to the cut edge. Hoggers with two rows of teeth and stepped tooth shape for cutting fibre materials, and for light constructional boards (e.g. honeycomb boards, etc.). The specific shape and integration of finishing and roughing teeth in one row of teeth give a finishing cut using all teeth. This ensures a tear free medium zone and a smooth edge without break out.

Chip removal

Leitz DT hoggers have a unique gullet design: DFC®-technology.
The new design gullets are adapted to suit the chip flow volume. The design directs the chips away from the panel cut edge, without the chip particles damaging the cut edge. Double cutting is avoided giving a better cut quality and longer performance times. Chip removal is improved by combining the tool with the extraction hood (see Users section – Lexicon 12.1.6).

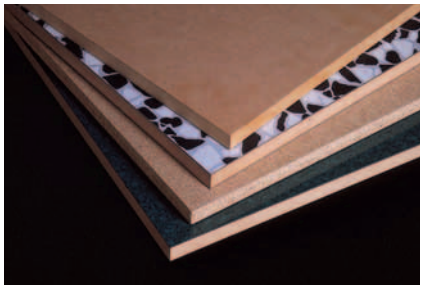
Feed rate



Feed rate v_f depends on the number of teeth Z and RPM n.

Cutting geometry

The diversity of board materials and decorative coatings available on the market requires optimised processing with special tooth shapes.
To process the coating and edge materials correctly, the cutting geometry of DT and DT scoring hoggers is customised to the specific requirements.



Hogger modular construction system

ID Number/Variation number

71100X – Interface

Interface	Quick change sleeve Hydro clamping sleeve	Hydro quick change sleeve Flanged sleeve
Variation number	**711XX0**	**711XX1**

7110X0 – Extension cutting edge

Extension cutting edge	Without extension cutting edge	With extension cutting edge
Variation number	**711X0X**	**711X1X**

711X00 – Tooth shape

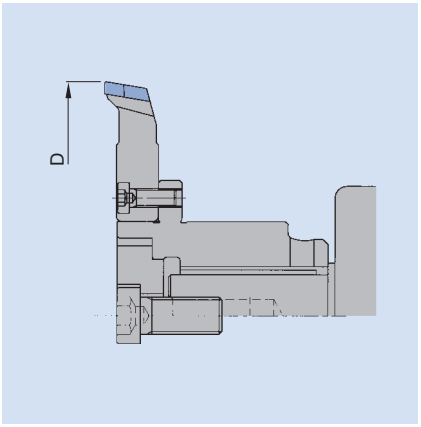
Variation number	**Tooth shape and application**
7111XX	Basic type for melamine coated chipboard
7112XX	Paper coated and veneered wood derived materials, loose medium layer, honeycomb board
7113XX	Isolated edges (problem solution for machining across grain), low cutting forces on finish cutting edge
7114XX	High gloss and HPL laminated wood derived materials, dense medium layer

Order information

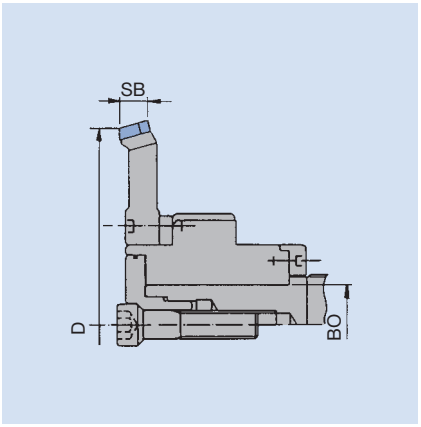
When ordering the variation numbers listed below must be detailed for the respective clamping sleeve and extension cutting edges, if any (such as veneer hogging), in addition to the hogger ID no.

Order example		
Tool	Hogger	
Diameter	250 mm; Z48	
Direction of rotation	Left-hand	
Fittings	DT Score Hogger Hydro clamping element	ID **190298** ID **061702**
Special notes	Including assembly With extension cutting edges, veneered chipboard	
ID	**190298/711211**	

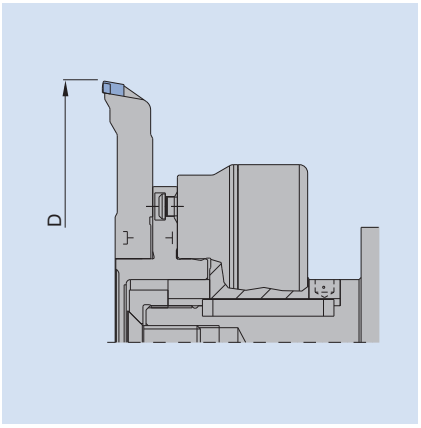
Designs



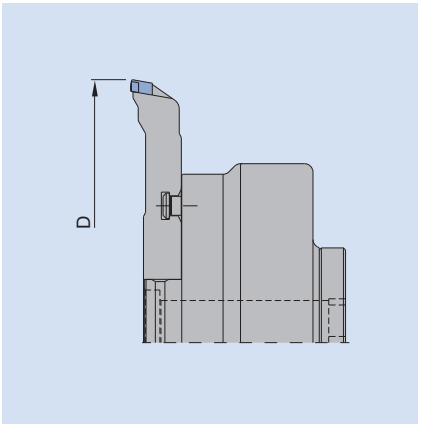
Tooth shape: top bevel decreasing
Hogger on standard flange.



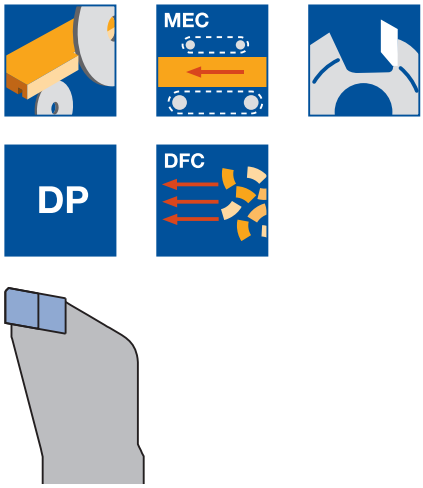
Tooth shape: top bevel increasing
Hogger on HF hydro-sleeve.



Tooth shape: top bevel decreasing
Hogger on quick change sleeve.



Tooth shape: top bevel decreasing
Hogger on hydro quick change sleeve.



Decreasing tooth shape

Diamaster DT Score - DFC

Application:
For hogging along and across grain - sizing - especially for **Scoring / Hogging**.

Machine:
Double end tenoners, edge processing machines etc.

Workpiece material:
Particle and fibre materials (MDF etc.) uncoated, veneered, plastic and paper coated, light construction panels (honeycomb).

Technical information:
Special tooth shape, developed for tear free middle layer and break out free edges in wood derived material with high contaminant content. All cutting edges involved in forming the workpiece edge and edge surface quality. Positive cutting angle. **Tooth shape decreasing** - optimised for machining along length and across grain. Customised cutting edge geometry depending on the workpiece material. **DFC** design for trouble free chip ejection and high chip clearance. 4.0 mm resharpening area.

For mounting on flanged sleeve or quick clamping sleeve
HZ 210-2

6D mm	SB mm	BO mm	Z	V_f* m min^{-1}	ID LL	ID RL
250	10	80	36 (30+6)	25	**190290** □	**190291** □
250	10	80	48 (40+8)	30	**190292** □	**190293** □
250	10	80	60 (50+10)	40	**190294** □	**190295** □

Order example:
Hogging set D-250 mm, Z 60, right
Hogging set, consisting of:
DT Score hogger D-250 ID **190301**
Hydro clamping element ID **061702**
Special remarks:
including assembly, machine model

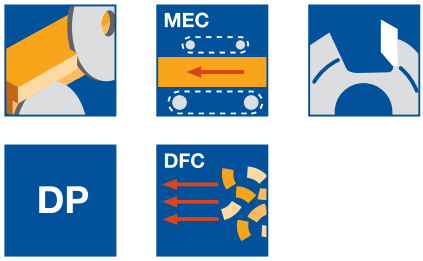
For mounting on hydro clamping or hydro quick clamping sleeve
HZ 210-2

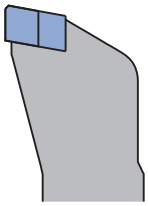
D mm	SB mm	BO mm	Z	V_f* m min^{-1}	ID LL	ID RL
250	10	60	36 (30+6)	25	**190296** □	**190297** □
250	10	60	48 (40+8)	30	**190298** □	**190299** □
250	10	60	60 (50+10)	40	**190300** □	**190301** □

Standard flanged sleeves, hydro clamping, quick clamping and hydro quick clamping sleeves, see section 8 - clamping systems.

* Recommended feed rate for veneered and coated chipboard materials and fibre materials.

● available ex stock
□ available at short notice
Instruction manual visit www.leitz.org





Decreasing tooth shape

Diamaster DT - DFC

Application:
For hogging along and across grain - sizing - especially for application **hogging / hogging**.

Machine:
Double end tenoners, edge banding machines etc.

Workpiece material:
Particle and fibre materials (MDF etc.) uncoated, veneered, plastic and paper coated, light construction panels (honeycomb).

Technical information:
Special tooth shape, developed for tear free middle layer and break out free edges in wood derived material with high contaminant content. All cutting edges are involved in forming the workpiece edge and edge surface quality. Negative cutting angle.
Tooth shape decreasing - optimised for machining along and across grain.
Customized design of cutting edge geometry depends on the workpiece material.
DFC design for trouble free chip ejection and high chip clearance. 4.0 mm resharpening area.

For mounting on flanged sleeve or quick clamping sleeve
HZ 210-2

D mm	SB mm	BO mm	Z	V_f* m min^{-1}	ID LL		ID RL	
250	10	80	24 (20+4)	30	**190232**	□	**190233**	□
250	10	80	30 (25+5)	35	**190234**		**190235**	
250	10	80	36 (30+6)	40	**190236**	□	**190237**	□
250	10	80	42 (35+7)	45	**190238**		**190239**	
250	10	80	48 (40+8)	50	**190240**	□	**190241**	□
250	10	80	54 (45+9)	60	**190242**		**190243**	
250	10	80	60 (50+10)	80	**190264**	□	**190265**	□

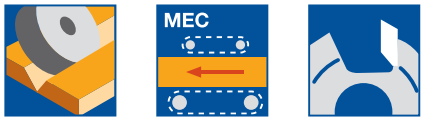
For mounting on hydro clamping or hydro quick clamping sleeve
HZ 210-2

D mm	SB mm	BO mm	Z	V_f* m min^{-1}	ID LL		ID RL	
250	10	60	24 (20+4)	30	**190244**	□	**190245**	□
250	10	60	30 (25+5)	35	**190246**		**190247**	
250	10	60	36 (30+6)	40	**190248**	□	**190249**	□
250	10	60	42 (35+7)	45	**190250**		**190251**	
250	10	60	48 (40+8)	50	**190252**	□	**190253**	□
250	10	60	54 (45+9)	60	**190254**		**190255**	
250	10	60	60 (50+10)	80	**190266**	□	**190267**	□

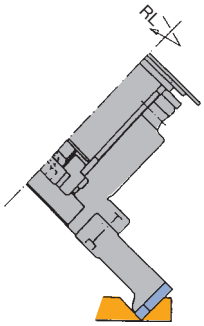
Standard flanged sleeves, hydro clamping, quick clamping and hydro quick clamping sleeves, see section 8 - clamping systems.

* Recommended feed rate for veneered and coated chipboard materials and fibre materials.

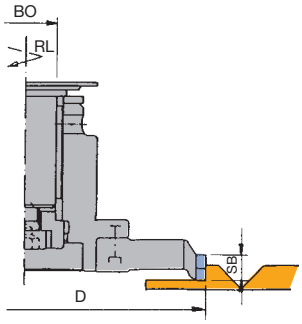
Order example:
Hogging set D-250 mm, Z 60, right
Hogging set consisting of:
DT hogger D-250 ID **190267**
Hydro clamping element ID **061702**
Special remarks:
including assembly, machine model



DP



Folding hogger for V-groove



Folding hogger for rebate

Folding hogger Diamaster

Application:
For cutting V-grooves and rebates, drawer elements, door frames etc.

Machine:
Folding units (e.g. Lehbrink, Koch, Homag), mitre moulders, special moulders, double end tenoners etc.

Workpiece material:
Particle and fibre materials (MDF etc.) uncoated, veneered, plastic and paper coated.

Technical information:
Low vibration design. Opening angle 91°. Uneven number of teeth to improve cut quality and increase performance time. 4.0 mm resharpening area.

For mounting on flanged sleeve or quick clamping sleeve
HZ 200-2

D mm	SB mm	BO mm	Z	ID LL	ID RL
250	15	80	21 (14+7)	**190208**	**190209**
250	15	80	33 (22+11)	**190210**	**190211**
250	25	80	21 (14+7)	**190212**	**190213**
250	25	80	33 (22+11)	**190214**	**190215**

For mounting on hydro clamping or hydro quick clamping sleeve
HZ 200-2

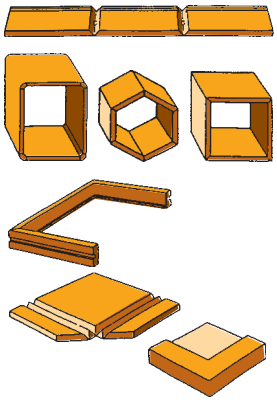
D mm	SB mm	BO mm	Z	ID LL	ID RL
250	15	60	21 (14+7)	**190224**	**190225**
250	15	60	33 (22+11)	**190226**	**190227**
250	25	60	21 (14+7)	**190228**	**190229**
250	25	60	33 (22+11)	**190230**	**190231**

For standard flanged sleeves, hydro clamping, quick clamping and hydro quick clamping sleeves, see section 8
Special flanged sleeves available on request.

Order tip:
The dimensions stated in the table refer to an opening angle of 91° and SB-15 mm for material thicknesses up to 10 mm, and SB-25 mm for material thicknesses up to 16 mm respectively.
When ordering please state material thickness and the required opening angle.

Order example:
Material thickness: 12 mm
Feed rate: 15 m/min
Tool: hogger D-250 mm, Z 33, right
Hogging set consisting of:
Hogger ID **190215**
Flanged sleeve ID **061650**
Special remarks:
including assembly, machine model

Examples



● available ex stock
□ available at short notice
Instruction manual visit www.leitz.org

Process

Hogging along and across grain with/without scoring sawblades.

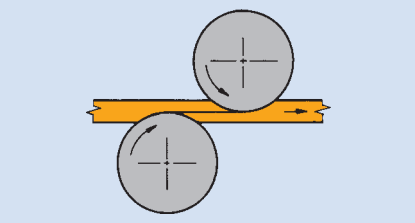
Workpiece materials

Solid wood, wood derived materials and composite materials.

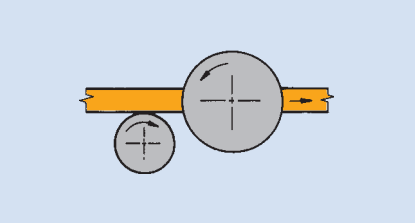
Machines

Multi-rip saws, double end tenoners, window making machines, edging machines.

Application

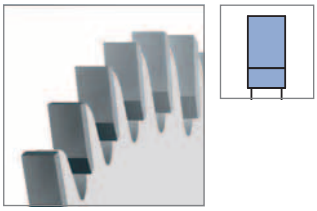


Double hogging
Both hoggers cut with feed.

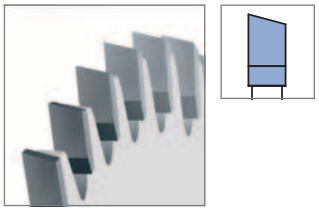


Scoring/hogging
Scoring saw cuts with feed, hogger against feed.

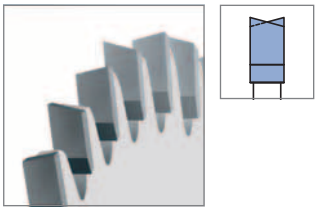
Tooth shapes



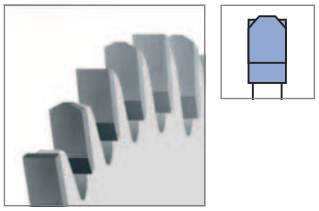
FZ (square teeth):
Hogging along grain in solid wood.
Timber products with/without coating, composite materials with coating.



ES (top bevel tooth/left hand side):
Hogging across grain in solid wood.
Timber products, veneered, paper-coated, veneered composite materials.



WZ (alternative bevel teeth):
Hogging across grain in solid wood.
Wood derived materials without coating, with veneer, with paper coating, veneered composite materials.



FZ/TR (square/trapezoidal teeth):
Wood derived materials with plastic coating.

Recommended tooth shape Hogger sawblades

Workpiece material		FZ	ES	WZ
Soft and hard wood	along grain	■		□
	across grain		■	■
Laminated wood	along grain	□	■	
	across grain		■	■
Chip/fibre materials	without coating	■	□	
	Plastic coated	■	□	
	veneered		■	■
	Paper coated		■	□
Composite material	HPL-coated	■	□	
	HF, MDF veneered		■	□

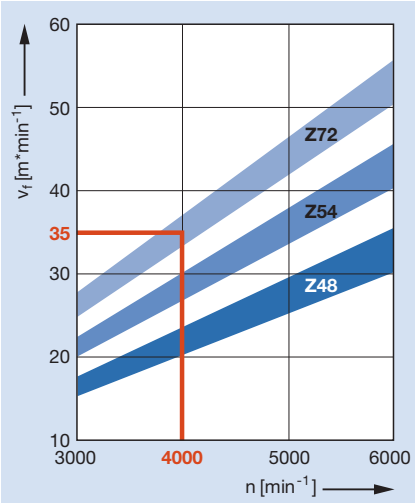
■ suitable
□ partly suitable

Cutting width and R.P.M.

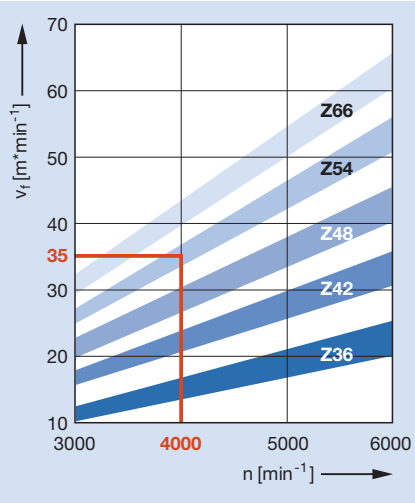
Tool*	D/mm	SB/mm	RPM max.
Segment hogger	250	25 – 50	7200 m/min^{-1}
	300	30 – 60	6000 m/min^{-1}
	350	35 – 70	5100 m/min^{-1}

* A larger sawblade diameter is recommended for veneered chipboard and fibre materials and laminated wood (e. g. hogger D 250 mm –> recommended sawblade D 260 mm).

Segment hogger

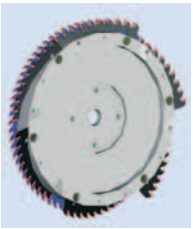


Feed speed v_f in relation to the number of teeth Z and R.P.M. n.

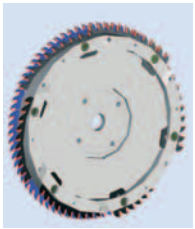


Feed speed v_f in relation to the number of teeth Z and R.P.M. n.

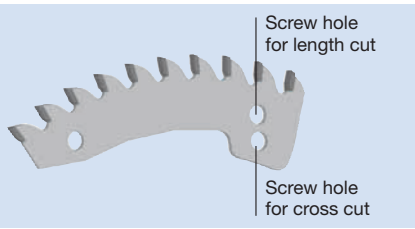
Segment hoggers are a modular design. Segment hoggers are used, depending on the diameter, for hogging widths from 25 to 70 mm. Hoggers or segment hoggers combined with different circular sawblades are suitable for cutting the following materials along and across the grain:
– Solid wood
– Wood derived materials without coating
– Wood derived materials with coating, with veneer, with paper etc.
– Composite materials



Cross cut



Length cut

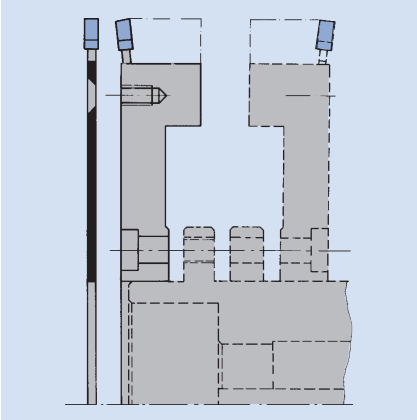


The hogging segments in segment hoggers are set either for length cut or cross cut. The cross cut setting reduces the risk of breaking the corner of the workpiece when cross cutting against the feed.
Segment hoggers with up to 12 segments are used for edging and sizing on wood-derived material production lines (e. g. Siempelkamp, Kontra etc.). A special segment hogger design has been developed for the finish cut on wood-derived material production lines.

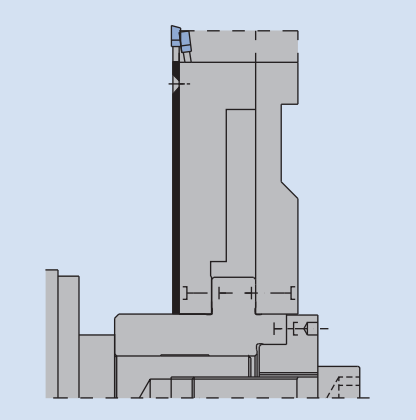
Saw hogger

Saw hoggers, single tools or assemblies with cutting widths of 6.35 – 12.00 mm are used for hogging along and across the grain, and to size solid wood on finger jointing machines.

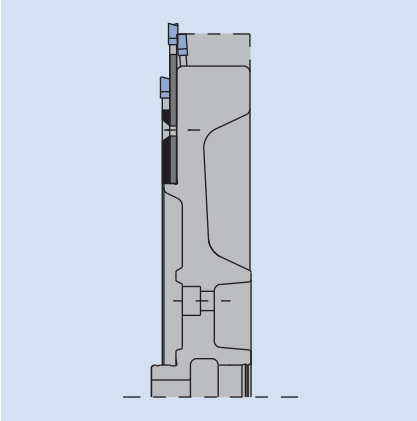
Assembly design/examples



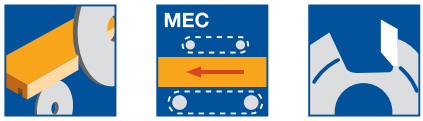
Segment hogger with extension hogger.

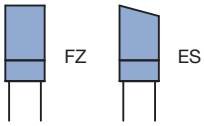


Tool set for edging station mounted on flanged sleeve.



Assembled hogger for sizing/edge finishing on wood derived material production line.





DFC - Segment hoggers

Application:
For tear free sizing along and across grain. Machining with feed when double hogging. If only one hogger, against feed only combined with scoring sawblade.

Machine:
Double end tenoners, edge processing machines etc.

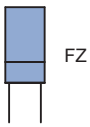
Workpiece material:
Softwood and hardwood, particle and fibre materials (MDF etc.) uncoated, veneered, plastic or paper coated, composite materials.

Technical information:
Cut edge quality is determined by the sawblade. Optional DP-hogger sawblade increased tool life significantly. Tool body in steel. Possibility to assembly with additional hogger bodies. Segmented cut with 6 hogger segments. Segment position available for straight or railed cut. DFC design for efficient chip clearance. Chips deflected from workpiece edge by sawblade and segments shear angles.

Circular sawblade
WK 800-2, WK 801-2, WK 801-2-05

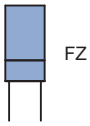
D mm	SB mm	BO mm	Z	ZF	QAL	ID LL		ID RL	
250	4,4	80	54	ES	HW	**061837**	●	**061838**	●
250	4,4	80	72	ES	HW	**061880**	●	**061881**	●
260	4,4	80	54	ES	HW	**061858**	●	**061859**	●
260	4,4	80	72	ES	HW	**061860**	●	**061861**	●
250	4,4	80	36	ES	DP	**190306**		**190307**	
250	4,4	80	54	ES	DP	**190308**		**190309**	
250	4,4	80	72	ES	DP	**190310**		**190311**	

Circular sawblades:
Tooth shape ES is optimised to cut across grain on softwood, hardwood, wood derived materials, veneered and paper coated and veneered composte materials.
DP sawblade - 4.0 mm resharpening area.



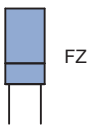
Basic hoggers
WZ 300-2

D mm	SB mm	BO mm	Z	ZF	QAL	ID LL		ID RL	
246	20	80	6x5	FZ	HW	**064456**	●	**064457**	●



Extension hoggers
WZ 300-2

D mm	SB mm	BO mm	Z	ZF	QAL	ID LL		ID RL	
246	20	80	6x5	FZ	HW	**064458**	●	**064459**	●



Segments (6 pieces / hogger)
TM 170-0

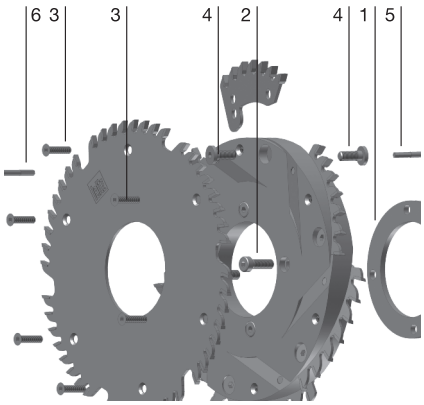
D mm	Z	ZF	QAL	ID LL		ID RL	
246	5	FZ	HW	**064974**	●	**064975**	●

● available ex stock
□ available at short notice
Instruction manual visit www.leitz.org

Order example:
Hogging set D-250 mm, Z 48, left
Hogging set consisting of:
Circular sawblade D-250 ID **061837**
Basic hogger ID **064456**
Flanged sleeve ID **061650**
Special remarks:
including assembly, machine model

Spare parts:

Part-no.	BEZ	ABM mm	BEM	ID
1	Spacer	115x11x80	for D = 250	**028186** ●
2	Cylindrical screw with ISK	M8x18		**005945** ●
3	Countersink screw, Torx® 20	M6x12	Torx® 20	**006084** ●
4	Screw with ISK	M8x17	for D = 250/350/305/355	**006237** ●
5	Allen Key	SW 6		**005494** ●
6	Torx® key	Torx® 20		**117503** ●



Circular sawblade for non-Leitz segment hoggers
WK 800-2-45, WK 800-2-46

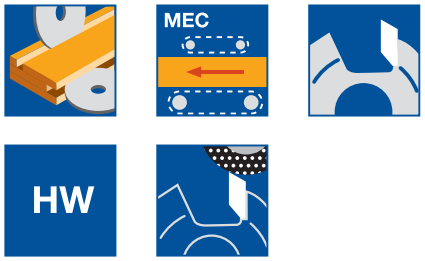
Type	D mm	SB mm	BO mm	Z	ZF	QAL	ID LL	ID RL
1	200	4	80	44	FZ	HW	**061862** ●	**061863** ●
1	200	4	80	64	FZ	HW	**061864** ●	**061865** ●
1	220	4	80	48	FZ	HW	**061866** ●	**061867** ●
1	220	4	80	60	FZ	HW	**061868** ●	**061869** ●
1	250	4	80	48	FZ	HW	**061870** ●	**061871** ●
1	250	4	100	48	FZ	HW	**061872** □	**061873** □
1	250	4	80	72	FZ	HW	**061874** ●	**061875** ●
1	250	4	100	72	FZ	HW	**061876** □	**061877** □

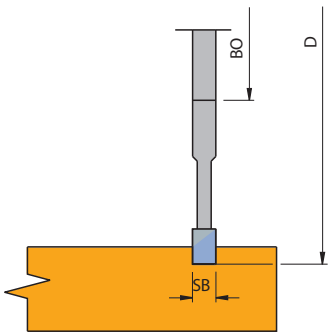
Type 1 for Leuco.

Segments for non-Leitz segment hogger
TM 170-0

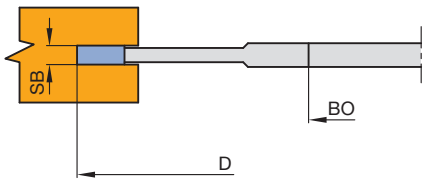
Type	for D mm	SB mm	Z	ZF	QAL	ID LL	ID RL
1	200/250	4	4	FZ	HW	**064976** ●	**064977** ●

Type 1 for Leuco.





Cutting the back panel groove



Grooving the narrow edge

Grooving cutter for mechanical feed

Application:
For grooving with feed (MEC).

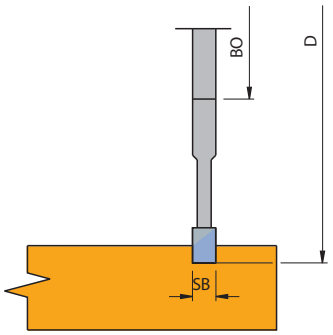
Machine:
Moulders and double end tenoners.

Workpiece material:
Solid wood; untreated, coated and veneered wood derived materials.

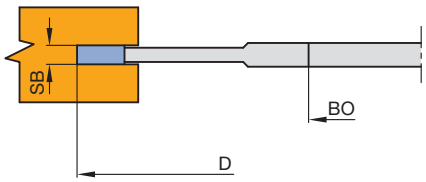
Z 12
WF 100-2-02

D mm	SB mm	TDI mm	BO mm	$BO_{max.}$ mm	DKN mm	Z	$n_{max.}$ min^{-1}	ID	
120	4,0	2,5	20	30	6x25,6	12	14200	**020308**	●
120	5,0	3,5	20	30	6x25,6	12	14200	**020309**	●
120	10,0	7,0	20	30	6x25,6	12	14200	**020100**	●
125	1,5	0,8	30	50		12	13700	**020145**	●
125	1,8	1,0	30	50		12	13700	**020146**	●
125	2,0	1,2	30	50		12	13700	**020147**	●
125	2,2	1,2	30	50		12	13700	**020148**	●
125	2,5	1,4	30	50		12	13700	**020149**	●
125	3,0	2,0	30	50		12	13700	**020150**	●
125	3,5	2,2	30	50		12	13700	**020151**	●
125	4,0	2,5	30	50		12	13700	**020152**	●
125	4,5	3,0	30	50		12	13700	**020153**	●
125	5,0	3,5	30	50		12	13700	**020191**	●
125	6,0	4,5	30	50		12	13700	**020192**	●
125	7,0	5,0	30	50		12	13700	**020193**	●
125	8,0	6,0	30	50		12	13700	**020194**	●
125	9,0	6,5	30	50		12	13700	**020195**	●
125	10,0	7,0	30	50		12	13700	**020196**	●
150	3,0	2,0	30	60		12	11400	**020154**	●
150	3,5	2,2	30	60		12	11400	**020155**	●
150	4,0	2,5	30	60		12	11400	**020156**	●
150	4,5	3,0	30	60		12	11400	**020157**	●
150	5,0	3,5	30	60		12	11400	**020158**	●
150	6,0	4,5	30	60		12	11400	**020159**	●
150	7,0	5,0	30	60		12	11400	**020160**	●
150	8,0	6,0	30	60		12	11400	**020161**	●
150	9,0	6,5	30	60		12	11400	**020162**	●
150	10,0	7,0	30	60		12	11400	**020163**	●

● available ex stock
□ available at short notice
Instruction manual visit www.leitz.org



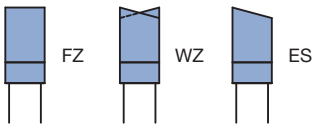
Cutting the back panel groove



Grooving the narrow edge

Z 18
WF 100-2-03

D mm	SB mm	TDI mm	BO mm	$BO_{max.}$ mm	DKN mm	Z	$n_{max.}$ min^{-1}	ID	
150	1,5	0,8	30	60		18	11400	**020164**	●
150	1,8	1,0	30	60		18	11400	**020165**	●
150	2,0	1,2	30	60		18	11400	**020166**	●
150	2,2	1,2	30	60		18	11400	**020167**	●
150	2,5	1,4	30	60		18	11400	**020168**	●
150	3,0	2,0	30	60		18	11400	**020169**	●
150	4,0	2,5	30	60		18	11400	**020170**	●
150	5,0	3,5	30	60		18	11400	**020171**	●
150	6,0	4,5	30	60		18	11400	**020172**	●
150	8,0	6,0	30	60		18	11400	**020173**	●
150	10,0	7,0	30	60		18	11400	**020174**	●
180	2,0	1,2	30	70		18	9500	**020202**	●
180	2,5	1,4	30	70		18	9500	**020203**	●
180	3,0	2,0	30	70		18	9500	**020204**	●
180	3,5	2,2	30	70		18	9500	**020205**	●
180	4,0	2,5	30	60		18	9500	**020197**	●
180	5,0	3,5	30	60		18	9500	**020198**	●
180	6,0	4,5	30	60		18	9500	**020199**	●
180	8,0	6,0	30	60		18	9500	**020200**	●
180	10,0	7,0	30	60		18	9500	**020201**	●
200	2,0	1,2	35	80	10x45	18	8500	**020299**	●
200	2,2	1,2	35	80	10x45	18	8500	**020300**	●
200	2,5	1,4	35	80	10x45	18	8500	**020301**	●
200	3,0	2,0	35	80	10x45	18	8500	**020302**	●
200	4,0	2,5	35	80	10x45	18	8500	**020303**	●
200	5,0	3,5	35	80	10x45	18	8500	**020304**	●
200	6,0	4,5	35	80	10x45	18	8500	**020305**	●
200	8,0	6,0	35	80	10x45	18	8500	**020306**	●
200	10,0	7,0	35	80	10x45	18	8500	**020307**	●



Circular sawblade for end trim on edge banding machines

Application:
For low noise trim cuts of edge bandings.

Machine:
Single or double sided edge banding machines and double end tenoners.

Workpiece material:
Softwood, hardwood, veneered, melamine and plastic edging.

Technical information:
Different tooth shapes and numbers of teeth for optimum cutting quality. Tool body with irregular tooth pitch and vibration damping laser ornaments. **AS OptiCut** and **AS OptiCut UT** design noise reduction by up to 8 dB(A).
Veneered and plastic edging:
Edging thickness > 2.0 mm - crosscut saw ES pos.
Edging thickness < 2.0 mm - crosscut saw ES neg.
Solid wood edging and multi purpose application:
Edging thickness > 2.0 mm - crosscut saw WZ pos.
Edging thickness < 2.0 mm - crosscut saw WZ neg.

Circular sawblade AS OptiCut, AS OptiCut UT - LowNoise
SK 499-2, WK 301 2, WK 320 2, WK 321 2, WK 331 2, WK 370 2, WK 380 2, WK 850 2

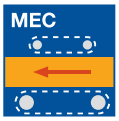
	Machine	D mm	SB mm	BO mm	Z	ZF	$n_{max.}$ min^{-1}	ID LL		ID RL	
	Biesse	115	3,2	52	30	ES pos.	19900	**065697**	●	**065698**	●
	Biesse	115	3,2	56	30	ES pos.	19900	**065668**	●	**065669**	●
	Biesse	130	3,6	30	16+4	WZ pos.	17600	**160007**	●	**160007**	●
	Biesse	130	3,6	30	20+4	ES pos.	17600	**160005**	●	**160006**	●
	Biesse	140	3,6	30	16+4	WZ neg.	16300	**160008**	●	**160008**	●
	Biesse	140	3,2	30	36	ES pos.	16300	**065670**	●	**065671**	●
	Biesse	160	3,2	20	48	WZ pos.	14300	**065672**	●	**065672**	●
	Brandt	100	2,6	32	30	ES neg.	22900	**065673**	●	**065674**	●
	Brandt	100	2,6	32	30	ES pos.	22900	**065658**	●	**065659**	●
	Brandt	100	2,6	32	30	WZ pos.	22900	**065650**	●	**065650**	●
	Brandt	110	2,4	32	40	ES pos.	20800	**065660**	●	**065661**	●
	Brandt	150	2,8	20	36	ES pos.	15200	**065402**	●	**065403**	●
	Cehisa	100	3,0	32	30	ES pos.	22900	**065675**	●	**065676**	●
	EBM	100	2,4	22	20	WZ neg.	22900	**160004**	●	**160004**	●
	Felder	100	3,2	22	20	WZ pos.	22900	**065677**	●	**065677**	●
	Felder	100	3,2	22	20	WZ neg.	22900	**065678**	●	**065678**	●
	Holz Her	110	3,6	22	20	WZ pos.	20800	**065688**	●	**065688**	●
	Holz Her	140	3,2	22	36	WZ pos.	16300	**065689**	●	**065689**	●
	Holz Her	160	3,2	20	48	WZ pos.	14300	**065672**	●	**065672**	●
	Holz Her	160	2,8	30	24	WZ pos.	14300	**065422**	●	**065422**	●
	Holz Her	160	4,0	40	24	WZ pos.	14300	**065690**	●	**065690**	●
	Homag	80	3,2	34	30	ES pos.	28600	**160001**	●	**160002**	●
*	Homag	100 92	3,0	32	20	ES pos.	22900	**065499**	●	**065484**	●
	Homag	100	3,0	32	20	ES pos.	22900	**065570**	●	**065571**	●
	Homag	100	3,2	32	20	ES pos.	22900	**065404**	●	**065405**	●
	Homag	100	3,2	32	20	ES neg.	22900	**065406**	●	**065407**	●
	Homag	100	3,6	32	20	WZ pos.	22900	**065408**	●	**065408**	●
	Homag	110	3,6	32	20	WZ pos.	20800	**065409**	●	**065409**	●
	Homag	110	1,7	40	30	FZ/TR pos.	20800	**160003**	●	**160003**	●
*	Homag	120 112	3,2	40	30	ES pos.	19000	**065653**	●	**065654**	●
	Homag	120	3,6	40	24	WZ pos.	19000	**065679**	●	**065679**	●
	Homag	120	3,2	40	36	WZ pos.	19000	**065655**	●	**065655**	●

● available ex stock
□ available at short notice
Instruction manual visit www.leitz.org

Machine	D mm	SB mm	BO mm	Z	ZF	$n_{max.}$ min^{-1}	ID LL		ID RL	
Homag	120	3,6	40	36	WZ pos.	19000	**160012**	●	**160012**	●
Homag	150	3,5	30	40	ES pos.	15200	**065680**	●	**065681**	●
Homag	170	3,2	30	36	WZ pos.	13400	**065682**	●	**065682**	●
Homag	170	3,5	30	48	ES pos.	13400	**065683**	●	**065684**	●
Homag	170	3,5	30	48	ES neg.	13400	**160010**	●	**160011**	●
Homag	180	3,5	30	48	ES pos.	12700	**065686**	●	**065687**	●
Homag	180	3,2	30	54	WZ pos.	12700	**065685**	●	**065685**	●
IDM	90	3,0	30	20	FZ pos.	25400	**065441**	●	**065441**	●
IMA	160	3,5	22	36	WZ neg.	14300	**065691**	●	**065691**	●
IMA	160	3,2	22	48	WZ neg.	14300	**065692**	●	**065692**	●
IMA	180	3,2	22	48	WZ pos.	12700	**065693**	●	**065693**	●
IMA	180	3,2	22	48	WZ neg.	12700	**160009**	●	**160009**	●
IMA	200	3,2	30	64	WZ pos.	11400	**065694**	●	**065694**	●
Ocmac	125	3,0	20	30	ES pos.	18300	**065450**	●	**065451**	●
Ocmac	180	3,2	30	58	WZ	12700	**058301**	●	**058301**	●
Ott	100	3,2	16	20	ES pos.	22900	**065425**	●	**065426**	●
Ott	140	3,2	16	36	ES pos.	16300	**065695**	●	**065696**	●
Ott	140	3,2	16	36	WZ pos.	16300	**065432**	●	**065432**	●
Raimann	100	3,6	32	20	WZ pos.	22900	**065408**	●	**065408**	●
Raimann	120	3,2	32	20	WZ neg.	19000	**065433**	●	**065433**	●
SCM	125	3,2	20	40	ES pos.	18300	**065573**	●	**065574**	●
SCM	150	3,8	35	24+6	ES pos.	15200	**065699**	●	**160000**	●
SCM	170	3,2	30	36	ES pos.	13400	**065575**	●	**065576**	●
Wilmsmeyer	100	3,2	32	20	ES neg.	22900	**065406**	●	**065407**	●

* For two-part set SK 499-2 use mounting flange ID **066750**

Working processes	Finishing plastic, veneered and solid wood edges of wood material boards. – Pre-cutting to remove asymmetric edge protrusions on top and bottom edges and edge trimming solid wood edges. – Profiling a bevel or round edge on top and bottom edges. – Profiling a bevel and round edges on top and bottom edges and front and back. – Profile scrapers to remove knife marks. – Flat scrapers for excellent alignment of edge and workpiece.
Workpiece material	Thick plastic edge banding made from PVC, PP, ABS, thin plastic edge banding made from melamine resin, veneer edge banding, solid wood banding and edge banding.
Machines	Single or double sided edging machines, double end tenoner.
Application	Against feed for plastic edge banding, preferably with feed for solid wood edge lippings.
Technical features	The tools are designed for the machine, the diameters and axial dimensions match the positions of the tracing rollers. Constant diameters are required for traced tools, ideally cutterheads with replaceable tips or DP tools that are not sharpened. Sharpening on the periphery is only possible with additional tracing rollers.
Chip disposal	Tools marked with the symbol i-system are optimised for these machines, and guide the chips from the tool cutting edge into the extraction. Even at low extraction air speeds more than 97% of the chips are collected. This improves not only process efficiency and productivity, but also the working environment. New machines require less extraction.

HW DP

Pre / finishing edge trimming cutter

Application:
To trim edge bandings on horizontal spindles or for bevelling with inclined spindles.

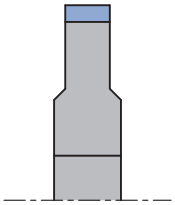
Machine:
Single or double side edge banding machines.

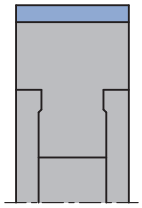
Workpiece material:
Softwood, hardwood, veneer and plastic edge bander.

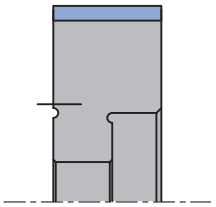
Technical information:
Tungsten carbide / DP tipped tools with cylindrical bore. DP tools - 3 mm tip height.

Jointing cutter
WF 200-2, WF 200-2-DP

Machine	D mm	SB mm	ND mm	BO mm	Type	Z	QAL	$n_{max.}$ min^{-1}	ID LL		ID RL	
Biesse	80	22	12	16 DKN	3	6	DP	18000	**192103**	●	**192102**	●
Biesse	80	20	15	16 DKN	4	8	DP	18000	**090871**	●	**090870**	●
Biesse, Brandt	70	20	12	16 DKN	2	6	DP	18000	**090893**	●	**090893**	●
Biesse, Brandt	70	10	12	16 DKN	1	6	DP	18000	**090899**	●	**090899**	●
Brandt	70	25	25	16 DKN	3	4	HW	18000	**065588**	●	**065589**	●
Holz Her 1828	70	19,5	19,5	20 DKN	5	4	HW	18000	**065592**	●	**065593**	●
Homag, IMA	70	14	13	16 DKN	1	4	DP	18000	**090722**	●	**090722**	●
Stefani	80	20	11	16 DKN	2	4	DP	18000	**192110**	●	**192111**	●


Type 1


Type 2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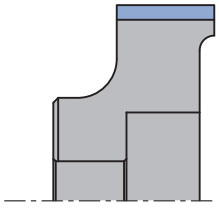
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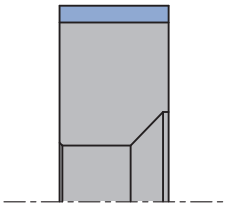
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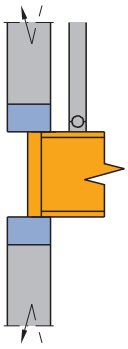
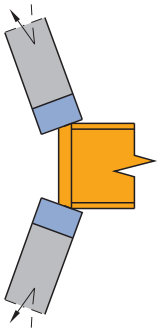
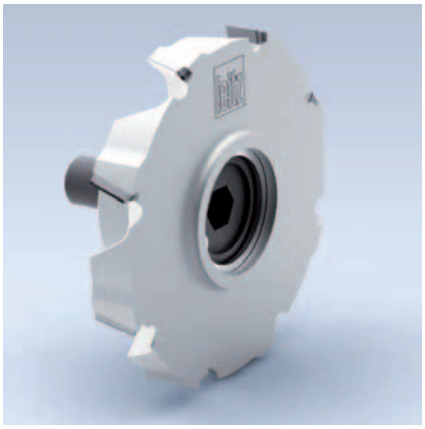
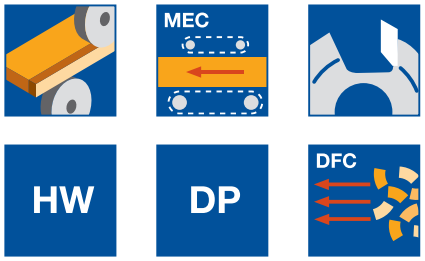
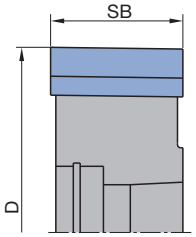

Trimming of edges on horizontal spindle - top motor tracing.

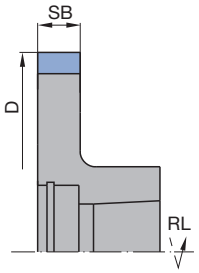

Bevelling of edges with inclined spindle.







HW jointing cutter with HSK 25 R bore, SB-25 mm.



DP jointing cutter with HSK 25 R bore.

Pre / finishing edge trimming cutter - i-system

Application:
To trim edge bandings on horizontal spindles or for bevelling with inclined spindles.

Machine:
Single or double sided edge banding machines. Machines combined with special extraction hood “i-system” for efficient chip clearance.

Workpiece material:
Softwood, hardwood, veneer and plastic edge bandings.

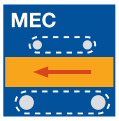
Technical information:
Tungsten carbide / DP tipped tools with HSK 25 R bore and a special extraction hood “i-system” for efficient chip clearance (approx. 97%) with reduced extraction energy consumption. Clean workpieces, no interference with scanning aggregates and less rework. High concentricity.
DP tools - 3 mm tip height.

Jointing cutter i-system - HSK 25 R
WF 200-2-DP, WF 210-2

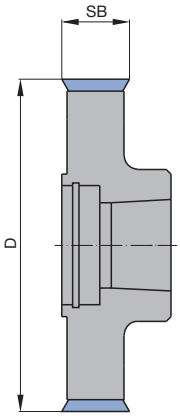
Machine	D mm	SB mm	BO mm	Z	QAL	$n_{max.}$ min^{-1}	ID LL		ID RL	
Homag, IMA	70	25	HSK 25 R	4	HW	18000	**073092**	●	**073093**	●
Homag, IMA	70	8	HSK 25 R	4	DP	18000	**198472**	●	**198473**	●
Homag, IMA	70	8	HSK 25 R	6	DP	18000	**198474**	●	**198475**	●
Homag, IMA	70	8	HSK 25 R	8	DP	18000	**198404**	●	**198405**	●
Homag, IMA	70	15	HSK 25 R	4	DP	18000	**198406**	●	**198407**	●
Homag, IMA	70	15	HSK 25 R	6	DP	18000	**198468**	●	**198469**	●

Recommended number of teeth:
Feed rates of up to 35 m min^{-1} Z 4
Feed rates of up to 60 m min^{-1} Z 6
Feed rates of up to 100 m min^{-1} Z 8 (thin edge)

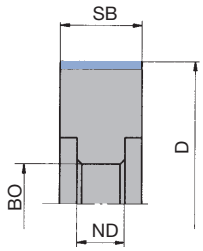
● available ex stock
□ available at short notice
Instruction manual visit www.leitz.org



HW



Type 1: WW 200-2-25



Type 2: WW 200-2-06

Pre / finishing edge trimming cutter cutterhead design

Application:
To trim edge bandings on horizontal spindles or for bevelling with inclined spindles.

Machine:
Single or double side edge banding machines.

Workpiece material:
Softwood, hardwood, veneer and plastic edge bandings.

Technical information:
Cutterhead with turnblade knives, cylindrical or HSK 25 R bore.

Jointing cutterhead
WW 200-2-25, WW 200-2-06

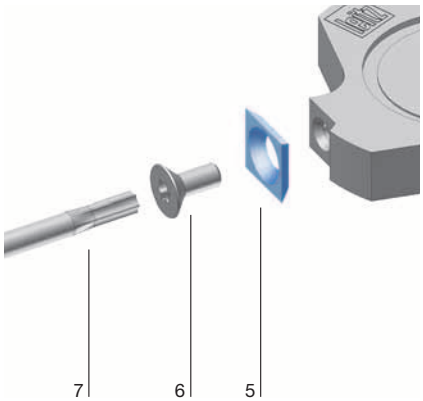
Machine	Type	D mm	SB mm	BO mm	Z	$n_{max.}$ min^{-1}	ID LL		ID RL	
Brandt	1	70	14,3	16 DKN	4	18000	**025130**	●	**025130**	●
Homag	1	70	14,3	HSK 25 R	4	12000	**073599**	●	**073600**	●
Homag	2	70	20	16 DKN	4	18000	**025079**	●	**025079**	●

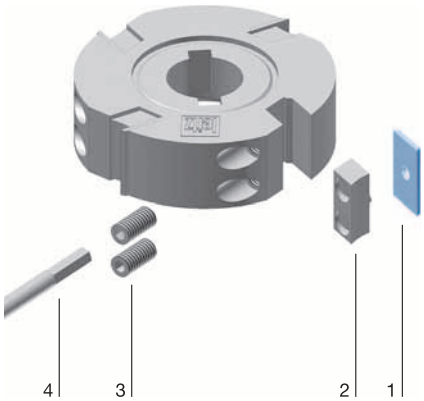
Spare knives:

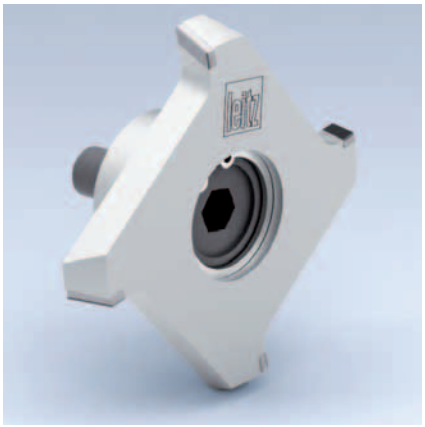
Part-no.	BEZ	ABM mm	QAL	VE PCS	ID	
1	Turnblade knife	20x12x1,5	HW-05	10	**005083**	●
5	Turnblade knife	14,3x14,3x2,5	HW	10	**005426**	●

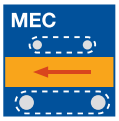
Spare parts:

Part-no.	BEZ	ABM mm	ID	
2	Clamping wedge with pin	18x11,5x7	**005272**	●
3	Allen screw	M6x12	**006035**	●
4	Allen Key	SW 3	**005444**	●
6	Countersink screw, Torx® 20	M5x12	**006247**	●
7	Torx® key	Torx® 20	**006091**	●







DP

Bevel cutter

Application:
To bevel edge bandings.

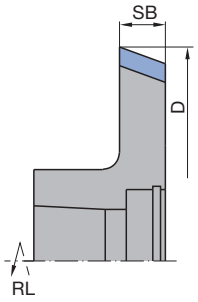
Machine:
Single or double sided edge banding machines.

Workpiece material:
Softwood, hardwood, veneer and plastic edge bandings.

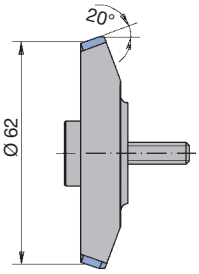
Technical information:
DP tipped tools with cylindrical, HSK 25 R or HSK 32 bores for FK aggregates.
DP tools - 3 mm tip height.

Various bevel angles - with DP-tipped
WF 300-2-DP, WF 350-2-DP

Machine	D mm	SB mm	BO mm	Type	Z	QAL	FAW	ID LL		ID RL	
Biesse	67,2	9	20 DKN	5	6	DP	25°	**091970**	●	**091969**	●
Biesse	68	9	20 DKN	5	6	DP	45°	**091972**	●	**091971**	●
Biesse	80	10,5	16 DKN	6	4	DP	15°	**091974**	●	**091973**	●
Biesse	67,2	9	16 DKN	5	6	DP	25°	**091976**	●	**091975**	●
Biesse	68	9	16 DKN	5	6	DP	45°	**091978**	●	**091977**	●
Holz Her 1825	52	6	16 DKN	3	2	DP	15°	**091982**	●	**091981**	●
Holz Her 1832	53	8	16 DKN	3	3	DP	15°	**091986**	●	**091985**	●
Holz Her 1832	56	5	16 DKN	3	3	DP	45°	**091988**	●	**091987**	●
Holz Her 1833	72,5	8	20 DKN	4	4	DP	45°	**091984**	●	**091983**	●
Homag	62	5	HSK 32	2	4	DP	20°	**091518**	●	**091519**	●
Homag	62	5	HSK 32	2	6	DP	20°	**091658**	●	**091659**	●
Homag	62	5	HSK 32	2	6	DP	30°	**091690**	●	**091691**	●
Homag	62	5	HSK 32	2	6	DP	45°	**091692**	●	**091693**	●
Homag, IMA	75	8	HSK 25 R	1	4	DP	20°	**091790**	●	**091791**	●
Stefani	70	5	16 DKN	3	4	DP	20°	**091980**	●	**091979**	●



Type 1



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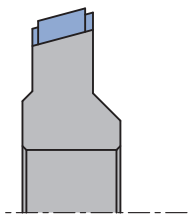
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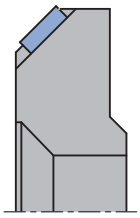
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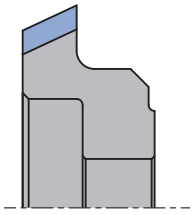
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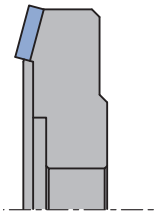
Type 6

● available ex stock
□ available at short notice
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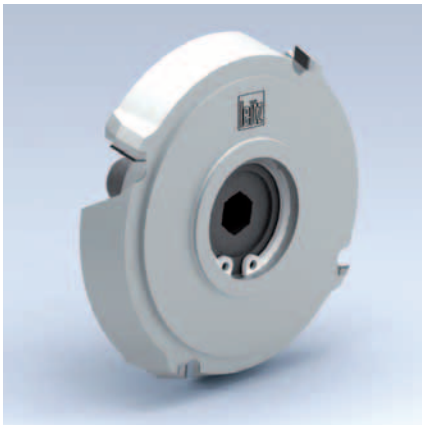
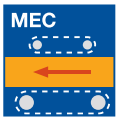
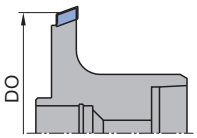


Bevel cutter with HSK 32 bore for FK-aggregates.

Bevel cutter i-system

Application:
To bevel edge bandings.

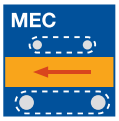
Machine:
Single or double sided edge banding machines. Machines with special extraction hood “i-system” for efficient chip clearance.

Workpiece material:
Softwood, hardwood, veneer and plastic edge bandings.

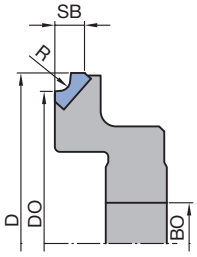
Technical information:
DP tipped tools with HSK 25 R and HSK 32 bores for FK-aggregates combined with special extraction hoods “i-system” for efficient chip clearance (approx. 97%) with reduced extraction energy consumption. Clean workpieces, no interference with scanning aggregates and less rework. High concentricity. Constant reference diameter.
DP tools - 3 mm tip height.

Various bevel angles i-system - Diamaster PRO
WF 350-2-DP

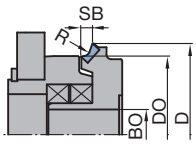
Machine	D0 mm	SB mm	BO mm	Z	FAW	NH mm	ID LL		ID RL	
Homag	62	5	HSK 32	4	20°	31,5	**198200**	●	**198201**	●
Homag	62	5	HSK 32	6	20°	31,5	**198202**	●	**198203**	●
Homag	62	5	HSK 32	8	20°	31,5	**198204**	●	**198205**	●
Homag	62	5	HSK 32	4	45°	31,5	**198240**	●	**198241**	●
Homag	62	5	HSK 32	6	45°	31,5	**198242**	●	**198243**	●
Homag, IMA	70	8	HSK 25 R	4	20°	19,5	**198408**	●	**198409**	●
Homag, IMA	70	8	HSK 25 R	6	20°	19,5	**198410**	●	**198411**	●
Homag, IMA	70	8	HSK 25 R	4	45°	19,5	**198464**	●	**198465**	●
Homag, IMA	70	8	HSK 25 R	6	45°	19,5	**198466**	●	**198467**	●



DP



Type 1



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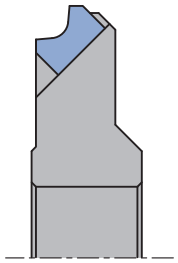

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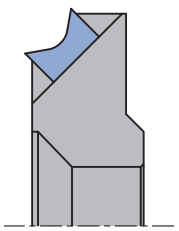

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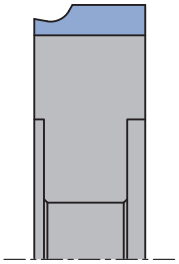

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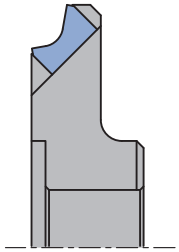


Type 6

Profile cutter

Application:
To round edge bandings.

Machine:
Single or double sided edge banding machines.

Workpiece material:
Softwood, hardwood, veneer and plastic edge banding.

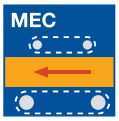
Technical information:
DP tipped tools and cylindrical bore.
Constant reference diameter. DP tools - 3 mm tip height.

Various radii, with DP-tipped
WF 501-2-DP

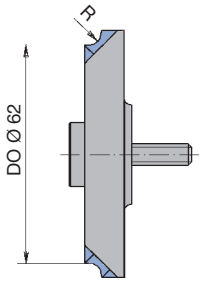
	Machine	D mm	D0 mm	BO mm	Z	QAL	R mm	Type	$n_{max.}$ min^{-1}	ID LL		ID RL	
	Biesse	67	60	16 DKN	6	DP	1,0	1	18000	**091960**	●	**091961**	●
	Biesse	68	60	16 DKN	6	DP	2,0	1	18000	**091962**	●	**091963**	●
	Biesse	70	60	16 DKN	6	DP	3,0	1	18000	**091964**	●	**091965**	●
	Biesse	72	70	16 KN	6	DP	1,0	5	18000	**192518**	●	**192519**	●
	Biesse	73	70	16 KN	6	DP	2,0	5	18000	**192520**	●	**192521**	●
	Biesse	75	70	16 KN	6	DP	3,0	5	18000	**192522**	●	**192523**	●
*	Brandt	58	50	16 DKN	4	DP	2,0	2	12000			**091966**	●
	Holz Her 1825	57	50	16 DKN	2	DP	2,0	3	24000	**192536**	●	**192537**	●
	Holz Her 1825	57	50	16 DKN	2	DP	2,5	3	24000	**192538**	●	**192539**	●
	Holz Her 1825	57	50	16 DKN	2	DP	3,0	3	24000	**192540**	●	**192541**	●
	Holz Her 1827	56	50	20 DKN	2	DP	2,0	4	24000	**192506**	●	**192507**	●
	Holz Her 1827	56	50	20 DKN	2	DP	2,5	4	24000	**192508**	●	**192509**	●
	Holz Her 1827	57	50	20 DKN	2	DP	3,0	4	24000	**192510**	●	**192511**	●
	Holz Her 1832	58,7	50	16 DKN	3	DP	2,0	3	24000	**192512**	●	**192513**	●
	Holz Her 1832	58,7	50	16 DKN	3	DP	2,5	3	24000	**192514**	●	**192515**	●
	Holz Her 1832	58,7	50	16 DKN	3	DP	3,0	3	24000	**192516**	●	**192517**	●
	Holz Her 1833	72,5	61	20 DKN	4	DP	2,0	4	18000	**192500**	●	**192501**	●
	Holz Her 1833	72,5	61	20 DKN	4	DP	2,5	4	18000	**192502**	●	**192503**	●
	Holz Her 1833	72,5	61	20 DKN	4	DP	3,0	4	18000	**192504**	●	**192505**	●
	Ott, Brandt	69	61	16 KN	4	DP	1,0	1	18000	**091954**	●	**091955**	●
	Ott, Brandt	69	61	16 KN	4	DP	2,0	1	18000	**091956**	●	**091957**	●
	Ott, Brandt	69	61	16 KN	4	DP	3,0	1	18000	**091958**	●	**091959**	●
	Stefani	70	60	16 DKN	4	DP	1,0	6	18000	**192524**	●	**192525**	●
	Stefani	70	60	16 DKN	4	DP	2,0	6	18000	**192526**	●	**192527**	●
	Stefani	70	60	16 DKN	4	DP	3,0	6	18000	**192528**	●	**192529**	●

* For Brandt edge trimming cutter with keyed and torque support.

● available ex stock
□ available at short notice
Instruction manual visit www.leitz.org

DP



Type 1

Profile cutter

Application:
To round (profile) edge bandings on FK-aggregate.

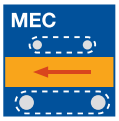
Machine:
Single or double sided edge banding machines.

Workpiece material:
Softwood, hardwood, veneer and plastic edge banding.

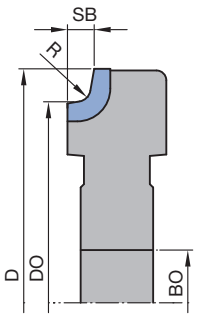
Technical information:
DP tipped tools with HSK 32 bores for FK-aggregates. High concentricity.
Constant reference diameter.
DP tools - 3 mm tip height.

Various radii - Diamaster PRO, FK-aggregate, HSK 32
WF 501-2-DP

Machine	D0 mm	BO mm	Z	QAL	R mm	Type	$n_{max.}$ min^{-1}	ID LL		ID RL	
Homag	62	HSK 32	4	DP	1,0	1	18000	**091500**	□	**091501**	□
Homag	62	HSK 32	4	DP	1,5	1	18000	**091502**	□	**091503**	□
Homag	62	HSK 32	4	DP	2,0	1	18000	**091504**	□	**091505**	□
Homag	62	HSK 32	4	DP	2,5	1	18000	**091506**	□	**091507**	□
Homag	62	HSK 32	4	DP	3,0	1	18000	**091508**	□	**091509**	□
Homag	62	HSK 32	4	DP	3,5	1	18000	**091510**	□	**091511**	□
Homag	62	HSK 32	4	DP	4,0	1	18000	**091512**	□	**091513**	□
Homag	62	HSK 32	4	DP	5,0	1	18000	**091516**	□	**091517**	□
Homag	62	HSK 32	6	DP	1,0	1	18000	**091672**		**091673**	
Homag	62	HSK 32	6	DP	1,5	1	18000	**091674**		**091675**	
Homag	62	HSK 32	6	DP	2,0	1	18000	**091650**		**091651**	
Homag	62	HSK 32	6	DP	2,5	1	18000	**091676**		**091677**	
Homag	62	HSK 32	6	DP	3,0	1	18000	**091652**		**091653**	
Homag	62	HSK 32	6	DP	3,5	1	18000	**091678**		**091679**	
Homag	62	HSK 32	6	DP	4,0	1	18000	**091654**		**091655**	
Homag	62	HSK 32	6	DP	5,0	1	18000	**091656**		**091657**	



DP



Profile cutter with bore 16 KN

Profile cutter

Application:
To round edge bandings.

Machine:
Single or double sided edge banding machines.

Workpiece material:
Softwood, hardwood, veneer and plastic edge banding.

Technical information:
DP tipped tools with bore 16 KN. Constant reference diameter.
DP tools - 3 mm tip height.

Various radii - Diamaster PRO, BO16 KN
WF 501-2-DP

Machine	D mm	D0 mm	BO mm	Z	QAL	R mm	ID LL		ID RL	
Homag, Ott	73	61	16 KN	3	DP	2,0	**090230**	●	**090231**	●
Homag, Ott	73	61	16 KN	3	DP	3,0	**090232**	●	**090233**	●

● available ex stock
□ available at short notice
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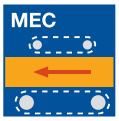
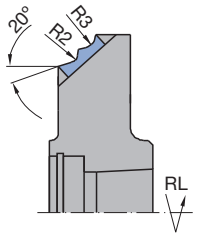
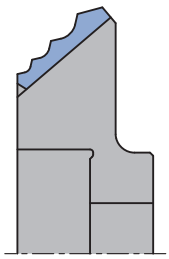
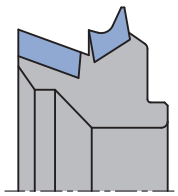


DP



Type 1


Type 2


Type 3

Profile cutter

Application:
For a choice of radii or bevels on edge bandings.

Machine:
Single or double sided edge banding machines.

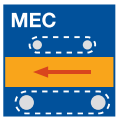
Workpiece material:
Softwood, hardwood, veneer and plastic edge banding.

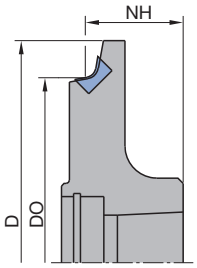
Technical information:
DP tipped tools with HSK 25 R or 16 DKN bore. Profile cutting with e.g. radii of 2.0 and 3.0 mm and bevel of 20°.
Constant reference diameter. DP tools - 0.5 mm resharpening area.

Multi-profile router - Diamaster PRO
WF 501-2-DP

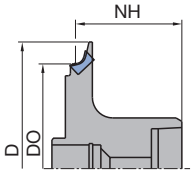
Machine	D mm	D0 mm	BO mm	Type	Z	R mm	FAW	$n_{max.}$ min^{-1}	ID LL		ID RL	
Biesse	75,4	60	16 DKN	2	6	1 / 2 / 3	25°	18000	**091996**	●	**091995**	●
Brandt	78	57,3	16 DKN	2	4	1,2 / 2 / 3	15°	18000	**091967**	●	**091968**	●
Holz Her 1826	58	50	20 DKN	3	2	2	flush	18000	**192530**	●	**192531**	●
Holz Her 1826	58	50	20 DKN	3	2	2,5	flush	18000	**192532**	●	**192533**	●
Holz Her 1826	58	50	20 DKN	3	2	3	flush	18000	**192534**	●	**192535**	●
Homag, IMA	85	65,2	HSK 25 R	1	4	2 / 3	20°	18000	**091798**	●	**091799**	●
Stefani	75,8	57,6	16 DKN	2	4	1 / 2 / 3	20°	18000	**091998**	●	**091997**	●

Alternative multi-profile trimming heads with different dimensions can be supplied at short notice on request.

Radii-cutter with HSK 25 R bore.



Radius cutter with HSK 32 R bore for FK-aggregates.

Profile cutter i-system

Application:
To round edge bandings.

Machine:
Single or double sided edge banding machines. Machines with special extraction hood “i-system” for efficient chip clearance.

Workpiece material:
Softwood, hardwood, veneer and plastic edge bandings.

Technical information:
DP tipped tools with HSK 25 R bore and special extraction hoods “i-system” for efficient chip clearance (approx. 97%) with reduced extraction energy consumption. Clean workpieces, no interference with scanning aggregates and less rework. Maximum concentricity. Constant reference diameter.
DP tools - 3 mm tip height.

Various radii i-system - Diamaster PRO, HSK 25 R
WF 501-2-DP

Machine	D mm	D0 mm	NH mm	BO mm	Z	QAL	R mm	$n_{max.}$ min^{-1}	ID LL		ID RL	
Homag, IMA	76	70	17,5	HSK 25 R	4	DP	1,0	18000	**198494**	●	**198484**	●
Homag, IMA	76	70	17,5	HSK 25 R	4	DP	1,5	18000	**198495**	●	**198485**	●
Homag, IMA	76	70	18,5	HSK 25 R	4	DP	2,0	18000	**198496**	●	**198486**	●
Homag, IMA	78	70	19	HSK 25 R	4	DP	2,5	18000	**198497**	●	**198487**	●
Homag, IMA	78	70	19,5	HSK 25 R	4	DP	3,0	18000	**198498**	●	**198488**	●
Homag, IMA	84	70	20,5	HSK 25 R	4	DP	4,0	18000	**198422**	●	**198423**	●
Homag, IMA	84	70	21,5	HSK 25 R	4	DP	5,0	18000	**198426**	●	**198427**	●
Homag, IMA	76	70	17,5	HSK 25 R	6	DP	1,0	18000	**198499**	●	**198489**	●
Homag, IMA	76	70	17,5	HSK 25 R	6	DP	1,5	18000	**198500**	●	**198490**	●
Homag, IMA	76	70	18,5	HSK 25 R	6	DP	2,0	18000	**198501**	●	**198491**	●
Homag, IMA	78	70	19	HSK 25 R	6	DP	2,5	18000	**198502**	●	**198492**	●
Homag, IMA	78	70	19,5	HSK 25 R	6	DP	3,0	18000	**198503**	●	**198493**	●
Homag, IMA	84	70	20,5	HSK 25 R	6	DP	4,0	18000	**198424**	□	**198425**	□
Homag, IMA	84	70	21,5	HSK 25 R	6	DP	5,0	18000	**198428**	□	**198429**	□

Application:
To round edge bandings on FK-aggregate.

Technical information:
DP tipped tools with HSK 32 bore for FK aggregates with special extraction hoods “i-system” for efficient chip clearance (approx. 97%) with reduced extraction energy consumption. Clean workpieces, no interference with scanning aggregates and less rework. Maximum concentricity. Constant reference diameter.
DP tools - 3 mm tip height.

Various radii i-system - Diamaster PRO, FK-aggregate, HSK 32
WF 501-2-DP

Machine	D mm	D0 mm	NH mm	BO mm	Z	QAL	R mm	$n_{max.}$ min^{-1}	ID LL		ID RL	
Homag	75	62	31,5	HSK 32	4	DP	1,0	18000	**198212**	●	**198213**	●
Homag	75	62	31,5	HSK 32	4	DP	1,5	18000	**198214**	●	**198215**	●
Homag	75	62	31,5	HSK 32	4	DP	2,0	18000	**198216**	●	**198217**	●
Homag	75	62	31,5	HSK 32	4	DP	2,5	18000	**198220**	●	**198221**	●
Homag	75	62	31,5	HSK 32	4	DP	3,0	18000	**198222**	●	**198223**	●
Homag	75	62	31,5	HSK 32	4	DP	4,0	18000	**198228**	●	**198229**	●
Homag	75	62	31,5	HSK 32	4	DP	5,0	18000	**198234**	●	**198235**	●

● available ex stock
□ available at short notice
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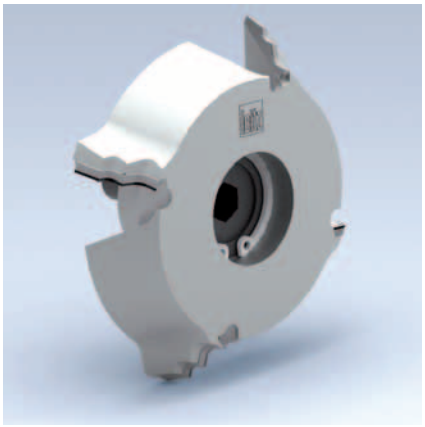
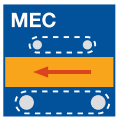
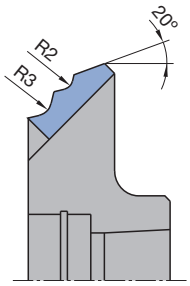
Machine	D mm	D0 mm	NH mm	BO mm	Z	QAL	R mm	$n_{max.}$ min^{-1}	ID LL		ID RL	
Homag	75	62	31,5	HSK 32	6	DP	1,0	18000	**198246**	●	**198247**	●
Homag	75	62	31,5	HSK 32	6	DP	1,5	18000	**198244**	●	**198245**	●
Homag	75	62	31,5	HSK 32	6	DP	2,0	18000	**198218**	●	**198219**	●
Homag	75	62	31,5	HSK 32	6	DP	2,5	18000	**198238**	●	**198239**	●
Homag	75	62	31,5	HSK 32	6	DP	3,0	18000	**198224**	●	**198225**	●
Homag	75	62	31,5	HSK 32	6	DP	4,0	18000	**198230**	●	**198231**	●
Homag	75	62	31,5	HSK 32	6	DP	5,0	18000	**198236**	●	**198237**	●







Multi-profile cutter i-System

Profile cutter i-system

Application:
For a choice of radii or bevels on edge bandings.

Machine:
Single or double sided edge banding machines. Machines with special extraction hood “i-system” for efficient chip clearance.

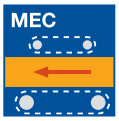
Workpiece material:
Softwood, hardwood, veneer and plastic edge bandings.

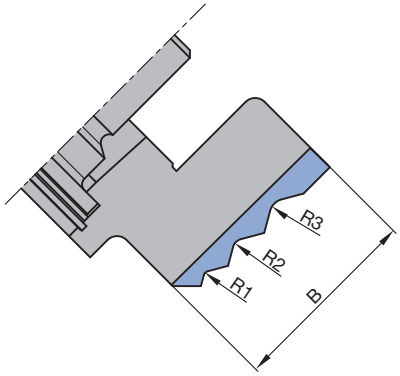
Technical information:
DP tipped tools with HSK 25 R bores and special extraction hood “i-system” for efficient chip clearance (approx. 97%) with reduced extraction energy consumption. Clean workpieces, no interference with scanning aggregates and less rework. Profile combination of radii of 2.0 and 3.0 mm and bevel 20°. High concentricity. DP tools - 3 mm tip height.

Multi-profile cutter i-system - Diamaster PRO, HSK 25 R
WF 501-2-DP

Machine	D mm	D0 mm	BO mm	Z	QAL	R mm	FAW	ID LL		ID RL	
Homag, IMA	85	62	HSK 25 R	4	DP	2 / 3	20°	**198444**	●	**198445**	●
Homag, IMA	85	62	HSK 25 R	4	DP	1,5 / 2	20°	**198504**	●	**198505**	●
Homag, IMA	85	62	HSK 25 R	6	DP	2 / 3	20°	**198456**	●	**198457**	●

Alternative multi-profile trimming heads with different dimensions can be supplied at short notice on request.





Profile cutter i-system

Application:
For a choice of radii and bevels on edge bandings. Corner rounding to leading and trailing edges and radius cutting/bevel on top/bottom edges.

Machine:
IMA edge banding machine with KFA-aggregates.

Workpiece material:
Softwood, hardwood, veneer and plastic edge bandings.

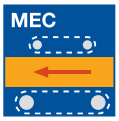
Technical information:
DP tipped tools with HSK 25 R bore and special extraction hood “i-system” for efficient chip clearance (approx. 97%) with reduced extraction energy consumption. Clean workpieces, no interference with scanning aggregates and less rework. tools - 3 mm tip height. Constant diameters. Low noise.

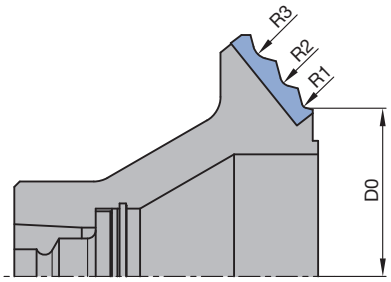
Multi-profile cutter i-system - Diamaster PRO, HSK 25 R, KFA-aggregates
WF 502-2-DP

Machine	D mm	B mm	BO mm	Z	R mm	FAW	ID LL		ID RL	
IMA	75	28	HSK 25 R	6	1/2/3	15°	**091912**	□	**091913**	□
IMA	75	43	HSK 25 R	6	1/2/3	15°	**091914**	□	**091915**	□
IMA	75	30	HSK 25 R	6	1/2/3	15°	**091916**	□	**091917**	□

Alternative multi-profile trimming heads with different dimensions can be supplied at short notice on request.

● available ex stock
□ available at short notice
Instruction manual visit www.leitz.org





Profile cutter i-system

Application:
For a choice of radii and bevels on edge bandings. Corner rounding on leading and trailing edges and radius bevel on top/bottom edges.

Machine:
IMA edge banding machines with MFA-aggregates

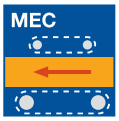
Workpiece material:
Softwood, hardwood, veneer and plastic edge bandings.

Technical information:
DP tipped tools with HSK 25 R bore and special extraction hood “i-system” for efficient chip clearance (approx. 97%) with reduced extraction energy consumption. Clean workpieces, no interference with scanning aggregates and less rework. tools - 3 mm tip height. Constant diameters. Low noise.

Multi-profile cutter i-system - Diamaster PRO, HSK 25 R, MFA-aggregates
WF 502-2-DP

Machine	D mm	D0 mm	BO mm	Z	R mm	FAW	ID LL		ID RL	
IMA	89	62	HSK 25 R	6	1/2	15°	**091918**	□	**091919**	□
IMA	89	57	HSK 25 R	6	1/2/3	15°	**091920**	□	**091921**	□

Alternative multi-profile trimming heads with different dimensions can be supplied at short notice on request.



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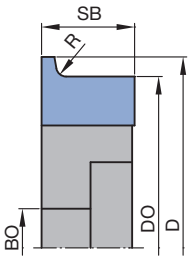
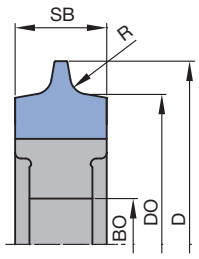
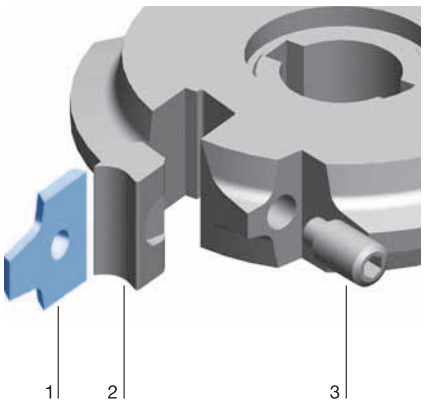


Type 1



Type 2



Profile cutterhead / Bevel cutterhead

Application:
To round edge bandings.

Machine:
Single or double sided edge banding machines.

Workpiece material:
Softwood, hardwood, veneer and plastic edge bandings.

Technical information:
Cutterheads with tungsten carbide throwaway knives and bore with DKN.
The same cutterhead tool body for R 1.5 to 3.0 mm. Constant reference diameter.

Various radii - Brandt
WE 500-2

Machine	D mm	D0 mm	SB mm	BO mm	Z	R mm	Type	$n_{max.}$ min^{-1}	ID LL		ID RL	
Brandt	56	50	16	16 DKN	4	2	1	18000	**075005**	●	**075006**	●
Brandt	58	50	12	16 DKN	4	3	2	18000	**075004**	●	**075004**	●
Brandt	78	70	19	16 DKN	4	3	1	18000	**075002**	●	**075003**	●
Brandt	82	70	16	16 DKN	4	2	2	18000	**075009**	●	**075009**	●

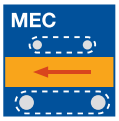
Spare knives:

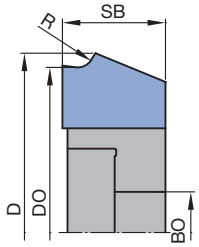
Part-no.	Type	BEZ	ABM mm	QAL	R mm	VE PCS	ID LL		ID RL	
1	1	Exchange knife	16x14,5x2	HW	1,5	10	**075324**	●	**075325**	●
1	1	Exchange knife	16x14,5x2	HW	2,0	10	**075326**	●	**075327**	●
1	1	Exchange knife	16x14,5x2	HW	3,0	10	**075328**	●	**075329**	●
1	1	Exchange knife	19,6x15,2x2	HW	1,5	10	**075333**	●	**075334**	●
1	1	Exchange knife	19,6x15,2x2	HW	2,0	10	**075335**	●	**075336**	●
1	1	Exchange knife	19,6x15,2x2	HW	2,5	10	**075337**	●	**075338**	●
1	1	Exchange knife	19,6x15,2x2	HW	3,0	10	**075302**	●	**075303**	●
1	2	Exchange knife	12x13x2	HW	1,5	10	**075339**	●	**075339**	●
1	2	Exchange knife	12x13x2	HW	2,0	10	**075330**	●	**075330**	●
1	2	Exchange knife	12x13x2	HW	3,0	10	**075304**	●	**075304**	●
1	2	Exchange knife	16x17,5x2	HW	1,5	10	**009539**	●	**009539**	●
1	2	Exchange knife	16x17,5x2	HW	2,0	10	**005132**	●	**005132**	●
1	2	Exchange knife	16x17,5x2	HW	3,0	10	**005133**	●	**005133**	●

Spare parts:

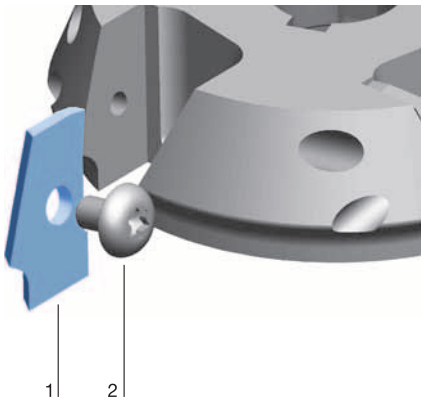
Part-no.	BEZ	ABM mm	ID	
2	Clamping wedge	10x11,5x7	**075400**	●
2	Clamping wedge	10x10,9x7	**075403**	●
2	Clamping wedge	13,5x11x7	**075404**	●
2	Clamping wedge	19	**075401**	●
2	Clamping wedge	19	**075402**	●
3	Allen screw	M6x12	**006035**	●
	Allen Key	SW 3	**005444**	●
	Magnetic setting gauge	1,0	**005372**	●

● available ex stock
□ available at short notice
Instruction manual visit www.leitz.org

Type 1



Profile cutterhead / Bevel cutterhead

Application:
To round and bevel edge bandings.

Machine:
Single or double sided edge banding machines. Machines must be equipped with DFC-system.

Workpiece material:
Softwood, hardwood, veneer and plastic edge bandings.

Technical information:
Cutterheads with tungsten carbide throwaway knives and bore with DKN. Constant reference diameter. DFC design for high chip clearance of more than 97% efficient.

Various profiles - DFC, Brandt
WE 500-2

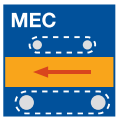
Machine	D mm	SB mm	BO mm	Z	R mm	FAW	Type	$n_{max.}$ min^{-1}	ID LL		ID RL	
Brandt	70,23	20,28	16 DKN	4		15°	1	12000	**075012**	●	**075013**	●
Brandt	70,23	20,28	16 DKN	4		30°	1	12000	**075014**	□	**075015**	□
Brandt	69,98	20,28	16 DKN	4		45°	1	12000	**075016**	●	**075017**	●
Brandt	70,57	20,28	16 DKN	4	1,0		1	12000	**075018**	□	**075019**	□
Brandt	70,57	20,28	16 DKN	4	1,2		1	12000	**075020**	□	**075021**	□
Brandt	70,57	20,28	16 DKN	4	1,5		1	12000	**075022**	□	**075023**	□
Brandt	70,57	20,28	16 DKN	4	2,0		1	12000	**075024**	●	**075025**	●
Brandt	70,57	20,28	16 DKN	4	2,5		1	12000	**075026**	□	**075027**	□
Brandt	70,57	20,28	16 DKN	4	3,0		1	12000	**075028**	●	**075029**	●
Brandt	73,39	20,28	16 DKN	4	5,0		1	12000	**075030**		**075031**	

Spare knives:

Part-no.	Type	BEZ	ABM mm	QAL	R mm	FAW	VE PCS	ID LL		ID RL	
1	1	Exchange knife	22,3x14x2	HW	1,0		10	**075315**	□	**075314**	□
1	1	Exchange knife	22,3x14x2	HW	1,5		10	**075319**	□	**075318**	□
1	1	Exchange knife	22,3x14x2	HW	2,0		10	**075307**	●	**075306**	●
1	1	Exchange knife	22,3x14x2	HW	2,5		10	**075321**	□	**075320**	□
1	1	Exchange knife	22,3x14x2	HW	3,0		10	**075309**	●	**075308**	●
1	1	Exchange knife	22,3x14x2	HW	1,2		10	**075317**	□	**075316**	□
1	1	Exchange knife	22,3x14x2	HW	5,0		10	**075323**		**075322**	
1	1	Exchange knife	22,3x14x2	HW		15°	10	**075311**	●	**075310**	●
1	1	Exchange knife	22,3x14x2	HW		30°	10	**075331**	□	**075332**	□
1	1	Exchange knife	22,3x14x2	HW		45°	10	**075313**	●	**075312**	●

Spare parts:

Part-no.	BEZ	ABM mm	ID	
2	Oval head screw Torx® 15	M4x6	**006225**	●
	Torx® key	Torx® 15	**005466**	●

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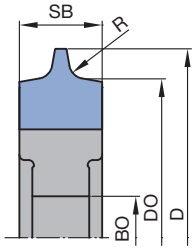
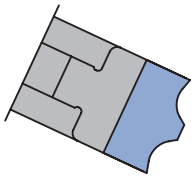


Type 1


Type 2

Profile cutterhead / Bevel cutterhead

Application:
To round edge bandings.

Machine:
Single or double sided edge banding machines.

Workpiece material:
Softwood, hardwood, veneer and plastic edge bandings.

Technical information:
Cutterheads with tungsten carbide throwaway knives and 16 mm bore.
The same cutterhead tool body for R 1.0 to 3.0 mm. Constant reference diameter.

Various radii - Ott
WE 500-2

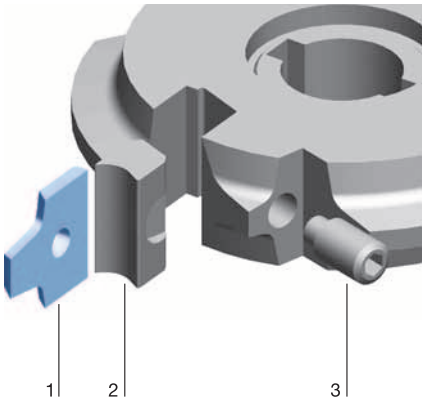
Machine	D mm	D0 mm	SB mm	BO mm	Z	R mm	Type	$n_{max.}$ min^{-1}	ID LL		ID RL	
Ott	73	61	16	16	3	2,0	1	18000	**074519**	●	**074519**	●
Ott	80	72	25	16	3	2,0	2	18000	**125113**		**125113**	

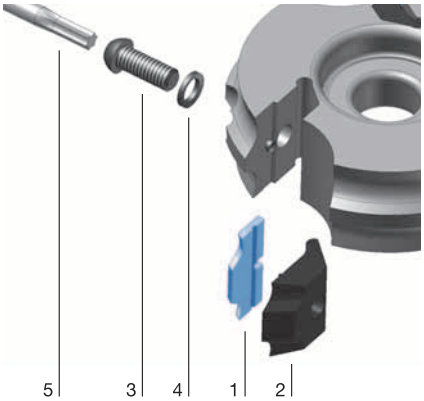
Spare knives:

Part-no.	Type	BEZ	ABM mm	QAL	R mm	VE PCS	ID LL		ID RL	
1	1	Exchange knife	16x16,5x2	HW	1,0	10	**074540**	□	**074540**	□
1	1	Exchange knife	16x17x2	HW	1,5	10	**074541**	□	**074541**	□
1	2	Exchange knife	16x17,5x2	HW	2,0	10	**005132**	●	**005132**	●
1	1	Exchange knife	16x18,5x2	HW	2,5	10	**074543**	□	**074543**	□
1	1	Exchange knife	16x19x2	HW	3,0	10	**005133**	□	**005133**	□
1	1	Exchange knife	16x19,5x2	HW	3,5	10	**074545**	□	**074545**	□
1	2	Exchange knife	25x15x2	HW	1,0	10	**619194**	□	**619194**	□
1	2	Exchange knife	25x15x2	HW	1,5	10	**619195**	□	**619195**	□
1	2	Exchange knife	25x15x2	HW	2,0	10	**619196**	●	**619196**	●
1	2	Exchange knife	25x15x2	HW	2,5	10	**619197**	□	**619197**	□
1	2	Exchange knife	25x15x2	HW	3,0	10	**619198**	□	**619198**	□
1	2	Exchange knife	25x15x2	HW	3,5	10	**619202**	□	**619202**	□

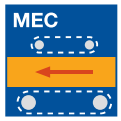
Spare parts:

Part-no.	Type	BEZ	ABM mm	ID	
2	1	Clamping wedge	13,5x11x7	**074704**	●
2	2	Clamping wedge	25x14x6	**629096**	●
3		Allen screw	M6x12	**006035**	●
3		Clamping screw, Torx® 25	M6x18,5	**007818**	●
4		Washer	9/6,2x1,2	**006753**	●
5		Allen Key	SW 3	**005444**	●
5		Torx® key	Torx® 25	**117504**	●





● available ex stock
□ available at short notice
Instruction manual visit www.leitz.org



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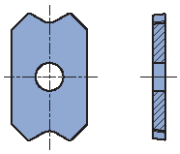


Turnblade knives - scraper

Radius scrapers

Application:
For scraping edges with radii or bevels.

Machine:
Single or double sided edge banding machines.

Workpiece material:
Plastic edge bandings.

Technical information:
Scraper holder to carry different scraper turnblade knives.

Scraper holder
XT 399-0

Machine	ABM mm	BEM	ID	
Homag	14x22x118	for R <= 5 mm	**074054**	●
Homag, Reich	16x15x131	for R <= 5 mm	**074053**	●
Ott	16x16x120	for R <= 3 mm	**074502**	●

Spare parts:

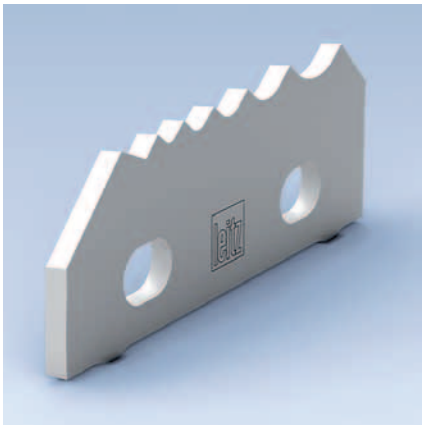
BEZ	ABM mm	ID	
Torx® key	Torx® 15	**005466**	●
Oval head screw Torx® 15	M4x6	**006225**	●

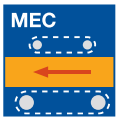
Technical information:
Bevel and radius scraper turnblade knives for scraper holder.

Turnblade knives - scrapers
TM 435-0

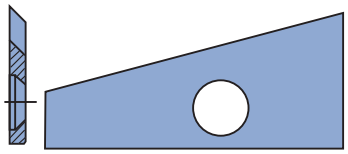
Machine	R mm	ABM mm	QAL	BEM	VE PCS	ID	
Homag, IMA, Holz Her	Bevel 45°	12x20x2	HW		10	**074037**	●
Homag, Holz Her	1,0	12x20x2	HW	Profile relief 6°	10	**074039**	●
Homag, Holz Her	1,5	12x20x2	HW	Profile relief 6°	10	**074074**	●
Homag, Holz Her	2,0	12x20x2	HW	Profile relief 6°	10	**074040**	●
Homag, Holz Her	2,5	12x20x2	HW	Profile relief 6°	10	**074075**	●
Homag, Holz Her	3,0	12x20x2	HW	Profile relief 6°	10	**074041**	●
IMA	1,0	12x20x2	HW	Profile relief 15°	10	**074044**	●
IMA	1,5	12x20x2	HW	Profile relief 15°	10	**074076**	●
IMA	2,0	12x20x2	HW	Profile relief 15°	10	**074021**	●
IMA	2,5	12x20x2	HW	Profile relief 15°	10	**074077**	●
IMA	3,0	12x20x2	HW	Profile relief 15°	10	**074022**	●
Homag - BAZ	1,0	20x11,5x2	HW	Profile relief 6°	10	**073713**	●
Homag - BAZ	1,5	20x11,5x2	HW	Profile relief 6°	10	**073714**	●
Homag - BAZ	2,0	20x11,5x2	HW	Profile relief 6°	10	**073715**	●
Homag - BAZ	3,0	20x11,5x2	HW	Profile relief 6°	10	**073716**	●
Homag - BAZ	Bevel 3°	20x11,5x2	HW		10	**073717**	●
Biesse, Stefani	1,0	12,7x12,7x3,18	HW	Profile relief 10°	10	**074548**	●
Biesse, Stefani	1,5	12,7x12,7x3,18	HW	Profile relief 10°	10	**074549**	●
Biesse, Stefani	2,0	12,7x12,7x3,18	HW	Profile relief 10°	10	**074550**	●
Biesse, Stefani	3,0	12,7x12,7x3,18	HW	Profile relief 10°	10	**074551**	●
Biesse, Stefani	Bevel 25°	12,7x12,7x3,18	HW		10	**074552**	●

Additional scrapers and anti stress whitening knives can be supplied at short notice on request.

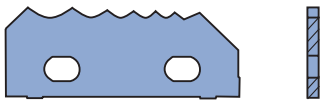




HW



Flat scraper



Multi-profile scraper

Flat scrapers

Application:
To scrape edges with radius or bevel.

Machine:
Single or double sided edge banding machines.

Workpiece material:
Plastic edge bandings.

Technical information:
Different profile flat scrapers.

Throwaway scraper knives
TM 135-0

Machine	ABM mm	QAL	FAW	ID LL		ID RL	
Biesse	22,9x22,9x2,5	HW				**074555**	●
Biesse	40x25x3	HW		**074554**	●	**074553**	●
Biesse	16x16x4,7	HW				**074556**	●
Homag	32x55x4,5	HW	15°	**074047**	●	**074048**	●
IMA	55x25x3	HW	15°	**074023**	●	**074024**	●
IMA	30x22,5x3	HW	15°	**074045**	□	**074046**	□
IMA	14,3x14,3x2,5	HW				**074305**	●
Ott, Brandt	15x14,3x2,5	HW	6°	**074500**	●	**074501**	●

Spare parts:

BEZ	ABM mm	ID	
Torx® key	Torx® 15	**005466**	●
Oval head screw Torx® 15	M4x6	**006225**	●

Application:
To scrape edges with radius or bevel.

Technical information:
Multi-profile scraper with a choice of bevels and radii.

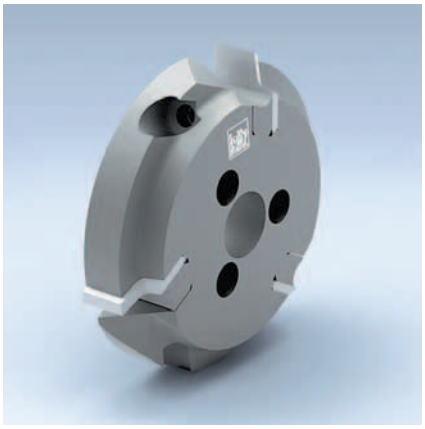
Multi-profile scrapers
TM 135-0

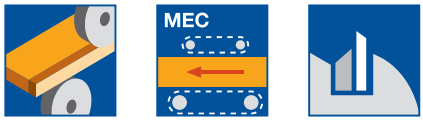
Machine	BEM	QAL	VE PCS	ID LL		ID RL	
Homag	R 0,45/1/1,5/2/3/5	HW	10	**074049**	●	**074050**	●
IMA	R 1/2/3	HW	10	**074079**	●	**074078**	●
Stefani	R 1/2/3/Bevel	HW	10	**074081**	●	**074080**	●
Biesse	R 1/2/3/Bevel	HW	10	**074083**	●	**074082**	●

Spare parts:

BEZ	ABM mm	ID	
Torx® key	Torx® 15	**005466**	●
Oval head screw Torx® 15	M4x6	**006225**	●

● available ex stock
□ available at short notice
Instruction manual visit www.leitz.org





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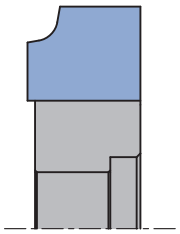
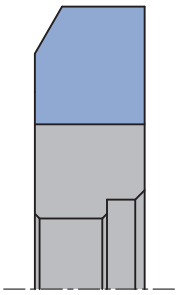


Type 1



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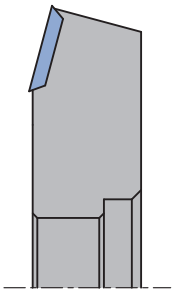

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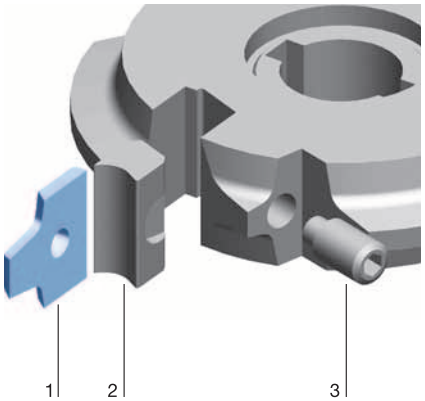


Profile-cutterhead / bevel-cutterhead for stationary machines

Application:
To bevel / round edge bandings.

Machine:
Homag BAZ.

Workpiece material:
Softwood, hardwood, veneer and plastic edge bandings.

Technical information:
Cutterheads with tungsten carbide throwaway knives for edge trimming cutter aggregate. The same cutterhead tool body suitable for R 1.0 to 3.0 mm. Constant reference diameter.

various radii / bevels for Homag machines
WE 500-2

D mm	D0 mm	BO mm	Z	QAL	R mm	FAW	Type	$n_{max.}$ min^{-1}	ID LL		ID RL	
59	50	15	3	HW	1,0		1	18000	**073001**	●	**073000**	●
59	50	15	3	HW	1,5		1	18000	**073003**	●	**073002**	●
59	50	15	3	HW	2,0		1	18000	**073005**	●	**073004**	●
59	50	15	3	HW	3,0		1	18000	**073009**	●	**073008**	●
60	50	15	3	HW		15°	2	18000	**073037**	●	**073036**	●
60	50	15	3	HW		30°	2	18000	**073039**	●	**073038**	●
60	50	15	3	HW		45°	2	18000	**073041**	●	**073040**	●
62	50	15	3	HW		15°	3	18000	**073101**	●	**073100**	●

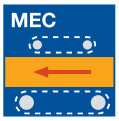
Type 3 for special thin edge bandings.

Spare knives:

SB mm	H mm	DIK mm	QAL	R mm	FAW	Type	ID LL		ID RL	
13	15	2	HW	1,0		1	**073501**	●	**073500**	●
13	15	2	HW	1,5		1	**073503**	●	**073502**	●
13	15	2	HW	2,0		1	**073505**	●	**073504**	●
13	15	2	HW	3,0		1	**073509**	●	**073508**	●
12	16	2	HW		15°	2	**073537**	●	**073536**	●
12	16	2	HW		30°	2	**073539**	●	**073538**	●
12	16	2	HW		45°	2	**073541**	●	**073540**	●
14	14	2	HW-F			3	**005099**	●	**005099**	●

Spare parts:

Part-no.	BEZ	ABM mm	ID	
2	Clamping wedge RL	11,5x14,4x7	**073400**	●
2	Clamping wedge LL	11,5x14,4x7	**073401**	●
3	Allen screw	M6x12	**006035**	●
3	Countersink screw, Torx® 20	M6x0,5x4,9	**006243**	●
	Allen Key	SW 3	**005444**	●
	Torx® key	Torx® 20	**006091**	●
	Magnetic setting gauge	1,0	**005372**	●



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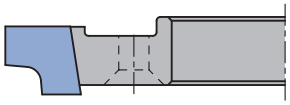
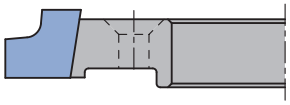




Profile cutter / bevel cutter for stationary machines.

Application:
To round / bevel edge bandings.

Machine:
IMA (BIMA).

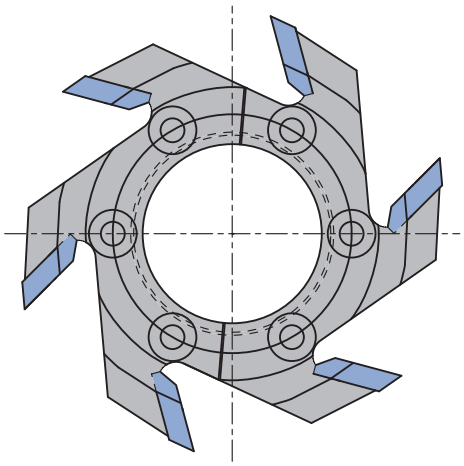
Workpiece material:
Softwood, hardwood, veneer and plastic edge bandings.

Technical information:
Profile cutter / bevel tungsten carbide tipped cutter, one or two part design.
DP tipped tools available at short notice.

Various radii / bevels for IMA machines
WF 501-2

D mm	D0 mm	SB mm	BO mm	Z	QAL	R mm	FAW	Type	$n_{max.}$ min^{-1}	ID LL		ID RL	
70	60	9	30	6	HW	1,5		1	18000	**074056**	●	**074057**	●
70	60	9	30	6	HW	2,0		1	18000	**074058**	●	**074059**	●
70	60	9	30	6	HW	3,0		1	18000	**074060**	●	**074061**	●
64,4	55	10,2	30	6	HW	1,5		1	18000	**074062**	●	**074063**	●
64,4	55	10,2	30	6	HW	2,0		1	18000	**074064**	●	**074065**	●
64,4	55	10,2	30	6	HW	3,0		1	18000	**074066**	●	**074067**	●
70	60	9	30	6	HW		15°	1	18000	**074068**	●	**074069**	●
70	60	9	30	6	HW		30°	1	18000	**074070**	●	**074071**	●
70	60	9	30	6	HW		45°	1	18000	**074072**	●	**074073**	●

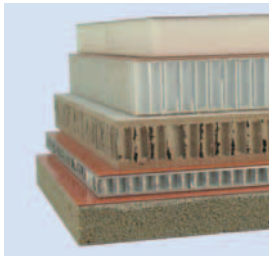
All cutters are available at short notice in two part design.



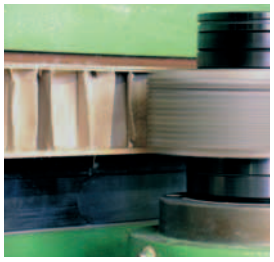
● available ex stock
□ available at short notice
Instruction manual visit www.leitz.org

Background	Rise in cost of conventional chipboards. Reduction in weight of material, in particular flat pack furniture. Rising transport costs.
Advantages	Raw material saving as less material used. Reduction in weight of end product. Reduction in transport costs. More design options using large panel thicknesses.
Requirements	Expert knowledge on edging and hogging techniques. Right choice of tool and in some cases special tools. Co-ordinated system solutions.
Material structure	Sandwich boards – Top layers on both sides MDF, HDF, HPL, chipboard, aluminium… – Light construction core: honeycomb (paper, plastic, aluminium) or foam (PU, glass, aluminium).
Application	Furniture and door production, board industry in general, interior design.
Edging techniques	1. Direct edging (for thick top layers and support to the core). 2. Support edge method (bonding edge, support edge, double edge). 3. Bolt insertion technique.

Machining examples

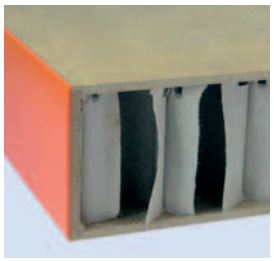


Light construction panels.

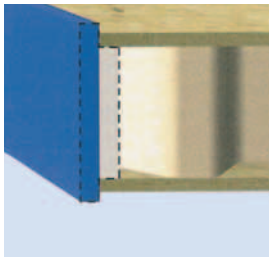


Groove cutting for support edge.

Direct edging.



Support edge.



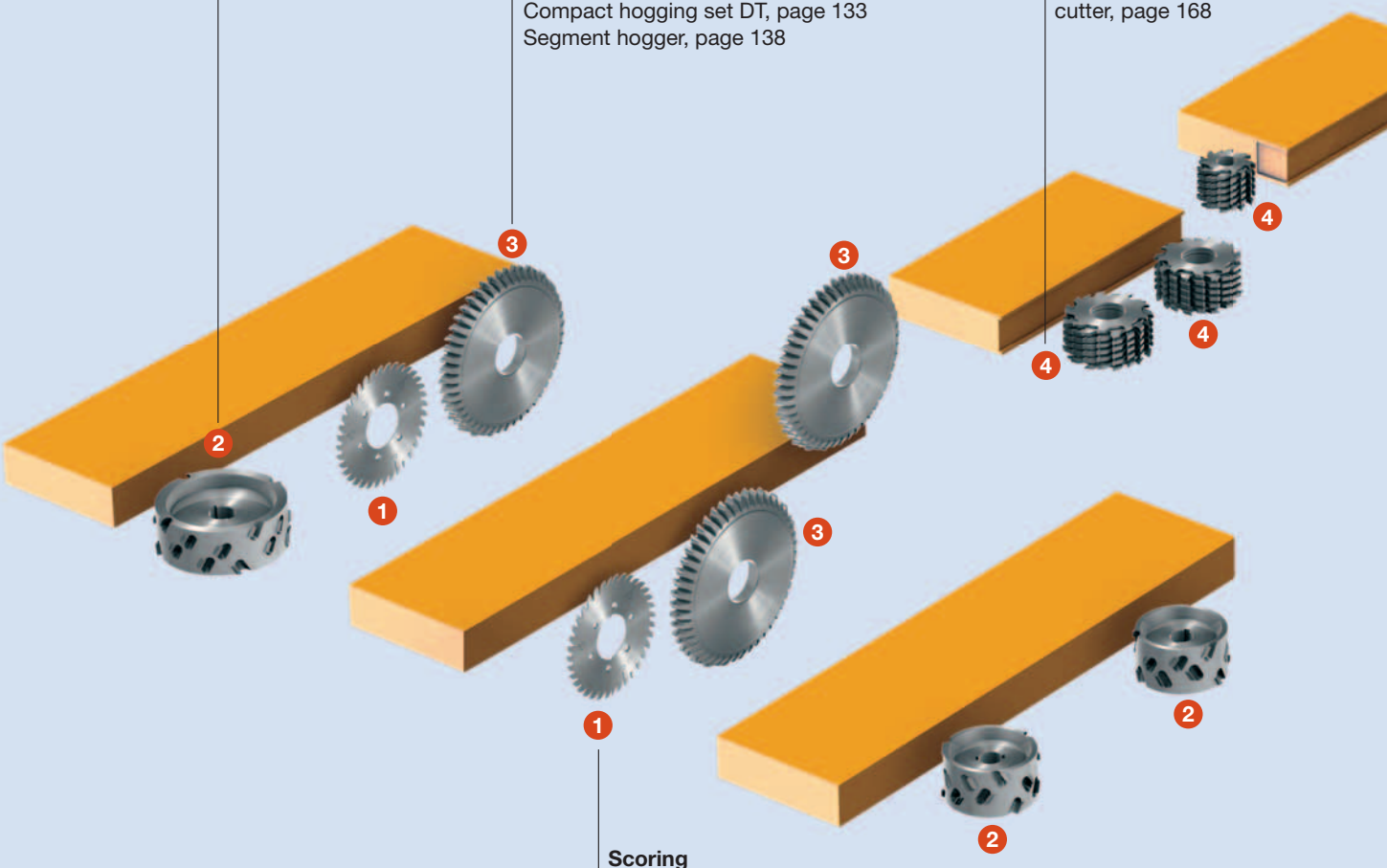
Double edge.

Bolt insertion technique.

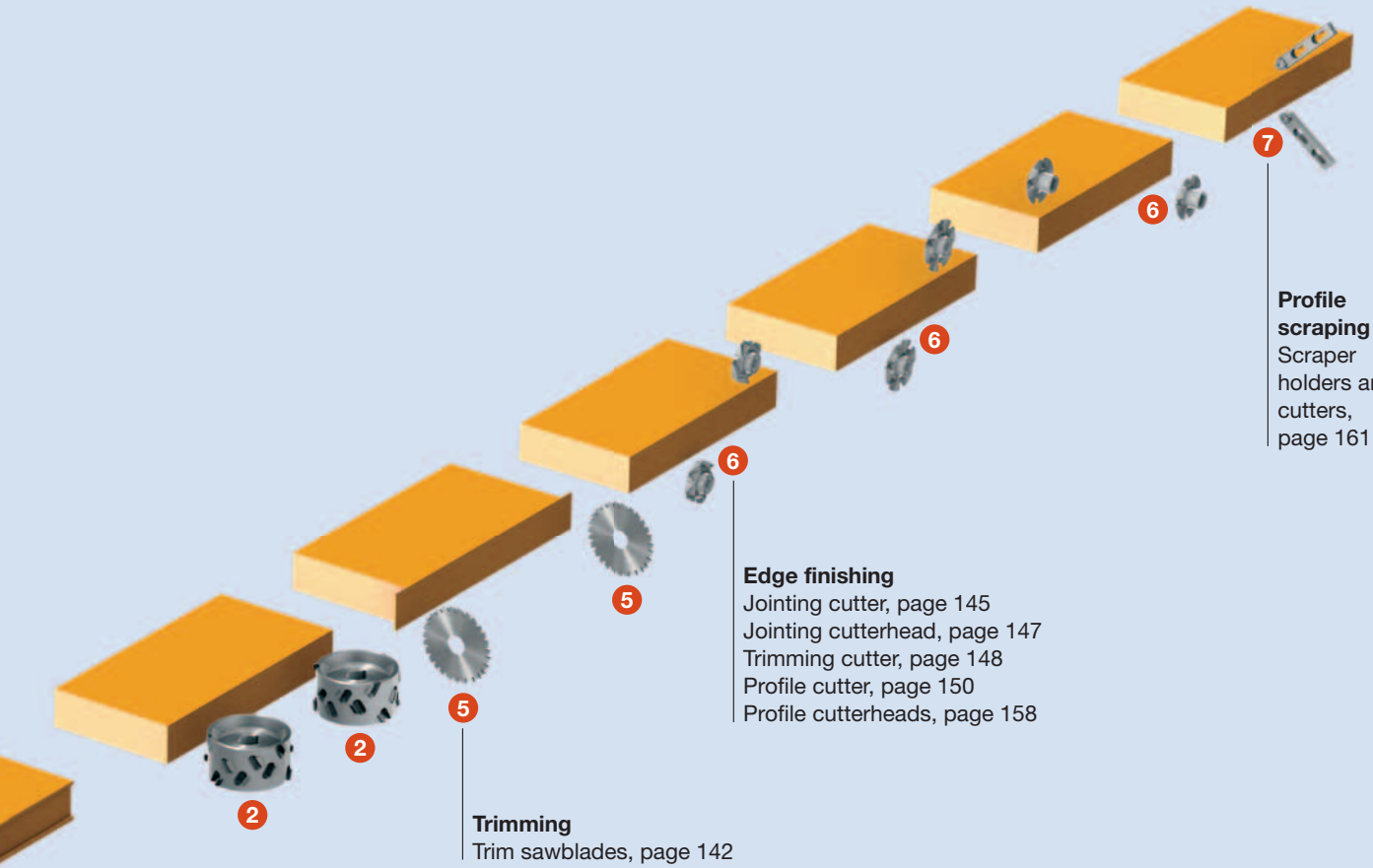
Jointing
Jointing cutter, page 118
Adjustable jointing cutters, page 122
Jointing cutterheads, page 320

Hogging
Compact hogging set DT Score, page 132
Compact hogging set DT, page 133
Segment hogger, page 138

Grooving, rebating
Grooving/rebating cutter, page 168



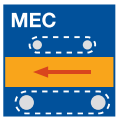
Scoring
Scoring sawblades; page 124



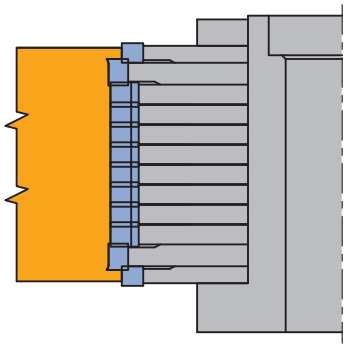
Profile scraping
Scraper holders and cutters, page 161

Edge finishing
Jointing cutter, page 145
Jointing cutterhead, page 147
Trimming cutter, page 148
Profile cutter, page 150
Profile cutterheads, page 158

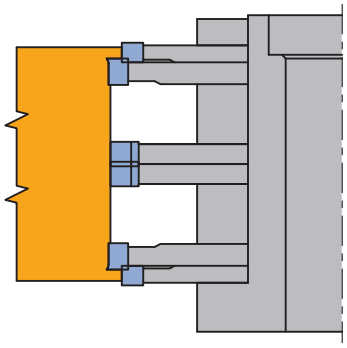
Trimming
Trim sawblades, page 142

HW DP



ID **190628**
Machining across the entire surface of the honeycomb with jointing of top/bottom layers.



ID **190629**
Partial machining of the honeycomb with jointing of top/bottom layers.

Grooving cutter and grooving cutter sets

Application:
For grooving and rebating workpiece narrow side of honeycomb panels for support edges prior to edge banding.

Machine:
Single or double sided edge banding machines.

Workpiece material:
Light construction or honeycomb panels.

Technical information:
Tungsten carbide and DP tipped tools assembled as sets to remove the honeycomb. Adjustment option for full or partial machining with/without jointing of surface layers. As the surface layers are simultaneously jointed, a grooving depth of 3 mm is achieved in one working step. This depth is suitable for several edgings (double edge etc.). Board thicknesses 25 - 100 mm can be machined (depending on the machine). DP tools - 4.0 mm resharpening area.

Jointing cutters
WF 800-2

D mm	SB mm	TDI mm	BO mm	Z	QAL	$n_{max.}$ min^{-1}	ID LL		ID RL	
92	5,2	4,5	50	9	DP	18600	**190620**	●	**190621**	●
117	5,2	4,5	50	9	DP	14600	**190622**	●	**190623**	●

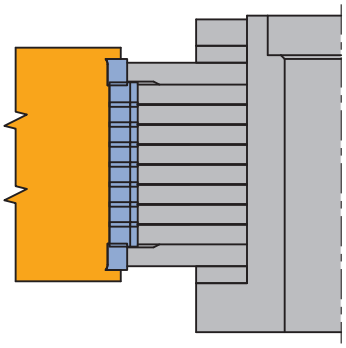
Edge groove cutters
WK 800-2

D mm	SB mm	TDI mm	BO mm	Z	QAL	$n_{max.}$ min^{-1}	ID LL		ID RL	
100	7	5,8	50	9	DP	17100	**190624**	●	**190625**	●
125	7	5,8	50	9	DP	13700	**190626**	●	**190627**	●

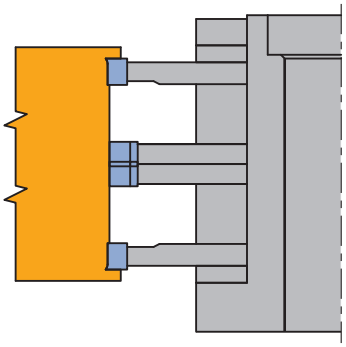
Central groove cutters
WK 800-2

D mm	SB mm	TDI mm	BO mm	Z	QAL	$n_{max.}$ min^{-1}	ID	
98	3,5	2,5	50	9	HW	17500	**020102**	●
123	3,5	2,5	50	9	HW	13900	**020103**	●
98	6,5	5,3	50	9	HW	17500	**020104**	●
123	6,5	5,3	50	9	HW	13900	**020105**	●

● available ex stock
□ available at short notice
Instruction manual visit www.leitz.org



ID **190630**
Full machining of the honeycomb.



ID **190631**
Partial machining of the honeycomb.

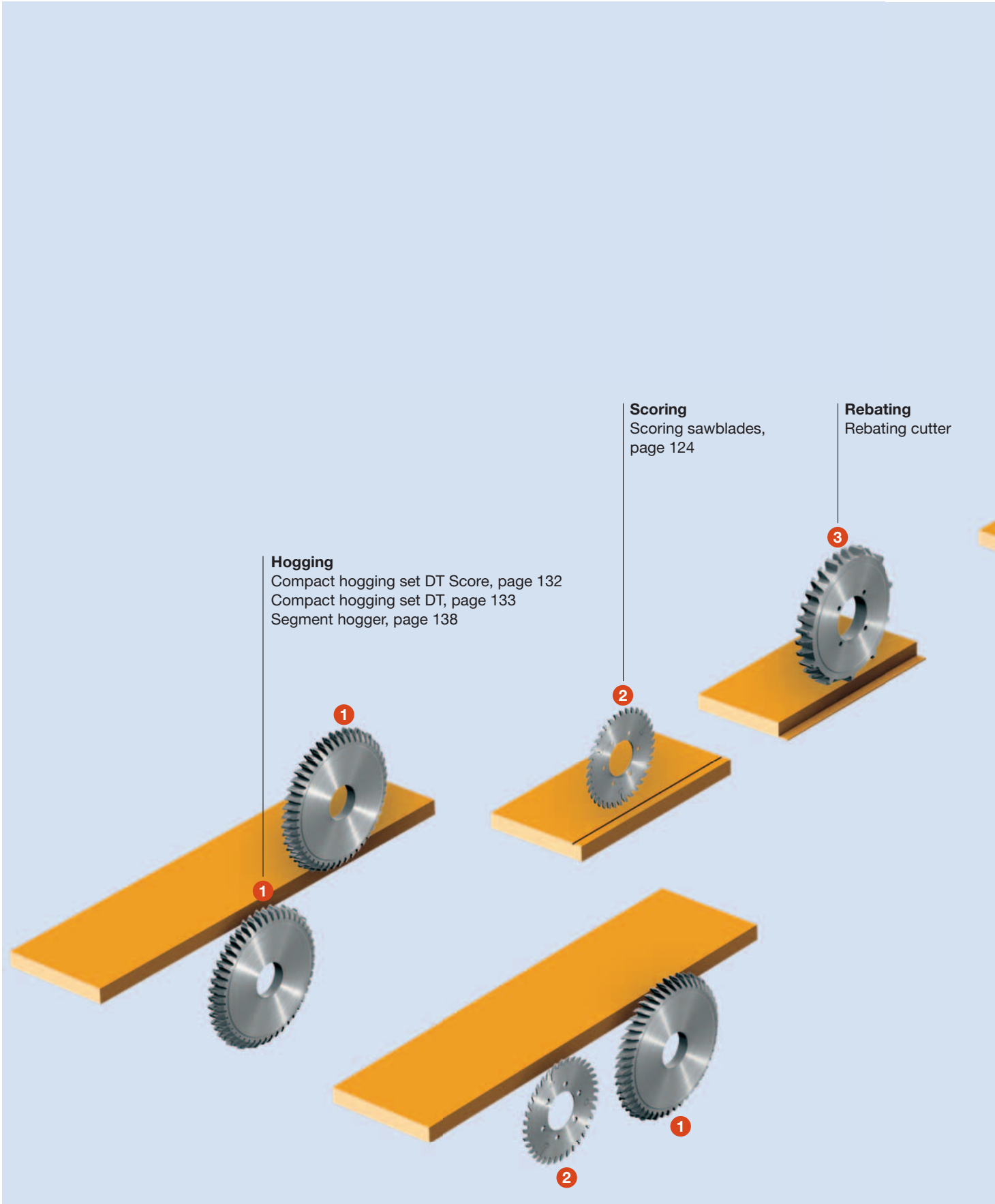
Spare parts:

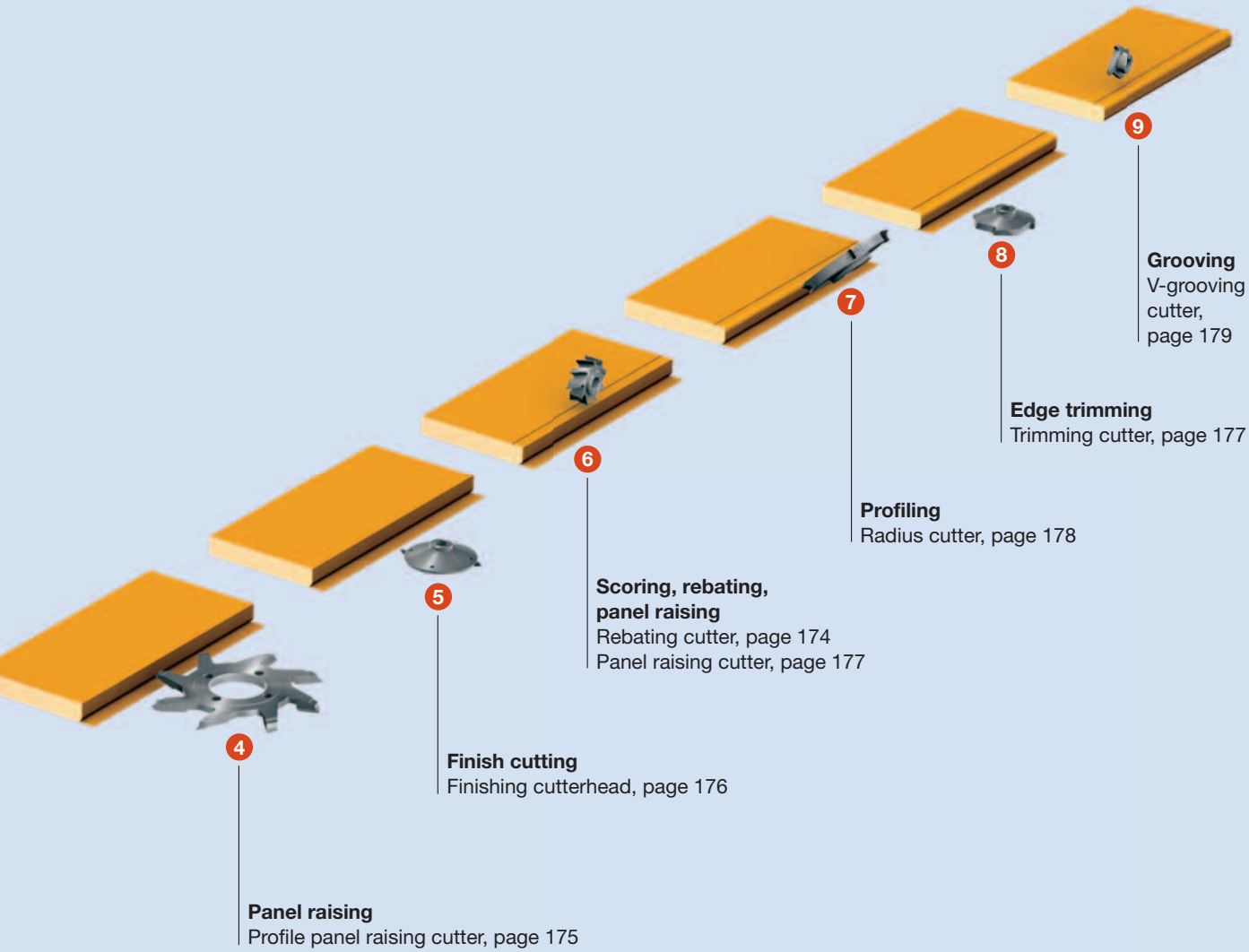
BEZ	ABM mm	ID	
Set of spacers for full cut	77/50/15,6	**028462**	●
Set of spacers for partial cut	77/50x10,6	**028463**	●

Number of central grooving cutters depends on the panel thickness. When combined, please note that the overall cutting width is reduced by 1.0 mm for ID **020102/020103** and 1.2 mm for ID **020104/020105** per fitting, remember to allow for the overlap of the tools.

Order example for HD = 50 mm: ID 190628, 125x53,6x30 mm
Tools: Grooving cutter set, D-125 mm, right-hand rotation.
Consisting of:
Jointing cutter: 1 x ID **190622** LL
Jointing cutter: 1 x ID **190623** RL
Edge groove cutter: 1 x ID **190626** LL
Edge groove cutter: 1 x ID **190627** RL
Central groove cutter: 6 x ID **020105** RL
Flanged sleeve: 1 x ID **061682**
Spindle mounting: 1 x ID **066477**

Special remark:
including assembly, machine model, spindle length.


Hogging
Compact hogging set DT Score, page 132
Compact hogging set DT, page 133
Segment hogger, page 138
Scoring
Scoring sawblades, page 124
Rebating
Rebating cutter
1
1
2
3
1
2



Grooving
V-grooving cutter, page 179

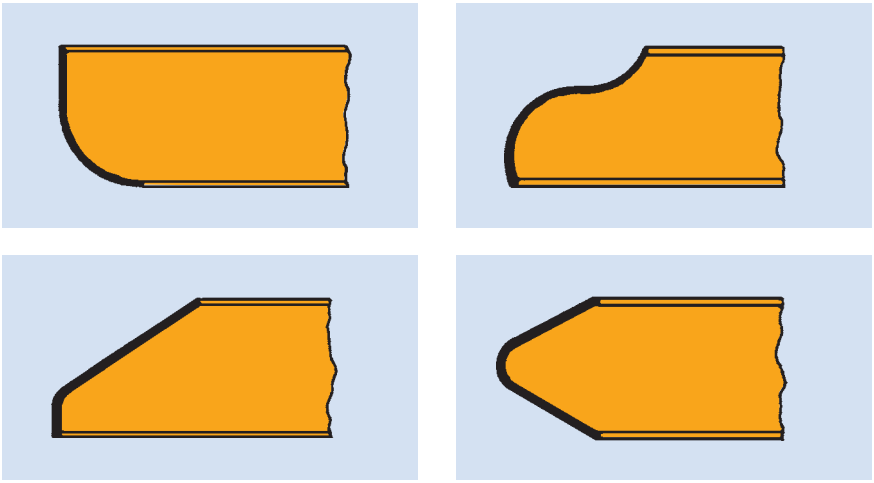
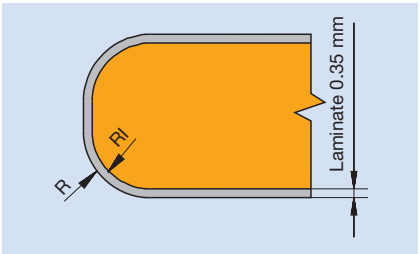
Edge trimming
Trimming cutter, page 177

Profiling
Radius cutter, page 178

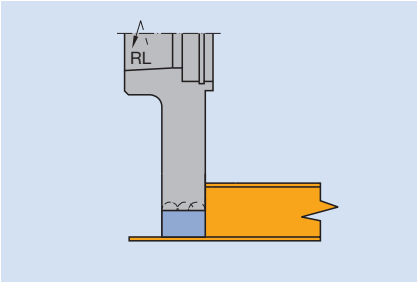
Scoring, rebating, panel raising
Rebating cutter, page 174
Panel raising cutter, page 177

Finish cutting
Finishing cutterhead, page 176

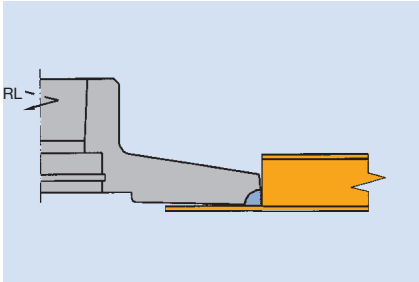
Panel raising
Profile panel raising cutter, page 175

Working processes	Production of workpieces with profiled narrow edges for profiling and coating with edging material.
Workpiece material	Chipboard and fibre materials (chipboard and MDF boards).
Machines	Single or double sided soft forming machines.
Procedure	Sizing panel by scoring hogging or double hogging, protection milling, if required. Scoring and removing the coating on workpiece surface by horizontal spindle. Profiling the narrow edge with vertical, horizontal or inclined spindle. Cutting the edge banding on the sized side to precise dimension with tracing spindle. Edge trimming of banding on the side banded first with tracing spindle. Scraping, if required.
Important order data	– Profile – Coating thickness – Coating material – Machine side – Number of sides to be coated – Expected profile production volume Given the diversity of products, standard tools and special tools are used in soft forming according to requirements.
Profile examples	
Working process	Production of workpieces with profiled narrow edges with jointless HPL, CPL or veneer surface coating material wrapped around the narrow face.
Workpiece material	Chipboard and fibre materials (chipboard and MDF board).
Machines	Single or double sided post forming machines.
Important ordering information	 – Radius and internal radius – Coating thickness – Material thickness – Type of coating – Post forming with or without inlay rod – Machine side R = External radius, e. g. R9 RI = internal radius, e. g. R8,65

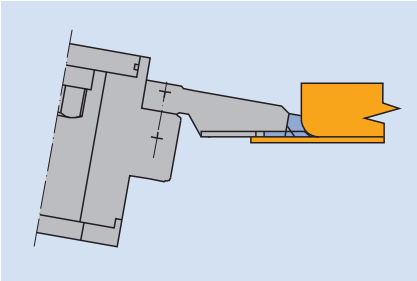
Procedure



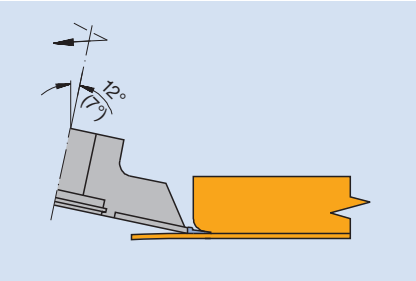
Pre-cutting the board to expose the top layer, preferably with feed.



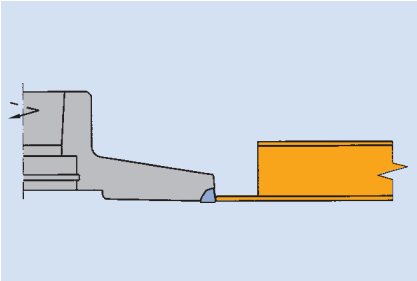
Removing material residues from top layer, against feed.



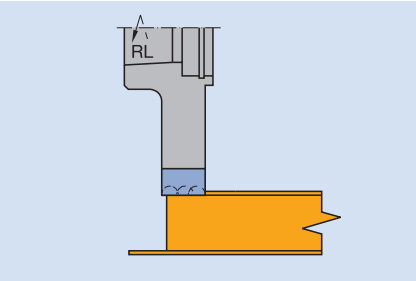
Radius cutting can be combined with previous working process for post forming procedure without inlay rod, against feed.



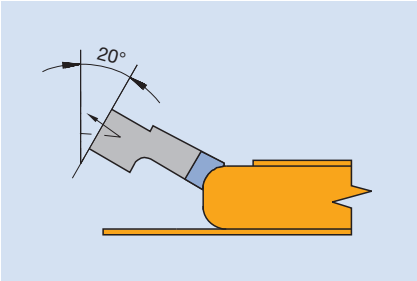
Finish cutting against feed.



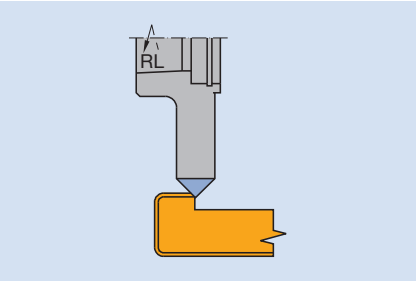
Sizing of top layer (bottom side) against feed (optional).



Rebating of top layer (top position) against feed (optional).



Radius cutting (U-shape profile) against feed (optional).



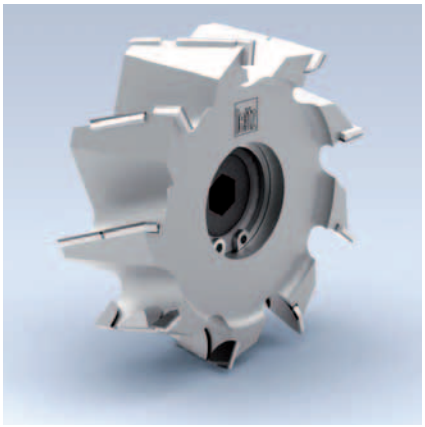
Laminate edge chamfer with feed.

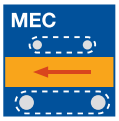
Feed speed

v_f approx. 20 m/min

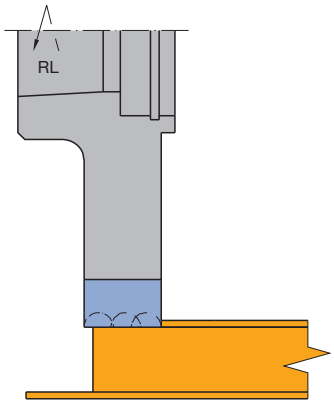
Finish cutting width

To edge and process veneered board with precision, the finish cut width should not exceed 0.5 mm. With less demand for precision of the radius and reduced risk of breaking the coating, a greater finish cutting width increases efficiency when working with resharpenable finish cutters.





DP



Rebating cutter with HSK 25 R bore: Machining the laminate layer with horizontal motor

Rebating cutter

Application:
To rebate the core to uncover and trim the edge of the top layer.

Machine:
Postforming machines.

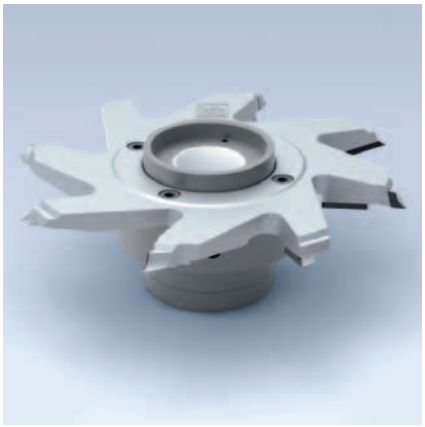
Workpiece material:
HPL, CPL or veneer coated particle and fibre materials (particle board, MDF, etc.).

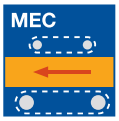
Technical information:
DP tipped tools with 20 KN or HSK 25 R bore. High number of teeth replaces scoring.
DP-tools - 2.0 mm resharpening area.

Diamaster PRO
WF 499-2

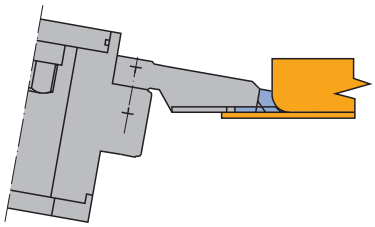
Machine	D mm	SB mm	BO mm	Z	$n_{max.}$ min^{-1}	ID LL		ID RL	
Homag, IMA	70	25	HSK 25 R	9+3	18000	**091796**	●	**091797**	●
Homag, IMA	70	25	20 KN	9+3	18000	**091594**	●	**091595**	●

● available ex stock
□ available at short notice
Instruction manual visit www.leitz.org





DP



Profile panel raising cutter mounted on hydro clamping sleeve

Profile panel raising cutter

Application:
To finish cut the coating layer and machining the radius in the direct postforming process.

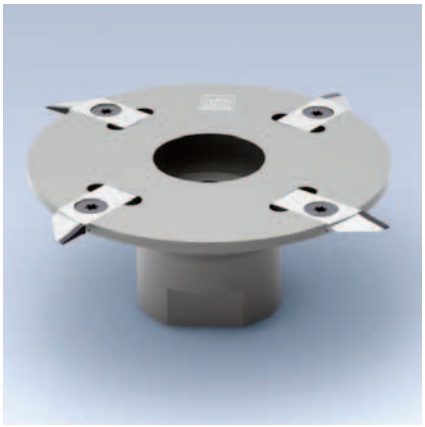
Machine:
Postforming machines.

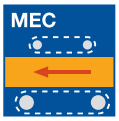
Workpiece material:
HPL, CPL or veneer coated particle and fibre materials (particle board, MDF, etc.).

Technical information:
DP tipped tool with bore for mounting on hydro clamping sleeve. Panel raising length 45 mm for U-channels and 25 mm for L-profiles. Against feed for HPL and melamine, with feed for verneer. When specifying the cutting radius RI, the thickness of the coating must be taken into account. The standard coating thickness is 0.35 mm.
DP tools - 2.0 mm resharpening area.

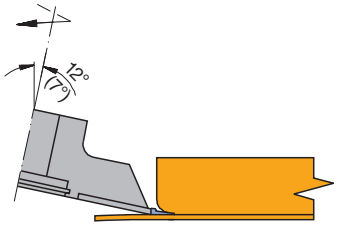
Diamaster PRO
HF 550-2

Machine	D mm	SB mm	BO mm	APL mm	R mm	RP mm	Z	QAL	$n_{max.}$ min^{-1}	ID LL	ID RL
Homag, IMA	250	10	80	45	9,0	8,65	4+4	DP	6000	**090270**	**090282**
Homag, IMA	250	7	80	45	5,0	4,65	4+4	DP	6000	**090271**	**090283**
Homag, IMA	250	10	80	25	9,0	8,65	4+4	DP	6000	**090272**	**090284**
Homag, IMA	250	7	80	25	5,0	4,65	4+4	DP	6000	**090273**	**090285**





DP



Finish cutting radii up to R 14 mm at 7° and 12° spindle angle

Finishing cutterhead

Application:
To finish cut the radius of postforming profiles.

Machine:
Postforming machines.

Workpiece material:
HPL, CPL or veneer coated particle and fibre materials (particle board, MDF, etc.).

Technical information:
Cutterhead with DP profile knives with cylindrical or HSK 25 R bore. Suitable for finish cutting radii up to R 14. Multi purpose cutterhead tool body for resharpenable or non-resharpenable knives. Non-resharpenable knives 0.5 mm optimised for sensitive coatings, veneer postforming and maximum contour accuracy. 0.75 mm knives can be resharpend up to three times for greater economy.

12° inclined spindle
WM 599-2

Machine	D mm	SB mm	BO mm	Z	QAL	$n_{max.}$ min^{-1}	Spindle angle Degree	ID LL		ID RL	
Homag, IMA	125	45/2,5	20 KN	4	DP	12000	12°	**090942**	●	**090934**	●
Homag, IMA	125	25/2,5	HSK 25 R	4	DP	12000	12°	**090939**	●	**090935**	●

7° inclined spindle
WM 599-2

Machine	D mm	SB mm	BO mm	Z	QAL	$n_{max.}$ min^{-1}	Spindle angle Degree	ID LL		ID RL	
Homag, IMA	125	45/2,5	20 KN	4	DP	12000	7°	**090943**	●	**090937**	●
Homag, IMA	125	25/2,5	HSK 25 R	4	DP	12000	7°	**090940**	●	**090938**	●

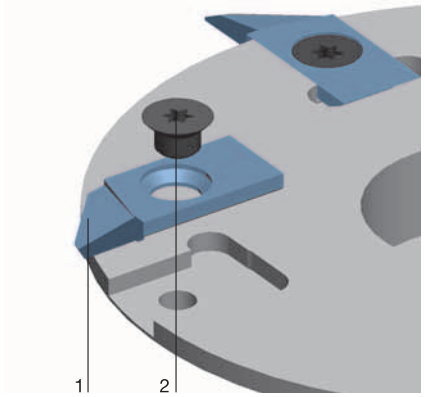
Spare knives:

Part-no.	BEZ	ABM mm	QAL	ID LL		ID RL	
1	Knife	12x31x2,5x0,5, SB2,5	DP	**008208**	●	**008204**	●
1	Knife, resharpenable	12x32x2,5x0,75, SB2,8	DP	**008247**	●	**008246**	●

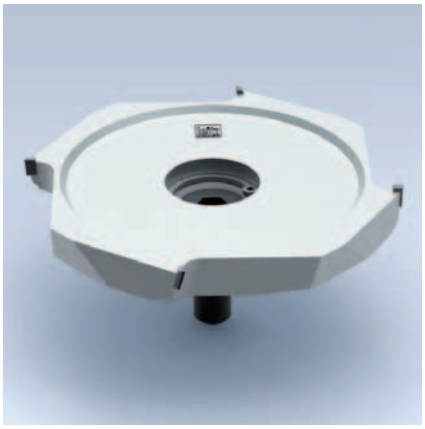
Spare knives for 7° and 12° inclined spindles.

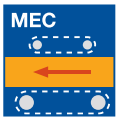
Spare parts:

Part-no.	BEZ	ABM mm	ID	
2	Countersink screw, Torx® 20	M6x0,5x4,9	**006243**	●
	Torx® key	Torx® 20	**006091**	●

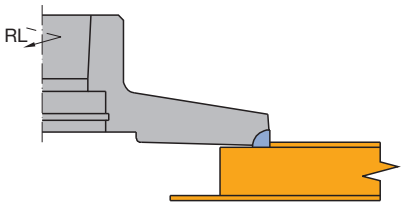


● available ex stock
□ available at short notice
Instruction manual visit www.leitz.org

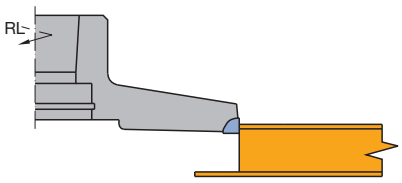


DP



Panel raising the laminate layer with vertical spindle



Trimming the edge backing layer with vertical spindle

Panel raising edge trimming cutter

Application:
To panel raise the laminate layer and trim the edges of the laminate and the backing material.

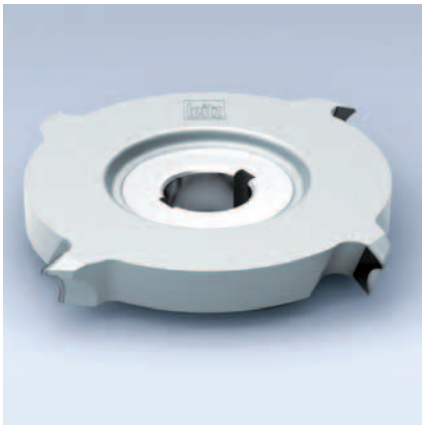
Machine:
Postforming machine.

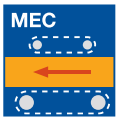
Workpiece material:
HPL, CPL or veneer-coated particle and fibre materials (particle board, MDF, etc.).

Technical information:
DP tipped tools with HSK 25 R bores.
DP tools - 1.5 mm resharpening area.

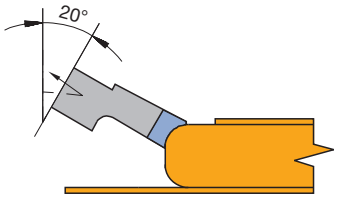
Diamaster PRO
WF 400-2-DP

Machine	D mm	SB mm	BO mm	Z	QAL	$n_{max.}$ min^{-1}	ID LL		ID RL	
Homag, IMA	100	5/28	HSK 25 R	4	DP	12000	**091794**	●	**091795**	●





DP



Radii-cutter on inclined spindle

Profile panel-raising cutter

Application:
To cut the upper radii of “U” profiles.

Machine:
Postforming machines.

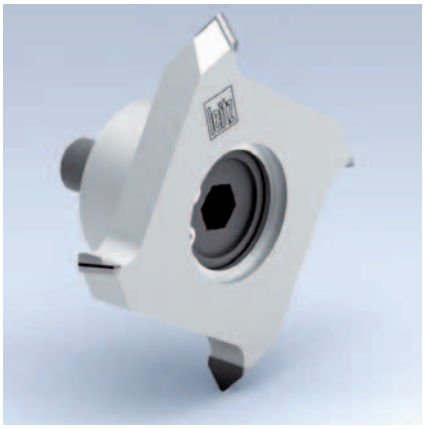
Workpiece material:
HPL, CPL or veneer coated particle and fibre materials (particle board, MDF, etc.).

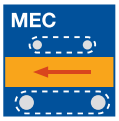
Technical information:
DP tipped tools with bore. When specifying the radius RI, the thickness of the laminate must be taken into account (standard laminate thickness - 0.35 mm).
DP tools - 4.0 mm resharpening area.

Various radii - Diamaster PRO
WF 502-2

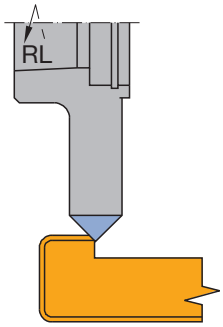
Machine	D mm	SB mm	BO mm	R mm	RP mm	Z	QAL	$n_{max.}$ min^{-1}	ID LL	ID RL
Homag, IMA	160	16	30 DKN	9,0	8,65	4	DP	9000	**090274**	**090286**
Homag, IMA	160	11	30 DKN	5,0	4,65	4	DP	9000	**090275**	**090287**

● available ex stock
□ available at short notice
Instruction manual visit www.leitz.org





DP



Trimming the laminate layer with horizontal spindle

V groove cutter

Application:
To bevel and trim the coating after glueing and forming a “U” profile.

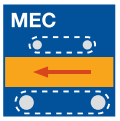
Machine:
Postforming machines.

Workpiece material:
HPL, CPL or veneer-coated particle and fibre materials (particle board, MDF, etc.).

Technical information:
DP tipped tools with HSK 25 R bores.
DP tools - 1.5 mm resharpening area.

Diamaster PRO
WF 501-2-DP

Machine	D mm	SB mm	BO mm	Z	QAL	$n_{max.}$ min^{-1}	ID LL		ID RL	
Homag, IMA	75	8/23	HSK 25 R	4	DP	12000	**091792**	●	**091793**	●



ES

Segment hogger for sizing

Application:
For hogging along and across grain with/without scoring sawblade.

Machine:
Sizing station on chipboard / MDF panel production lines.

Workpiece material:
Particle and fibre materials (MDF etc.) uncoated, veneered, plastic coated.

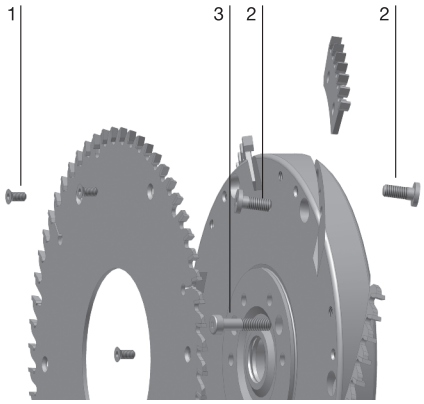
Technical information:
The cut edge quality depends on the circular sawblade. Tool body D-305 in steel or D-355 mm in aluminium. Staggered cut with six tungsten carbide segments. Build-up option with extension hogger unit. For D-305 the hogger is mounted directly on the spindle without flanged sleeve.

Hogger for sizing station
SZ 300-2, SZ 301-2

Machine	D mm	SB mm	BO mm	Z/ZF Sawblade	QAL	ID LL		ID RL	
Siempelkamp	305	60,1	30	60/ES	HW	**064700**	□	**064701**	□
Siempelkamp	355	60,5	40 DKN	72/ES	HW	**064702**	□	**064703**	□

Spare parts:

Part-no.	BEZ	ABM mm	BEM	ID	
1	Countersink screw, Torx® 20	M6x12	Torx® 20	**006084**	●
2	Screw with ISK	M8x17	for D = 250/350/305/355	**006237**	●
3	Cylindrical screw with ISK	M8x60	for D = 305	**005878**	●
3	Cylindrical screw with ISK	M8x35	for D = 305/350	**005874**	●
3	Cylindrical screw with ISK	M8x25	for D = 355	**005947**	●

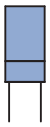


ES

Hogging sawblade
WK 801-2

D mm	SB mm	BO mm	Z	ZF	QAL	ID LL		ID RL	
305	4,4	120	60	ES	HW	**061844**	●	**061845**	●
355	4,4	80	72	ES	HW	**061846**	●	**061847**	●

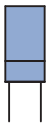
● available ex stock
□ available at short notice
Instruction manual visit www.leitz.org


FZ

Technical information:
Of steel (D - 300 mm) and aluminium (D - 350 mm) with segments.

Basic hogger
WZ 300-2

D mm	SB mm	BO mm	Z	ZF	QAL	ID LL		ID RL	
300	28	30	6x7	FZ	HW	**064440**	●	**064441**	●
350	36,5	80	6x10	FZ	HW	**064442**	□	**064443**	□


FZ

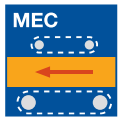
Extension hogger
WZ 300-2

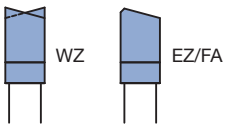
D mm	SB mm	BO mm	Z	ZF	QAL	ID LL		ID RL	
300	28	30	6x7	FZ	HW	**064444**	●	**064445**	●
350	20,2	80	6x10	FZ	HW	**064446**	●	**064447**	●

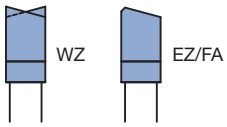

FZ

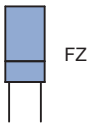
Segments (6 per hogger)
TM 170-0

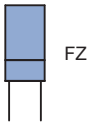
ABM mm	Z	ZF	QAL	ID LL		ID RL	
D 300 / 340	7	FZ	HW	**064970**	●	**064971**	●
D 350	10	FZ	HW	**064962**	●	**064963**	●











Segment hogger for sizing

Application:
For hogging along and across grain with/without scoring sawblade.

Machine:
Sizing station on chipboard / MDF panel production lines.

Workpiece material:
Particle and fibre materials (MDF etc.) uncoated, veneered, plastic coated.

Technical information:
Cut edge quality of the trim and finish cuts is defined by the sawblades. Set assembled mounted with finish cut, trim sawblade and twelve tungsten carbide tipped segments. Staggered cut by twelve hogging segment. The hogger is mounted directly on the motor spindle without flanged sleeve.

Hogger for sizing station
SZ 300-2

Machine	D mm	SB mm	BO mm	Z/ZF Sawblade	QAL	ID LL		ID RL	
Siempelkamp	350	42,1	30	60 ES/FA 72 WZ	HW	**064704**	□	**064705**	□

Spare parts:

Part-no.	BEZ	ABM mm	BEM	ID	
1	Countersink screw, Torx® 20	M6x16	Torx® 20	**006086**	●
2	Cylindrical screw with ISK	M8x35	for D = 305/350	**005874**	●

Technical information:
D - 300 mm finish cut and D - 350 mm trimming sawblade.

Hogging sawblade
WK 802-2, WK 850-2

D mm	SB mm	BO mm	Z	ZF	QAL	ID LL		ID RL	
300	4,4	200	60	ES/FA	HW	**061848**	●	**061849**	●
350	4,4	200	72	WZ	HW	**061850**	●	**061850**	●

Basic hogger with segments
WZ 300-2

D mm	SB mm	BO mm	Z	ZF	QAL	ID LL		ID RL	
340	34,5	30	12x7	FZ	HW	**064448**	●	**064449**	●

Segments (12 per hogger)
TM 170-0

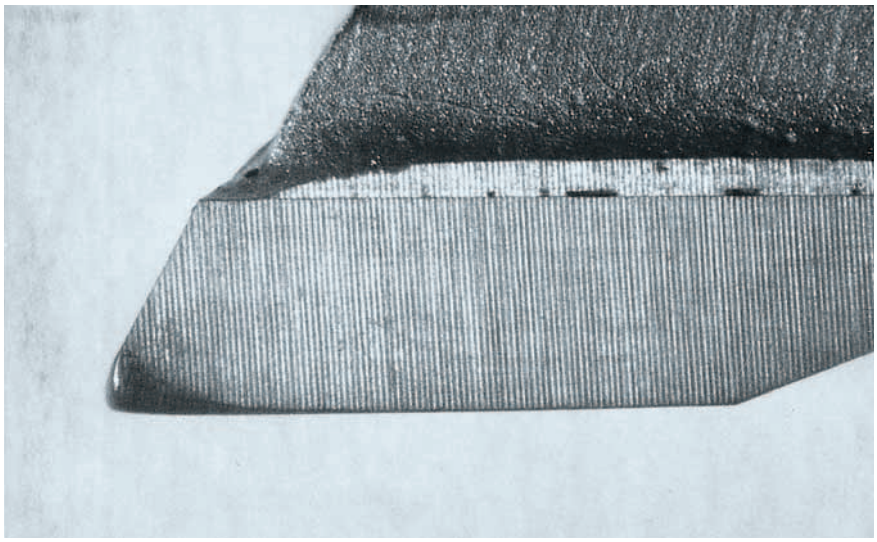
ABM mm	Z	ZF	QAL	ID LL		ID RL	
D 300 / 340	7	FZ	HW	**064970**	●	**064971**	●

● available ex stock
□ available at short notice
Instruction manual visit www.leitz.org

Problem	Possible cause	Action
Break outs at edge of workpiece Top edge	– Incorrect height adjustment of hogging motor and tilt in feed direction	Correct setting Check position of tools in feed direction, adjust standard value of 0.1 mm to the panel edge
	– To much axial play in spindle bearing or damaged bearing	Check motor bearings and tolerances
	– Track vibrates due to low chain tension and damaged guides	Check tension of chain, replace damaged parts
	– Incorrect adjustment of top pressure	Check top pressure
	– Run out tolerance too high, possible imbalance tool	Measure tool, correct and check for imbalance
	– Insufficient no. of teeth, feed rate too high	Increase no. of teeth or adjust feed speed
Break outs at edge of workpiece bottom edge	– Workpiece projection too large or thin workpieces	Provide additional support in the tool area
	– Incorrect adjustment in feed direction of scoring or hogging tool	Produce trial sample and adjust motors
	– Scoring sawblade not precisely adjusted in feed direction or hogging tool tilted too far	Check angles of scoring sawblade and hogging tool in feed direction
Tooth pattern at workpiece edge wavy surface	– Tilted tool position in feed direction too high	Correction of tilted tool position
	– Transport of workpiece not consistent during through feed	Check chain and drive
	– Insufficient no. of teeth, feed speed too high	Increase no. of teeth or adjust feed speed
	– Run out tolerance too high, possible imbalance tool	Measure tool, correct and check for imbalance
Surface of middle layer rough, uneven (with steps)	– Tool worn, blunt	Repair tool
	– Insufficient no. of teeth, feed speed too high	Increase no. of teeth, adjust feed speed
	– Adjustment of top and bottom tools (scoring/hogging tool) not level with feed direction	Produce trial sample and adjust motors
	– Adjustment of hogging tool not at right angle to the track	Check angle with dial gauge on the horizontal moving spindle
	– Incorrect tooth shape of tool and angle geometry	Check and correct
	– Insufficient quality of middle layer of workpiece material	Improve by removing resin and sharpening more frequently
Break outs at edge of workpiece end grain, front	– Adjustment of jump head to the hogging tool not level with feed direction	Produce trial sample and adjust motors
Break outs at edge of workpiece end grain, back	– Adjustment of the controlled scoring motor not level with the hogging unit in feed direction	Check movement of the jump scoring motor and correct adjustment to the hogging unit
	– Poor quality of middle layer of workpiece material (large chip flow, poor pressing)	Improve by removing resin and sharpening tools more often
	– Insufficient no. of teeth, feed speed to high	Increase no. of teeth or adjust feed speed
	– Incorrect tooth shape and angle geometry	Check and adjust through resharpening

Rounding of cutting edges
When hogging solid wood and wood-derived materials with or without coating, the teeth of the hogging saw-blade and hogger parts are subject to mechanical and chemical wear.

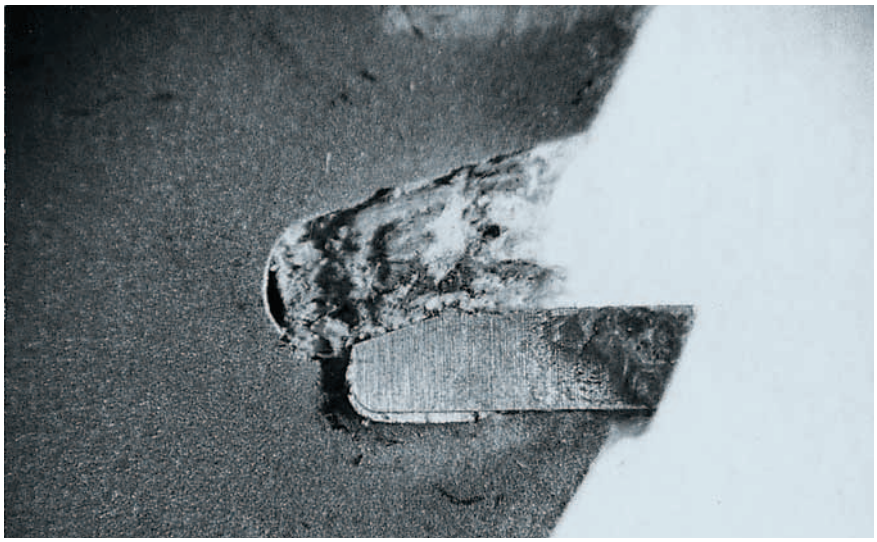
The surface quality determines the size of the cutting edge abrasion. An extremely worn sawblade tooth requires additional sharpening and reduces the number of possible resharpenings.



Typical cutting edge wear when machining solid wood.

Cutting edge destruction through improper use
If the relationship between the number of teeth and feed speed is wrong, the cutting forces are too high when hogging solid wood, especially with a high moisture content. This leads to choking the gullet and consequently destruction of the saw tooth.

Action:
Reduce the no. of teeth, to increase the gullet area; adjust feed speed so the cutting quality is still adequate.



Cutting edge destruction through improper use.

Cutting edge destruction through overstress
If the material to be removed is wider than the cutting width of the hogger, the outside teeth of the raised hogger segments are destroyed by overstress.

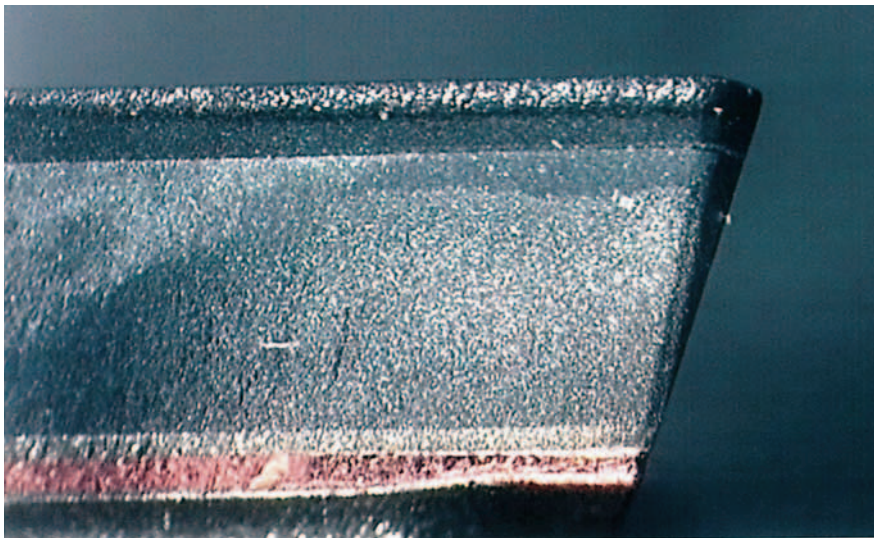
The hogging width must always be smaller than the cutting width of the hogging tool.

Destruction of saw tooth through overstress.

Rounding of cutting edges
The illustration opposite shows a typical blunt cutting edge, resulting from mechanical abrasion when machining uniform materials.

Removing the resin from the sides of the teeth between resharpening intervals leads to a considerably longer performance time, as it prevents the loss of side relief.

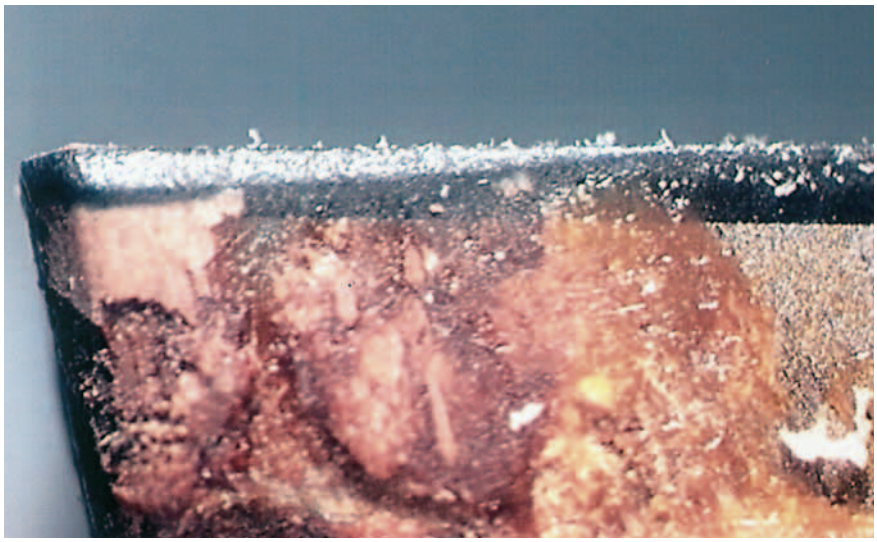
The area of wear should be approx. 0.2 to max. 0.3 mm.



Wear to cutting edges after machining MDF.

Rounding of cutting edges and resin build-up
Apart from cutting edge wear, a build-up also forms at the side of the teeth from adhesive dust and chip particles (resin build-up) when the workpiece material has a high resin content or the tool is run for a long time.

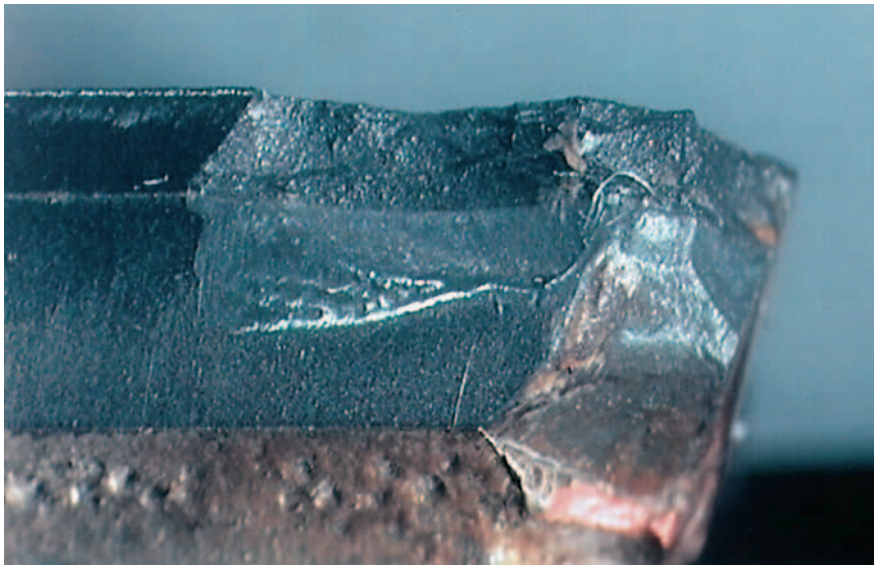
This leads to a higher cutting power, low surface quality of the surface coating and middle layer, and a considerably shorter performance time.



Wear to cutting edges and resin build-up after machining chipboard.

Cutting edge destruction
The cutting edges can be destroyed when machining workpiece materials with a high sand content, a grain size up to 2 – 3 mm diameter (l) or containing metallic particles.

Using DP (DIA) tools when machining such workpiece materials is problematic and use is not recommended for efficient machining.



Cutting edge destruction from metallic particles.

Inquiry/order form special tools – panel processing

Customer details: Customer number: (if known) ☐☐☐☐☐☐☐☐

☐ Inquiry
☐ Order

Delivery date: (not binding) ☐☐ CW

Company:

Street:

Post code/place:

Country:

Phone/fax:

Contact person:

Signature:

Date:

Inquiry/order no.:

Tool ID: (if known)

No. of pieces:

Workpiece material:

Type:
Moisture content (of solid wood) %
Direction of machining
☐ along grain ☐ across grain
Cutting quality:
☐ Pre-hogging

Coating: ☐ Yes ☐ No
Type (of wood derived material):
Hogging width: mm
Material thickness: mm

☐ Finish hogging

Machine:

Manufacturer:
Type:
Model:

Power:
RPM:
Feed:

kW (HP) Motor spindle (see drawing):
min^{-1}
m min^{-1}

Hogging motor:
☐ Against feed
☐ With feed
☐ Application scoring/hogging
☐ Application hogging/hogging

Tool:

Tool type (see selection):
☐ Hogging set in cutter design
☐ Hogging set with segments
☐ Compact hogging set
☐ Other

Adaptor:
☐ Mechanical
☐ Quick change
☐ Hydraulic

Dimensions:
Diameter mm
Cutting width mm
Bore mm

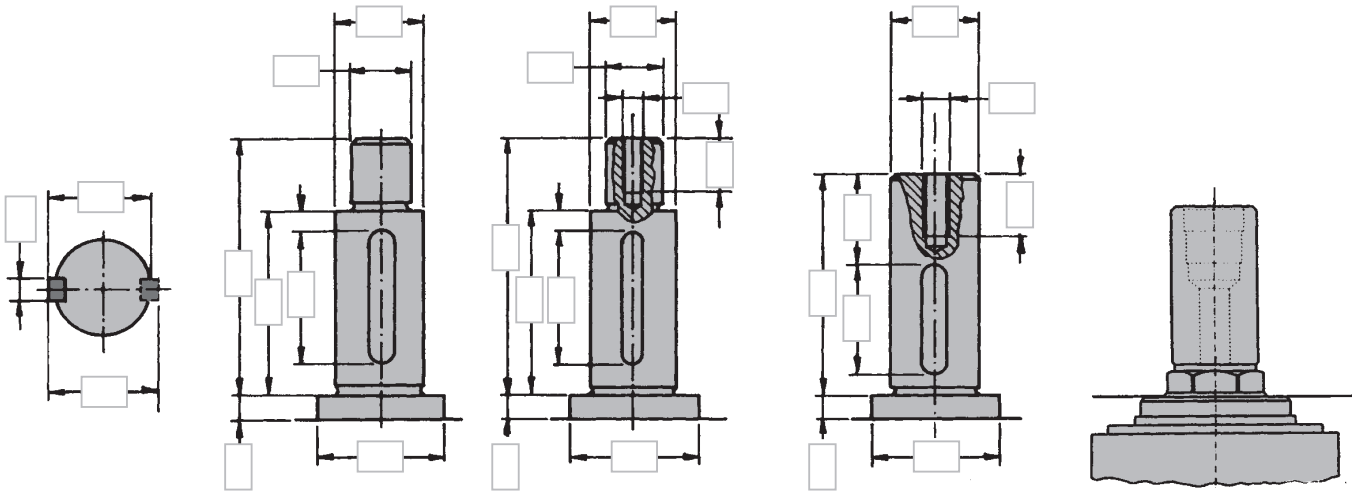
No. of teeth:
Hogging sawblade
Hogger

Cutting material:
☐ HW (TC)
☐ DP (DIA)

Please state existing data on tool, machine and workpiece material.

Hogging motor/spindle details:

(Enter dimensions on drawing or state in space for sketches)



Standard motor

high-precision motor
D40-6 KT (Hydro sleeve)

Sketch for application plan, motor spindle etc.

3. Planing and profiling

Application


Planing and thicknessing of workpieces on planing and thicknessing machines. The workpiece is first planed to give a reference surface. Next the exact workpiece thickness is machined by the thicknesser.

Workpiece material

Soft and hardwood (dry and wet), chipboard and fibre materials (chipboard, MDF, etc.), without coating, with plastic coating, with veneer etc.

Machines

Surface planing and thicknessing machines.

Mounting of long planerheads

Long planerheads have integrated bearing and drive pulley.
The dimensions depend on the machine, and must be specified when ordering the tools.

Noise level of long planerheads

	Free running		
Surface planing machine	With wedge-type head Z2	With spiral head Z2	Noise reduction dB
A acoustic sound level	99.1	84.5	14.6
A acoustic power level L_A n dB at height of ears	85.2	72.2	13.0
Thicknessing machine			
A acoustic power level L_{WA} in dB	94.2	85.1	9.1
A acoustic power level L_A in dB at head height infeed	80.1	69.3	10.8
at head height outfeed	75.5	68.8	7.1

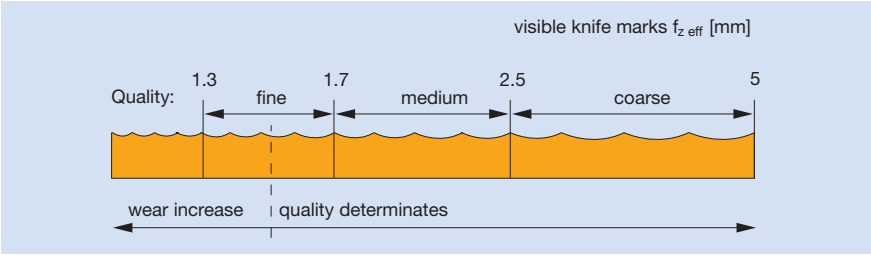
	During operation		
Surface planing machine	With wedge-type head Z2	With spiral head Z2	Noise reduction dB
A acoustic sound level	100.6	94.1	6.5
A acoustic power level LA n dB at height of ears	89.6	83.6	6.0
Thicknessing machine			
A acoustic power level LWA in dB	98.3	92.1	6.2
A acoustic power level LA in dB at head height infeed	81.5	77.2	4.3
at head height outfeed	82.7	77.7	5.0

Recommended cutting materials

	HS	Marathon (MC)	HW
Softwood dry	♦	♦	♦
Softwood wet	◇	♦	
Hardwood dry	◇	♦	♦
Hardwood wet	◇	♦	
Plywood		◇	♦
Chipboard			♦
MDF			◇
WPC (Wood-Plastic-Composite)	◇	♦	♦

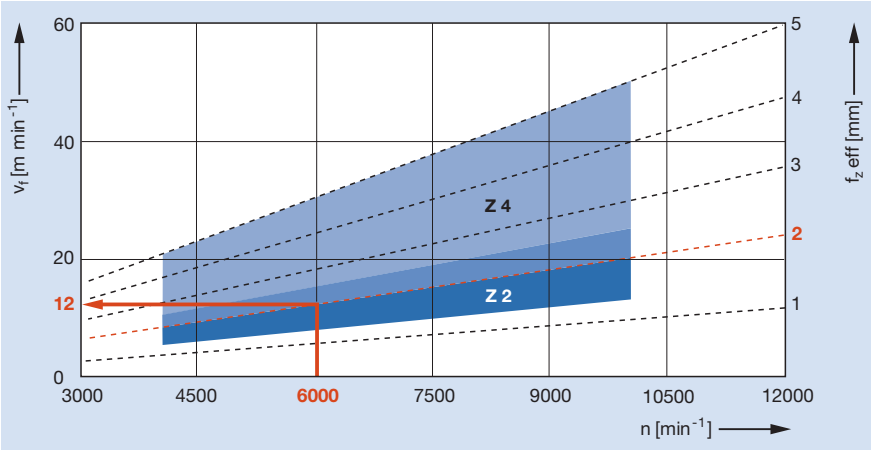
♦ suitable ◇ partly suitable

Feed speed



The feed speed is determined by the required surface quality.
Relation between the surface quality and length of knife marks $f_{z\ eff}$.

Diagram to determine the feed speed v_f depending on R.P.M. n and knife marks $f_{z\ eff}$ for different number of teeth Z*



* Even on tools with several wings, only the marks of one knife show on the workpiece surface (one-knife finish).
Z 2 and Z 4 tools produce the same surface quality under identical machining conditions. (see technical information and charts in section User manual).

Spiral planerhead

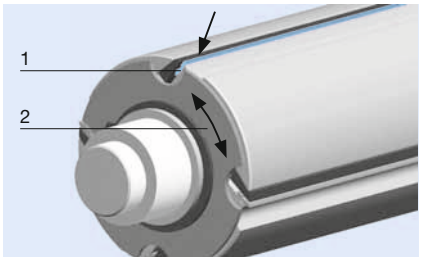
Constant knife cutting circle diameter after resharpening with setting fixture – long spiral planerhead

Technical information	Steel planerhead with resharpenable HS spiral cutting knives or HS throwaway knives. Mounted in a cassette with clamping wedges. Constant knife cutting circle diameter after sharpening in setting fixture.
Tool design	– Long planerheads with spiral cutting edges (shear-cut) for smooth surfaces – Noise reduction of up to 13 dB (see chart) – Option for resharpening the turnblade HS knives in the planerhead
Chip removal	Softwood: up to 5.0 mm Hardwood: up to 3.0 mm
No. of wings/resharpening area	2 – 6 mm
Cutting material	HS

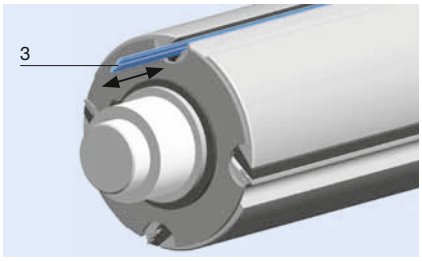
Planerhead CentroFix

Tool design	Steel or Aluminium planerhead with resharpenable HS or HW reversible resharpenable knives positioned by form fitting knife clamping system
Technical information	– Centrifugal force clamping system in the protected area behind the wing. – The turnblade knives with chip breaker ensures clean surfaces even in critical zones. – The clamping system is positioned in the area protected from contamination, behind the knife.
Chip removal	Softwood: up to 7.0 mm Hardwood: up to 5.0 mm
No. of wings	Z 2 or Z 4, with 2 cutting edges per knife.
Cutting material	HS, HW

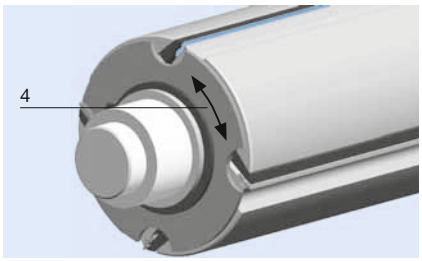
Handling/Changing the planing knife



1. Loosen knife clamping by tapping the clamping wedge
2. Release knife seat by rotating the safety flange



3. Axial knife change



4. Close knife seat by rotating the safety flange

Note	– CentroFix centrifugal clamping system (without clamping screws) for quick, simple knive change. – Lower noise level compared to conventional cutterheads from optimised gullet and closed, round tool body. – Axial knife change.

Inquiry/order form special tools – surface planing and thicknessing

Customer details: Customer number: (if known) | ☐ Inquiry ☐ Order | Delivery date: (not binding) | CW

Company:

Street: | Date:

Post code/place: | Inquiry/order no.:

Country: | Tool ID: (if known)

Phone/fax: | No. of pieces:

Contact person:

Signature:

Workpiece material:

Type:

☐ Solid wood:	Type:	Moisture content:	%
☐ Wood derived material:	Type:	Density:	g/cm³
☐ Others	Type:	Additional information:	

Machine:

Manufacturer:
Type:
Model:

Spindle sequence (in feeding direction) e.g. 1 bottom, 2 right hand, 3 left hand, 4 top, 5 multi purpose...

Motor:	Power:	RPM:	Spindle dimensions:	Add. information:
1	kW (HP)	min⁻¹	mm	
2	kW (HP)	min⁻¹	mm	
3	kW (HP)	min⁻¹	mm	
4	kW (HP)	min⁻¹	mm	
5	kW (HP)	min⁻¹	mm	

Tool:

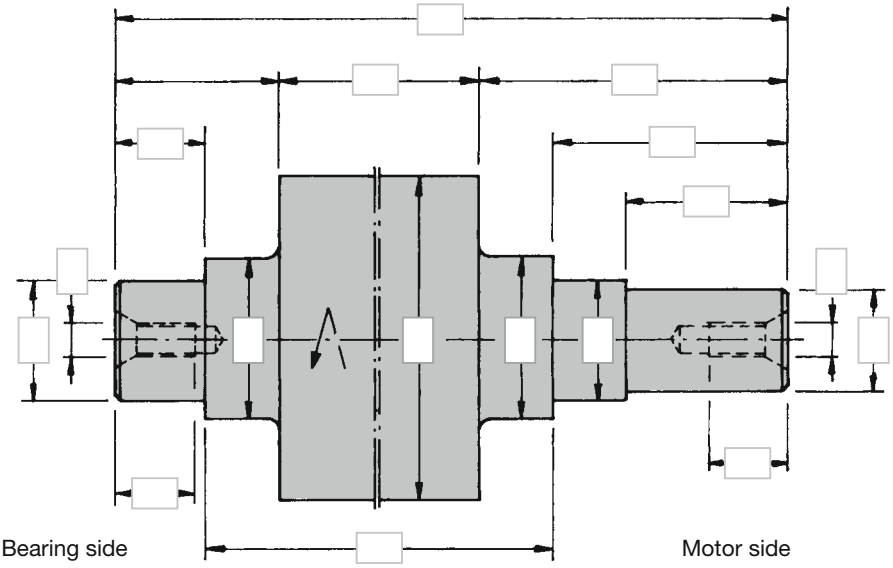
Tool type (see selection):

Dimension:		Cutting material:	Direction of rotation:
Diameter:	mm	☐ HL (HLS)	☐ left hand
Cutting width:	mm	☐ HS (HSS)	☐ right hand
Bore:	mm	☐ HW (HM)	
No. of teeth:		☐ ST	

Please state existing data on tool, machine and workpiece material.

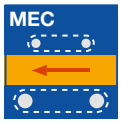
Dimensions for long planerheads

(Enter dimensions on drawing or graph)



Sketch for application, special motor spindle etc., side of table to workpiece and fence.

Working process



Planing is the first step after cutting the workpiece to size, it prepares workpiece surfaces and machines a datum surface for accurate workpiece processing.
Pre planing is recommended prior to profiling on four sided moulders and multi spindle moulding machines.
Pre planing and reference heads can be combined on the same spindle to guide the timber through the machine.

Workpiece materials

Soft and hardwood dry and wet
Chipboard and fibre materials (chipboard, MDF, HDF, etc.).

Machines

Four side moulders and multi spindle moulding machines.

Tool clamping

Mounted directly on the machine spindle, retained by spindle nut.

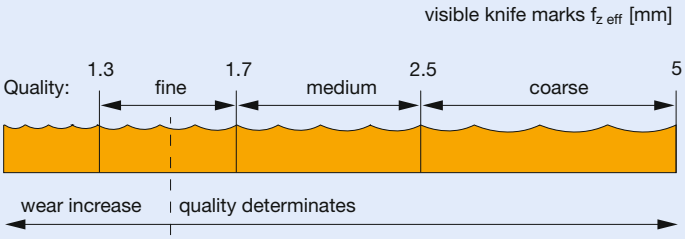
Recommended cutting material

	HS	HS Marathon	HW
Softwood dry	♦	♦	♦
Softwood wet	◇	♦	
Hardwood dry	◇	♦	♦
Hardwood wet	◇	♦	
Plywood		◇	♦
Chipboard			♦
MDF			◇
WPC (Wood-Plastic-Composite)	◇	♦	♦

♦ suitable ◇ partly suitable

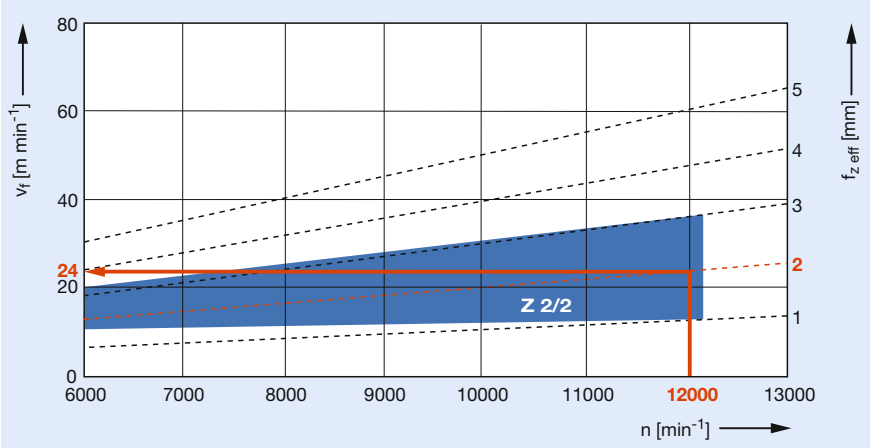
Feed speed

The feed speed is determined by the required surface quality.
Relation between the surface quality and length of knife marks $f_{z\ eff}$.



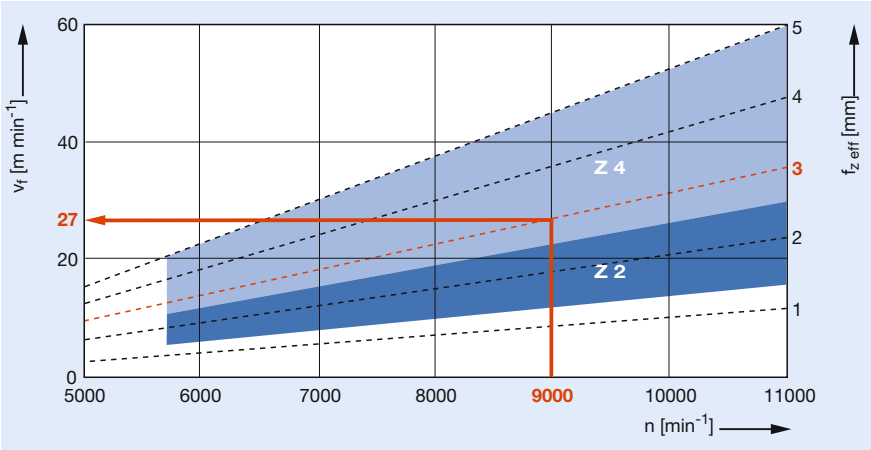
The feed size is determined according to the quality requirements which can be measured by the produced cuttermarks.
The diagram shows the relation between surface quality and length of knife marks $f_{z\ eff}$.

Diagram:
HeliPlan
Z = 2/2



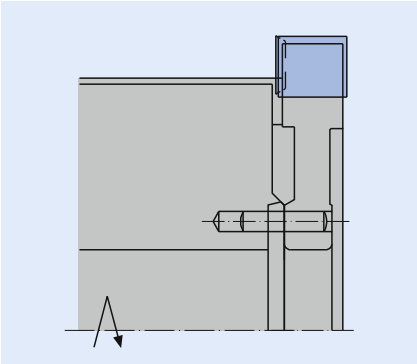
The feed speed is determinded by the required surface quality (length of knife marks $f_{z\ eff}$ and depend RPM and the no. of wings of the cutterheads).

Diagram:
Build up planerhead
Z = 2 and Z = 4

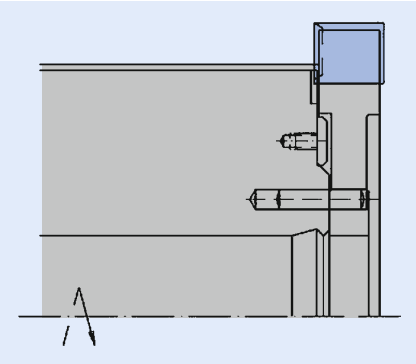


Even on tools with several wings, only the marks of one knife show on the workpiece surface (one-knife finish).
Z 2 and Z 4 tools produce the same surface quality under identical machining conditions (see technical information and charts in section User Manual).

Pre planing combined with reference cutterhead



Reference cutterhead combined with CentroStar planerhead, build up planerhead, or wedge type planerhead.



Reference cutterhead combined with VariPlan, VariPlan Plus or HeliPlan planerhead.

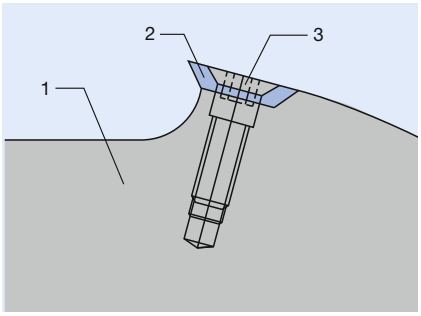
Note

Z = 2 and V = 2
RPM n_{max} = 12500 min^{-1}

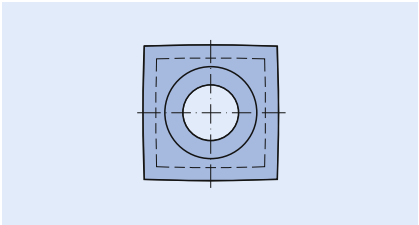
Note: a 3 mm spacer (ID **028617**) is required with build up and wedge type planerheads.

Planerhead HeliPlan

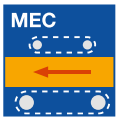
Application	Planing, pre planing
Machines	Four side moulders, with HSK 85 WS interface if required.
Workpiece material	Softwood and hardwood
No. of teeth/tool life	2/2 staggered, each HW turnblade knife has 4 lives.
Cutting material	HW
Chip removal	Softwood: up to 15.0 mm. Hardwood: up to 10.0 mm.
Tool design	Aluminium or steel tool body with spiral, staggered single cutting edges, mounted on the tool body periphery.
Technical features	HW turnblade knives with 4 curved cutting edges.
RPM	D = 125 mm, $n_{max.}$ = 12000 min^{-1} D = 140 mm, $n_{max.}$ = 9000 min^{-1}
Special advantages	– Minimum breakout. – Noise reduction (up to 10 dB(A)). – The staggered cut reduces both the cutting force and feed pressure. – Turnblade knives have four cutting edges (four lives).
Note	– Barely visible marks in the overlap area; minimal waviness. – As HeliPlan has a staggered cut of individual cutting edges, the tool has limited suitability for producing finished surfaces. Finish planing or profiling may be required depending on the quality requirement. – Tool body surface hardening advisable for abrasive workpiece materials. – Use in combination with reference cutterhead WW 410-2 (see page 200) on the first bottom spindle of moulding machines.

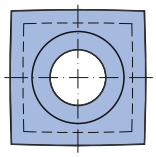


1) Tool body of steel or Aluminium
2) Knives
3) Clamping screw

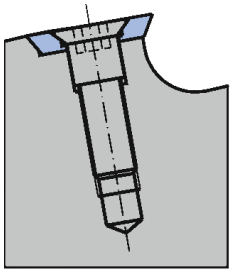


HW turnblade knife with 4 cutting edges.

HW turnblade knife



Knives mounted on periphery

Planerhead HeliPlan with 4 edge HW turnblade knives

Application:
Pre planing, surfacing and jointing all types of wood with large chip removal. Also suitable for finish planing if quality demands are less important or in connection with subsequent sharpening.

Machine:
Four side moulders.

Workpiece material:
Softwood and hardwood.

Technical information:
Pre planing cutterhead with 4 edge HW turnblade knives. Low noise and energy efficient due to spiral, segmented edge arrangement. Smooth finish by radiused cutting edges. Aluminium tool body. Tool and HSK are shrink-fit together. Optional with steel reference cutterhead, for machines with fence.

Aluminium tool body, with bore
WW 220-2-01

D mm	SB mm	BO mm	Z	AM PCS	$n_{max.}$ min^{-1}	ID	
125	130	40	2/2	26	12000	**030423**	●
125	170	40	2/2	32	12000	**030425**	●
125	210	40	2/2	38	12000	**030452**	●
125	230	40	2/2	40	12000	**030447**	●
125	240	40	2/2	46	12000	**030426**	●
140	170	50	2/2	32	9000	**030427**	
140	240	50	2/2	46	9000	**030428**	

Design with HW cutting edges
Further dimensions and inch dimensions available on request.
Suitable reference cutterheads can be found on page 200.

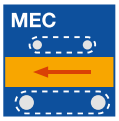
Spare knives:

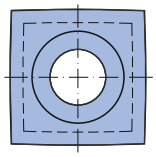
BEZ	ABM mm	QAL	VE PCS	ID	
Turnblade knife	15x15x2,5	HW	10	**009535**	●

Spare parts:

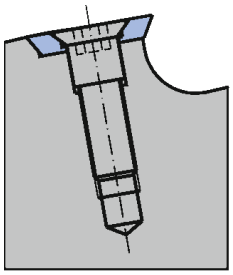
BEZ	ABM mm	ID	
Countersink screw, Torx® 20	M5x14.2-8.8	**007394**	●
Torx® key	Torx® 20	**006091**	●

● available ex stock
□ available at short notice
Instruction manual visit www.leitz.org

HW turnblade knife



Knives mounted on periphery

Planerhead HeliPlan with 4 edge HW turnblade knives

Application:
Pre planing, surfacing and jointing all types of wood with large chip removal. Also suitable for finish planing if quality demands are less important or in connection with subsequent sharpening.

Machine:
Four side moulders with HSK 85 WS interfaces.

Workpiece material:
Softwood and hardwood.

Technical information:
Pre planing cutterhead with 4 edge HW turnblade knives. Low noise and energy efficient due to spiral, segmented edge arrangement. Smooth finish through radiused cutting edges. Aluminium tool body. Tool and HSK are shrink-fit together. Optional steel reference cutterhead for machines with fence.

Aluminium tool body, with HSK 85 WS
WL 210-2-02

D mm	SB mm	A mm	Z	AM PCS	$n_{max.}$ min^{-1}	DRI	ID	
125	130	26	2/2	26	12000	bottom	**132000**	□
125	130	26	2/2	26	12000	top	**132001**	□
125	170	26	2/2	30	12000	bottom	**132016**	□
125	170	26	2/2	30	12000	top	**132017**	□
125	210	26	2/2	36	12000	bottom	**132008**	□
125	210	26	2/2	36	12000	top	**132009**	□
125	240	26	2/2	42	12000	bottom	**132010**	□
125	240	26	2/2	42	12000	top	**132011**	□
125	270	26	2/2	46	8000	bottom	**132012**	□
125	270	26	2/2	46	8000	top	**132013**	□
125	310	26	2/2	54	8000	bottom	**132014**	□
125	310	26	2/2	54	8000	top	**132015**	□

Aluminium tool body, HSK 85 WS with reference cutterhead
WL 403-2-02

D mm	SB mm	A mm	Z	V	AM PCS	$n_{max.}$ min^{-1}	DRI	ID	
125	210	26	2/2	2	36	12000	bottom	**132062**	□
125	240	26	2/2	2	42	12000	bottom	**132063**	□
125	270	26	2/2	2	46	8000	bottom	**132064**	□
125	310	26	2/2	2	54	8000	bottom	**132065**	□

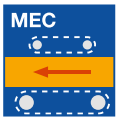
Design with HW cutting edges
Further dimensions and inch dimensions available on request.
Suitable reference cutterheads can be found on page 200.

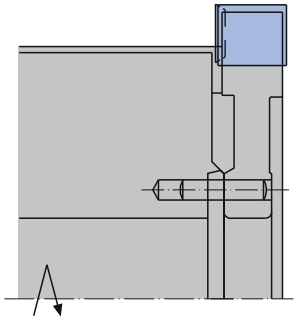
Spare knives:

BEZ	ABM mm	QAL	VE PCS	ID	
Turnblade knife	15x15x2,5	HW	10	**009535**	●

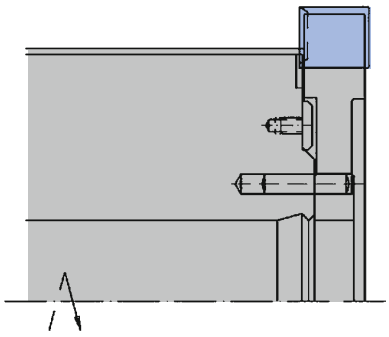
Spare parts:

BEZ	ABM mm	ID	
Countersink screw, Torx® 20	M5x14.2-8.8	**007394**	●
Torx® key	Torx® 20	**006091**	●





Combined reference cutterhead with wedge type system, build up system and CentroStar. Mounted with spacer ID **028617**.



Combination with HeliPlan, VariPlan Plus. Mounted with spacer.

Reference cutterhead

Application:
For cutting a side reference rebate when surface planing on the first bottom spindle in combination with a planer cutterhead.

Machine:
Four side moulders with fence.

Workpiece material:
Softwood and hardwood.

Technical information:
Steel tool body with HW turnblade knives, can be combined with pre planing and finish planing cutterheads on the first bottom spindle.
D145 for planerheads D125.
D160 for planerheads D140.

For wedge type system, build up system, CentroStar
WW 410-2

D mm	SB mm	BO mm	Z	V	QAL	$n_{max.}$ min^{-1}	ID	
145	15	40	2	2	HW	12500	**024554**	●
160	15	40	2	2	HW	12500	**024560**	●

For HeliPlan, VariPlan Plus
WW 410-2

D mm	SB mm	BO mm	Z	V	QAL	$n_{max.}$ min^{-1}	ID	
145	15	40	2	2	HW	12500	**024563**	●
160	15	40	2	2	HW	12500	**024564**	●

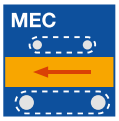
Spare knives:

BEZ	ABM mm	QAL	VE PCS	ID	
Turnblade spur VS1	14x14x2	HW-F	10	**005099**	●
Turnblade knife	14,7x8x1,5	HW-30F	10	**005070**	●

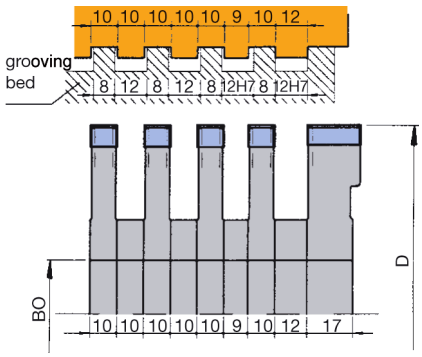
Spare parts:

BEZ	ABM mm	BEM	ID	
Spacer	70x3x40,DTK58		**028617**	●
Countersink screw, Torx® 20	M6x0,5x4,9	Torx® 20 for steel-body	**006243**	●
Pin	6x20		**008619**	●

● available ex stock
□ available at short notice
Instruction manual visit www.leitz.org



HW



Number of tools for different widths

SB mm	working width mm				
	80	100	120	140	170
SB 20	1	1	1	1	1
SB 10	3	4	5	6	8

Cutterhead for groove bed guide

Application:
For guide grooves on the first bottom spindle for precise feeding of short parts or curved workpieces.

Machine:
Four side moulders with groove beds.

Workpiece material:
Softwood and hardwood, along the grain.

Technical information:
Build up turnblade knife tool system, diameter and cutting width constant.
The closed, round design of the tool body reduces the noise level.

HW turnblade design
WW 101-2, WW 102-2

D mm	SB mm	BO mm	$BO_{max.}$ mm	Z	V	$n_{max.}$ min^{-1}	ID	
125	20	40	50	2	2	12000	**020389**	●
125	10	40	50	2	2	12000	**020390**	●
140	20	40	50	2	2	10900	**020386**	●
140	10	40	50	2	2	10900	**020388**	●

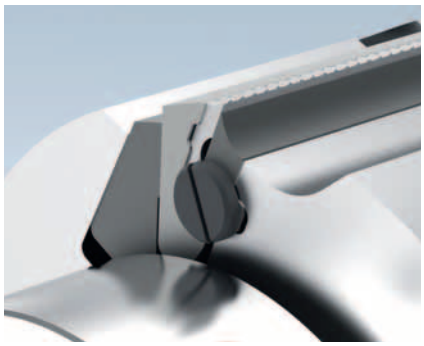
Spare knives:

BEZ	ABM mm	QAL	VE PCS	ID	
Turnblade knife	19,7x8x1,5	HW-30F	10	**005071**	●
Turnblade knife	9,7x8x1,5	HW-30F	10	**005197**	●
Turnblade spur VS1	14x14x2	HW-F	10	**005099**	●

Spare parts:

BEZ	ABM mm	ID	
Spacer	60x0,1x40	**027941**	●
Spacer	60x0,3x40	**027942**	●
Spacer	60x9x40	**028449**	●
Spacer	60x10x40	**027951**	●
Spacer	60x11,5x40	**028431**	●
Set of spacers	60x11,5/0,3/2x 0,1x40	**028459**	●
Clamping wedge	18x18,75x8,27	**009671**	●
Clamping wedge	9x18,75x8,27	**009764**	●
Clamping screw, Torx® 25	M6x18,5	**007818**	●
Washer	9/6,2x1,2	**006753**	●
Allen screw with shank, Torx® 15	M5x20	**007380**	●
Countersink screw, Torx® 20	M6x0,5x4,9	**006243**	●
Torx® key	Torx® 15	**117507**	●
Torx® key	Torx® 20	**117503**	●
Setting gauge	0,3/0,8	**005374**	●

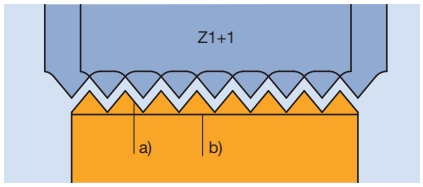
Planing cutterhead VariPlan Plus

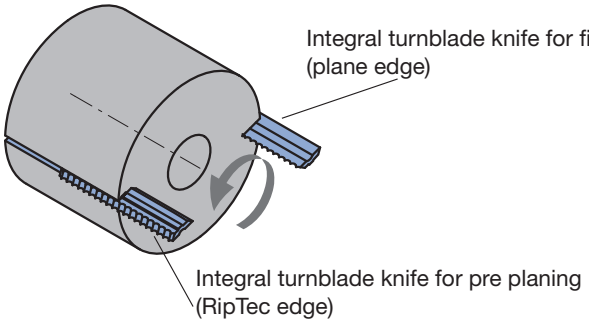


Application

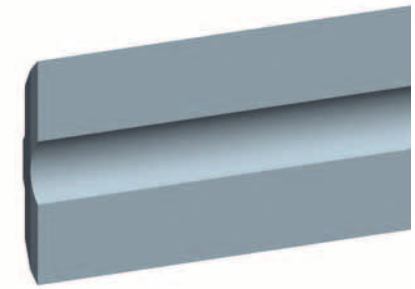
Pre planing of hard to machine wood to minimise the pre splitting.

Pre planing with RipTec.

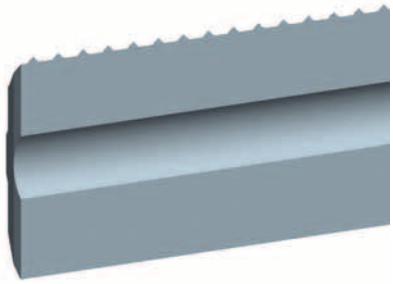




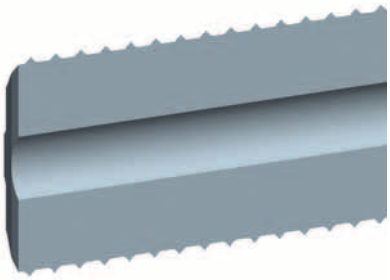
Pre planing with VariPlan Plus Z = 1+1 RipTec turnblade knives.



Microfinish, resharpenable turnblade knife in HS or HW for finish planing of soft and hardwood.



Integral, resharpenable turnblade knife in HW (plane/ripple) for pre and finish planing of soft and hardwood, hard to machine wood with a planerhead on a machining spindle.



RipTec, resharpenable turnblade knife in HW (ripple/ripple) for pre planing of soft- and hardwood, hard to machine wood on separate spindle.

Machines

Four side and multi spindle moulders, also with HSK 85 WS interface.

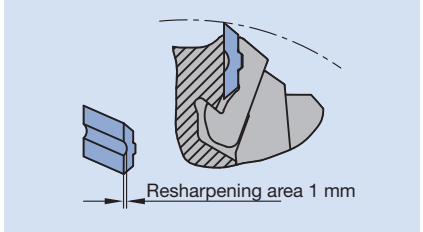
Workpiece material

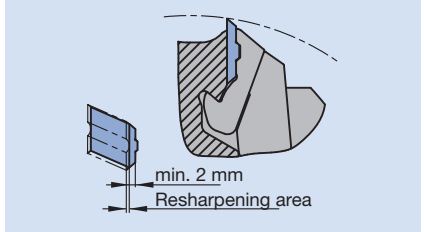
Soft and hardwood, plastics (limited suitable).

Number of knives

Z = 2 (1+1) to Z = 12 (6+6) depending on the feed speed and the tool diameter.
See the feed rate diagram.

Resharpening area: 1.0 mm





Planing cutterhead VariPlan Plus

Cutting material

HS for softwood (only plane turnblade knives)
HW for hardwood, various assembly and laminated wood with glued joint, (all knife types).

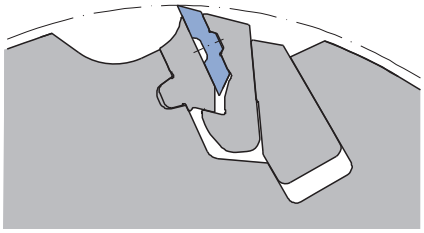
Chip removal

Pre planing: Softwood up to 10 mm, hardwood up to 8 mm.
Finish planing up to 1.0 mm.

Tool design

Resharpenable and diameter constant tool system with turnblade planer knives. Aluminium basic body, wear resistant steel chip breaker. For Microfinish, RipTec and Integral turnblade knives.

Technical characteristics

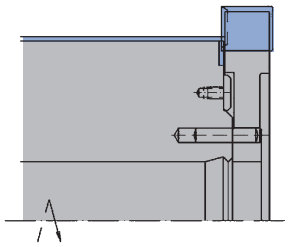


Aluminium tool body with steel chip breaker.

Operational safety through form fitting knife clamping.
Fast knife change through self positioning knife clamping.
Knife clamping in the dust-protected area.

One sharpening operation, two runtimes through by turnblade knife.
VariPlan Plus basic body for 3 knife variants: Microfinish, RipTec and Integral turnblade knives.

VariPlan Plus Planerheads for machines with HSK 85 WS interface are mounted on HSK 85 WS arbor. Combination with pre surfacing/rebating cutterhead possible.



Combination with planerhead VariPlan Plus.

Combination with rebate guide cutterhead during the application on the first bottom working spindle with pre surfacing fence. Reference cutterhead see page 200.

RPM / feed rate

D= 125 mm n_{max} = 12000 min^{-1}
D= 140 mm n_{max} = 11300 min^{-1}
D= 180 mm n_{max} = 10000 min^{-1}
D= 200 mm n_{max} = 9400 min^{-1}
D= 250 mm n_{max} = 8400 min^{-1}

RipTec turnblade knives just for pre planing

Tool data			RPM n [min^{-1}]			
$D_{min.}$		$n_{max.}$	6000	8000	10000	12000
[mm]	Z	min^{-1}	Feed rate v_f [m min^{-1}]			
125	1+1	12000	8 - 20	11 - 27	14 - 34	16 - 40
125	2+2	12000	17 - 41	22 - 54	28 - 68	34 - 82
140	3+3	10500	25 - 61	34 - 82	42 - 102	
180	4+4	9300	34 - 82	45 - 109		
200	5+5	8600	42 - 102	56 - 136		
250	6+6	6900	50 - 122			

Integral turnblade knives for pre and finish planing on one spindle

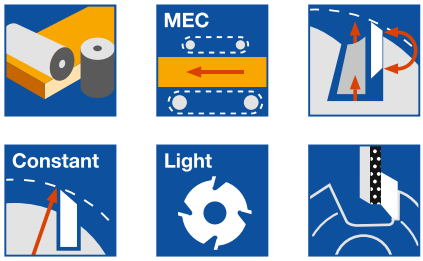
Tool data			RPM n [min^{-1}]				Knife mark
$D_{min.}$		$n_{max.}$	6000	8000	10000	12000	$f_{z1.}$
[mm]	Z	min^{-1}	Feed rate v_f [m min^{-1}]				[mm]
125	1+1	12000	8 - 12	10 - 14	14 - 20	16 - 24	1,4 - 2,0
125	2+2	12000	16 - 24	20 - 28	28 - 40	32 - 48	2,8 - 3,2

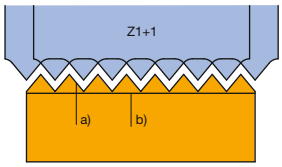
Special advantage

With Leitz ripple technology RipTec, pre splittings during pre planing is minimised for hard to machine wood. At finish planing, optimal finish is achieved. If only 1 spindle you benefit from using the Integral turnblade knives in the same tool.

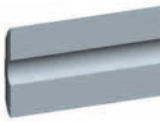
Note

RipTec turnblade knives for surfacing or pre planing are designed for a chip removal of 0.5 mm during finish planing.

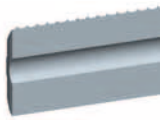




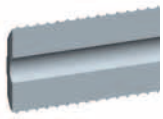
Pre planing with VariPlan Plus Z1+1 RipTec turnblades



a) Microfinish turnblades HS/HW



b) Integral turnblades HW (plane/ripple)



c) RipTec turnblades HW (ripple/ripple)

When ordering **always** state the variant! Further dimensions and inch dimensions on request. Suitable reference cutterheads in section 3.2.1 VariPlan Plus spare knives of all versions on page 207.

Planerhead VariPlan Plus for pre and finish planing

Application:
Multi purpose planing tool:
For pre planing with RipTec turnblades.
For finish planing with Microfinish turnblades.
For roughing/finishing planing on a spindle with Integral turnblades.

Machine:
Four side moulders and multi spindle planing machines.

Workpiece material:
Softwood and hardwood, thermoplastic plastics (partly suitable).

Technical information:
Resharpenable and constant diameter planerhead system.
Self positioning and centrifugal force supported knife clamping. Aluminium tool body.
2 cutting angles: 25° for softwood, 18° for dry and hardwood. HW RipTec and Integral, HS/HW Microfinish turnblades. Resharpening the knives on the cutting face means 1 sharpening operation gives 2 run times.

Aluminium tool body, cutting angle 18°
WW 240-2-05

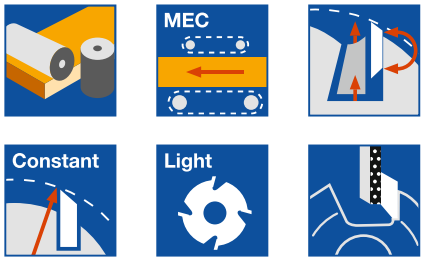
D mm	SB mm	D0 mm	BO mm	n max. min^{-1}	ID Z 2		ID Z 4	
125	130	136	40	11200	**131210**	□	**131410**	□
125	150	156	40	11200	**131211**	□	**131411**	□
125	170	176	40	11200	**131212**	□	**131412**	□
125	180	186	40	11200	**131213**	□	**131413**	□
125	190	196	40	11200	**131214**	□	**131414**	□
125	210	216	40	11200	**131215**	□	**131415**	□
125	230	236	40	11200	**131216**	□	**131416**	□
125	240	246	40	11200	**131217**	□	**131417**	□
140	270	276	40	8000	**131218**		**131418**	
140	310	316	40	8000	**131219**		**131419**	

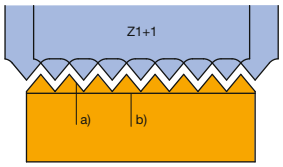
Aluminium tool body, cutting angle 25°
WW 240-2-05

D mm	SB mm	D0 mm	BO mm	n max. min^{-1}	ID Z 2		ID Z 4	
125	130	136	40	11200	**131200**	□	**131400**	□
125	150	156	40	11200	**131201**	□	**131401**	□
125	170	176	40	11200	**131202**	□	**131402**	□
125	180	186	40	11200	**131203**	□	**131403**	□
125	190	196	40	11200	**131204**	□	**131404**	□
125	210	216	40	11200	**131205**	□	**131405**	□
125	230	236	40	11200	**131206**	□	**131406**	□
125	240	246	40	11200	**131207**	□	**131407**	□
140	270	276	40	8000	**131208**		**131408**	
140	310	316	40	8000	**131209**		**131409**	

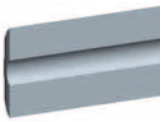
Variant	Description	picture knife
110 000	Planerhead without knives	
110 001	Planerhead with HS Microfinish turnblade knives	a)
110 002	Planerhead with HW Microfinish turnblade knives	a)
110 003	Planerhead with HW Integral turnblade knives	b)
110 004	Planerhead with HW RipTec turnblade knives	c)

● available ex stock
□ available at short notice
Instruction manual visit www.leitz.org

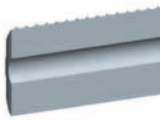




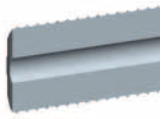
Pre planing with VariPlan Plus Z1+1 RipTec turnblades



a) Microfinish turnblades HS/HW



b) Integral turnblades HW (even/ripple)



c) RipTec turnblades HW (ripple/ripple)

When ordering **always** state the variant! Further dimensions and inch dimensions on request. Suitable reference cutterheads in section 3.2.1 VariPlan Plus spare knives of all versions on page 207.

Planerhead VariPlan Plus with HSK 85 WS for pre and finish planing

Application:
Multi purpose planing tool:
For pre planing with RipTec turnblades.
For finish planing with Microfinish turnblades.
For roughing/finishing planing on a spindle with Integral turnblades.

Machine:
Four side moulders and multi spindle moulders with HSK 85 WS interfaces.

Workpiece material:
Softwood and hardwood, thermoplastic plastics (partly suitable).

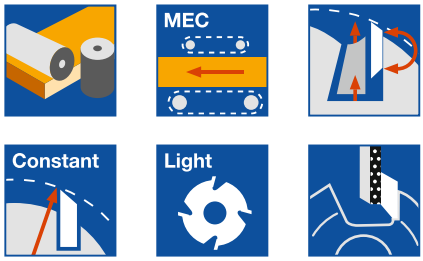
Technical information:
Resharpenable and constant diameter planerhead system.
Self positioning and centrifugal force supported knife clamping. Aluminium tool body. 2 cutting angles: 25° for softwood, 18° for dry and hardwood. HW RipTec and Integral, HS/HW Microfinish turnblades. Resharpening the knives on the cutting face means 1 sharpening operation gives 2 run times. Tool body and HSK arbor are shrunk fit together.

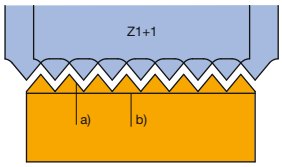
Aluminium tool body, cutting angle 18° on HSK 85 WS
WP 240-2-05

D mm	SB mm	A mm	$n_{max.}$ min^{-1}	Z	ID LL/ on bottom	ID RL/ on top
125	130	26	12000	2	**131520** □	**131521** □
125	150	26	12000	2	**131522** □	**131523** □
125	170	26	12000	2	**131524** □	**131525** □
125	180	26	12000	2	**131526** □	**131527** □
125	190	26	12000	2	**131528** □	**131529** □
125	210	26	12000	2	**131530** □	**131531** □
125	230	26	12000	2	**131532** □	**131533** □
125	240	26	12000	2	**131534** □	**131535** □
140	270	26	11300	2	**131536**	**131537**
140	310	26	11300	2	**131538**	**131539**
125	130	26	12000	4	**131620** □	**131621** □
125	150	26	12000	4	**131622** □	**131623** □
125	170	26	12000	4	**131624** □	**131625** □
125	180	26	12000	4	**131626** □	**131627** □
125	190	26	12000	4	**131628** □	**131629** □
125	210	26	12000	4	**131630** □	**131631** □
125	230	26	12000	4	**131632** □	**131633** □
125	240	26	12000	4	**131634** □	**131635** □
140	270	26	11300	4	**131636**	**131637**
140	310	26	11300	4	**131638**	**131639**

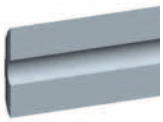
Aluminium tool body, cutting angle 18° on HSK 85 WS with reference cutterhead Z2 / V2
WP 240-2-08

D mm	SB mm	A mm	$n_{max.}$ min^{-1}	DRI	Z	ID
125	230	26	12000	LL/ on bottom	2	**131582** □
125	240	26	12000	LL/ on bottom	2	**131583** □
125	230	26	12000	LL/ on bottom	4	**131682** □
125	240	26	12000	LL/ on bottom	4	**131683** □

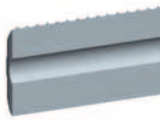




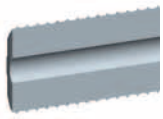
Pre planing with VariPlan Plus Z1+1 RipTec turnblades



a) Microfinish turnblades HS/HW



b) Integral turnblades HW (even/ripple)



c) RipTec turnblades HW (ripple/ripple)

When ordering **always** state the variant! Further dimensions and inch dimensions on request. Suitable reference cutterheads in section 3.2.1 VariPlan Plus spare knives of all versions on page 207.

Planerhead VariPlan Plus with HSK 85 WS for pre and finish planing

Application:
Multi purpose planing tool:
For pre planing with RipTec turnblades.
For finish planing with Microfinish turnblades.
For roughing/finishing planing on a spindle with Integral turnblades.

Machine:
Four side moulders and multi spindle moulders with HSK 85 WS interfaces.

Workpiece material:
Softwood and hardwood, thermoplastic plastics (partly suitable).

Technical information:
Resharpenable and constant diameter planerhead system.
Self positioning and centrifugal force supported knife clamping. Aluminium tool body. 2 cutting angles: 25° for softwood, 18° for dry and hardwood. HW RipTec and Integral, HS/HW Microfinish turnblades. Resharpening the knives on the cutting face means 1 sharpening operation gives 2 run times. Tool body and HSK arbor are shrunk fit together.

Aluminium tool body, cutting angle 25° on HSK 85 WS
WP 240-2-05

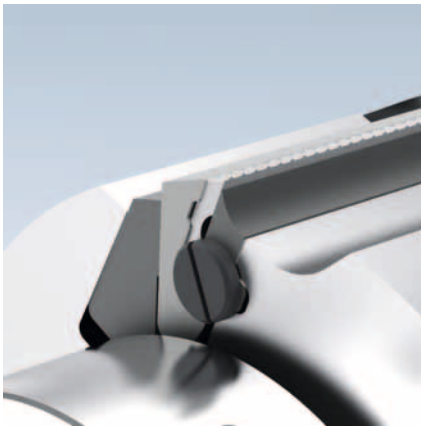
D mm	SB mm	A mm	$n_{max.}$ min^{-1}	Z	ID LL/ on bottom		ID RL/ on top	
125	130	26	12000	2	**131500**	□	**131501**	□
125	150	26	12000	2	**131502**	□	**131503**	□
125	170	26	12000	2	**131504**	□	**131505**	□
125	180	26	12000	2	**131506**	□	**131507**	□
125	190	26	12000	2	**131508**	□	**131509**	□
125	210	26	12000	2	**131510**	□	**131511**	□
125	230	26	12000	2	**131512**	□	**131513**	□
125	240	26	12000	2	**131514**	□	**131515**	□
140	270	26	11300	2	**131516**		**131517**	
140	310	26	11300	2	**131518**		**131519**	
125	130	26	12000	4	**131600**	□	**131601**	□
125	150	26	12000	4	**131602**	□	**131603**	
125	170	26	12000	4	**131604**	□	**131605**	□
125	180	26	12000	4	**131606**	□	**131607**	
125	190	26	12000	4	**131608**	□	**131609**	□
125	210	26	12000	4	**131610**	□	**131611**	□
125	230	26	12000	4	**131612**	□	**131613**	□
125	240	26	12000	4	**131614**	□	**131615**	□
140	270	26	11300	4	**131616**		**131617**	
140	310	26	11300	4	**131618**		**131619**	

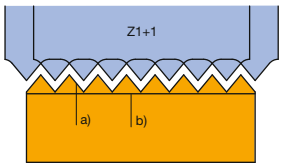
Aluminium tool body, cutting angle 25° on HSK 85 WS with reference cutterhead Z2 / V2
WP 240-2-08

D mm	SB mm	A mm	$n_{max.}$ min^{-1}	DRI	Z	ID	
125	230	26	12000	LL/ on bottom	2	**131580**	□
125	240	26	12000	LL/ on bottom	2	**131581**	□

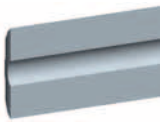
● available ex stock
□ available at short notice
Instruction manual visit www.leitz.org

Variant	Description	picture knife
110 000	Planerhead without knives	
110 001	Planerhead with HS Microfinish turnblade knives	a)
110 002	Planerhead with HW Microfinish turnblade knives	a)
110 003	Planerhead with HW Integral turnblade knives	b)
110 004	Planerhead with HW RipTec turnblade knives	c)

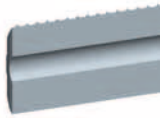




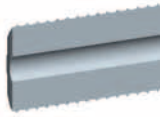
Pre planing with VariPlan Plus Z1+1 RipTec turnblades



a) Microfinish turnblades HS/HW



b) Integral turnblades HW (plane/ripple)



c) RipTec turnblades HW (ripple/ripple)

Planer knives VariPlan Plus for pre and finish planing

Application:
Microfinish HS and HW turnblades: for finish planing softwood and hardwood. RipTec HW turnblades (ripple/ripple): for pre planing/trimming on separate spindle, for softwood and hardwood, particularly for twisted grain wood. Integral HW turnblades (plane/ripple): for roughing/finishing planing on one machining spindle, for softwood and hardwood, particularly for twisted grain wood.

Technical information:
Turnblade variants suitable for the planerhead system VariPlan Plus.
HS Microfinish turnblades for softwood, HW turnblades (all knife types) for hardwood and softwood as well as for gluelam with glued joint. Resharpenable turnblade, resharpening area 1.0 mm.

Microfinish turnblades [1)]
AT 103-0-27

SB mm	H mm	DIK mm	ID HS		ID HW	
130	16	3,7	**617006**	●	**617106**	●
150	16	3,7	**617009**	●	**617109**	●
170	16	3,7	**617011**	●	**617111**	●
180	16	3,7	**617012**	●	**617112**	●
190	16	3,7	**617014**	●	**617114**	●
210	16	3,7	**617015**	●	**617115**	●
230	16	3,7	**617016**	●	**617116**	●
240	16	3,7	**617018**	●	**617118**	●
270	16	3,7	**617065**	●	**617165**	●
310	16	3,7	**617022**	●	**617122**	●

[1)] Suitable for VariPlan and VariPlan Plus planerheads.

ID = 2 pcs.

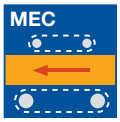
RipTec and Integral turnblade knives [2)]
AT 103-0-24, AT 103-0-23

SB mm	H mm	DIK mm	QAL	ID HW Integral		ID HW RipTec	
130	16	3,7	HW	**611906**	●	**611206**	●
150	16	3,7	HW	**611909**	●	**611209**	●
170	16	3,7	HW	**611911**	●	**611211**	●
180	16	3,7	HW	**611912**	●	**611212**	●
190	16	3,7	HW	**611914**	●	**611214**	●
210	16	3,7	HW	**611915**	●	**611215**	●
230	16	3,7	HW	**611916**	●	**611216**	●
240	16	3,7	HW	**611918**	●	**611218**	●
270	16	3,7	HW	**611965**	●	**611265**	●
310	16	3,7	HW	**611922**	●	**611222**	●

[2)] Only suitable for VariPlan Plus planerheads.

ID = 2 pcs.

Application



Finish planing is the last production step on four sided moulders. The recommended a finish planing cutting depth is 0.5-0.8 mm. For good results a tear out free pre planed surface is important. Cutterheads with the same number of wings are recommended for pre planing and finish planing.

Workpiece material

Soft and hardwood. Dry and wet:
Chipboard and fibre materials (chipboard, MDF, HDF, etc.).

Machines

Four side moulders with or without jointing.

Tool clamping

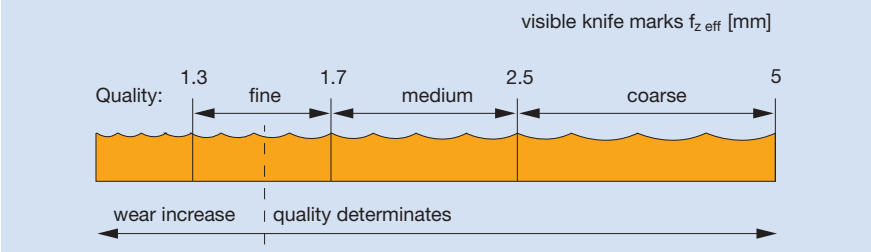
Direct on the machine spindle with spindle clamping nut or for hydro clamped cutterheads with locking collar.

Recommended cutting

	HS	Marathon (MC)	HW
Softwood dry	♦	♦	◇
Softwood wet		♦	♦
Plywood		◇	♦
Chipboard			♦
MDF			♦
WPC (Wood-Plastic-Composite)	◇	♦	♦

♦ suitable ◇ partly suitable

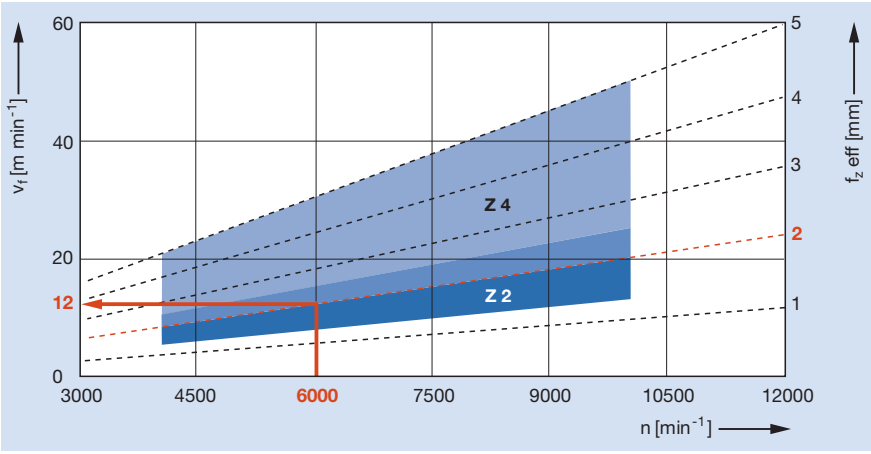
Feed speed



The selection of the feed speed is determined by the required surface quality. See diagram for the relationship between surface quality and length of knife marks $f_{z\ eff}$.

Diagram to determine feed speed v_f depending on RPM n and length of knife marks $f_{z\ eff}$ for different no. of wings.

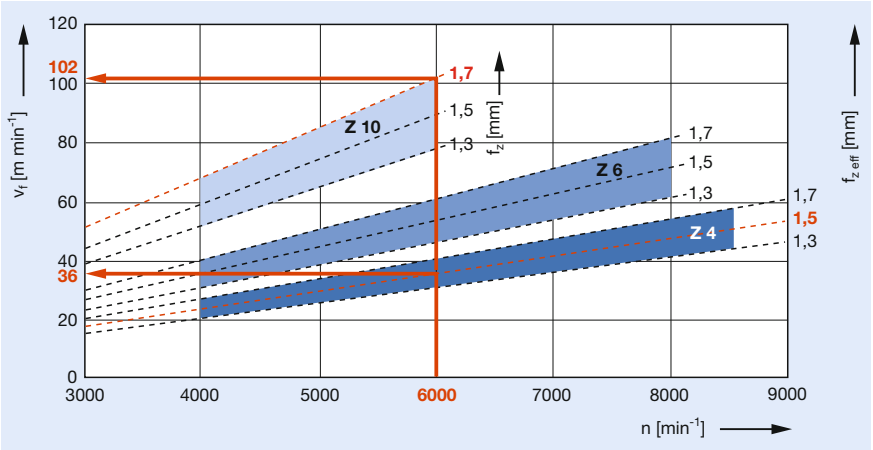
Diagram:
Planing cutterhead
Z = 2 and Z = 4



Even on tools with several wings, only the marks of one knife show on the workpiece surface (one-knife finish).
Z 2 and Z 4 tools produce the same surface quality under identical machining conditions (see technical information and charts in section User manual).

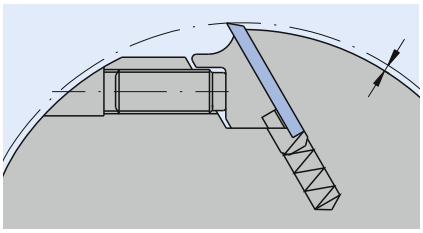
Length of cutter marks for hydro planing cutterheads

Diagram:
Hydro planerhead
Z = 4
Z = 6
Z = 10



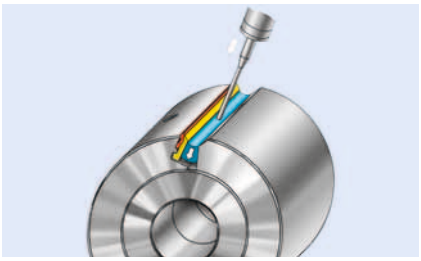
The marks of all knives show on the workpiece in regular pitches on jointed hydro-tools. More wings means high feed speeds maintaining the same surface quality (see technical information and charts in section User manual).

Wedge type system

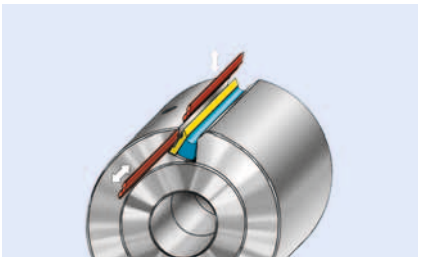
Application	Planing, pre planing and finish planing
Machines	Four side moulders
Workpiece material	Softwood and hardwood
No. of wings	4. Knife thickness: 3 mm. Knife height: 30 mm. Resharpening area 10 mm.
Cutting material	HS, HW and Marathon (MC).
Chip removal	Softwood: up to 15.0 mm. Hardwood: up to 10.0 mm.
Tool design	Steel or aluminium cutterhead with resharpenable planer knives SB x 30 x 3 mm. For four sided moulders as pre and finish planing tool.
Technical information	Used on four sided moulders for pre planing and finish planing.
RPM	D = 125 mm, $n_{max.}$ = 10400 min^{-1} D = 140 mm, $n_{max.}$ = 9300 min^{-1}
Note	 correct knife projection: max. 2 mm. – Knives resharpened in the cutterhead for improved run out accuracy and better planing quality. – After resharpening check the minimum knife clamping height marked on the tool body – Always tighten the screws from the middle to the outside; setting torque 17 Nm – Check the knife projection (see picture above) – Position the planing knife with key and setting gauge. – New design with revised clamping wedges and clamping screws (for spare parts for previous design see section Knives/spare parts) – Mounting the reference head requires two additional holes D 7 mm on a pitch circle diameter of 58 mm and a spacer 3 mm (ID **028617**).

CentroStar planerhead

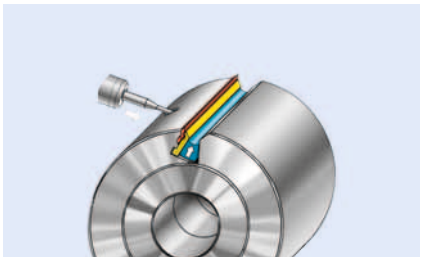
Application	Jointing, pre planing and finish planing with low chip removal
Machines	Four side moulders
Workpiece material	Softwood and hardwood
No. of wings	2 to 4; Reversible knife with 2 lives per knife.
Cutting material	HS, HW and Marathon (MC)
Chip removal	Softwood: up to 7.0 mm. Hardwood: up to 5.0 mm.
Tool design	Aluminium cutterhead with turnblade knives, constant diameter and form fitting centrifugal clamping system.
Technical information	– Centrifugal clamping system. – Turnblade knives with chip breaker for clean surfaces in critical zones. – Tool body of aluminium. – High wear parts of hardened steel, replaceable.
RPM	D = 100/120 mm, $n_{max.}$ = 12000 min^{-1} D = 125 mm, $n_{max.}$ = 12000 min^{-1} D = 140 mm, $n_{max.}$ = 8500 min^{-1}
Note	– CentroStar quick clamping system with snap mechanism (no clamping screws) for quick and easy knife replacement. – Lower noise level compared to existing cutterheads from optimised gullet and closed tool body. – Can be used with Reference cutterhead WW 410-2 on four sided moulding machines.



Loosen knife clamping.

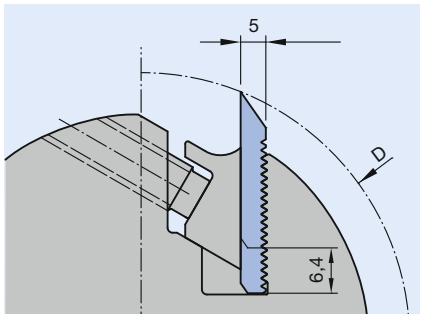


Radial and axial knife change possible.



Activate knife clamping. Secured by form fitting centrifugal clamping system.

Serrated back planerhead with HSK 85 WS

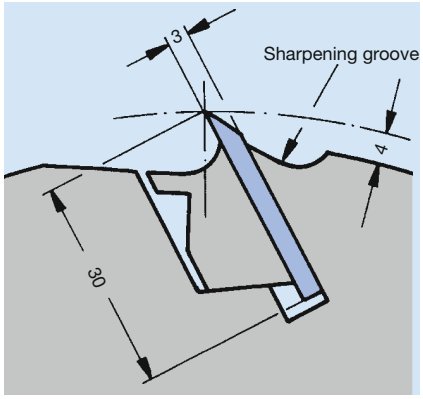
Application	Pre and finish planing
Machines	Planing machines with HSK 85 WS interface
Workpiece material	Softwood and hardwood, dry and wet
No. of wings	Z = 2, Z = 4, Z = 6
Cutting material	Marathon (MC), tungsten carbide HW
Chip removal	Softwood: up to 12 mm Hardwood: up to 10 mm
Application	Planing
Tool design 	Monobloc steel tool body. High concentricity and balance. Seating for 60° serrated back planer knives H = 40 mm x 5.0 mm thickness with standard tooth pitch 1.6 mm. A reference cutterhead can be mounted for aligning with the fence.
RPM	Tool body diameter = 90 mm $n_{all.}$ 12000 min^{-1} up to a cutting width of 240 mm, $n_{all.}$ 8000 min^{-1} cutting widths from 241 mm to 310 mm Tool body diameter = 115 mm $n_{all.}$ 10000 min^{-1} up to a cutting width of 130 mm, $n_{all.}$ 8000 min^{-1} cutting widths from 131 mm to 170 mm
Resharpening area	9 mm
Advantages	Pre and finish planing with Marathon planer knives resharpened to a cutting circle. For finish planing with n = 12000 min^{-1} and a feed rate > 18m/min, the planer knives require jointing on the machine. After jointing, all knives will have the same cutting circle. Jointing is required for finish planing. Optimum cutting speed and improved surface quality at n = 12000 min^{-1}
Note	Cutting angle 20° for softwood Cutting angle 12° for hardwood and wood fibre materials Jointing with n = 10000 min^{-1}

Hydro planerhead

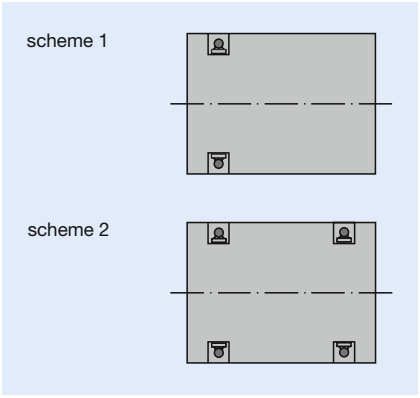
Application	Surfacing, pre planing and finish planing for feeds up to 24 to 120 m min^{-1}
Machines	Multi spindle moulders, with jointing if required
Workpiece material	Softwood and hardwood
Number of wings/Resharpening area	4–10 depending on diameter of body/10.0 mm
Cutting material	HS, HW and Marathon (MC).
Chip removal	Pre planing up to 5.0 mm Finish planing up to 0.8 mm
Tool design	Steel cutterhead with hydraulic clamping, open hydro clamping system with resharpenable planer knives resharpened in the cutterhead for concentricity < 0.005 mm.
Technical features	Joint knives for excellent surfaces at high feed speeds. Maximum joint bevel width: for softwood 0.5 mm, for hardwood 0.7 mm. High running accuracy and low vibration from hydro clamping. High feed speeds depend on the number of wings and RPM (see page 215, Diagram to determine feed speed).
RPM	D = 143 mm, $n_{max.}$ = 9100 min^{-1} D = 163 mm, $n_{max.}$ = 8000 min^{-1} D = 203 mm, $n_{max.}$ = 6400 min^{-1}

Note

- Hydro clamp only on spindle.
- Clamp to spindle with locking collar.
- For wings 30 x 3 mm HS, HW and HS Marathon.



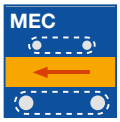
Sharpening groove on the body behind knife for easy knife resharpening in the cutterhead on sharpening machines.



Arrangement of the grease nipples for hydro clamping.

Hydro planerheads – high speed

Application



High performance multi spindle hydro moulders with automatic in feed, out feed and workpiece stacking are used for high speed planing and profiling. Planerheads are hydro clamped on high precision spindles with outrigger bearings and jointing devices. The same tools can be used for pre planing and finish planing. **Feed speeds over 80 m min^{-1}** require special multi wing high speed cutterheads. The aim is a surface quality with a visible knife mark length of between 1.5 and 2.5 mm Marathon planer knives are recommended to minimise tool changes and reduce set up time.

Machines

Heavy duty high speed moulders with hydro clamping, jointing and mechanical handling systems.

Tool clamping

Hydro clamping sleeve.

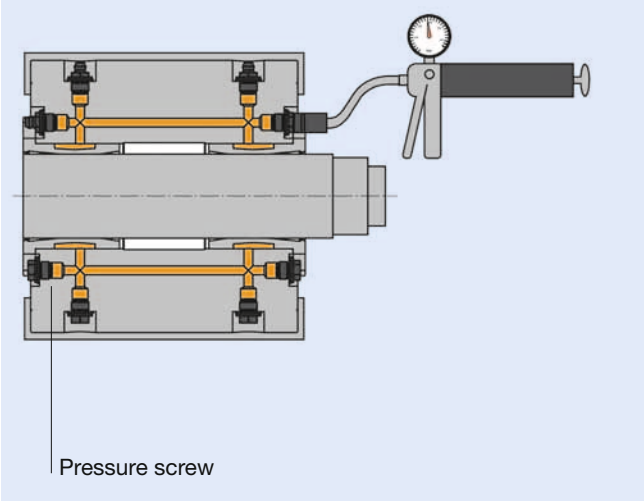


Illustration of hydro clamping system.

Max. jointing width

For softwood max. 0.5 mm.
For hardwood max. 0.7 mm.

Workpiece material

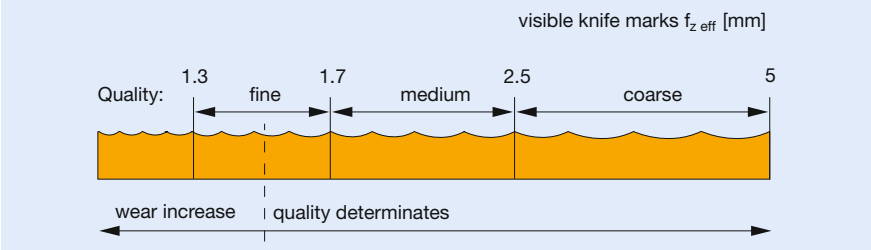
Soft- and hardwood.

Recommended cutting materials

	HS	Marathon (MC)	HW
Softwood	♦	♦	◇
Hardwood		♦	♦

♦ suitable ◇ partly suitable

Quality characteristics



The feed speed is determined by the required surface quality. Relation between the surface quality and length of knife marks $f_{z\ eff}$.

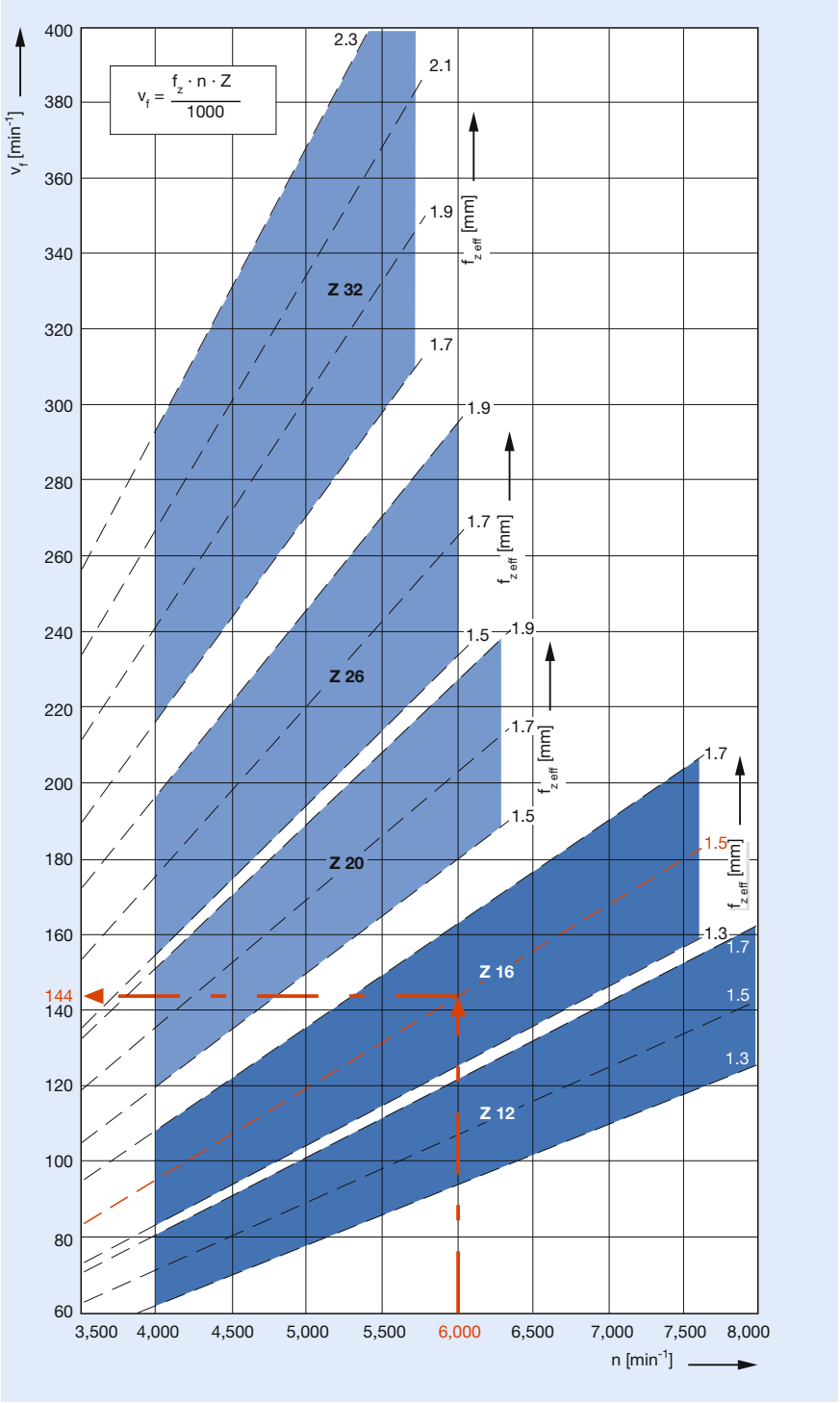
Hydro planerheads – high speed

Diagram to determine feed speed v_f of jointed hydro planerheads depending on RPM n and knife marks $f_{z\,eff}$ different no. of wings Z*

Diagram:
Hydro Planerhead
RotaPlan and TurboPlan

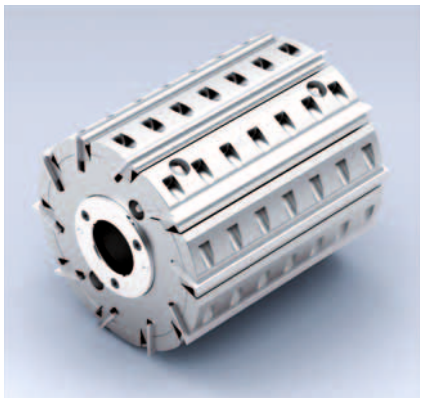
Z = 12
Z = 16
Z = 20
Z = 26
Z = 32

The feed speed is determined by the required surface quality (length of knife marks $f_{z\,eff}$) and depends on the RPM and the no. of wings in the cutterhead. The relation can be found in the diagram below.

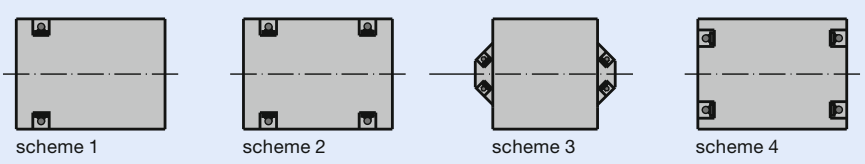


With jointed hydro tools the marks of all knives are shown on the workpiece in regular pitches. More wings mean higher feed speeds maintaining the same surface quality.

RotaPlan hydro planerhead

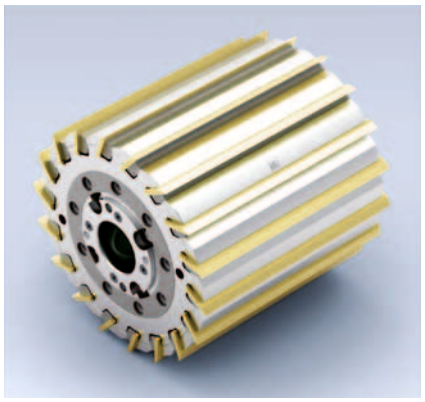


Application	Pre planing and precision finish planing for feeds 80 to 200 m min^{-1}
Machines	High performance moulders with high precision spindle bearings, counter bearing and jointing
Workpiece material	Softwood and hardwood
Diameter/RPM/ No. of wings	D-180 mm, $n_{max.}$ = 9100 min^{-1}, Z = 6–12. D-203 mm, $n_{max.}$ = 8000 min^{-1}, Z = 6–10. D-225 mm, $n_{max.}$ = 6400 min^{-1}, Z = 10–16.
Cutting materials	Marathon (MC), HW.
Chip removal	Pre planing: 5.0 mm. Finish planing: 0.8 mm.
Resharpening area	10.0 mm.
Tool design	Hydro clamped steel cutterhead with open hydro clamping system and resharpenable planing knives. Run out tolerance less than 0.005 mm.
Technical information	Excellent surface quality at high feed speeds by jointing the knives. Knife dimensions – SB x 35 x 3.0 mm High concentricity and low vibration from hydro clamping system.
Tool clamping	Hydro clamping system.
Knife clamping	Serrated back knife clamped by serrated wedge.
Note	Jointed knives give an excellent finish at high feed speeds. Do not pressurise the hydro clamping system without mounting the tool on the spindle. Working pressure 270 bar – check daily. Spindle safety device – use locking collars to reduce the risk of the tool spinning and cold welding on the spindle.

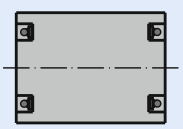


Position of grease nipples.

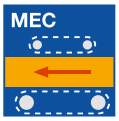
TurboPlan hydro planerhead

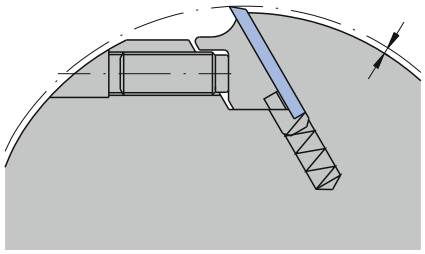


Application	Pre planing and precision finish planing feed between 160 to 360 m min^{-1}
Machines	High performance moulders with precision spindles, counter bearing, jointing unit and mechanised workpiece handling.
Workpiece material	Softwood and hardwood.
Diameter/RPM/ No. of wings	D = 225 mm, $n_{max.}$ = 7200 min^{-1}, Z = 18. D = 250 mm, $n_{max.}$ = 6900 min^{-1}, Z = 20. D = 260 mm, $n_{max.}$ = 6700 min^{-1}, Z = 22. D = 300 mm, $n_{max.}$ = 6300 min^{-1}, Z = 26. D = 330 mm, $n_{max.}$ = 6000 min^{-1}, Z = 28. D = 360 mm, $n_{max.}$ = 5700 min^{-1}, Z = 32.
Cutting material	Marathon (MC)
Chip removal	Pre planing: 5.0 mm. Finish planing: 0.8 mm.
Resharpening area	10.0 mm.
Tool design	Hydro planerhead with steel body. Open Hydro clamping system. Integrated balancing segments, attached to body. Positive knife clamping: HS Leitz Marathon serrated back resharpenable knives design. Knife clamping by open Hydro system.
Technical features	For Leitz serrated back Marathon knives HS 30 x 5.0 mm. High concentricity and low vibration from hydro clamping system. Knives resharpened in automatic resharpening machines have a concentricity < 0.005 mm.
Tool clamping	Hydro clamping system.
Knife clamping	Knife clamped by serrated wedge.
Note	Jointed knives give an excellent finish at high feed speeds. Do not pressurise the hydro clamping system without mounting the tool on the spindle. Working pressure 350-450 bar – check daily. Spindle safety – use locking collars to reduce the risk of the tool spinning and cold welding on the spindle. For Leitz serrated back knives Marathon (MC) 30 x 5 mm.

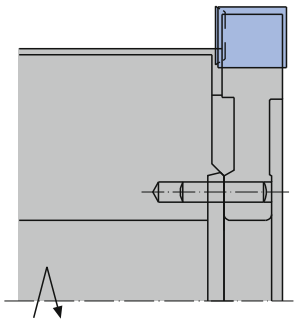


scheme 4





Correct knife protrusion: max. 2 mm.



Combined reference cutterhead with wedge type system, build up system and CentroStar. Mounted with spacer ID **028617**.

Planerhead wedge type system

Application:
Multi purpose applications for pre planing with large chip removal and finish planing.

Machine:
Four side moulders.

Workpiece material:
Softwood and hardwood.

Technical information:
Cutterhead with resharpenable planer knives SB x 30 x 3.0 mm. Pressure springs position the knives to the defined cutting circle by a setting gauge. Cutting edge qualities HS, Marathon (MC) or HW available. Steel or aluminium tool body design.

Steel tool body
WM 200-2-05

D mm	SB mm	D0 mm	BO mm	n max. min^{-1}	Z	ID HS		ID HW	
125	100	100	40	10400	4	**140002**	●	**140052**	□
125	120	120	40	10400	4	**140003**	●	**140053**	□
125	130	130	40	10400	4	**140004**	●	**140054**	□
125	150	150	40	10400	4	**140005**	●	**140055**	□
125	170	170	40	10400	4	**140006**	●	**140056**	□
125	180	180	40	10400	4	**140007**	●	**140057**	□
125	210	210	40	10400	4	**140009**	●	**140059**	□
125	230	230	40	10400	4	**140010**		**140060**	
125	240	240	40	10400	4	**140011**		**140061**	

Suitable reference cutterheads can be found on page 200.

Aluminium tool body
WM 200-2-07

D mm	SB mm	ND mm	BO mm	n max. min^{-1}	Z	ID HS		ID HW	
125	130	130	40	9000	4	**140400**	●	**140450**	□
125	180	180	40	9000	4	**140401**	●	**140451**	□
125	230	230	40	9000	4	**140402**	●	**140452**	□
125	240	240	40	9000	4	**140403**	●	**140453**	□
140	130	130	50	9000	4	**140404**		**140454**	
140	180	180	50	9000	4	**140405**		**140455**	
140	230	230	50	9000	4	**140406**		**140456**	
140	240	240	50	9000	4	**140407**		**140457**	

Suitable reference cutterheads can be found on page 200.

● available ex stock
□ available at short notice
Instruction manual visit www.leitz.org

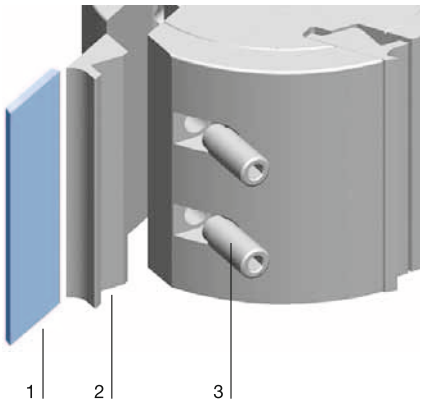
Spare knives:

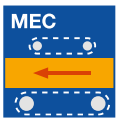
Part-no.	SB mm	H mm	DIK mm	ID HS	ID HW
1	100	30	3	**027103** ●	**027279** ●
1	120	30	3	**027105** ●	**027281** ●
1	130	30	3	**027106** ●	**027282** ●
1	150	30	3	**027107** ●	**027283** ●
1	170	30	3	**027108** ●	**027284** ●
1	180	30	3	**027109** ●	**027285** ●
1	210	30	3	**027110** ●	**027286** ●
1	230	30	3	**027111** ●	**027287** ●
1	240	30	3	**027134** ●	**027323** ●

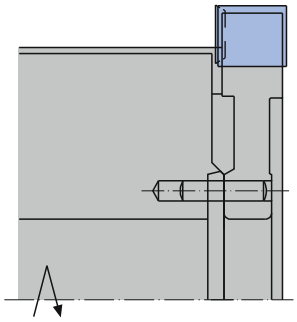
Spare knives with other dimensions and qualities, see section 9 Knives and spare parts.

Spare parts:

Part-no.	BEZ	ABM mm	ID
2	Clamping wedge	98x25,43x11	**620752** ●
2	Clamping wedge	118x25,43x11	**620753** ●
2	Clamping wedge	128x25,43x11	**620754** ●
2	Clamping wedge	148x25,43x11	**620755** ●
2	Clamping wedge	168x25,43x11	**620756** ●
2	Clamping wedge	178x25,43x11	**620757** ●
2	Clamping wedge	208x25,43x11	**620759** ●
2	Clamping wedge	228x25,43x11	**620760** ●
2	Clamping wedge	238x25,43x11	**620761** ●
3	Allen screw	M10x1x25	**007395** ●
	Allen Key	SW 5	**117509** ●
	Pressure spring	30x7,5 X 0,8	**008051** ●
	Setting gauge	D125/140	**005361** ●







Combined with reference cutterhead and spacer ID **028617**.

Planerhead CentroStar

Application:
Especially suitable for finish planing. Can also be used for pre planing with chip removal up to 6 mm.

Machine:
Four side moulders.

Workpiece material:
Softwood and hardwood.

Technical information:
Form fit knife clamping system supported by centrifugal force. Axial or radial knife removal. HS or HW turnblade planer knife SB x 12 x 2.7 mm. Integrated chip breaker to prevent pre splitting. Aluminium tool body.

Aluminium tool body
WW 240-2-20

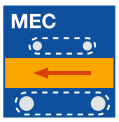
D mm	SB mm	ND mm	BO mm	$BO_{max.}$ mm	Z	$n_{max.}$ min^{-1}	ID HS		ID HW	
125	100	106	40	50	4	12000	**130442**	●	**130443**	□
125	130	136	40	50	4	12000	**130446**	●	**130447**	□
125	170	176	40	50	4	12000	**130452**	●	**130453**	□
125	180	186	40	50	4	12000	**130454**	●	**130455**	□
125	210	216	40	50	4	12000	**130458**		**130459**	
125	230	236	40	50	4	12000	**130460**	●	**130461**	□
125	240	246	40	50	4	12000	**130462**	●	**130463**	□

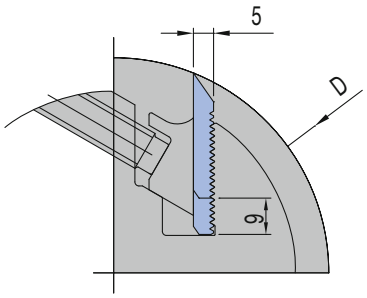
Further dimensions and inch dimensions available on request
Suitable reference cutterheads can be found on page 200.
Spare parts service only by the manufacturer.

Spare knives:

SB mm	H mm	DIK mm	QAL	SET PCS	ID	
100	12	2,7	HS	4	**610203**	●
130	12	2,7	HS	4	**610205**	●
170	12	2,7	HS	4	**610210**	●
180	12	2,7	HS	4	**610211**	●
210	12	2,7	HS	4	**610213**	●
230	12	2,7	HS	4	**610214**	●
240	12	2,7	HS	4	**610215**	●
100	12	2,7	HW-F	2	**610606**	●
130	12	2,7	HW-F	2	**610612**	●
170	12	2,7	HW-F	2	**610620**	●
180	12	2,7	HW-F	2	**610621**	●
210	12	2,7	HW-F	2	**610627**	●
230	12	2,7	HW-F	2	**610629**	●
240	12	2,7	HW-F	2	**610631**	●

● available ex stock
□ available at short notice
Instruction manual visit www.leitz.org





Planerhead with HSK 85 WS and serrated back HS Marathon planer knives

Application:
Finish planing.

Machine:
Four side moulders with HSK 85 WS interface.

Workpiece material:
Cutting angle 20° for softwood and hardwood in general.
Cutting angle 12° for materials likely to splinter such as oak, douglas fir, merbau and wood fibre materials, e.g. MDF.

Technical information:
Finish planing cutterhead in mono block design DTK 90 mm with serrated back planer knives SB x 40 x 5 mm ground to cutting circle. Jointable by specific jointing stone. For D = 106 mm the allowed RPM for jointing is n = 12000 min^{-1} for SB 240 mm: n = 10000 min^{-1}, >240 - 310 mm: n = 8000 min^{-1}; steel tool body. High balance quality by assembly with parts of the same weight.

Cutting angle 20°
WP 210-2-01

D mm	SB mm	A mm	QAL	Z	n max. min^{-1}	ID LL / on bottom		ID RL / on top	
106	130	26	MC	2	12000	**140322**	●	**140323**	●
106	170	26	MC	2	12000	**140324**	●	**140325**	●
106	240	26	MC	2	12000	**140326**	●	**140327**	●
106	80	26	MC	4	12000	**140330**	●	**140331**	●
106	130	26	MC	4	12000	**140332**	●	**140333**	●
106	170	26	MC	4	12000	**140334**	●	**140335**	●
106	240	26	MC	4	12000	**140336**	●	**140337**	●
106	310	26	MC	4	8000	**140338**	●	**140339**	●
128	80	26	MC	6	10000	**140346**	□	**140347**	□
128	130	26	MC	6	10000	**140348**	□	**140349**	□
128	170	26	MC	6	8000	**140350**	□	**140351**	□

Cutting angle 12°
WP 210-2-01

D mm	SB mm	A mm	QAL	Z	n max. min^{-1}	ID LL / on bottom		ID RL / on top	
106	130	26	MC	2	12000	**140302**	●	**140303**	●
106	170	26	MC	2	12000	**140304**	●	**140305**	●
106	240	26	MC	2	12000	**140306**	●	**140307**	●
106	130	26	MC	4	12000	**140312**	●	**140313**	●
106	170	26	MC	4	12000	**140314**	●	**140315**	●
106	240	26	MC	4	12000	**140316**	●	**140317**	●
128	80	26	MC	6	10000	**140340**	□	**140341**	□
128	130	26	MC	6	10000	**140342**	□	**140343**	□
128	170	26	MC	6	8000	**140344**	□	**140345**	□

Spare knives:

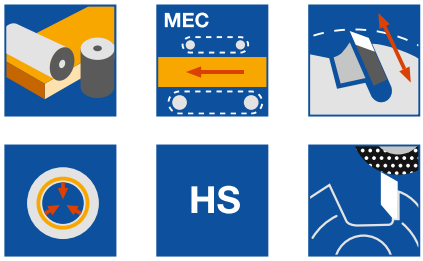
SB mm	H mm	DIK mm	$PT_{max.}$ mm	QAL	SET PCS	ID	
80	40	5	0	MC	2	**697158**	●
130	40	5	0	MC	2	**697160**	●
170	40	5	0	MC	2	**697162**	●
240	40	5	0	MC	2	**697167**	●
310	40	5	0	MC	2	**697169**	●

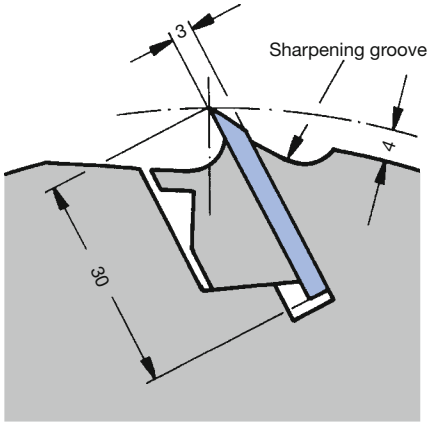
Set matched to the same weight.

Spare parts:

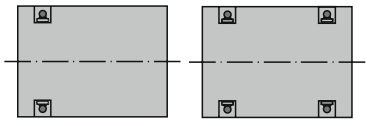
BEZ	ABM mm	ID	
Clamping wedge	80, for knife-thickness 5/6	**620732**	●
Clamping wedge	130, for knife-thickness 5/5	**620734**	●
Clamping wedge	170, for knife-thickness 5/6	**620736**	●
Clamping wedge	240, for knife-thickness 5/6	**620739**	●
Clamping wedge	310, for knife-thickness 5/6	**620741**	●
Pin	6x20	**008619**	●
Torx® key	Torx® 25	**117504**	●
Allen Key	SW 5	**117509**	●
Jointing stone (angular)	20x15x60	**008238**	●
Jointing stone (round)	12x32	**008237**	●

● available ex stock
□ available at short notice
Instruction manual visit www.leitz.org





Mounted knife



Scheme 1 - left
Scheme 2 - right

Arrangement of the grease nipples

Hydro planerhead

Application:
Pre planing and finish planing at high feed speeds of 24 to 120 m/min.
See introduction pages for application data.

Machine:
Four side moulders with jointing device.

Workpiece material:
Softwood and hardwood.

Technical information:
Steel tool body with integrated hydro clamping system. Activated by grease gun. Resharpenable HS planer knives SB x 30 x 3.0 mm. Wedge angle 30°. For jointing, the knives are to be sharpened in the tool body to a concentricity of < 0.005 mm.

Z 4 - Z 10
HM 200-2-05

D mm	SB mm	BO mm	Z	QAL	Scheme	$n_{max.}$ min^{-1}	ID	
143	160	40	4	HS	2	9000	**142003**	●
163	160	50	4	HS	2	9000	**142008**	●
163	230	50	4	HS	2	9000	**142009**	●
163	260	50	4	HS	2	9000	**142010**	
163	60	50	6	HS	1	9000	**142011**	●
163	100	50	6	HS	1	9000	**142012**	●
163	130	50	6	HS	1	9000	**142013**	●
163	160	50	6	HS	2	9000	**142014**	●
163	230	50	6	HS	2	9000	**142015**	●
163	260	50	6	HS	2	9000	**142016**	
163	60	50	8	HS	1	9000	**142017**	
163	100	50	8	HS	1	9000	**142018**	●
163	160	50	8	HS	2	9000	**142019**	●
163	230	50	8	HS	2	9000	**142020**	●
203	230	50	8	HS	2	6400	**142024**	●
203	150	50	10	HS	2	6400	**142026**	●

For spare knives of other dimensions and qualities, see section 9 Knives and Spare Parts.

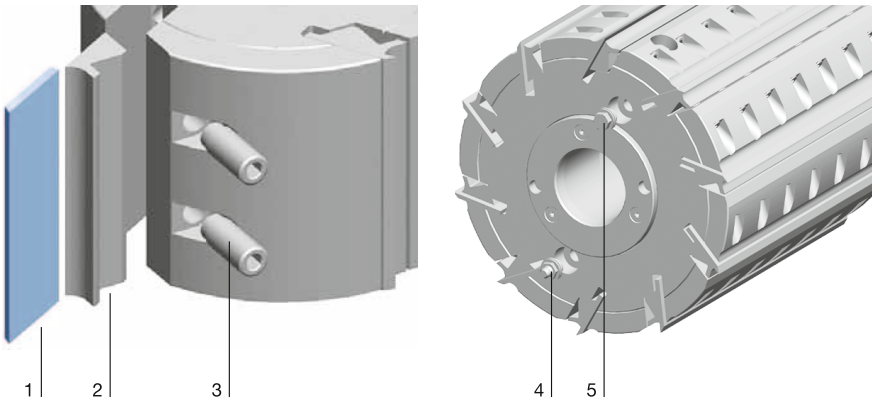
Marathon knives (MC) for high performance, especially in softwood.

Spare knives:

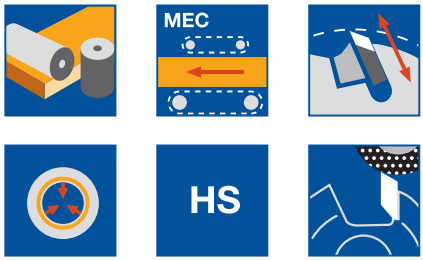
Part-no.	SB mm	H mm	DIK mm	QAL	ID	
1	60	30	3	HS	**009362**	●
1	100	30	3	HS	**009350**	●
1	130	30	3	HS	**009351**	●
1	150	30	3	HS	**009352**	●
1	160	30	3	HS	**009363**	●
1	230	30	3	HS	**009354**	●
1	260	30	3	HS	**009355**	●

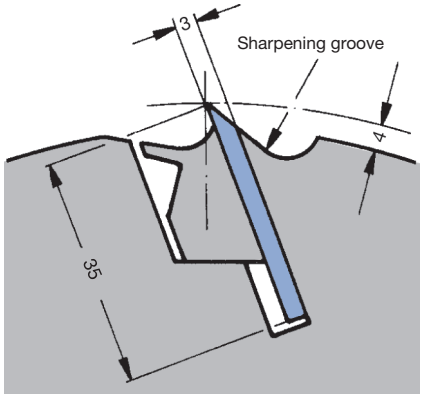
Spare parts:

Part-no.	BEZ	ABM mm	ID	
2	Clamping wedge	52x25,3x10,8	**620711**	●
2	Clamping wedge	92x25,3x10,8	**620712**	
2	Clamping wedge	122x25,3x10,8	**620713**	●
2	Clamping wedge	142x25,3x10,8	**620714**	●
2	Clamping wedge	152x25,3x10,8	**620715**	●
2	Clamping wedge	222x25,3x10,8	**620716**	●
2	Clamping wedge	252x25,3x10,8	**620717**	●
3	Allen screw	M10x1x25	**007395**	●
3	Allen screw	M10x1x20	**007396**	●
3	Allen screw	M10x1x16	**007397**	●
4	Grease nipple	M10x1	**007935**	●
5	Relief plug	M10x1	**007983**	●
	Allen Key	SW 5	**117509**	●
	Grease gun		**008239**	●

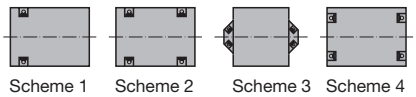


● available ex stock
□ available at short notice
Instruction manual visit www.leitz.org





Mounted knife



Arrangement of the grease nipples

RotaPlan hydro planerhead

Application:
For pre planing and finish planing at feed speeds of 60 to 200 m min^{-1}.
See introduction pages for application data.

Machine:
High performance moulders with precision spindles, counter bearing, jointing device and mechanical workpiece handling.

Workpiece material:
Softwood and hardwood.

Technical information:
Steel tool body with integrated, hydro clamping system. Activated by grease gun. Resharpenable HS planer knives SB x 35 x 3.0 mm. Wedge angle 30°. For jointing, the knives are to be sharpened in the tool body to a concentricity of < 0.005 mm.

Z 10 - Z 16
HM 200-2-06

D mm	SB mm	ND mm	BO mm	Z	QAL	Scheme	n max. min^{-1}	ID
203	100	130	50	10	HS	3	6400	**142115**
203	160	190	50	10	HS	3	6400	**142116**
203	230	230	50	10	HS	2	6400	**142117**
203	320	320	50	10	HS	2	6400	**142118**
203	100	130	50	12	HS	3	6400	**142119**
203	160	190	50	12	HS	3	6400	**142120**
203	230	230	50	12	HS	2	6400	**142121**
203	320	320	50	12	HS	2	6400	**142122**
225	100	130	45	10	HS	3	5800	**142123**
225	160	190	45	10	HS	3	5800	**142124**
225	230	230	45	10	HS	2	5800	**142125**
225	100	130	45	12	HS	3	5800	**142126**
225	160	190	45	12	HS	3	5800	**142127**
225	230	230	45	12	HS	2	5800	**142128**
225	100	130	45	14	HS	3	5800	**142129**
225	160	190	45	14	HS	3	5800	**142130**
225	230	230	45	14	HS	2	5800	**142131**
225	160	190	45	16	HS	3	5800	**142132**

For spare knives of other dimensions and qualities, see section 9 Knives and Spare Parts.

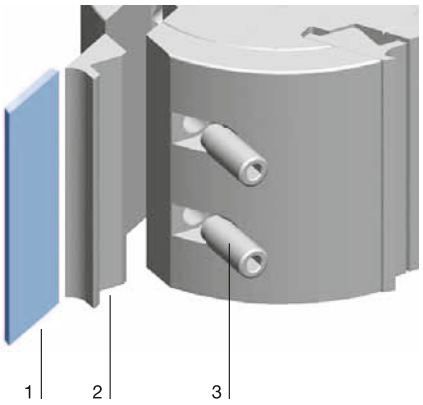
Marathon knives (MC) for high performance, especially in softwood.

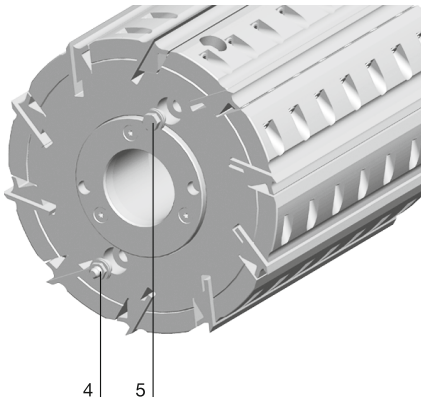
Spare knives:

Part-no.	SB mm	H mm	DIK mm	QAL	ID
1	100	35	3	HS	**009343** ●
1	160	35	3	HS	**009344** ●
1	230	35	3	HS	**009345** ●
1	320	35	3	HS	**009346** ●

Spare parts:

Part-no.	BEZ	ABM mm	ID	
2	Clamping wedge	92x25,3x10,8	**620712**	
2	Clamping wedge	152x25,3x10,8	**620715**	●
2	Clamping wedge	222x25,3x10,8	**620716**	●
2	Clamping wedge	312x25,43x11	**620718**	
2	Clamping wedge	92x25,3x10,8,40°	**620719**	
3	Allen screw	M10x1x25	**007395**	●
3	Allen screw	M10x1x20	**007396**	●
4	Grease nipple	M10x1	**007935**	●
5	Relief plug	M10x1	**007983**	●
	Grease gun		**008239**	●
	Grease cartridge	for Hydro sleeve	**007934**	●
	Allen Key	SW 5	**117509**	●





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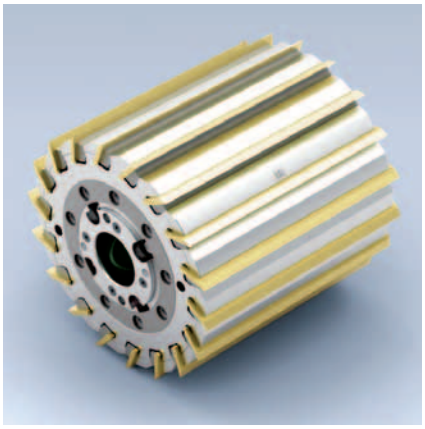
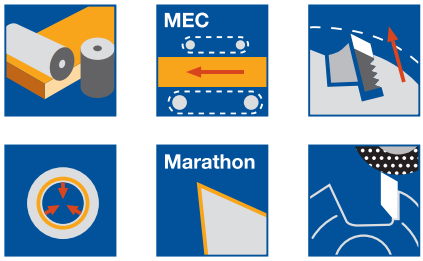
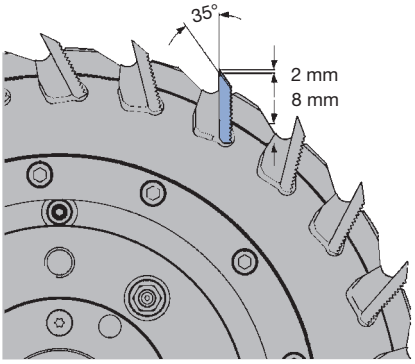






TurboPlan with integrated balancing segments

TurboPlan hydro planerhead

Application:
For pre planing and finish planing at feed speeds of 160 to 360 m min^{-1}.
See introduction pages for application data.

Machine:
High performance moulders with precision spindles, counter bearing, jointing device and mechanical workpiece handling.

Workpiece material:
Softwood and hardwood.

Technical information:
Steel tool body with two seperate hydro systems for tool and knife clamping. Activated by grease gun. Marathon coated (MC) serrated back planer knives SB x 30 x 5.0 mm. For jointing, the knives are to be sharpened in the tool body to a concentricity of < 0.005 mm.

Z 18 - Z 26
HM 200-2-04

D mm	SB mm	Z	ND mm	$BO_{max.}$ mm	$n_{max.}$ min^{-1}	ID
225	130	18	132	50	7200	**142218**
225	150	18	152	50	7200	**142219**
225	230	18	232	50	7200	**142220**
250	130	20	132	60	6900	**142201**
250	150	20	152	60	6900	**142202**
250	230	20	232	60	6900	**142203**
260	130	22	132	60	6700	**142205**
260	150	22	152	60	6700	**142206**
260	230	22	232	60	6700	**142207**
300	130	26	132	60	6300	**142209**
300	150	26	152	60	6300	**142210**
300	230	26	232	60	6300	**142211**

Spare knives:

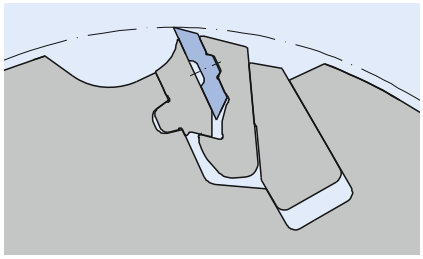
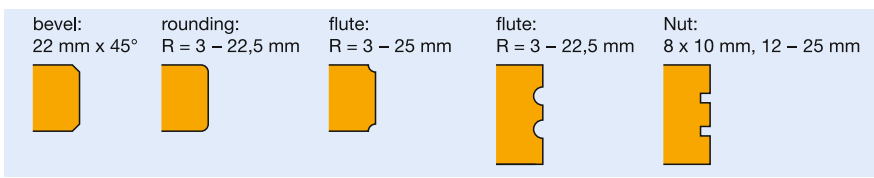
SB mm	H mm	DIK mm	QAL	ID
130	30	5	MC	**605451** □
150	30	5	MC	**605452** □
230	30	5	MC	**605453** □

Spare parts:

BEZ	ABM mm	BEM	ID
Clamping wedge	52x18,6x9,3	for SB = 60	**620650**
Clamping wedge	122x18,6x9,3	for SB = 130	**620651**
Clamping wedge	142x18,6x9,3	for SB = 150	**620652**
Clamping wedge	222x18,6x9,3	for SB = 230	**620653**
Knife setting device	for TurboPlan		**142290**
Setting gauge for Hydro planerhead	Knife protection 3,8 mm		**142291**
Grease nipple	M10x1		**007935** ●
Relief plug	M10x1		**007983** ●
Grease gun			**008239** ●
Grease cartridge	for Hydro sleeve		**007934** ●
Allen Key	SW 3		**005444** ●
Jointing stone (round)	12x32	Colour: grey	**008237** ●
Jointing stone (angular)	20x15x60	Colour: brown	**008238** ●

● available ex stock
□ available at short notice
Instruction manual visit www.leitz.org

Planerhead VariPlan Plus/ ProFix F

Application	Four side moulders for planing, grooving or profiling in one process step. The combination of planing knives and profiling knives allows the planerhead to be used as a multi purpose planing and profiling tool. An efficient planing system for woodwork.
Machines	Four side moulders
Workpiece material	Soft and hardwood.
Cutting material	Planing knives HS / HW. Profile knives HW.
No. of wings	Z = 2 + 2 seatings for radius, bevel, grooving or profile knives.
Resharpening area	Planer knife 1.0 mm, profile knife 4.5 mm
RPM	D = 125 mm, $n_{max.}$ = 9000 min^{-1} D = 140 mm, $n_{max.}$ = 8000 min^{-1}
Chip removal	Softwood: up to 10.0 mm Hardwood: up to 7.0 mm
Tool design	Aluminium cutterhead with resharpenable turnblade planing knives. Clamping system with constant profile and constant diameter (see introduction VariPlan Plus and ProFix cutterhead).
Technical features	 Axially adjustable profile knives can be adjusted to the corresponding wood width/height. Profile depths up to 25 mm and working widths up to 120 mm possible. Cutterhead with aluminium tool body and steel chip breaker.
Accessories	Bevel, grooving, fluting knives; two left and two right knives per set. 
Note	Simple and quick knife change. Profiling, grooving and bevel knives can be adjusted axially to any point on the cutterhead. Special profile knives to order.

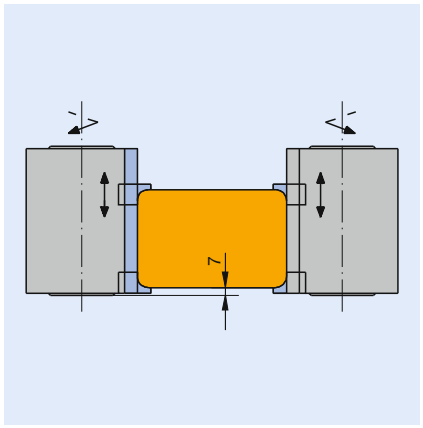


Planerhead VariPlan Plus/ ProFix F

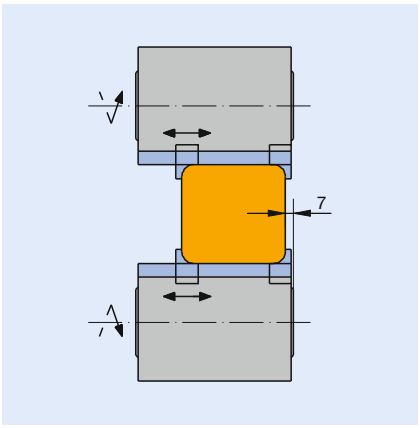
Tool design

Multi purpose aluminium cutterhead with VariPlan Plus planer knives and ProFix profile knives. Resharpenable, constant diameter and constant profile. Shrunk fit on HSK 85 WS arbor as one piece tool.

Technical features



Use on vertical spindles.



Use on horizontal spindles.

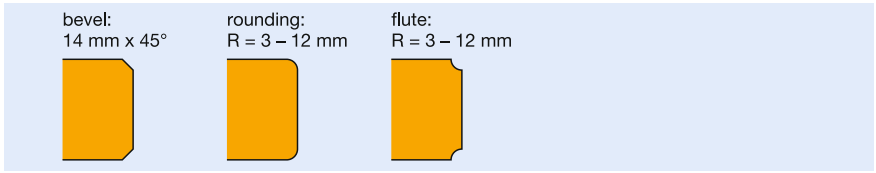
No. of wings

Z = 2 + 2

Resharpening area

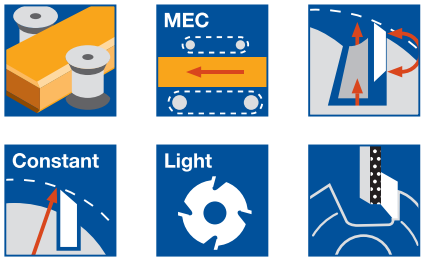
VariPlan Plus knives: 1.0 mm, ProFix profiling knives: 3.5 mm.

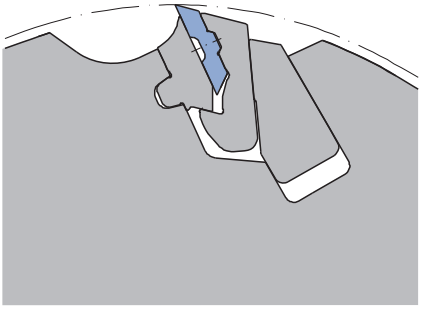
Accessories



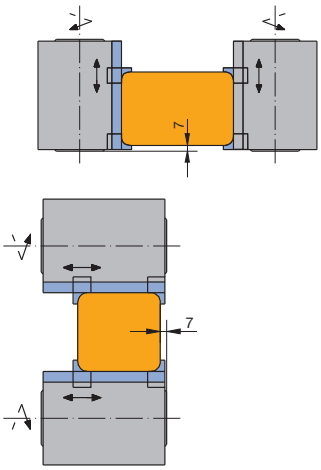
Note

- Quick radial or axial change of VariPlan Plus knives.
- Quick axial change of ProFix profiling knives.
- Special profile knives on request.





Aluminium tool body with steel chip breaker



Use on vertical or horizontal spindles
HD = SB - 40 mm

Planerhead VariPlan Plus/ProFix F system PF 25

Application:
For planing and profiling (chamfering) e.g. grooving, bevelling, rounding or profiling in common.

Machine:
Four side moulders.

Workpiece material:
Softwood and hardwood.

Technical information:
Resharpenable cutterhead system with constant diameter and constant profile. VariPlan Plus planerhead with knife seatings for ProFix F profile knives (PF 25). Profile knives: PT_{max} 25 mm, SB_{max} 100 mm. Aluminium tool body.

Bore 40 mm
WW 240-2-07

D mm	SB mm	ND mm	BO mm	QAL	$n_{max.}$ min^{-1}	Z	ID	
125	130	136	40	HW	9000	2+2	**131053**	●
125	170	176	40	HW	9000	2+2	**131054**	●
125	240	246	40	HW	9000	2+2	**131055**	●

When ordering **always** state the variant!
Further dimensions and inch dimensions on request. Servicing with spare parts only by the manufacturer. VariPlan Plus spare knives in section 9 Knives and spare parts.

Spare knives:

BEZ	SB mm	ABM mm	QAL	ID LL		ID RL	
ProFix F knife PF 25 R=3	25	R=3	HW	**011041**	●	**011042**	●
ProFix F knife PF 25 R=5	25	R=5	HW	**011043**	●	**011044**	●
ProFix F knife PF 25 R=8	25	R=8	HW	**011045**	●	**011046**	●
ProFix F knife PF 25 R=10	25	R=10	HW	**011047**	●	**011048**	●
ProFix-F knife PF 25 Bevel 45°	25	Bevel 45°	HW	**011051**	●	**011052**	●

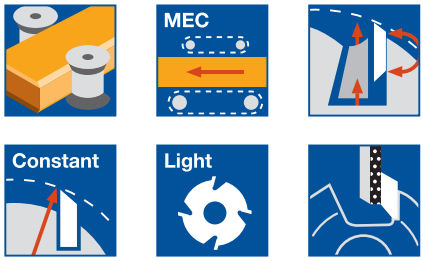
Further profile knives on request.

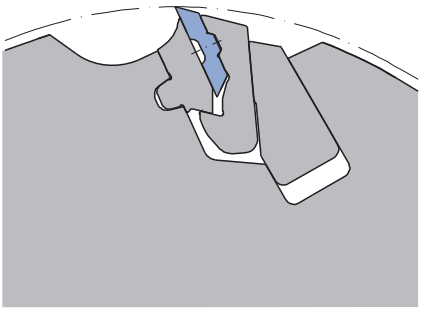
Spare parts:

BEZ	ABM mm	ID	
Allen Key	SW 4	**005445**	●
Allen Key	SW 5	**005452**	●

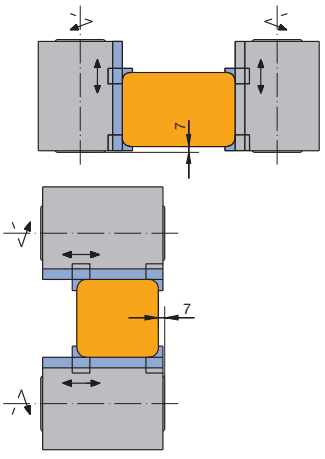
Variant	Description
110 000	Planerhead without knives
110 001	Planerhead with HS Microfinish turnblade knives
110 002	Planerhead with HW Microfinish turnblade knives
110 003	Planerhead with HW Integral turnblade knives
110 004	Planerhead with HW RipTec turnblade knives

● available ex stock
□ available at short notice
Instruction manual visit www.leitz.org





Aluminium tool body with steel chip breaker



Use on vertical or horizontal spindles
HD = SB - 40 mm

Planerhead VariPlan Plus/ProFix F system PF 25

Application:
For planing and profiling (chamfering) e.g. grooving, bevelling, rounding or profiling in common.

Machine:
Four side moulders with HSK 85 WS interface.

Workpiece material:
Softwood and hardwood.

Technical information:
Resharpenable cutterhead system with constant diameter and constant profile.
VariPlan Plus planerhead with knife seatings for ProFix F profile knives (PF 25).
Profile knives: PT_{max} 25 mm, SB_{max} 100 mm. Aluminium tool body.

HSK 85 WS
WP 240-2-01

D mm	SB mm	A mm	Z	$n_{max.}$ min^{-1}	DRI	BEM	ID	
125	130	26	2+2	10000	LL	left/ on bottom	**131108**	□
125	130	26	2+2	10000	RL	right/ on top	**131109**	□
125	170	26	2+2	10000	LL	left/ on bottom	**131110**	□
125	170	26	2+2	10000	RL	right/ on top	**131111**	□
125	240	26	2+2	10000	LL	on bottom	**131112**	□
125	240	26	2+2	10000	RL	on top	**131113**	□
140	310	26	2+2	8000	LL	on bottom	**131114**	□
140	310	26	2+2	8000	RL	on top	**131115**	□

When ordering **always** state the variant!
Further dimensions and inch dimensions on request. Servicing with spare parts only by the manufacturer. VariPlan Plus spare knives in section 9 Knives and spare parts.

Spare knives:

BEZ	SB mm	ABM mm	QAL	ID LL		ID RL	
ProFix F knife PF 25 R=3	25	R=3	HW	**011041**	●	**011042**	●
ProFix F knife PF 25 R=5	25	R=5	HW	**011043**	●	**011044**	●
ProFix F knife PF 25 R=8	25	R=8	HW	**011045**	●	**011046**	●
ProFix F knife PF 25 R=10	25	R=10	HW	**011047**	●	**011048**	●
ProFix-F knife PF 25 Bevel 45°	25	Bevel 45°	HW	**011051**	●	**011052**	●

Further profile knives on request.

Spare parts:

BEZ	ABM mm	ID	
Allen Key	SW 4	**005445**	●
Allen Key	SW 5	**005452**	●

Variant	Description
110 000	Planerhead without knives
110 001	Planerhead with HS Microfinish turnblade knives
110 002	Planerhead with HW Microfinish turnblade knives
110 003	Planerhead with HW Integral turnblade knives
110 004	Planerhead with HW RipTec turnblade knives

Profile variations

Tongue and groove profiles are used on wall, ceiling and floor panels.
The profiles are standardised and different in each country.
The tools for machining solid wood panels presented on the following product pages are the most common designs in Europe.
The majority of tools for wall and ceiling panel machining are produced to customer specifications.

Workpiece materials

Soft and medium hardwood.

Machines

Four side moulders with feed speeds up to 80 m/min.
Machines with high precision spindles and jointing for feed speeds up to 300 m/min.

Application

Machining against feed, panel face down. Groove right, tongue left.
Groove machined either as a part of the groove profile or separately on a horizontal spindle.

Tool design

HL solid cutter:
HL solid cutters are form ground with a large resharpening area.
Suitable for softwood such as spruce or fir. The main application is high speed moulders for producing standardised tongue and groove boards in high quantities and with high quality requirements.

HS tipped tools:
HS tipped tools have a smaller resharpening area of approx. 5 mm depending on the tipping thickness. HS tipped tools are suitable for soft and medium hardwood. They are mainly used on small volume moulding machines with frequent profile changes.

Design of grooving and tongue cutter sets

Tongue and groove cuttersets are of 2 part, adjustable.

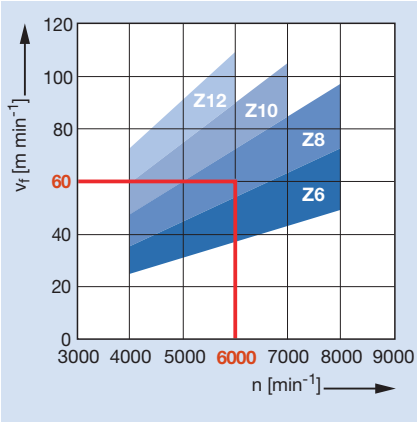
Tongue cutter:
Always wing on wing.

Grooving cutter:
two designs –
wing on wing or
wing on gullet

Wing-on-wing design:
With the wing-on-wing design, the two parts of the cutter set are positioned with the cutting edges on top of each other and the gullets in line so the two parts can be resharpened simultaneously.
Advantage: Resharpening simpler and greater resharpening area.
Disadvantage: Only every other groove wing is cutting the groove flank.
For a Z6 groove cutter, only three groove wings are cutting each side of the groove.
Tear outs can occur at high feed speeds.

Wing-on-gullet design:
Unless indicated otherwise, Leitz delivers wing-on-gullet design as a standard.
With this design, the two cutter parts are adjusted so that the wings of one part lie in the gullets of the other part.
Advantage: All the wings are constantly working on the groove side.
This design is preferable for high feed speeds.

Relation between feed rate, RPM and no. of wings

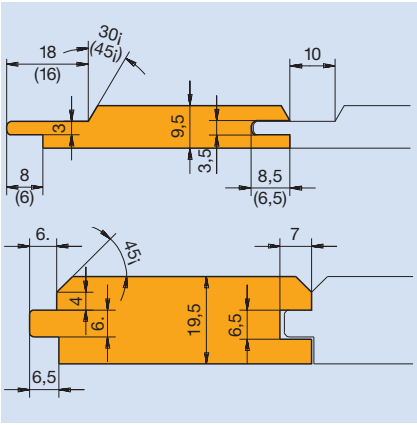


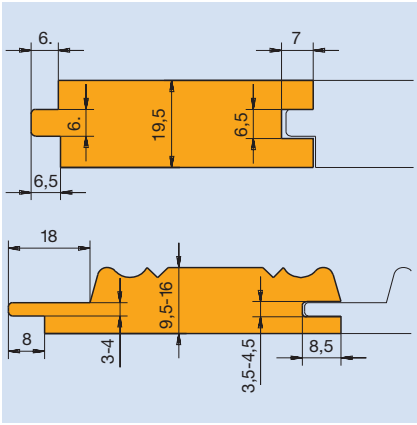
With tools without hydro clamping, only the marks of one knife show on the surface (one-knife finish).
When calculating the maximum feed speed, only one cutting edge can be taken into account.
If the tool is clamped with a Hydro clamping system and the profiling is resharpened to a concentricity of at least 0.01 mm, all cutting edges are equally involved in the cutting process and can be taken into account when calculating the maximum feed speed.

f_z 0.8 – 1.5 mm

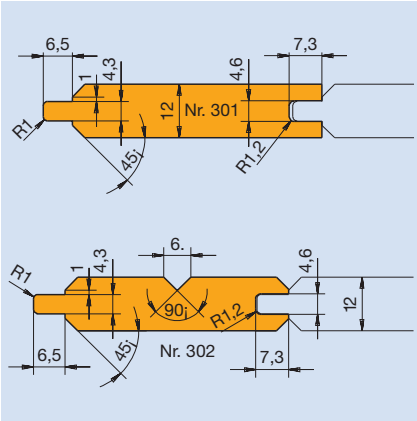
Profile samples for groove and tongue panels

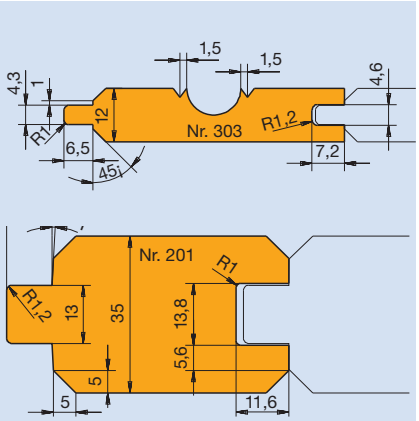
1. German standard profiles



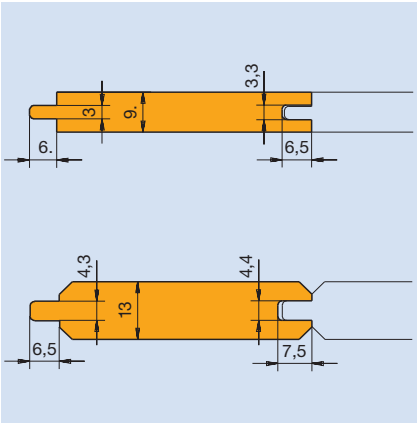


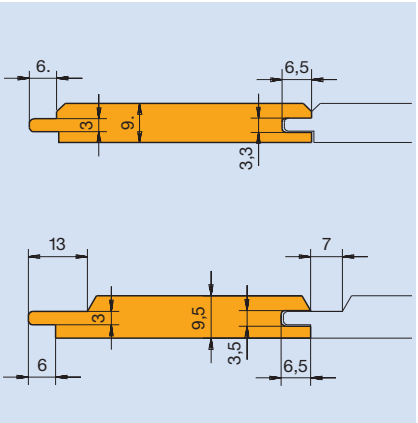
2. Australian standard profiles



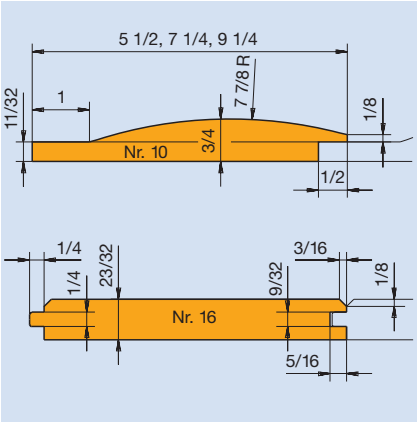


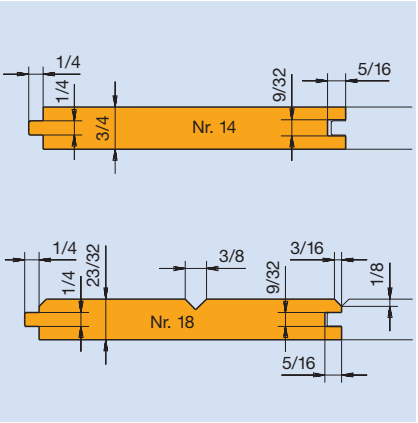
3. Scandinavian standard profiles



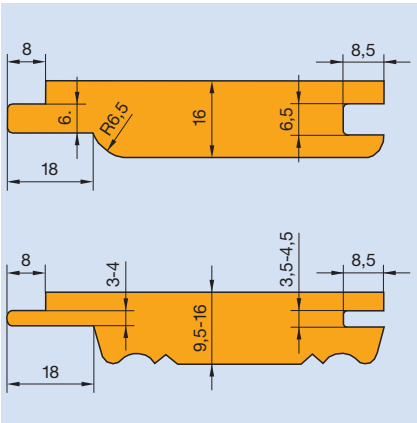


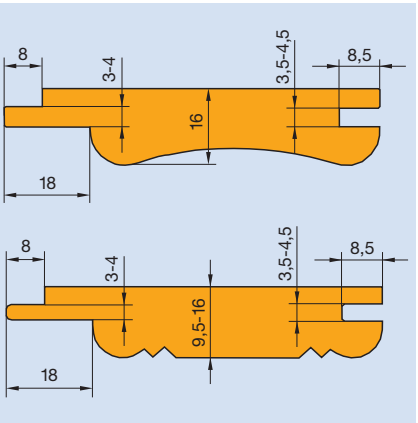
4. Canadian standard profiles





5. European cladding profiles





Single part cutting tools in HL solid

Features

HL cutters are form ground with a large resharpening area.
They are sharpened on the face to maintain the same cutting angle.
So the shape of the profile is retained through the tool's lifetime.
HL solid cutters can only be delivered for mechanical feed.

Dimensions

Diameter	80 – 300 mm
Cutting width	20 – 100 mm
No. of wings	Z2 – 24

Application

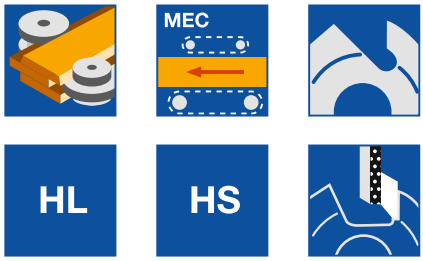
Application areas: high speed machining of wall panels, ceiling panels and mouldings.

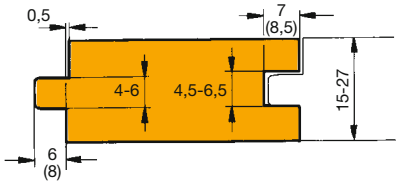
Workpiece materials

Softwood, spruce, fir, pine, kiln-dried.
Special tools for machining wet wood on request.

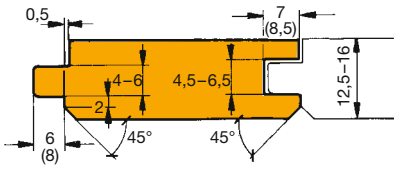
Machines

Moulders with high precision spindle bearings and jointing.

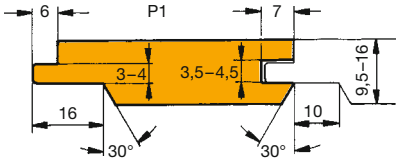




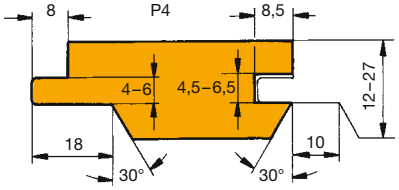
Profile 3: AF 200-2



Profile 5: AF 210-2



Profile 1: AF 240-2



Profile 4: AF 240-2

Tongue and groove cutter, HL solid / HS tipped

Application:
For tongue and groove profiles on wall and ceiling panels.

Machine:
Four side moulders.

Workpiece material:
Softwood, along grain.

Technical information:
Tongue and groove cutterset with spacers for adjustment to different wood thicknesses and tongue and groove widths. BO 60 for use on hydro sleeve for high feed speeds and machining qualities. HL profile cutter with form ground clearance and large resharpening area; HS tipped design with straight clearance.

Straight with closed joint (P 3)
AF 200-2

P	D mm	BO mm	HD mm	Z	NT mm	FL mm	$n_{max.}$ min^{-1}	QAL	ID	
3	180	60	15 - 27	6	8,5	8	9000	HL	**021876**	●
3	160	40	15 - 27	6	8,5	8	9000	HS	**022016**	●

Bevel profile with closed joint (P 5)
AF 210-2

P	D mm	BO mm	HD mm	Z	NT mm	FL mm	$n_{max.}$ min^{-1}	QAL	ID	
5	160	40	12,5 - 16	6	7	6	9000	HS	**021913**	●

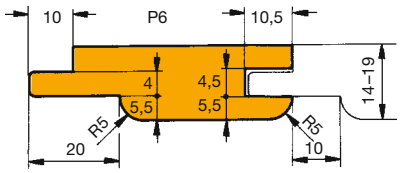
Bevel profile (P 1, P 4)
AF 240-2

P	D mm	BO mm	HD mm	NT mm	FL mm	Z	$n_{max.}$ min^{-1}	QAL	ID	
1	180	60	12 - 27	7	6	6	9000	HL	**021964**	●
4	180	60	12 - 27	8	8,5	6	9000	HL	**021969**	●

Radius profile R5 (P 6)
AF 221-2

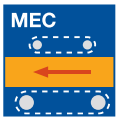
P	D mm	BO mm	HD mm	NT mm	FL mm	Z	$n_{max.}$ min^{-1}	QAL	ID	
6	180	60	14 - 19	10	10,5	6	9000	HL	**021883**	●

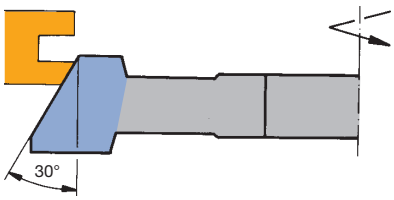
Hydro-Duo clamping element see page 239.



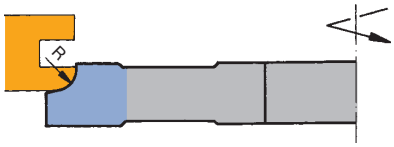
Profile 6: AF 221-2

● available ex stock
□ available at short notice
Instruction manual visit www.leitz.org

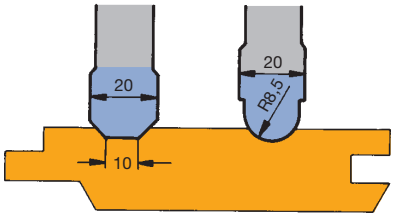



Bevel cutter - groove side



Radius cutter - groove side

Left: Trapezoidal groove /
Right: Round groove



Relief groove cutter with trapezoidal or round profile

Bevel / radius profile cutter for tongue and groove joints, HL solid

Application:
Profiling of the visible edge on the groove side of tongue and groove panels on a separate spindle.

Machine:
Four side moulders.

Workpiece material:
Softwood, along grain.

Technical information:
HL profile cutter with form ground clearance and large resharpening area suitable to mount on hydro sleeve.

Bevel groove side, 30°
HF 300-2

D mm	SB mm	BO mm	Z	$n_{max.}$ min^{-1}	DRI	ID
240	30	60	10	6000	RL	**023700**
240	30	60	12	6000	RL	**023701**

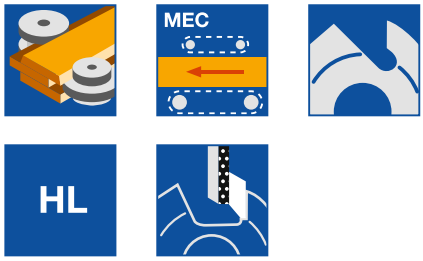
Round profile groove side
WF 501-2

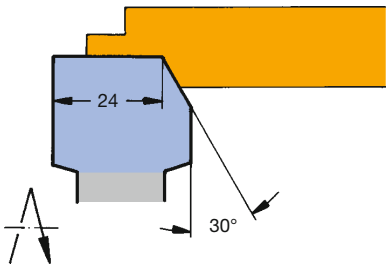
D mm	SB mm	BO mm	Z	R mm	$n_{max.}$ min^{-1}	DRI	ID
240	20	60	10	5	6000	RL	**023628**
240	20	60	10	6	6000	RL	**023629**
240	20	60	10	7	6000	RL	**023630**
240	20	60	10	8	6000	RL	**023631**
240	20	60	12	5	6000	RL	**023632**
240	20	60	12	6	6000	RL	**023633**
240	20	60	12	7	6000	RL	**023634**
240	20	60	12	8	6000	RL	**023635**

Application:
For cutting relief grooves on the back of tongue and groove panels.

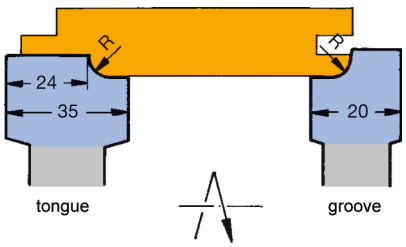
Relief groove cutter with trapezoidal or round profile
WF 501-2

Tool Type	D mm	SB mm	BO mm	Z	$n_{max.}$ min^{-1}	ID	
Trapezoidal groove	200	20	60	6	8000	**023603**	●
Round groove	200	20	60	6	8000	**023600**	●
Trapezoidal groove	200	20	60	8	8000	**023602**	●
Round groove	200	20	60	8	8000	**023601**	●





Shadow groove cutter, bevel profile



Shadow groove cutter, round profile for tongue and groove panels

Shadow grooving cutter for tongue and groove panels, HL solid

Application:
For cutting shadow groove profiles on tongue and groove panels on the bottom spindle.

Machine:
Four side moulders.

Workpiece material:
Softwood, along the grain.

Technical information:
HL profile cutter with form ground clearance and large resharpening area suitable for mounting on hydro sleeve.

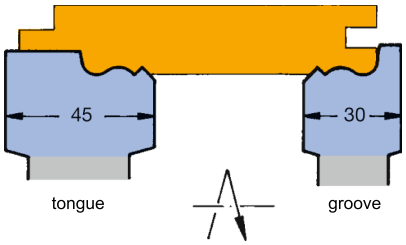
Bevel profile, tongue 30°
WF 741-2

D mm	SB mm	BO mm	Z	$n_{max.}$ min^{-1}	ID
200	35	60	10	8000	**023400**
220	35	60	12	7000	**023401**

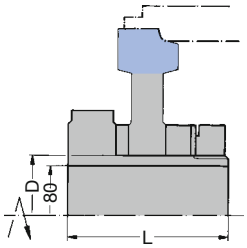
Round profile
WF 501-2

Tool Type	D mm	SB mm	BO mm	Z	R mm	$n_{max.}$ min^{-1}	ID
Groove side	200	20	60	10	5	8000	**023604**
Tongue side	200	35	60	10	5	8000	**023605**
Groove side	200	20	60	10	6	8000	**023606**
Tongue side	200	35	60	10	6	8000	**023607**
Groove side	200	20	60	10	7	8000	**023608**
Tongue side	200	35	60	10	7	8000	**023609**
Groove side	200	20	60	10	8	8000	**023610**
Tongue side	200	35	60	10	8	8000	**023611**
Groove side	220	20	60	12	5	7000	**023612**
Tongue side	220	35	60	12	5	7000	**023613**
Groove side	220	20	60	12	6	7000	**023614**
Tongue side	220	35	60	12	6	7000	**023615**
Groove side	220	20	60	12	7	7000	**023616**
Tongue side	220	35	60	12	7	7000	**023617**
Groove side	220	20	60	12	8	7000	**023618**
Tongue side	220	35	60	12	8	7000	**023619**

● available ex stock
□ available at short notice
Instruction manual visit www.leitz.org



Shadow groove cutter, chalet style profile for tongue and groove panels



Mounting example:
Shadow groove cutter on Hydro-Duo clamping sleeve.
Attention: Only use high precision spacers - see section 9 Knives and spare parts.

Chalet style profile
WF 502-2

Tool Type	D mm	SB mm	BO mm	Z	$n_{max.}$ min^{-1}	ID
Groove side	200	30	60	8	8000	**023620**
Tongue side	200	45	60	8	8000	**023621**
Groove side	200	30	60	10	8000	**023622**
Tongue side	200	45	60	10	8000	**023623**
Groove side	200	30	60	12	8000	**023624**
Tongue side	200	45	60	12	8000	**023625**

Application:
Hydro-Duo clamping sleeve to mount tongue and groove cutters, bevel/radius profile cutters and shadow groove cutters.

Technical information:
Open clamping system activated by a grease gun.

Hydro-Duo clamping sleeve
PH 130-0

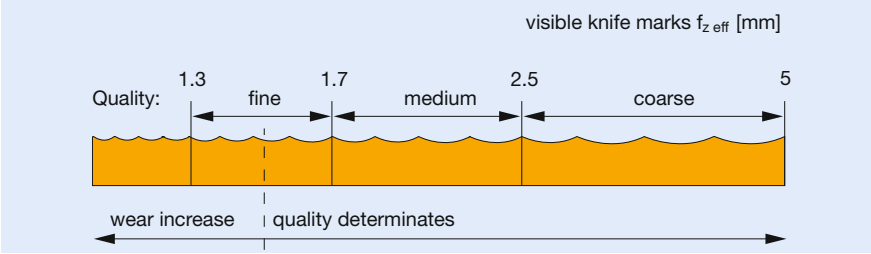
BEM	D mm	BO mm	L mm	ID	
For bevel or radius cutter	60	45	80	**030517**	□
For bevel or radius cutter	60	50	80	**030522**	□
For shadow grooving cutter bevel and radius profile	60	45	80	**030523**	□
For shadow grooving cutter bevel and radius profile	60	50	80	**030516**	□
For shadow grooving cutter chalet style profile	60	45	80	**030525**	□
For shadow grooving cutter chalet style profile	60	50	80	**030524**	□

Process steps

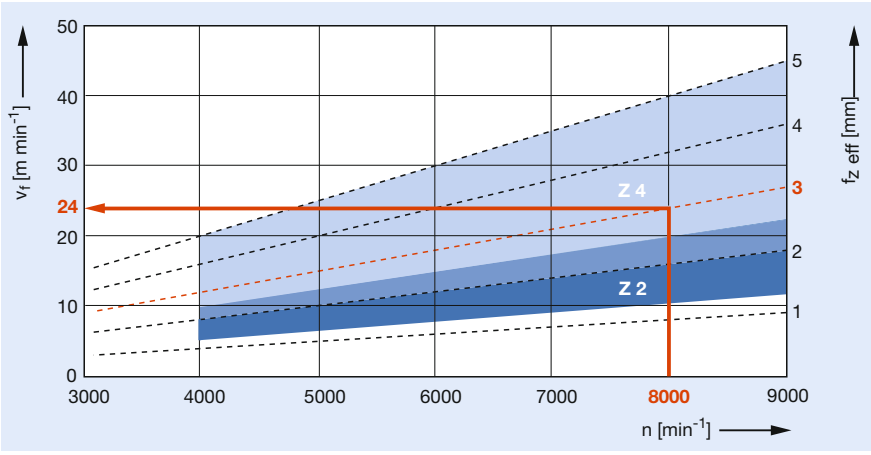
Serrated back cutterheads are the most used tools in the production of special and standard profiles. The cutterheads presented in the following section are suitable for a variety of profiles in the craft and industrial sectors.
Due to the different application possibilities, the use of the tool and wood types to be machined are detailed on the respective product pages.

The section introduction gives general remarks and user guidelines.

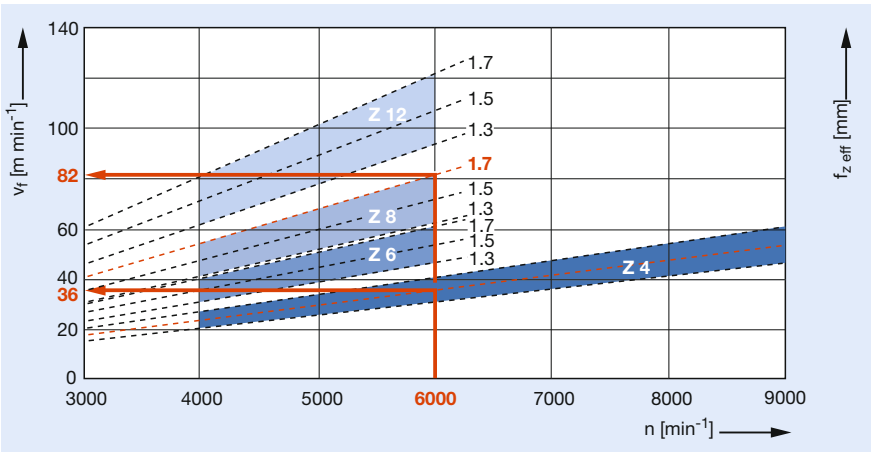
Relation between surface quality and length of knife marks $f_{z\ eff}$



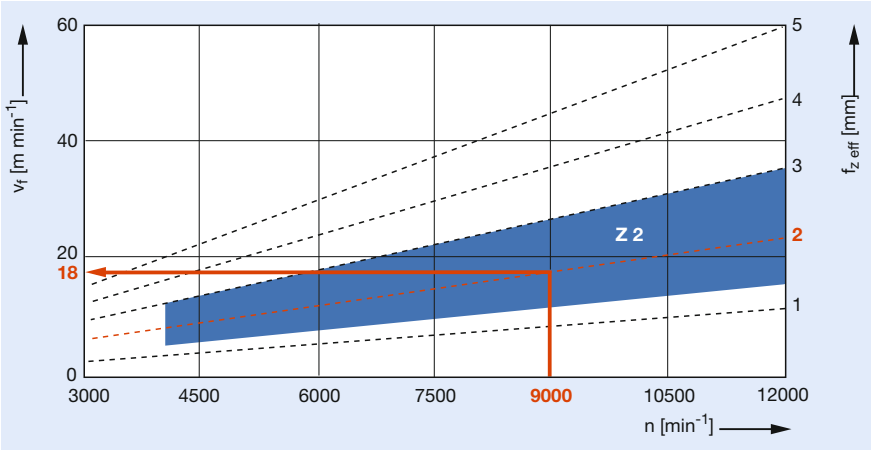
Cutterhead without hydro clamping: Feed speeds depending on RPM, length of knife marks and no. of wings



Cutterhead with hydro clamping: Feed speeds depending on RPM, length of knife marks and no. of wings



Cutterheads with HSK 85 WS



Blank knives for numerous workpiece materials

Various blank knives are available for profiling.
Blank knives are found in the Knives and Spare Parts section.
HS solid blank knives for softwood and hardwood.
Thickness 5; 6; 8 mm for profile depths of up to 30 mm.
Tungsten carbide tipped blank knives for hardwood.
Thickness 10 mm for profile depths of 10 and 18 mm.
Micro serrated blank knives with backing plates for hardwood and MDF or HDF panel materials.
Thickness of 10 mm for profile depths up to max. 30 mm.

Profile depths and tool diameter

The possible profile depth depends on the particular blank knife thickness and knife height. The profile depths and the tool cutting circle diameters are shown in the following table.

	HS	HS	HW	HS	HW	HS
Knife thickness	5	8	10	8	10	8
Knife height	45	50	50	60	60	70
Profile depth	10	12	10	20	18	30
$D_{max.}$ with TD						
135		174	174	194	194	214
145		184	184	204	204	224
150		189	189	209	209	229
165		204	204	224	224	244
170		209	209	229	229	249
190	220	229	229	249	249	269

The values given are maximum diameters that must not be exceeded at the profile points with the greatest projection.

Machines

Four side moulders with or without high precision spindles.
Four side moulders with HSK 85 adaptor.

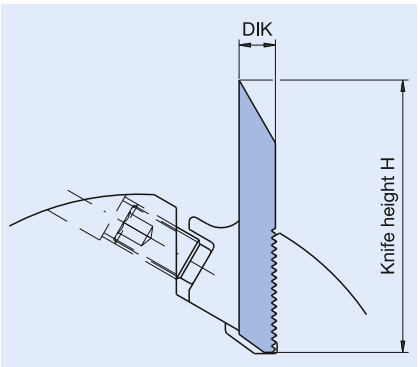
Application

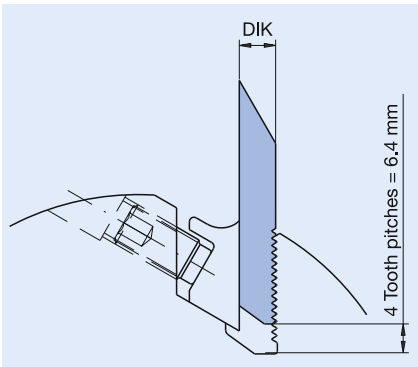
Profiling along grain.

Resharpening area/ adjustment area of knives

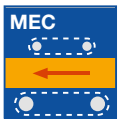
The resharpening area, using the entire profile depth, is 6.4 mm.
The knives can be adjusted within the serration by max. 4 tooth pitches to the outside. Further adjustment is not permitted for safety reasons.

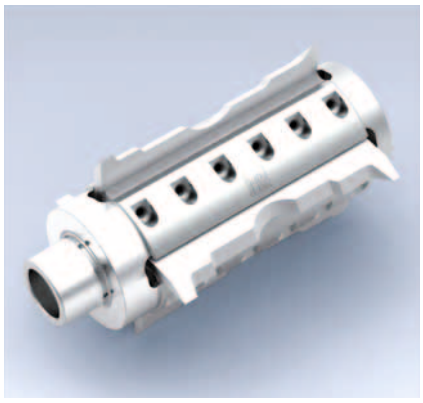
Solid and tipped knives only – not for HW blank knives with backing plates.





Profile cutterhead with HSK 85 WS adaptor for serrated back blank knives

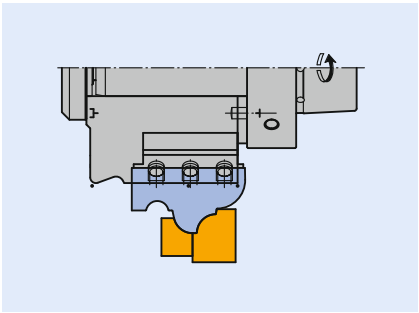



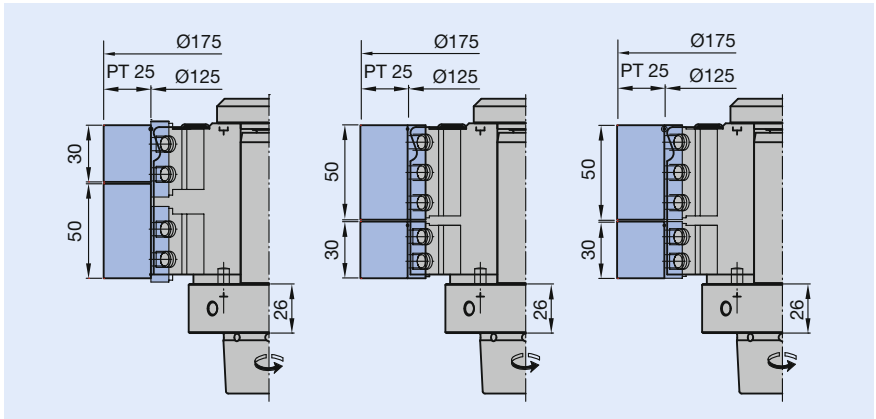
Application	Multi purpose profiling, machining along grain
Machines	Four side moulders with HSK 85 WS interface
Workpiece materials	Soft and hardwood
No. of teeth	Z = 2, Z = 4
Cutting material	Marathon (MC), HW
Resharpening area	10.8 mm (9 + 1.8 mm) Marathon (MC) and HW blank knife with backing plate
Feed	Four side profiling
Tool design	Monobloc steel tool body. High concentricity and balance. Knife seat for serrated back knives in HS and HS-M, thickness 8 mm, and HW and HW PowerKnifeSystem (MicroSystem blank knives), total thickness 10 mm (HW blank knife and backing plate). Standard pitch 1.6 mm.
RPM	$n_{all.}$ 12000 min^{-1} up to a cutting width of 240 mm, $n_{all.}$ 8000 min^{-1} cutting widths from 241 mm to 310 mm
Advantages	Profiling with jointed knives; at n = 12000 r.p.m. and a feed speed > 18 m/min, jointing of profiled knives on machine recommended to guarantee all knives are in the cutting process. At n = 12,000 min^{-1} for optimum cutting speed and surface quality.
Note	Cutting angle 20° for softwood Cutting angle 12° for hardwood and wood fibre materials PowerKnifeSystem (HW MicroSystem) blank knives with a knife height of 70 mm can only be used for cutting widths up to 150 mm. For jointing: resharpened concentricity of < 0.005 mm.

Profile cutterhead with HSK 85 WS adaptor

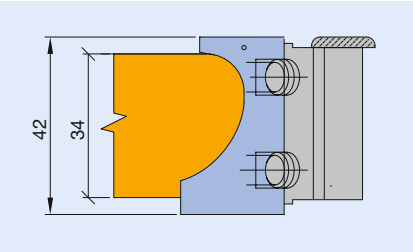
Application	Multi purpose profiling
Machines	Four side moulders, possibly with HSK 85 WS interface
Workpiece material	Softwood and hardwood
Number of wings	Z = 2
Cutting material	HW
Tool design	Aluminium tool body with ProFix F seatings for ProFix F profile knives. With constant profile and constant diameter tool system. Shrunk fit on HSK 85 WS arbor.
RPM	Aluminium tool body n_{max} = 10500 min^{-1}
Feed rate	MEC
Resharpening area	4.5 mm
Particular benefit	The same ProFix F tool body can have with profile knives up to 80 mm cutting width with different profile designs and profile depths up to 25 mm. ProFlex knives can also be mounted in this tool body. It is possible to fit 2 ProFix knives (total cutting width max. 80 mm) in one knife seating.
Note	The profile cutterhead with HSK 85 WS interface is for the right hand spindle (DRI-RL) and for the upper spindle (DRI top), the tool for the left hand spindle (DRI-LL) can also be used for the lower spindle.

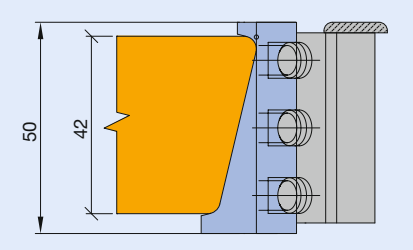


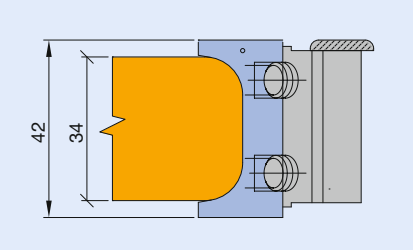
ProFix profile cutterhead with ProFix profile knife. Machining from above

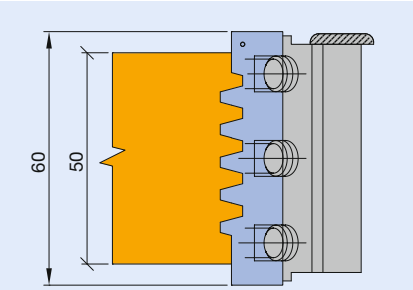


For further information about ProFix, see section 11.



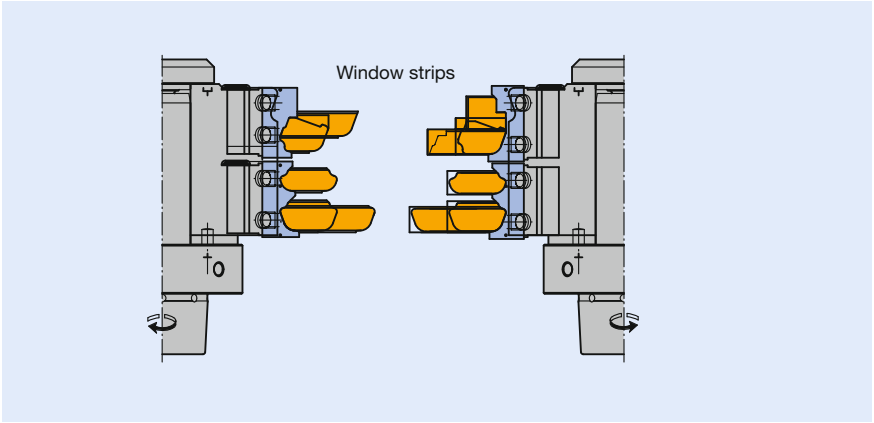




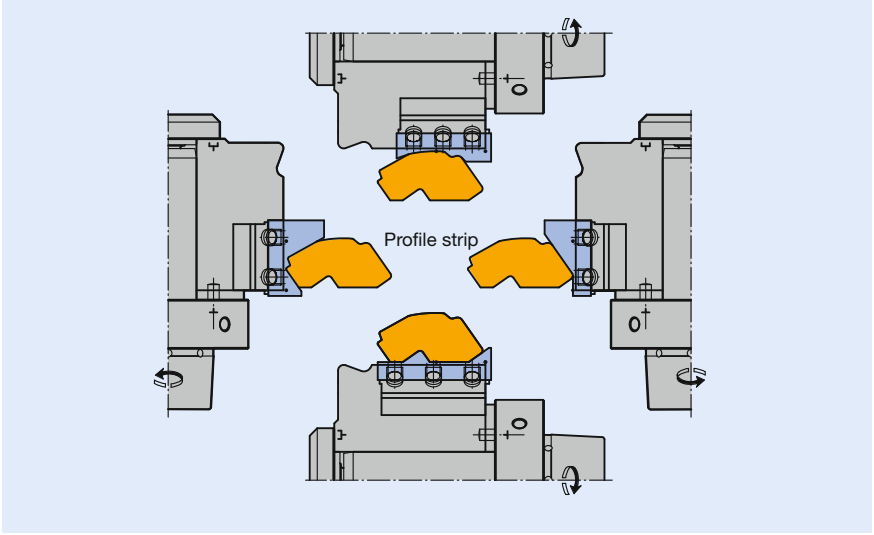


Profiling examples with ProFix F profile knives

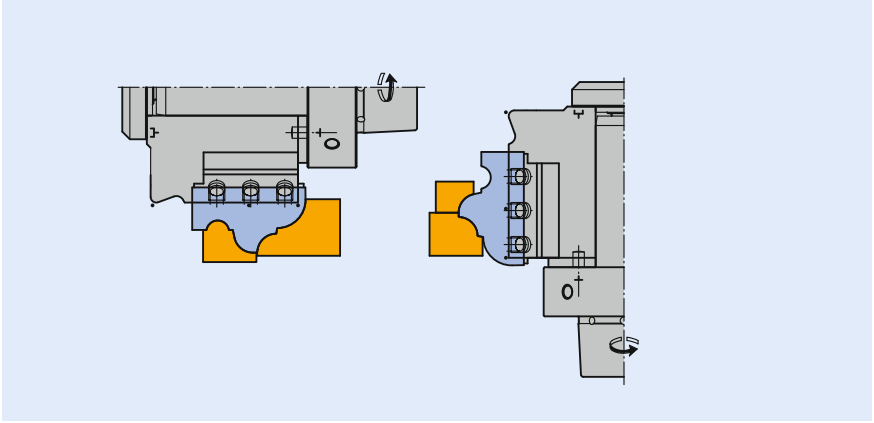
Profile cutterhead with HSK 85 WS adaptor



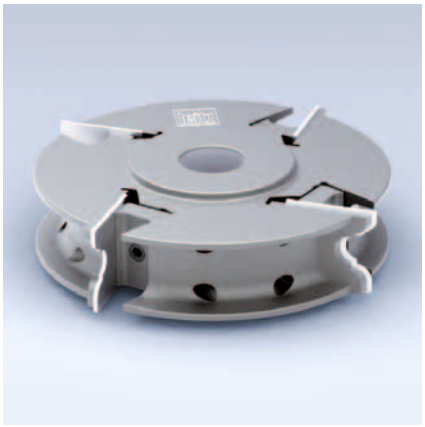
Example of multiple profiles 6 profiles without changing tool or knives.

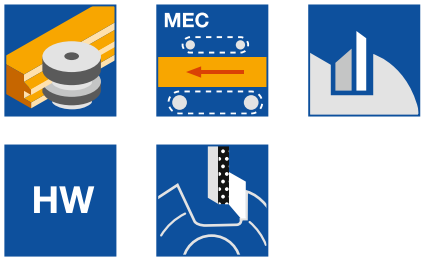


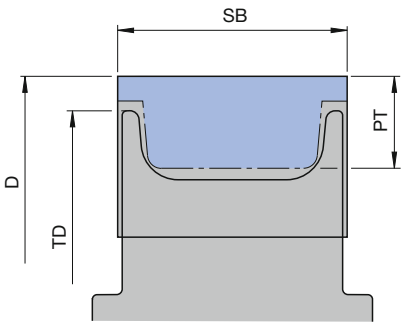
Example of 4 side mould.



Profiling example with cutterhead and standard ProFix F knife ID 11050, see section 9



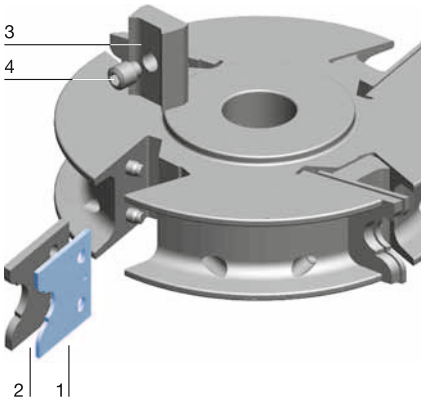




Tool body, U profile

Table of the 0-diameter (D_0)
for adjusting the machine spindles

D mm	TD mm	Do mm
150	135	110
165	140	125
180	165	140



Profile cutterhead VariForm

Application:
For cutting profiles. Different profiles with max. 20 mm profile depth can be mounted.

Machine:
Moulders, double end tenoners, edge banding machines etc.

Workpiece material:
Softwood and hardwood (HW-30F), panel materials or glued wood (HW-10F).

Technical information:
Multi purpose cutterhead for MEC feed with tungsten carbide special profile knives and backing plates.
Resharpenable 3 to 4 times.

Partly profiled tool body, MEC feed, Z2 - Z4 U profile
TT 531-2

D mm	TD mm	SB mm	BO mm	$BO_{max.}$ mm	$PT_{max.}$ mm	Z	$n_{max.}$ min^{-1}	ID	
165	140	40	30	40	20	2	10000	**135212**	●
165	140	50	30	40	20	2	10000	**135213**	●
165	140	60	30	40	20	2	10000	**134214**	●
180	165	40	35 DKN	35	20	4	9000	**135203**	●
180	165	50	35 DKN	35	20	4	9000	**135204**	●
180	165	40	30	50	20	4	9000	**135206**	●
180	165	60	30	50	20	4	9000	**135208**	●

Supplied with clamping wedges, but without backing plates and knives.

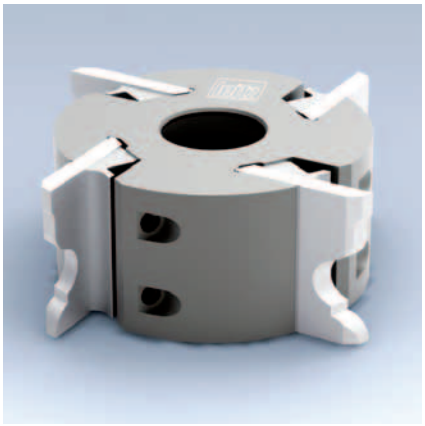
Spare knives:

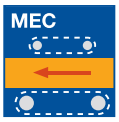
Part-no.	H mm	SB mm	ID HW-10F		ID HW-30F	
1	45	40	**636226**	●	**636239**	●
1	45	50	**636283**	●	**636271**	●
1	45	60	**636287**	●	**636275**	●

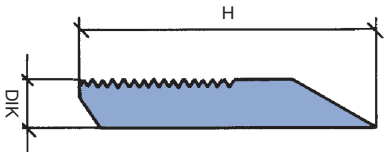
Spare parts:

Part-no.	BEZ	ABM mm	for SB mm	ID	
2	Backing plate VariForm	for knives 40x45x2.1		**645004**	●
2	Backing plate VariForm	for knives 50x45x2.1		**645005**	●
2	Backing plate VariForm	for knives 60x45x2.1		**645006**	●
3	Clamping wedge	36x13,21x26	40/45	**009756**	●
3	Clamping wedge	56x13,21x26	60	**009757**	●
3	Clamping wedge VariForm	44x13,21x24,25	50/60	**009760**	●
4	Allen screw with ISK 5	M10x12		**006044**	●
	Allen Key	SW 5, L100		**117506**	●

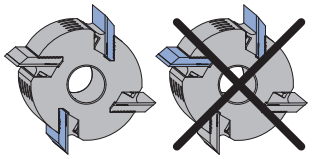
Tool system description VariForm see section 11.







Serrated back blank knives with high precision serration, serration angle 60°, pitch 1.6 mm



Attention:
For safety reasons, always mount knives + backing plates (VE) of the same weight opposite to each other.

H mm	QAL	PT mm
50	MC	15
60	MC	20
70	MC	30
50	HW	10
60	HW	18
55		15
70		27

Table to determine max. profile depth. The profile depth figures are to be regarded as standard values. The max. profile depth depends on the tool diameter and cutting angle.

Profile cutterheads for serrated back blank knives

Application:
For multi purpose profiles in hard and/or materials likely to splinter.

Machine:
Four side moulders.

Workpiece material:
Cutting angle 20° for softwood and hardwood in general.
Cutting angle 12° for materials likely to splinter such as oak, douglas fir, merbau and wood fibre materials, e.g. MDF.

Technical information:
Profile cutterhead with 60° serration, 1.6 mm pitch. Steel tool body. Blank knives with knife thickness 8 - 10 mm and knife heights of 40 - 70 mm can be used depending on required profile depth. Cutting materials: Marathon (MC) and HW.

Cutting angle 20°
WM 501-2-05

TD mm	SB mm	BO mm	BO in	$BO_{max.}$ mm	Z	$n_{max.}$ min^{-1}	ID	
122	80	40		40	2	9000	**135805**	●
122	40	40		40	4	9000	**135802**	●
122	60	35		40	4	9000	**135806**	●
122	60		1 1/2“	40	4	9000	**135807**	□
122	60	40		40	4	9000	**135808**	●
122	80	40		40	4	9000	**135809**	●
122	100	35		40	4	9000	**135810**	●
122	100		1 1/2“	40	4	9000	**135811**	□
122	100	40		40	4	9000	**135812**	●
122	130	40		40	4	9000	**135814**	●
122	150	40		40	4	9000	**135817**	●
122	170	40		40	4	9000	**135816**	●
122	180	40		40	4	9000	**135819**	●
122	230	35		40	4	9000	**135820**	●
122	230	40		40	4	9000	**135821**	●
122	240	40		40	4	9000	**135822**	●
137	60	40		50	4	8500	**135823**	●
137	60		1 13/16“	50	4	8500	**135824**	□
137	60	50		50	4	8500	**135825**	●
137	80	50		50	4	8500	**135826**	●
137	100	40		50	4	8500	**135827**	●
137	100		1 13/16“	50	4	8500	**135828**	□
137	100	50		50	4	8500	**135829**	●
137	130	40		50	4	8500	**135830**	●
137	130	50		50	4	8500	**135831**	●
137	150	40		50	4	8500	**135832**	●
137	150	50		50	4	8500	**135833**	●
137	180	50		50	4	8500	**135836**	●
137	230	50		50	4	8500	**135838**	●

Cutterhead without knives. For blank knives in different dimensions and qualities, see section 9 Knives and spare parts.

● available ex stock
□ available at short notice
Instruction manual visit www.leitz.org

H mm	QAL	PT mm
50	MC	15
60	MC	20
70	MC	30

Table to determine max. profile depth. The profile depth figures are to be regarded as standard values. The max. profile depth depends on the tool diameter and cutting angle.

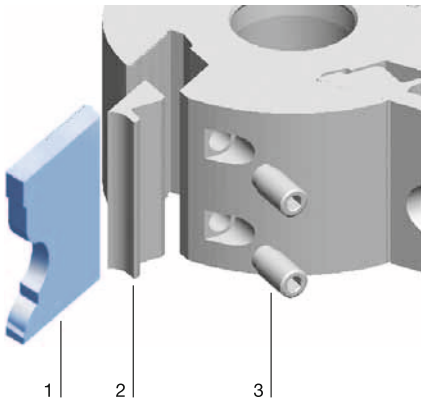
Cutting angle 12°
WM 501-2-05

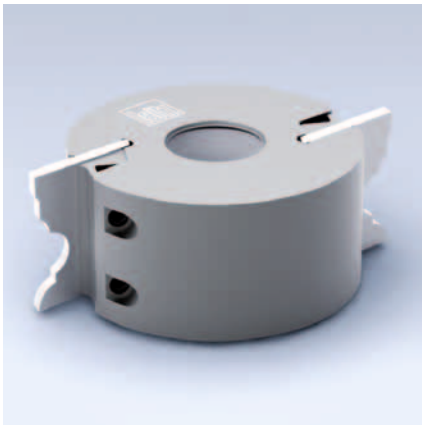
TD mm	SB mm	ND mm	BO mm	Z	ID	
122	40	40	40	4	**135840**	●
122	60	60	40	4	**135841**	●
122	80	80	40	4	**135842**	●
122	130	130	40	4	**135843**	●

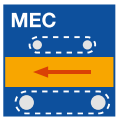
Cutterhead without knives. For blank knives in different dimensions and qualities, see section 9 Knives and spare parts.

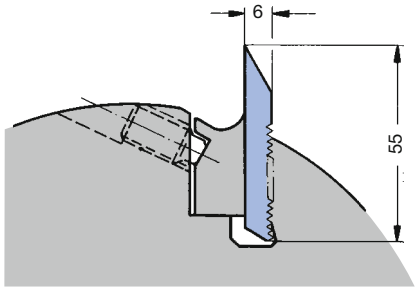
Spare parts:

Part-no.	BEZ	ABM mm	ID	
2	Clamping wedge	38x25,3x10,8	**620700**	●
2	Clamping wedge	58x25,3x10,8	**620701**	●
2	Clamping wedge	78x25,3x10,8	**620702**	●
2	Clamping wedge	98x25,3x10,8	**620703**	●
2	Clamping wedge	128x25,3x10,8	**620705**	●
2	Clamping wedge	148x25,3x10,8	**620706**	●
2	Clamping wedge	168x25,3x10,8	**620707**	●
2	Clamping wedge	178x25,3x10,8	**620708**	●
2	Clamping wedge	228x25,43x11	**620709**	●
2	Clamping wedge	238x25,3x10,8	**620710**	●
3	Allen screw	M10x1x20	**007396**	●
	Filler piece	40x30x8	**005305**	●
	Filler piece	60x30x8	**005306**	●
	Filler piece	80x30x8	**005307**	●
	Filler piece	100x30x8	**005308**	●
	Filler piece	130x30x8	**005310**	●
	Filler piece	150x30x8	**005311**	●
	Filler piece	170x30x8	**620770**	●
	Filler piece	180x30x8	**005312**	●
	Filler piece	230x30x8	**005313**	●
	Filler piece	240x30x8	**620771**	●
	Allen Key	SW 5	**117509**	●









Knife thickness: 6.0 mm
Knife height: 55.0 mm
Resharpening area: 4.8 mm

Knife height mm	**45**	**55**
Max. profile depth mm	15	25
Diameter for a tool body diameter of 100 mm	140	160

Profile cutterheads for serrated back blank knives

Application:
Cutting multi purpose profiles.

Machine:
Four side moulders with 30 mm or 1 1/4“ working spindle and CNC routers.

Workpiece material:
Softwood and hardwood.

Technical information:
Profile cutterhead with 60° serration, 1.6 mm pitch. Steel tool body. HS blank knives with 6 mm knife thickness and knife heights of 45 - 55 mm can be used depending on required profile depth.

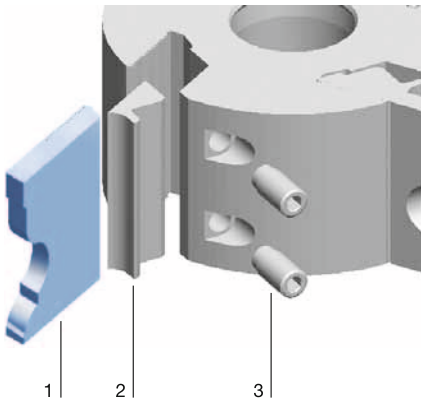
Cutting angle 20°, for knife thickness 6 mm
WM 501-2-02

TD mm	Z	DIK mm	SB mm	BO mm	$BO_{max.}$ in	$n_{max.}$ min^{-1}	ID	
100	2	6	60	30	1 1/4“	12000	**026961**	●

Cutterhead without knives. For blank knives in different dimensions and qualities, see section 9 Knives and spare parts.

Spare parts:

Part-no.	BEZ	ABM mm	ID	
2	Clamping wedge	58x21,4x13	**009254**	●
3	Allen Key	SW 5, L 80	**005435**	●
	Allen screw	M10x16	**006046**	●



● available ex stock
□ available at short notice
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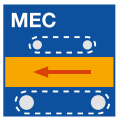
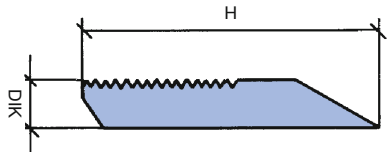
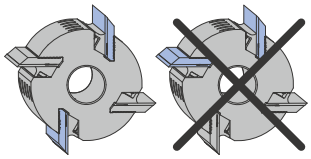






Serrated back blank knives with high precision serration, serration angle 60°, pitch 1.6 mm



Attention:
For safety reasons, always mount knives + backing plates (VE) of the same weight opposite to each other.

H mm	QAL	PT mm
50	MC	15
60	MC	20
70	MC	30
50	HW	10
60	HW	18
55		15
70		27

Table to determine max. profile depth. The profile depth figures are to be regarded as standard values. The max. profile depth depends on the tool diameter and cutting angle.

Hydro profile cutterhead for serrated back blank knives

Application:
For multi purpose profiles in hard and/or materials likely to splinter at feed speeds of 24 to 100 m/min.

Machine:
Four side moulders.

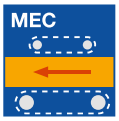
Workpiece material:
Cutting angle 20° for softwood and hardwood in general.
Cutting angle 12° for materials likely to splinter such as oak, douglas fir, merbau and wood fibre materials, e.g. MDF.

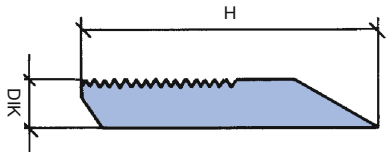
Technical information:
Profile cutterhead with 60° serration, 1.6 mm pitch. Steel tool body. Blank knives with knife thickness of 8 - 10 mm and knife heights of 40 - 70 mm can be used depending on required profile depth. Integrated hydro clamping, open system, activated by grease gun. Only use hydro profile cutterhead with a locking collar.

Cutting angle 20°
HM 501-2-05

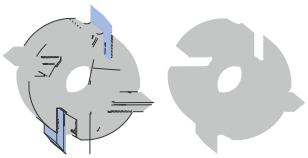
TD mm	SB mm	BO mm	DIK mm	Z	$n_{max.}$ min^{-1}	ID	
135	100	40	8 - 10	4	9000	**137001**	●
135	150	40	8 - 10	4	9000	**137002**	
145	60	50	8 - 10	6	8300	**137005**	●
145	100	45	8 - 10	6	8300	**137004**	
145	100	50	8 - 10	6	8300	**137006**	●
150	60	50	8 - 10	4	8100	**137007**	●
150	100	50	8 - 10	4	8100	**137008**	●
150	150	50	8 - 10	4	8100	**137009**	●
150	230	50	8 - 10	4	8100	**137010**	●
150	60	50	8 - 10	6	8100	**137011**	●
150	100	50	8 - 10	6	8100	**137012**	●
150	150	50	8 - 10	6	8100	**137013**	●
150	230	50	8 - 10	6	8100	**137014**	●
165	60	45	8 - 10	8	7800	**137015**	
165	60	50	8 - 10	8	7800	**137017**	●
165	100	45	8 - 10	8	7800	**137016**	
165	100	50	8 - 10	8	7600	**137018**	●
170	60	50	8 - 10	8	7600	**137019**	●
170	100	50	8 - 10	8	7600	**137020**	●
170	150	50	8 - 10	8	7600	**137021**	●
170	230	50	8 - 10	8	7600	**137022**	
190	60	45	8 - 10	10	7200	**137023**	
190	60	50	8 - 10	10	7200	**137026**	
190	60	45	5	12	7200	**137024**	
190	60	50	5	12	7200	**137027**	●
190	60	45	5	14	7200	**137025**	
190	60	50	5	14	7200	**137028**	

Cutterhead without knives. For blank knives in different dimensions and qualities, see section 9 Knives and spare parts.





Serrated back blank knives with high precision serration, serration angle 60°, pitch 1.6 mm



Hydro profile cutterhead for serrated back blank knives

Application:
For multi purpose profiles in hard and/or materials likely to splinter at feed speeds of 24 to 100 m/min.

Machine:
Four side moulders.

Workpiece material:
Cutting angle 20° for softwood and hardwood in general.
Cutting angle 12° for materials likely to splinter such as oak, douglas fir, merbau and wood fibre materials, e.g. MDF.

Technical information:
Profile cutterhead with 60° serration, 1.6 mm pitch. Steel tool body. Blank knives with knife thickness of 8 - 10 mm and knife heights of 40 - 70 mm can be used depending on required profile depth. Integrated hydro clamping, open system, activated by grease gun. Only use hydro profile cutterhead with a locking collar.

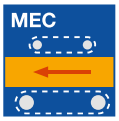
Cutting angle 12°
HM 501-2-05

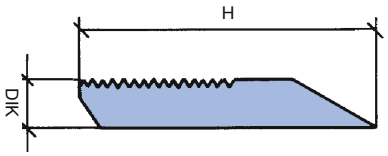
TD mm	SB mm	BO mm	DIK mm	Z	$n_{max.}$ min^{-1}	ID	
135	40	40	8 - 10	4	9000	**137029**	●
135	60	40	8 - 10	4	9000	**137030**	●
135	80	40	8 - 10	4	9000	**137031**	●
135	130	40	8 - 10	4	9000	**137032**	●
145	60	50	8 - 10	6	8300	**137033**	
145	80	50	8 - 10	6	8300	**137034**	

Spare parts:

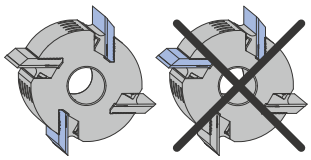
Part-no.	BEZ	ABM mm	for SB mm	ID	
2	Clamping wedge	38x25,3x10,8	60	**620700**	●
2	Clamping wedge	for knife thickness 5 mm	60	**009665**	●
2	Clamping wedge	98x25,3x10,8	100	**620703**	●
2	Clamping wedge	148x25,3x10,8	150	**620706**	●
2	Clamping wedge	228x25,43x11	230	**620709**	●
3	Allen screw	M10x1x20		**007396**	●
3	Allen screw	M10x1x25		**007395**	●
	Allen Key	SW 5		**117509**	●

● available ex stock
□ available at short notice
Instruction manual visit www.leitz.org





Serrated back blank knives with high precision serration, serration angle 60°, pitch 1.6 mm



Attention:
For safety reasons, always mount knives + backing plates (VE) of the same weight opposite to each other.

H	QAL	PT
mm		mm
50	MC	15
60	MC	20
70	MC	30
50	HW	10
60	HW	18
55		15
70		27

Table to determine max. profile depth. The profile depth figures are to be regarded as standard values. The max. profile depth depends on the tool diameter and cutting angle.

Profile cutterhead with HSK 85 WS for serrated back blank knives

Application:
For multi purpose profiles in hard and/or materials likely to splinter.

Machine:
Four side moulders with HSK 85 WS interface.

Workpiece material:
Cutting angle 20° for softwood and hardwood in general.
Cutting angle 12° for materials likely to splinter e.g. oak, Douglas fir, Merbau and wood fibre materials, e.g. MDF.

Technical information:
Profile cutterhead with back serration, 1.6 mm pitch, with integrated HSK.
Blanks with knife thickness 8 - 10 mm and knife heights of 40 - 70 mm can be used depending on the required profile depth. Cutting materials: Marathon (MC) and HW.
For TD = 90 mm allowed rpm up to SB 240 mm:
n = 12000 min^{-1}, for jointing: n = 10000 min^{-1}, >240 - 310 mm: n = 8000 min^{-1}; steel tool body. High balance quality by assembly with parts of the same weight.

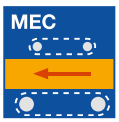
Cutting angle 20°
WP 510-2-02

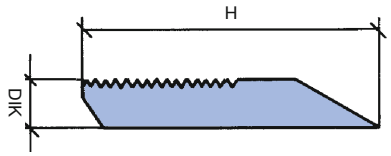
	TD mm	SB mm	A mm	Z	$n_{max.}$ min^{-1}	ID LL / on bottom		ID RL / on top	
	90	40	26	2	12000	**136200**	●	**136201**	●
	90	60	26	2	12000	**136202**	●	**136203**	●
	90	80	26	2	12000	**136204**	●	**136205**	●
	90	100	26	2	12000	**136206**	●	**136207**	●
	90	130	26	2	12000	**136208**	●	**136209**	●
	90	150	26	2	12000	**136210**	●	**136211**	●
*	90	170	26	2	12000	**136212**	●	**136213**	●
*	90	190	26	2	12000	**136214**		**136215**	
*	90	210	26	2	12000	**136216**		**136217**	
*	90	240	26	2	12000	**136218**	●	**136219**	●
	90	270	26	2	8000	**136220**		**136221**	
	90	310	26	2	8000	**136222**		**136223**	
	90	40	26	4	12000	**136224**	●	**136225**	●
	90	60	26	4	12000	**136226**	●	**136227**	●
	90	80	26	4	12000	**136228**	●	**136229**	●
	90	100	26	4	12000	**136230**	●	**136231**	●
	90	130	26	4	12000	**136232**	●	**136233**	●
	90	150	26	4	12000	**136234**	●	**136235**	●
*	90	170	26	4	12000	**136236**	●	**136237**	●
*	90	190	26	4	12000	**136238**		**136239**	
*	90	210	26	4	12000	**136240**		**136241**	
*	90	240	26	4	12000	**136242**	●	**136243**	●
*	90	270	26	4	8000	**136244**		**136245**	
*	90	310	26	4	8000	**136246**	●	**136247**	●
	115	80	26	6	10000	**136198**	□	**136199**	□
	115	130	26	6	10000	**136400**	□	**136401**	□
	115	170	26	6	8000	**136402**	□	**136403**	□

* = Not for PKS blank knives H = 70 mm with n = 12000 min^{-1}

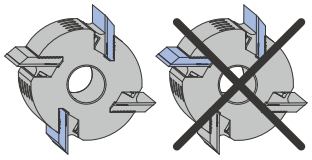
Cutterhead without knives. For blank knives in different dimensions and qualities, see section 9 Knives and spare parts.

● available ex stock
□ available at short notice
Instruction manual visit www.leitz.org





Serrated back blank knives with high precision serration, serration angle 60°, pitch 1.6 mm



Attention:
For safety reasons, always mount knives + backing plates (VE) of the same weight opposite to each other.

H	QAL	PT
mm		mm
50	MC	15
60	MC	20
70	MC	30
50	HW	10
60	HW	18
55		15
70		27

Table to determine max. profile depth. The profile depth figures are to be regarded as standard values. The max. profile depth depends on the tool diameter and cutting angle.

Profile cutterhead with HSK 85 WS for serrated back blank knives

Application:
For multi purpose profiles in hard and/or materials likely to splinter.

Machine:
Four side moulders with HSK 85 WS interface.

Workpiece material:
Cutting angle 20° for softwood and hardwood in general.
Cutting angle 12° for materials likely to splinter e.g. oak, Douglas fir, Merbau and wood fibre materials, e.g. MDF.

Technical information:
Profile cutterhead with back serration, 1.6 mm pitch, with integrated HSK.
Blanks with knife thickness 8 - 10 mm and knife heights of 40 - 70 mm can be used depending on the required profile depth. Cutting materials: Marathon (MC) and HW.
For TD = 90 mm allowed rpm up to SB 240 mm:
n = 12000 min^{-1}, for jointing: n = 10000 min^{-1}, >240 - 310 mm: n = 8000 min^{-1}; steel tool body. High balance quality by assembly with parts of the same weight.

Cutting angle 12°
WP 510-2-02

	TD mm	SB mm	A mm	Z	$n_{max.}$ min^{-1}	ID LL / on bottom		ID RL / on top	
	90	40	26	2	12000	**136248**		**136249**	
	90	60	26	2	12000	**136250**	●	**136251**	●
	90	80	26	2	12000	**136252**	●	**136253**	●
	90	100	26	2	12000	**136254**	●	**136255**	●
	90	130	26	2	12000	**136256**	●	**136257**	●
	90	150	26	2	12000	**136258**	●	**136259**	●
*	90	170	26	2	12000	**136260**	●	**136261**	●
*	90	190	26	2	12000	**136262**	●	**136263**	●
*	90	210	26	2	12000	**136264**	●	**136265**	●
*	90	240	26	2	12000	**136266**	●	**136267**	●
*	90	270	26	2	8000	**136268**		**136269**	
*	90	310	26	2	8000	**136294**	●	**136295**	●
	90	40	26	4	12000	**136270**		**136271**	
	90	60	26	4	12000	**136272**	●	**136273**	●
	90	80	26	4	12000	**136274**	●	**136275**	●
	90	100	26	4	12000	**136276**	●	**136277**	●
	90	130	26	4	12000	**136278**	●	**136279**	●
	90	150	26	4	12000	**136280**	●	**136281**	●
*	90	170	26	4	12000	**136282**	●	**136283**	●
*	90	190	26	4	12000	**136284**	●	**136285**	●
*	90	210	26	4	12000	**136286**	●	**136287**	●
*	90	240	26	4	12000	**136288**	●	**136289**	●
*	90	270	26	4	8000	**136290**		**136291**	
*	90	310	26	4	8000	**136292**	●	**136293**	●
	115	80	26	6	10000	**136192**	□	**136193**	□
	115	130	26	6	10000	**136194**	□	**136195**	□
	115	170	26	6	8000	**136196**	□	**136197**	□

* = Not for PKS blank knives H = 70 mm with n = 12000 min^{-1}

Cutterhead without knives. For blank knives in different dimensions and qualities, see section 9 Knives and spare parts.

● available ex stock
□ available at short notice
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Spare parts:

BEZ	for knife thickness	for SB mm	ID	
Clamping wedge	8/10	40	**620816**	
Clamping wedge	8/10	60	**620817**	●
Clamping wedge	8/10	80	**620818**	●
Clamping wedge	8/10	100	**620819**	
Clamping wedge	8/10	130	**620820**	●
Clamping wedge	8/10	150	**620821**	●
Clamping wedge	8/10	170	**620822**	●
Clamping wedge	8/10	190	**620823**	
Clamping wedge	8/10	210	**620824**	
Clamping wedge	8/10	240	**620825**	●
Clamping wedge	8/10	270	**620826**	
Clamping wedge	8/10	310	**620827**	
Allen screw			**007396**	●
Filler piece		40	**005305**	●
Filler piece		60	**005306**	●
Filler piece		80	**005307**	●
Filler piece		100	**005308**	●
Filler piece		130	**005310**	●
Filler piece		150	**005311**	●
Filler piece		170	**620770**	●
Filler piece		190	**620772**	●
Filler piece		210	**620773**	●
Filler piece		240	**620771**	●
Filler piece		270	**620774**	●
Filler piece		310	**620775**	●
Dust protection cover			**008244**	●
Allen Key			**117509**	●

Profile cutterhead ProFix F with HSK 85 WS

Application:
For various profiles, ideal for panel production.

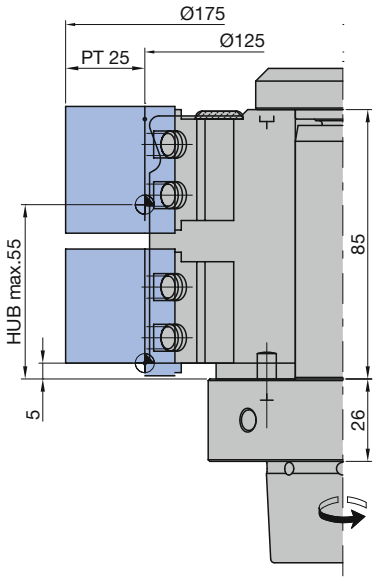
Machine:
Four side moulders with HSK 85 WS interface.

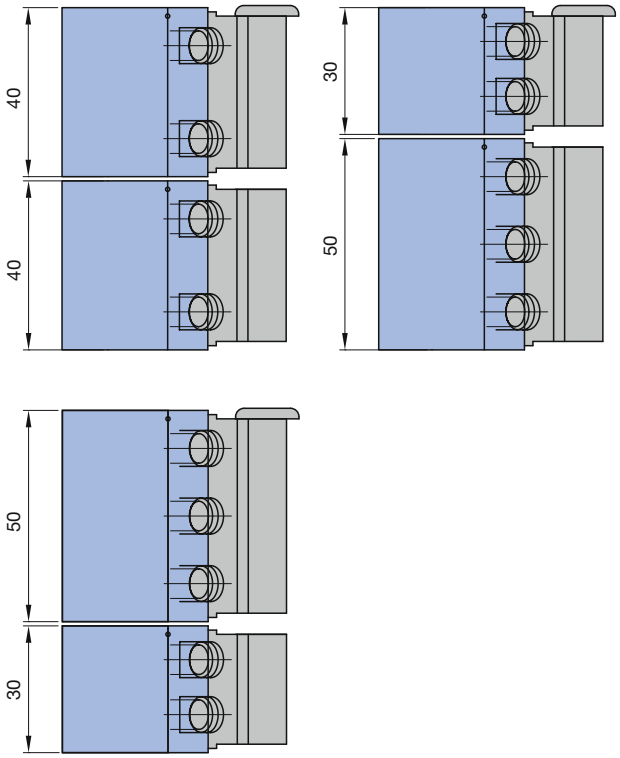
Workpiece material:
Softwood and hardwood, along the grain.

Technical information:
Tool system that is resharpenable, diameter and profile constant. Easy to change profile by changing knife - no need for tool measurement. ProFix F knife with 4.5 mm resharpening area. Maximum profile depth 25 mm. Steel or aluminium tool body shrunk fit to HSK 85 WS arbor. Maximum cutting width 80 mm - possible to split across several knives.

Aluminium tool body
HY 500-2-25

D0 mm	PT mm	SB mm	$n_{max.}$ min^{-1}	BEM	ID	
125	25	20 - 80	8000	right/ on top	**014040**	●
125	25	20 - 80	8000	left/ on bottom	**014041**	●

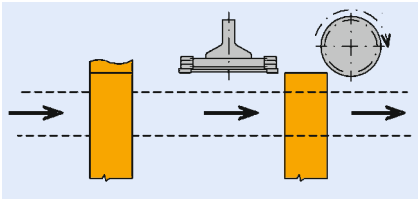




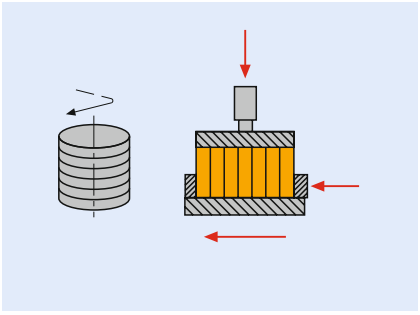
Example: Possible combinations of knife cutting widths.
Further profile examples and knife combinations see introduction pages.

● available ex stock
□ available at short notice
Instruction manual visit www.leitz.org

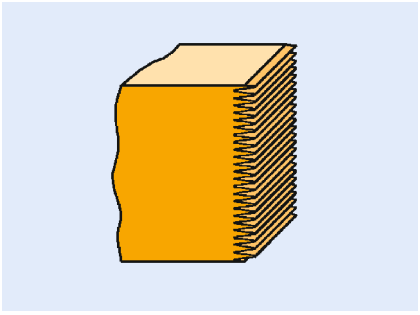
Process step	Cutting high-strength finger joint profiles for longitudinal jointing of workpieces. The finger profiles meet the requirements of the testing institutes (finger pitch and length). The user must provide the strength analysis for load bearing components.
Machines	Single and double side finger jointing machines with and without cut off and saws, double end tenoners, compact finger joint lines, cross profile and standard machines.
Tools	For finger joint machines without cut off saw: Use minifinger tools with the following finger lengths: 10/10, 15/15 or 20/20 mm. For finger joint machines with cut off saw: Use minifinger tools with the following finger lengths: 10/11, 15/16.5 or 20/22 mm.



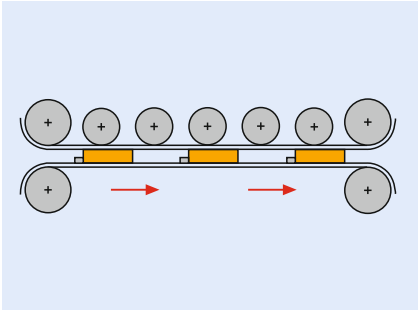
Minifinger jointing machine with cut off



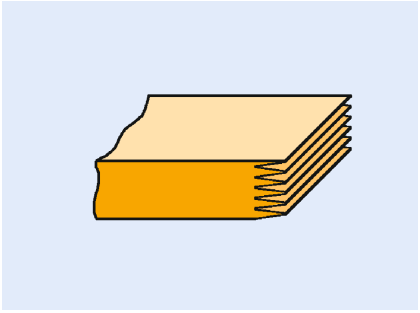
Vertical finger jointing machine/stack machine.



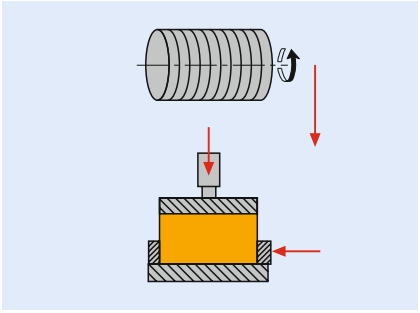
Vertical finger jointing.



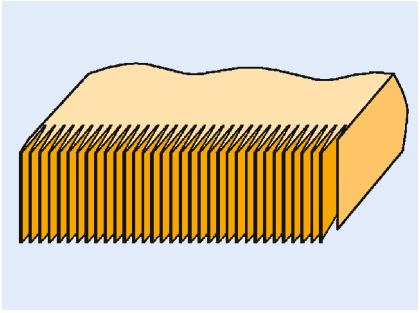
Horizontal finger jointing line.



Horizontal finger jointing.



Compact finger jointing line.



Compact finger jointing.
Vertical finger jointing with horizontal spindle.

Feed rate	Depending on the spindle RPM, no. of wings, workpiece material and bluntness of the minifinger tools.
Workpiece materials	Coniferous wood and hardwood, soft and hard, Exotic wood, glulam (limited).

Recommended cutting material

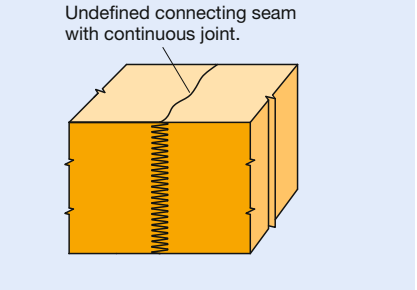
	HS	Marathon (MC)	HW
Coniferous wood soft	♦	♦	◇
Coniferous wood hard		♦	♦
Hardwood soft		♦	♦
Hardwood hard		◇	♦
Exotic wood		◇	♦
Glulam			◇

♦ suitable ◇ partly suitable

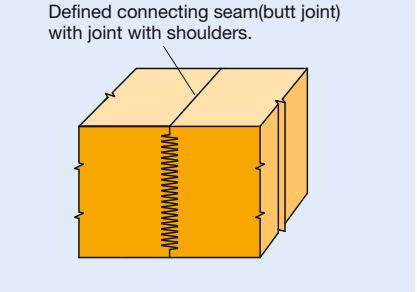
Joint types

Shoulder variations

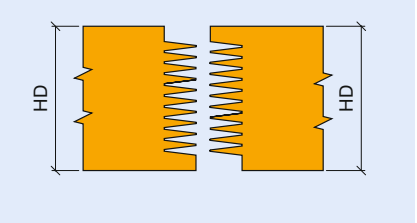
Strips with continuous joint present an irregular glue line on the side of the profile.
To give a straight line (seam), the fingers are profiled with shoulder cutters.
The number of fingers is determined by the wood thickness and the shoulder width.



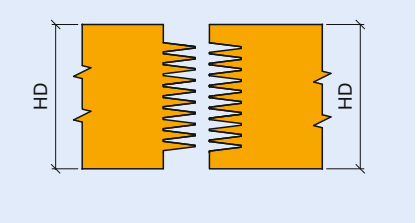
Continuous joint.



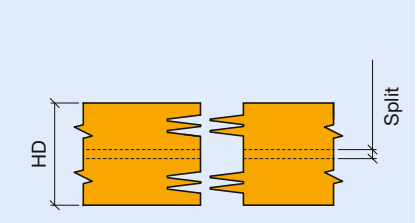
Joint with shoulders.



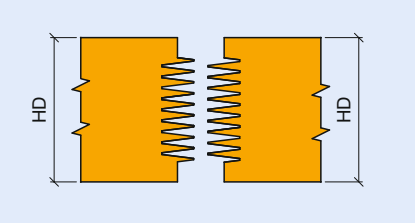
Profile 2: Staggered shoulders



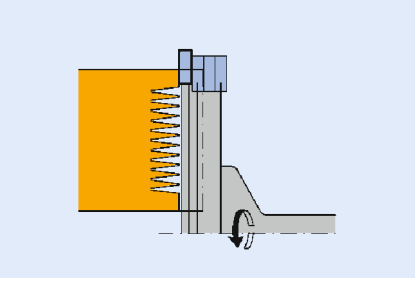
Profile 3: Level shoulders.



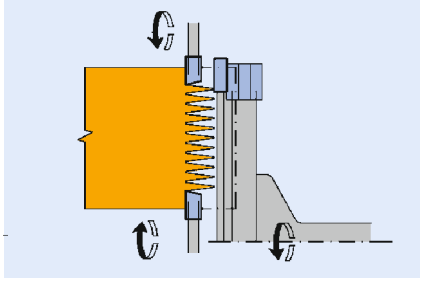
Profile 4: Shoulders for splitting.



Profile 5: Shoulder centralised.



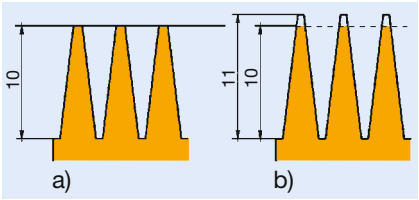
Hogger for trimming minifingers.



Hogger and scoring saw for trimming minifingers and scoring the butt joint.

The requirements for finger joints are defined in the standards DIN 68140 and EN 385 and EN 387.
Load group I (load-bearing components):
Multi purpose finger joints for laminated panels BSH.
The components should be calculated according to DIN 1052. v = ≤ 0.18.
Load group II:
Multi purpose finger joints for construction timber (KVH).
Finger joints with shoulders also fall into this group. v = ≤ 0.25.

Finger profiles



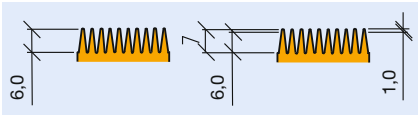
Minifinger profila
a – without cut off, b – with cut off

Finger length l mm	Finger pitch t mm	Width of finger tip b mm	Weakening degree v	Relativetip play s mm
10	3.8	0.60	0.16	0.30 – 0.50
15	3.8	0.42	0.11	0.45 – 0.75
20	5.0	0.50	0.10	0.60 – 1.00
20	6.2	1.00	0.16	0.60 – 1.00
30	6.2	0.60	0.10	0.90 – 1.50
50	12.0	2.00	0.17	1.50 – 2.50

Finger length 4 mm
Finger pitch 1.6 mm

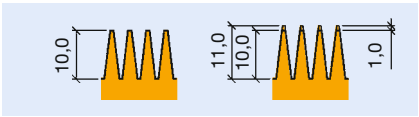
Production of mouldings, glued panels in furniture, mitre joints for windows/doors, picture frames.

Finger length 6/7 mm
Finger pitch 2.8 mm



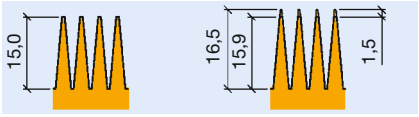
Wood finishing and residual wood for precise construction parts e.g. special window blanks, frieze strips, glued wood panels in furniture.
Reduced finger length to save wood. Tightly sealed finger profile feasible through the length determination of the fingers.

Finger length 10 mm
Finger pitch 3.8 mm



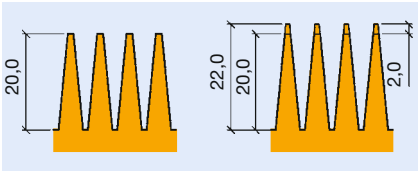
Wood finishing and wood residue recycling, lamellas for window blanks and glued panels in furniture. Finger length 10 mm to DIN 68140 (EN 385 and EN 387) for finger joints in coniferous wood for load bearing components. Finger joints present a visible tip play (S) after pressing.

Finger length 15 mm
Finger pitch 3.8 mm



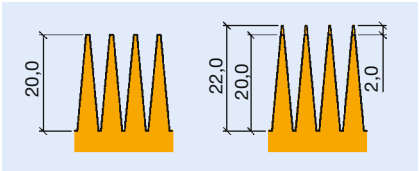
Wood finishing for BSH (laminated wood) and KVH (construction timber).
Finger joints in coniferous wood for high strength, load bearing components to DIN 68140 (EN 385 and EN 387), e. g. lamellas for laminated wood. These finger joints present a visible tip play (S) after pressing.

Finger length 20 mm
Finger pitch 6.2 mm



Wood finishing for laminated wood, mainly for construction timber, duo, trio and cross beams to DIN 68140, (EN 385 and EN 387) for finger joints in coniferous wood for high strength, load bearing components, e. g. lamellas for laminated wood. These finger joint present a visible tip play (S) after pressing. Because of the greater pitch the finger seam is more visible and stability lower.

Finger length 20 mm
Finger pitch 5.0 mm

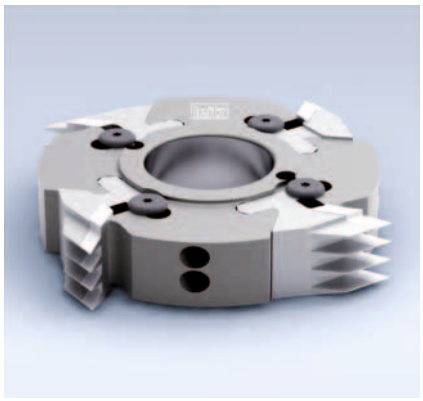


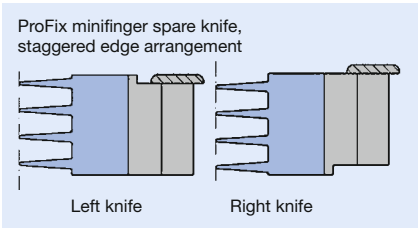
Wood finishing for laminated wood and KVH construction timber to DIN 68140 (EN 385 and 387) for finger joints in coniferous wood for high strength, load bearing components, e. g. lamellas for laminated wood, KVH, formwork beams. These finger joints show a visible gap after pressing.
Finger profile with higher stability than the fingers with 6.2 mm pitch. Advantage compared to ZL 15 mm: Because of greater pitch, the wood finger is more stable and more easily pressed together.

Minifinger cutterhead ProFix PF 25 finger joint profiles

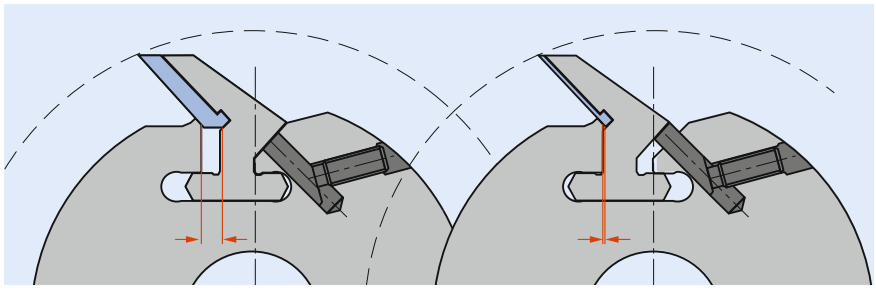
Tool design
WY 620-2-25
ProFix cutterhead PF 25

ProFix steel tool body. For ProFix minifinger profile knives with straight cut and straight relief, staggered cutting edges.





Application	For self locking longitudinal joints of exactly measured components, e. g. finger joint profiled mouldings, window and door profiles, mitre joint picture frames, arched joints, stair, furniture and panels.
Cutting material	HS, HW (Quality depends on machined material).
Machines	Finger joint machines, routers with CNC.
RPM	8000 min^{-1} at D = 160 mm 6000 min^{-1} at D = 250 mm
Resharpening area	PF 25, 4.5 mm.
No. of wings/cutting width	Z = 2+2, at D = 160 mm, Z 3+3 at D = 250 mm, SB = 30.4 mm for finger length 10/10 mm.
Technical features	Steel tool body for resharpenable HS or HW profile knives. Constant diameter and constant profile after resharpening. New and resharpened knives are always positioned and clamped at constant diameter by the ProFix clamping system. – Form and force fitted knife clamping. – The clamping screws are positioned behind the cutting edges to protect them from dust and resin.
Note	– Simple and precise knife change. – No gauges required. – Constant profile and constant diameter (no machine setting adjustments required). – Ready for use immediately after knife change, even on the machine. – Basic clearance 0.4 mm without side clearance after pressing.



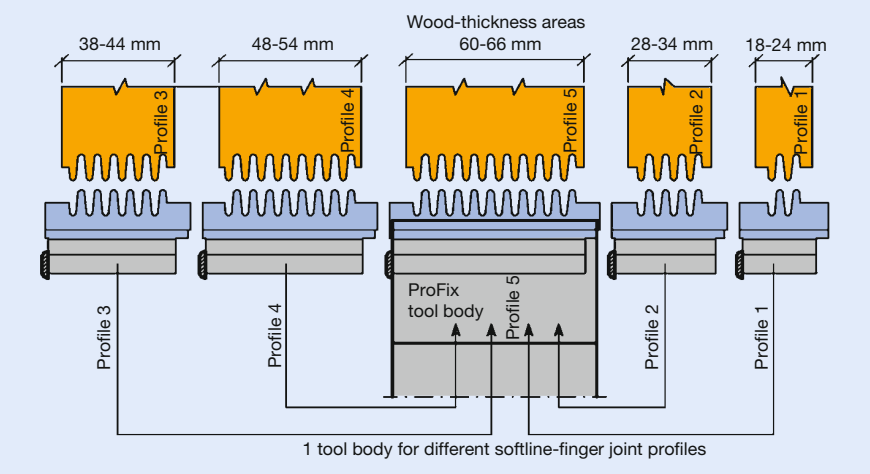
ProFix knife clamping system.

For a detailed description of the ProFix tool system, see section 11.

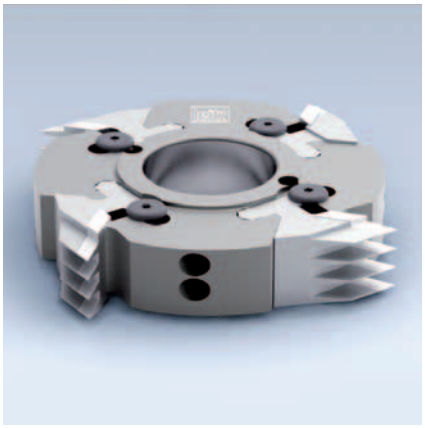
Minifinger cutterhead ProFix PF 25 softline profiles

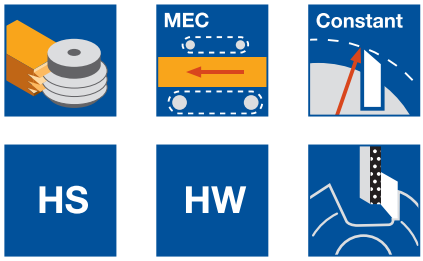
WY 620-2-25
ProFix F cutterhead PF 25 multi purpose

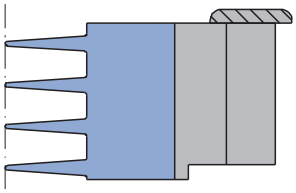
ProFix steel tool body. For ProFix minifinger profile knives with straight cut and straight relief.



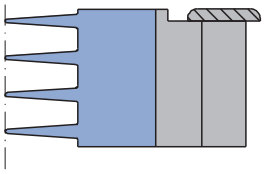
Application	For self locking longitudinal joints for precision components, e. g. finger joint profile mouldings, window and door profiles, mitre joint picture frames, arched joints, stair, furniture and panels with special softline profile.
Cutting material	HS, HW (Quality depends on machined material).
Machines	Routers with/without CNC, special machines with spindles for tools with bore. Finger joint machines.
RPM D_o = Diameter tool body	D_o = 100 mm, $n_{max.}$ 9000 min^{-1} D_o = 160 mm, $n_{max.}$ 8000 min^{-1} D_o = 250 mm, $n_{max.}$ 6000 min^{-1}
Resharpening area	PF 25, 4.5 mm.
No. of wings	Z = 2, $SB_{max.}$ = 80 mm.
Note	Special profile designs and knife cutting widths on request.
Technical features	Steel tool body for resharpenable HS or HW profile knives. Constant diameter and constant profile after resharpening. New and resharpened knives are always positioned and clamped at constant diameter by the ProFix clamping system. – Form and force fitted knife clamping. – The clamping screws are positioned behind the cutting edges to protect them from dust and resin. – 1 tool body for different finger or glue joint profiles and different cutting widths.
Note	– Simple and exact knife change. – No setting gauges required. – Constant profile and constant diameter (no machine setting adjustments required). – Ready for use immediately after knife change, even on the machine. – Exact fitting of the workpiece by adjusting the profile to the middle of the wood thickness (profile symmetry = HD/2). For a detailed description of the tool system, see section 11.







ProFix minifinger spare knives with staggered shoulder, knife left



ProFix minifinger spare knives with staggered shoulder, knife right

Minifinger joint cutterhead ProFix PF25

Application:
For self locking longitudinal joints.

Machine:
Finger joint machines with / without cut off saw, continuous machines.

Workpiece material:
Softwood and hardwood, across grain.

Technical information:
Resharpenable, constant diameter and constant profile tool system. Easy to change knife. No machine adjustment required. Steel tool body can be used for minifinger knife with a finger pitch of 3.8 mm and finger length of 10 and 15 mm. Cutting materials HS and HW. Knives: ProFix PF25 knife with 4.5 mm resharpening area.

ZL 10 mm, TG 3.8 mm
WY 620-2-25

D mm	SB mm	BO mm	Z	ZA PCS	$n_{max.}$ min^{-1}	QAL	ID ZL 10/10		ID ZL 10/11	
160	30,4	50	2/2	8	8000	HS	**023466**	□	**023470**	□
160	30,4	50	2/2	8	8000	HW	**023467**	□	**023471**	□
250	30,4	50	3/3	8	6000	HS	**023468**	□	**023472**	□
250	30,4	50	3/3	8	6000	HW	**023469**	□	**023473**	□

Spare knives:

BEZ	SB mm	QAL	ID ZL 10/10		ID ZL 10/11	
ProFix Minifinger knife, right	28,6	HW	**011005**	●	**011007**	●
ProFix Minifinger knife, left	28,6	HW	**011006**	●	**011008**	●
ProFix Minifinger knife, right	28,6	HS	**011009**	●	**011011**	●
ProFix Minifinger knife, left	28,6	HS	**011010**	●	**011012**	●

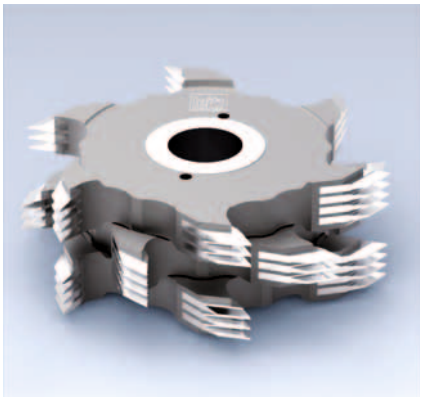
Table to determine the number of cutters for a given wood thickness.

Minifinger cutterhead with a pitch of 3.8 mm.
Finger length 10 and 10/11 mm; 15 and 15/16.5 mm.

SB	31.4 mm
Boss	30.4 mm
ZA	Tooth row 8
Wood thickness	Quantity of cutterheads
28	1
58	2
89	3
119	4
150	5
180	6
210	7
241	8
271	9
302	10
332	11
362	12

● available ex stock
□ available at short notice
Instruction manual visit www.leitz.org

WF 620-2/WF 620-2-06
Minifinger joint cutter



Minifinger joint cutters with straight cut, straight back relief, staggered profile teeth, secured against twisting by design of tool body. Solid and robust cutter design with individually brazed finger cutting edges.

Table for allowed RPM n = min^{-1} in relation to finger length ZL an diameter D.
0-diameter (D0) in relation to finger length for adjustment of the machine spindles.

ZL mm	D mm	Do mm	$n_{max.}$ min^{-1}
10	160	140	9.000
6	160	148	9.000
15	170	140	8.500
20	180	140	8.000
10	250	230	6.200
15	260	230	6.000
20	260	220	6.000

Application

For self locking longitudinal joints for all kinds in load bearing components and window blanks with continuous finger joint.

Cutting material

HS, Marathon (MC) and HW.

Resharpening area

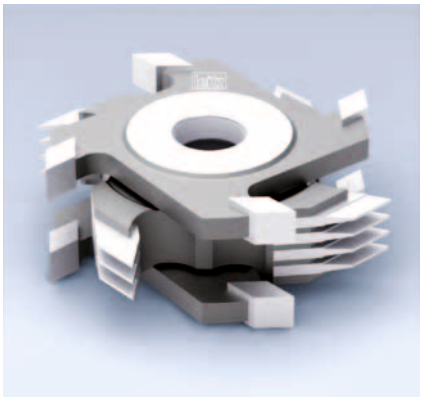
12 mm.

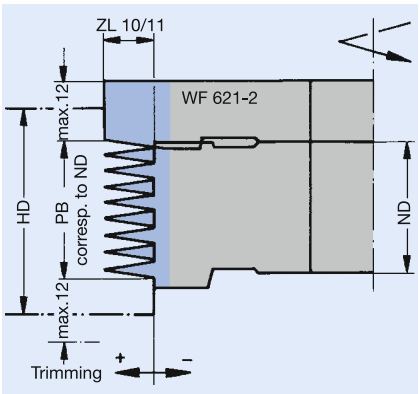
Feed rate

Depending on RPM up to 24 m min^{-1}.

WF 621-1/WF 622-1
Shoulder cutter

For combination with standard minifinger joint cutter WF 620-2.
Variable woof thickness by combining different minifinger cutting widths.
Resharpen set on multi purpose sharpening machines, adjust set to profile fit.





Cutting material

HS, HW.

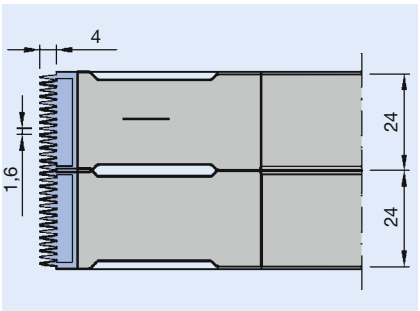
No. of wings

Z = 4.

Minifinger joint cutter pitch 1.6 mm
Standard cutting width
Minifinger joint cutter WF 620-2
Finger length = 4 mm
D = 160 mm
Finger pitch 1.6 mm

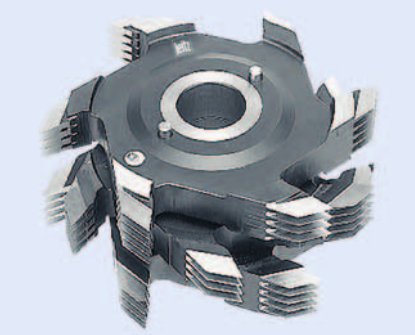
Table to determine the number of cutters for a given wood thickness and cutting width.

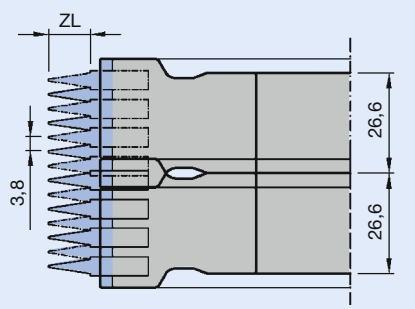
SB	25.0 mm
Hub	24.0 mm
No. of fingers	Wing row ZA 15
Wood thickness	No. of cutters
23	1
47	2
71	3
95	4
119	5



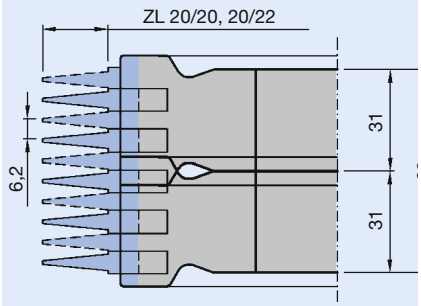
Minifinger joint cutter
WF 620-2/WF 620-06
Standard mini finger joint cutter
Finger length 10 mm and 15 mm
D = 160/250 mm 170/260 mm
Finger pitch = 3.8 mm

Minifinger joint cutter
WF 620-2/WF 620-06
Standard mini finger joint cutter
Finger length 20 mm
D = 180/260mm
Finger pitch = 6.2 mm





Minifinger joint cutter pitch 3.8 mm, finger length 10 or 15 mm



Minifinger joint cutter pitch 6.2 mm

Minifinger joint cutter with pitch of 3.8 mm

SB	28.6 mm
Hub	26.6 mm
ZA	Tooth row ZA 7
Wood thickness	Number of cutters
24	1
51	2
77	3
104	4
131	5
157	6
184	7
210	8
237	9
264	10
290	11
317	12

Minifinger joint cutter with pitch of 6.2 mm

SB	33.0 mm
Hub	31.0 mm
ZA	Tooth row ZA 5
Wood thickness	Number of cutters
28	1
59	2
90	3
121	4
152	5
183	6
214	7
245	8
278	9
397	10
338	11

Minifinger joint cutter for manual feed WF 620-1

Minifinger joint cutter with brazed cutting edges. Staggered teeth, with chip limitors. Also combined with shoulder cutters WF 621-1/WF622-2.

Application

For self locking longitudinal joints in panels and mouldings and arched segments, finger length 10/10 mm.

Cutting material

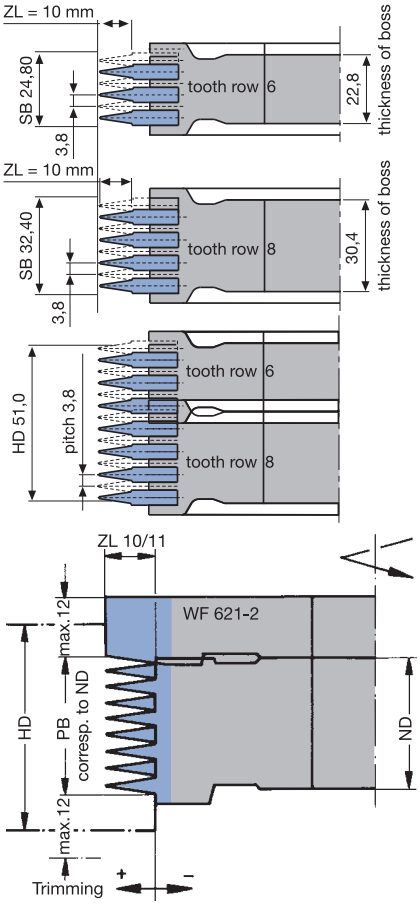
HS, HW.

Machines

For use on standard spindle moulders with feed device.

Note

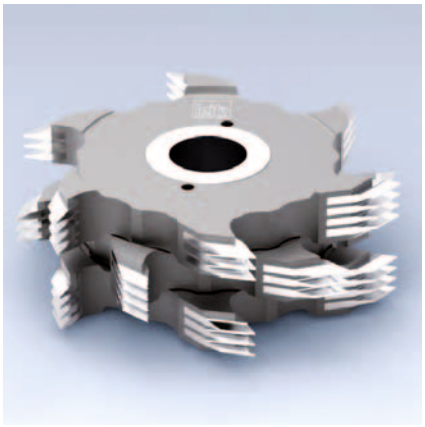
Approved for manual feed on spindle moulders in combination with tool clamping and feed device (sliding table).

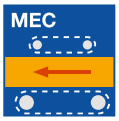


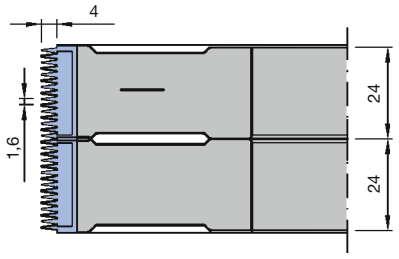
Determining the quantity of cutters for a given wood thickness:
Wood thickness = total of the ND 1/2 pitch
Use is permitted on spindle mounders only when using a feed device with clamping (sliding table).

Table to determine the quantity of cutters for a wood thickness

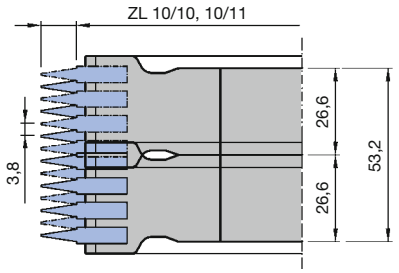
	Cutter	Cutter
SB	24.8 mm	32.4 mm
ZA	**Tooth row 6**	**Tooth row 8**
Boss	22.8 mm	30.4 mm
Wood thickness	Quantity of cutters	Quantity of cutters
21,0	1	0
28,5	0	1
43,5	2	0
51,0	1	1
66,5	3	0
74,0	2	1
89,0	0	3
89,0	4	0
97,0	3	1



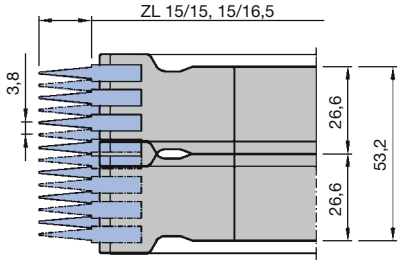




Minifinger joint cutter ZL 4 mm, TG 1.6 mm



Minifinger joint cutter ZL 10 mm, TG 3.8 mm



Minifinger joint cutter ZL 15 mm, TG 3.8 mm

Minifinger joint cutter, HS

Application:
For self locking longitudinal joints. See section introduction for additional information.

Machine:
Finger joint machines with / without cut off saw, continuous machines.

Workpiece material:
Softwood, across grain; limited suitability for hardwood.

Technical information:
Reduced risk of breakage from individually brazed finger cutting edges. Design with enlarged tip gap suitable for PU adhesives and for finger joint machines without cut off saw and horizontal working spindle. Cutting material HS. Resharpening area 12 mm.

ZL 4 mm, TG 1.6 mm
WF 620-2

D mm	SB mm	ND mm	BO mm	Z	ZA PCS	QAL	ZL mm	ID	
160	25	22,4	50	2/2	15	HS	4	**021543**	●

ZL 10 mm, TG 3.8 mm
WF 620-2

D mm	SB mm	ND mm	BO mm	Z	ZA PCS	QAL	ID ZL 10/10		ID ZL 10/11	
160	17,2	11,4	50	2/2	3	HS	**021687**	□	**021691**	□
160	24,8	22,8	50	2/2	6	HS	**021686**	□	**021690**	□
160	28,6	26,6	50	2/2	7	HS	**021685**	●	**021689**	●
160	28,6	26,6	50	3/3	7	HS	**120313**	□	**021692**	●
250	28,6	26,6	50	3/3	7	HS	**021688**	□	**021693**	●
250	28,6	26,6	50	4/4	7	HS	**120316**	□	**120318**	□

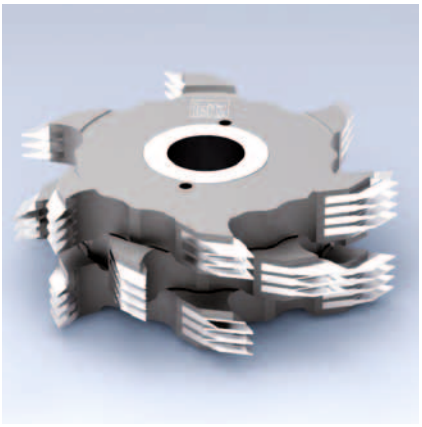
ZL 10 mm, TG 3.8 mm, larger basic clearance
WF 620-2

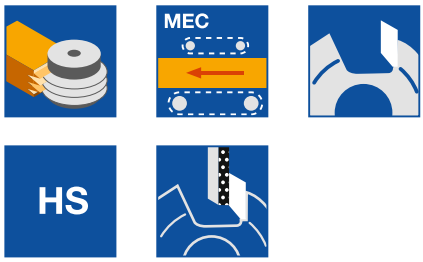
D mm	SB mm	ND mm	BO mm	Z	ZA PCS	QAL	ID ZL 10/10		ID ZL 10/11	
160	28,6	26,6	50	2/2	7	HS	**120309**	□	**120311**	□
160	28,6	26,6	50	3/3	7	HS	**120314**	□	**120315**	□
250	28,6	26,6	50	3/3	7	HS	**120310**	□	**120312**	□
250	28,6	26,6	50	4/4	7	HS	**120317**	□	**120319**	□

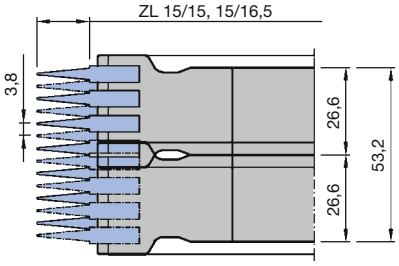
ZL 15 mm, TG 3.8 mm
WF 620-2

D mm	SB mm	ND mm	BO mm	Z	ZA PCS	QAL	ID ZL 15/15		ID ZL 15/16,5	
170	28,6	26,6	50	2/2	7	HS	**021694**	●	**021696**	●
260	28,6	26,6	50	3/3	7	HS	**021695**	□	**021697**	●
260	28,6	26,6	50	4/4	7	HS	**120416**	□	**120418**	□

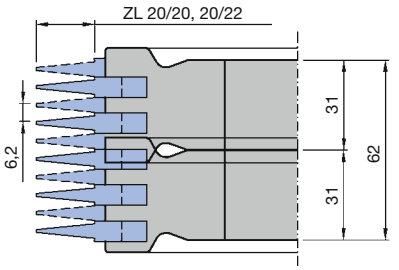
● available ex stock
□ available at short notice
Instruction manual visit www.leitz.org



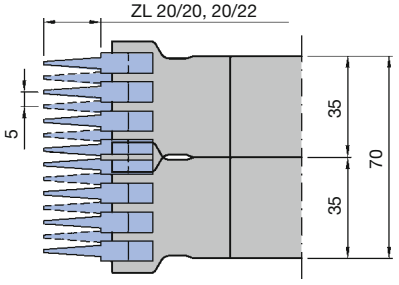




Minifinger joint cutter ZL 15 mm, TG 3.8 mm



Minifinger joint cutter ZL 20 mm, TG 6.2 mm



Minifinger joint cutter ZL 20 mm, TG 5.0 mm

Minifinger joint cutter, HS

Application:
For self locking longitudinal joints. See section introduction for additional information.

Machine:
Finger joint machines with / without cut off saw, continuous machines.

Workpiece material:
Softwood, across grain; limited suitability for hardwood.

Technical information:
Reduced risk of breakage from individually brazed finger cutting edges. Design with enlarged tip gap suitable for PU adhesives and for finger joint machines without cut off saw and horizontal working spindle. Cutting material HS. Resharpening area 12 mm.

ZL 15 mm, TG 3.8 mm, larger basic clearance
WF 620-2

D mm	SB mm	ND mm	BO mm	Z	ZA PCS	QAL	ID ZL 15/15		ID ZL 15/16,5	
170	28,6	26,6	50	2/2	7	HS	**120412**	●	**120414**	□
260	28,6	26,6	50	3/3	7	HS	**120413**	□	**120415**	□
260	28,6	26,6	50	4/4	7	HS	**120417**	□	**120419**	□

ZL 20 mm, TG 6.2 mm
WF 620-2

D mm	SB mm	ND mm	BO mm	Z	ZA PCS	QAL	ID ZL 20/20		ID ZL 20/22	
180	33	31	50	2/2	5	HS	**021668**	●	**021669**	●
260	33	31	50	3/3	5	HS	**021674**	□	**021670**	□
260	33	31	50	4/4	5	HS	**021675**	□	**120513**	□

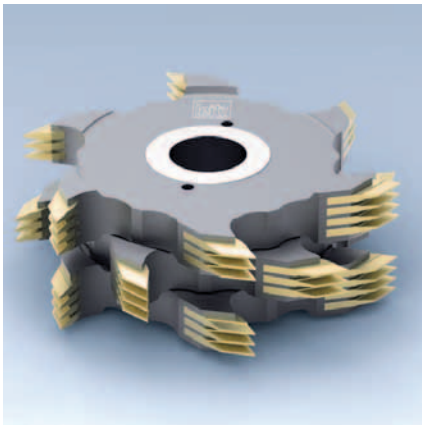
ZL 20 mm, TG 6.2 mm, larger basic clearance
WF 620-2

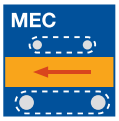
D mm	SB mm	ND mm	BO mm	Z	ZA PCS	QAL	ID ZL 20/20		ID ZL 20/22	
180	33	31	50	2/2	5	HS	**120515**	●	**120516**	●
260	33	31	50	3/3	5	HS	**120510**	□	**120511**	□
260	33	31	50	4/4	5	HS	**120512**	□	**120514**	□

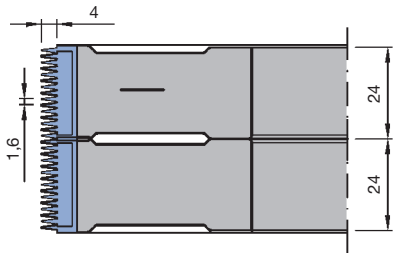
ZL 20 mm, TG 5.0 mm
WF 620-2

D mm	SB mm	ND mm	BO mm	Z	ZA PCS	QAL	ID ZL 20/20		ID ZL 20/22	
180	37	35	50	2/2	7	HS	**021729**	●	**021730**	□
260	37	35	50	3/3	7	HS	**021735**	□	**021731**	□

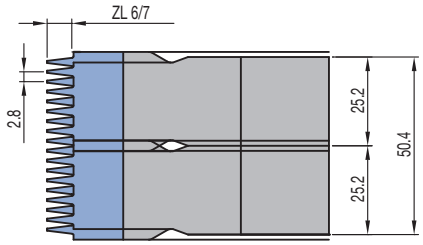
● available ex stock
□ available at short notice
Instruction manual visit www.leitz.org



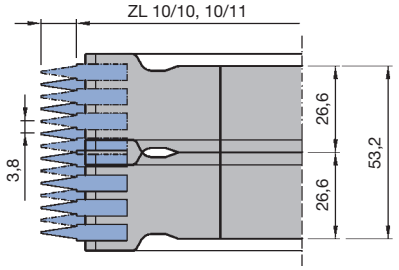




Minifinger joint cutter ZL 4 mm,
TG 1.6 mm



Minifinger joint cutter ZL 6/7 mm,
TG 2.8 mm



Minifinger joint cutter ZL 10 mm,
TG 3.8 mm

Minifinger joint cutter, Marathon

Application:
For self locking longitudinal joints. See section introduction for additional information.

Machine:
Finger joint machines with / without cut off saw, continuous machines.

Workpiece material:
Softwood, across grain; also suitable for hardwood.

Technical information:
Reduced risk of breakage from individually brazed finger cutting edges. Design with enlarged tip gap suitable for PU adhesives and for finger joint machines without cut off saws and horizontal working spindle. Marathon coating allows up to 4 times longer tool life compared to HS version. Resharpening area 12 mm.

ZL 4 mm, TG 1.6 mm
WF 620-2-06

D mm	SB mm	ND mm	BO mm	Z	ZA PCS	QAL	ZL mm	ID	
160	25	22,4	50	2/2	14	MC	4	**123000**	□
250	25	22,4	50	3/3	14	MC	4	**123001**	□
250	25	22,4	50	6/6	14	MC	4	**123002**	□

ZL 6/7 mm, TG 2.8 mm
WF 620-2-06

D mm	SB mm	ND mm	BO mm	Z	ZA PCS	QAL	ZL mm	ID	
165	28	25,2	50	3/3	9	MC	6/7	**123100**	□
255	28	25,2	50	4/4	9	MC	6/7	**123101**	□
255	28	25,2	50	6/6	9	MC	6/7	**123102**	□

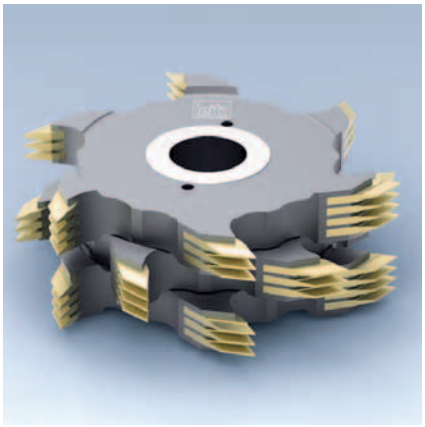
ZL 10 mm, TG 3.8 mm
WF 620-2-06

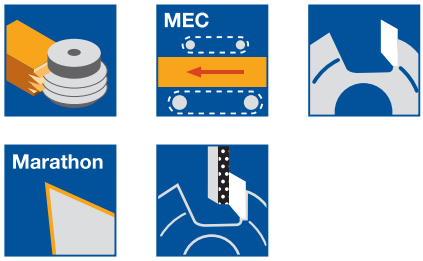
D mm	SB mm	ND mm	BO mm	Z	ZA PCS	QAL	ID ZL 10/10		ID ZL 10/11	
160	28,6	26,6	50	2/2	7	MC	**120608**	●	**120612**	●
160	28,6	26,6	50	3/3	7	MC	**120616**	□	**120617**	□
250	28,6	26,6	50	3/3	7	MC	**120609**	□	**120613**	●
250	28,6	26,6	50	4/4	7	MC	**120620**	□	**120622**	□

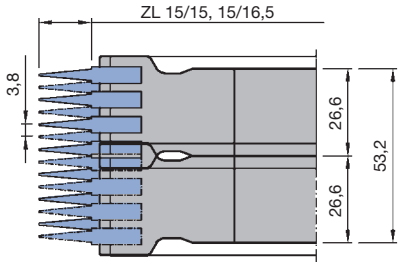
ZL 10 mm, TG 3.8 mm, larger basic clearance
WF 620-2-06

D mm	SB mm	ND mm	BO mm	Z	ZA PCS	QAL	ID ZL 10/10		ID ZL 10/11	
160	28,6	26,6	50	2/2	7	MC	**120610**	□	**120614**	□
160	28,6	26,6	50	3/3	7	MC	**120618**	□	**120619**	□
250	28,6	26,6	50	3/3	7	MC	**120611**	□	**120615**	□
250	28,6	26,6	50	4/4	7	MC	**120621**	□	**120623**	□

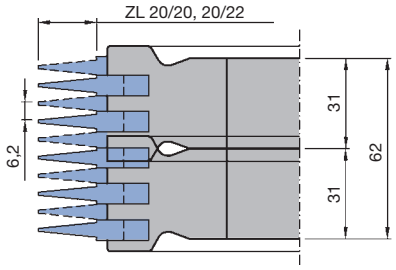
● available ex stock
□ available at short notice
Instruction manual visit www.leitz.org







Minifinger joint cutter ZL 15 mm, TG 3.8 mm



Minifinger joint cutter ZL 20 mm, TG 6.2 mm

Minifinger joint cutter, Marathon

Application:
For self locking longitudinal joints. See section introduction for additional information.

Machine:
Finger joint machines with / without cut off saw, continuous machines.

Workpiece material:
Softwood, across grain; also suitable for hardwood.

Technical information:
Reduced risk of breakage from individually brazed finger cutting edges. Design with enlarged tip gap suitable for PU adhesives and for finger joint machines without cut off saws and horizontal working spindle. Marathon coating allows up to 4 times longer tool life compared to HS version. Resharpening area 12 mm.

ZL 15 mm, TG 3.8 mm
WF 620-2-06

D mm	SB mm	ND mm	BO mm	Z	ZA PCS	QAL	ID ZL 15/15		ID ZL 15/16,5	
170	28,6	26,6	50	2/2	7	MC	**120709**	□	**120713**	●
260	28,6	26,6	50	3/3	7	MC	**120710**	□	**120714**	●
260	28,6	26,6	50	4/4	7	MC	**120717**	□	**120719**	□

ZL 15 mm, TG 3.8 mm, larger basic clearance
WF 620-2-06

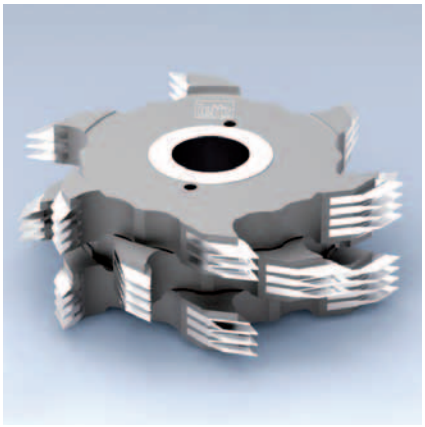
D mm	SB mm	ND mm	BO mm	Z	ZA PCS	QAL	ID ZL 15/15		ID ZL 15/16,5	
170	28,6	26,6	50	2/2	7	MC	**120711**	●	**120715**	□
260	28,6	26,6	50	3/3	7	MC	**120712**	□	**120716**	□
260	28,6	26,6	50	4/4	7	MC	**120718**	□	**120720**	□

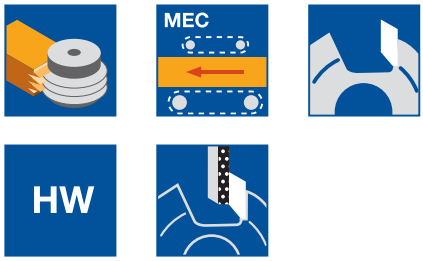
ZL 20 mm, TG 6.2 mm
WF 620-2-06

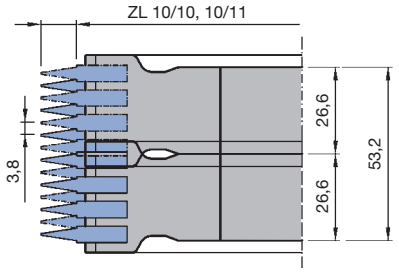
D mm	SB mm	ND mm	BO mm	Z	ZA PCS	QAL	ID ZL 20/20		ID ZL 20/22	
180	33	31	50	2/2	5	MC	**120810**	●	**120814**	□
260	33	31	50	3/3	5	MC	**120811**	□	**120815**	□
260	33	31	50	4/4	5	MC	**120822**	□	**120824**	□

ZL 20 mm, TG 6.2 mm, larger basic clearance
WF 620-2-06

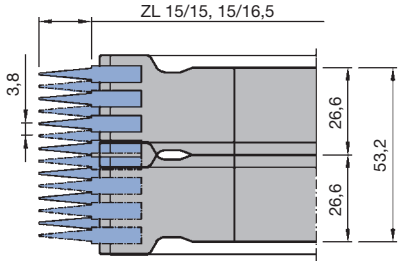
D mm	SB mm	ND mm	BO mm	Z	ZA PCS	QAL	ID ZL 20/20		ID ZL 20/22	
180	33	31	50	2/2	5	MC	**120812**	●	**120816**	□
260	33	31	50	3/3	5	MC	**120813**	□	**120817**	□
260	33	31	50	4/4	5	MC	**120823**	□	**120825**	□







Minifinger joint cutter ZL 10 mm,
TG 3.8 mm



Minifinger joint cutter ZL 15 mm,
TG 3.8 mm

Minifinger joint cutter, HW

Application:
For self locking longitudinal joints. See section introduction for additional information.

Machine:
Finger joint machines with / without cut off saws, continuous machines.

Workpiece material:
Hardwood, across grain.

Technical information:
Reduced risk of breakage from individually brazed finger cutting edges. Cutting material HW. Resharpening area 12 mm.

ZL 10 mm, TG 3.8 mm
WF 620-2

D mm	SB mm	BO mm	Z	ZA PCS	QAL	$n_{max.}$ min^{-1}	ID ZL 10/10		ID ZL 10/11	
160	28,6	50	2/2	7	HW	8000	**021600**	●	**021601**	●
160	28,6	50	3/3	7	HW	8000	**021604**	□	**021603**	●
250	28,6	50	3/3	7	HW	6000	**021605**	□	**021602**	●

ZL 15 mm, TG 3.8 mm
WF 620-2

D mm	SB mm	BO mm	Z	ZA PCS	QAL	$n_{max.}$ min^{-1}	ID ZL 15/15		ID ZL 15/16,5	
170	28,6	50	2/2	7	HW	8000	**021644**	●	**021645**	●
260	28,6	50	3/3	7	HW	6000	**021652**		**021648**	

Table to determine the number of cutters
for a given wood thickness.
Finger length 10 and 15 mm;
D = 160/250 mm and 170/260 mm
Finger pitch = 3.8 mm

SB	28.6 mm
Hub	26.6 mm
ZA	Tooth row ZA 7
Wood thickness	Quantity cutter
24	1
51	2
77	3
104	4
131	5
157	6
184	7
210	8
237	9
264	10
290	11
317	12

● available ex stock
□ available at short notice
Instruction manual visit www.leitz.org

Minifinger cutter for manual feed, HS / HW

Application:
For self locking longitudinal joints for non supporting components, e.g. panels and strips.

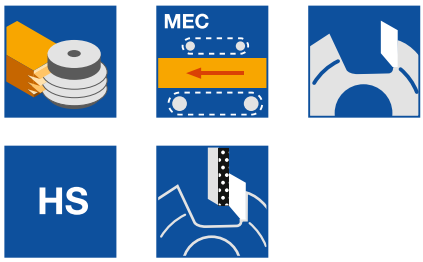
Machine:
Spindle moulders with workpiece clamping and sliding table.

Workpiece material:
Softwood and hardwood, across grain.

Technical information:
Steel tool body with individually brazed cutting edges. Reduced risk of breakage. Cutting materials HS and HW. Resharpening area 12 mm.

ZL 10 mm, TG 3.8 mm
WF 620-2

D mm	SB mm	ND mm	BO mm	Z	ZA PCS	$n_{max.}$ min^{-1}	QAL	ID	
160	32,4	30,4	40	2/2	8	8000	HS	**122904**	●
160	24,8	22,8	40	2/2	6	8000	HS	**021742**	●
160	32,4	30,4	40	2/2	8	8000	HW	**021748**	●
160	24,8	22,8	40	2/2	6	8000	HW	**021750**	



Shoulder cutter, HS

Application:
For self locking longitudinal joints with a straight visible joint, use with minifinger joint cutters D 160 mm, ZL 10/10 or ZL 10/11 mm.

Machine:
Finger joint machines with/without cut off saws, continuous machines. Can also be used with finger cutters in MAN version on spindle moulders with workpiece clamping and sliding table.

Workpiece material:
Softwood, across grain; limited suitability for hardwood.

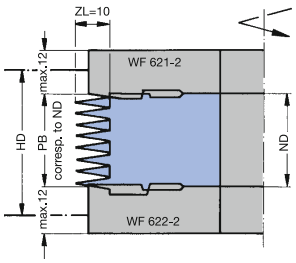
Technical information:
Steel tool body with brazed HS edges. Resharpening area 12 mm.

ZL 10/10 mm, TG 3.8 mm
WF 621-2, WF 622-2

Tool Type	D mm	SB mm	BO mm	Z	QAL	ID	
Profile cutter	150	15	40	4	HS	**021752**	●
Profile cutter	150	15	50	4	HS	**021753**	□
Jointing cutter	150	15	40	4	HS	**021755**	●
Jointing cutter	150	15	50	4	HS	**021756**	□

ZL 10/11 mm, TG 3.8 mm
WF 621-2, WF 622-2

Tool Type	D mm	SB mm	BO mm	Z	QAL	ID	
Profile cutter	159,6	15	50	4	HS	**021761**	●



Profile example

● available ex stock
□ available at short notice
Instruction manual visit www.leitz.org

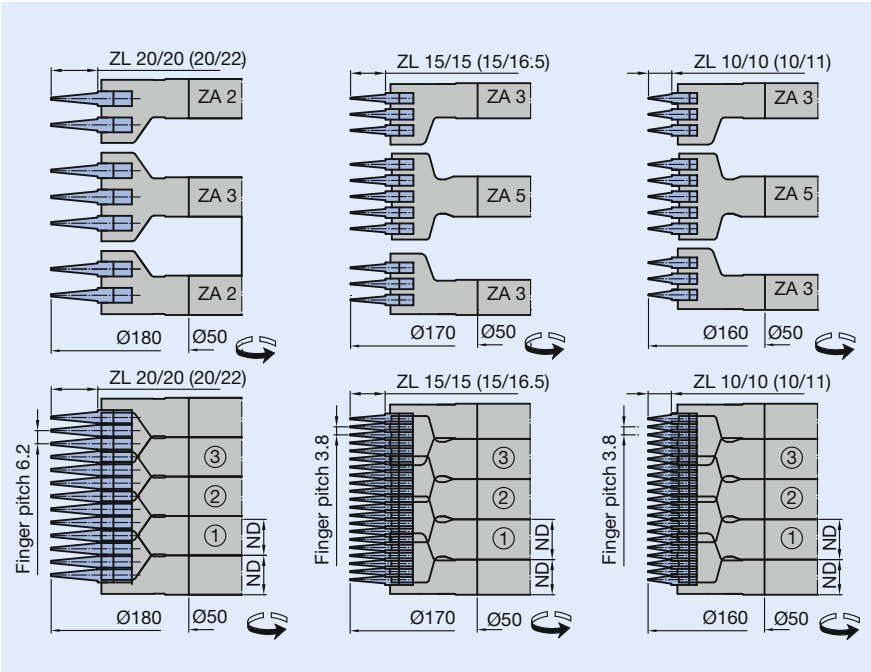
High performance minifinger joint cutters, real Z = 4/real Z = 3

Application	For self locking finger joints for supporting and load bearing components on high performance finger joint machines.
Machines	High performance finger joint machines with/without cut off saw.
Workpiece material	Solid woods across grain
Number of wings	D = 180 mm Z = 3, D = 160/170 mm Z = 4
Cutting material	HS and Marathon (MC)
Tool design	Solid steel tool body design with individually brazed finger knives. Higher number of wings for higher feed speeds and improved joint cut quality.
Feed	MEC
Resharpening area	12 mm
Particular benefit	A tool set, comprising of basic, top and bottom cutters for the required working width/height. The spiral knife arrangement reduces the power consomption and noise.

RPM

Table for allowed RPM n = min^{-1} in relation to finger length ZL and diameter D. o-diameter (Do) in relation to finger length for adjustment of the machine spindles.

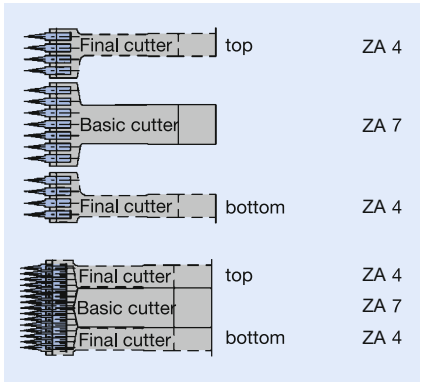
ZL mm	D mm	Do mm	$n_{max.}$ min^{-1}
10	160	140	9.000
6	160	148	9.000
15	170	140	8.500
20	180	140	8.000



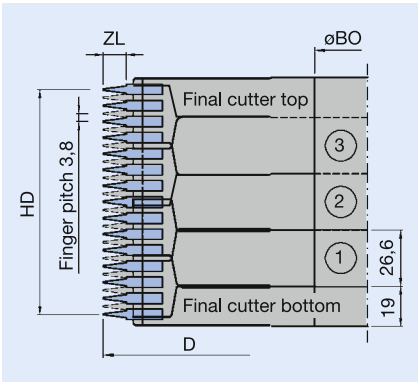
Minifinger joint cutter combinations with the finger lengths 10, 15 and 20 mm.

High performance minifinger joint cutters, real Z = 6

Application	For self locking finger joints for supporting and load bearing components for high performance finger joint machines.
Machines	High performance finger joint machines with/without cut off saw.
Workpiece material	Solid woods across grain
Number of wings	Real Z = 6, for ZL 10 mm D = 250, for ZL 15 mm D = 260 mm
Cutting material	HS and Marathon (MC)
Tool design	Solid steel tool body with individually brazed finger knives. High number of wings for higher feed speeds and improved joint cut quality.
RPM	n_{max} = 6000 min^{-1}
Feed	MEC
Resharpening area	12 mm
Particular benefit	A tool set, comprising basic, top and bottom cutters for the required working width/height. The spiral knife arrangement reduces the power consomption and noise.



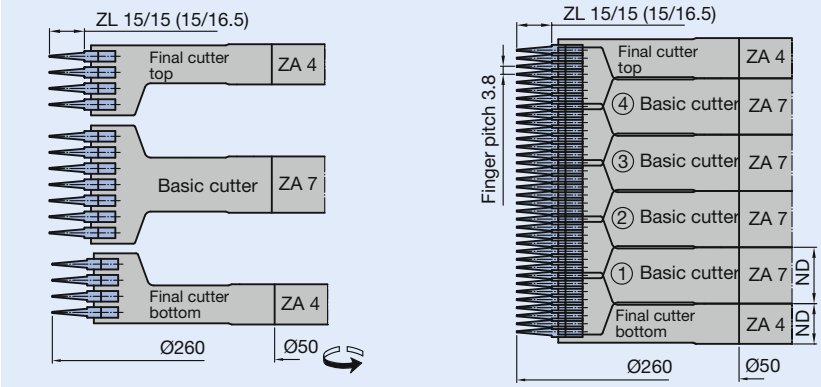
Combination for high performance minifinger joint cutter set Z = 6.



Z 6 minifinger joint cutter, constant joint.

Table to determining the number of minifinger joint cutters with finger pitch of 3.8 mm

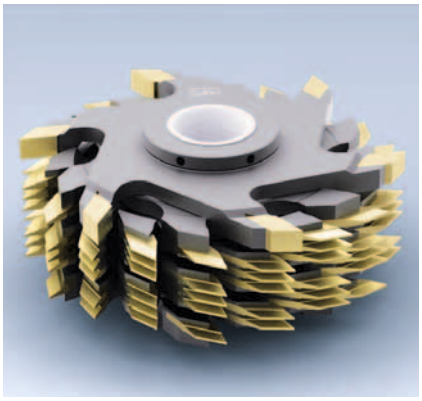
Finger length 10 and 15 mm Real Z6			**TG 3.8 mm**	
		Basic cutter	Final cutter top	Final cutter bottom
Tooth row	ZA	7	4	4
Hub thickness	ND	26.6 mm	19 mm	19 mm
Wood thickness HD	Clamping height KLH	Number of cutters	Number of cutters	Number of cutters
27	38	0	1	1
53	64.6	1	1	1
80	91.2	2	1	1
106	117.8	3	1	1
133	144.4	4	1	1
160	171	5	1	1
186	197.6	6	1	1
213	224.2	7	1	1
239	250.8	8	1	1
266	277.4	9	1	1
293	304	10	1	1



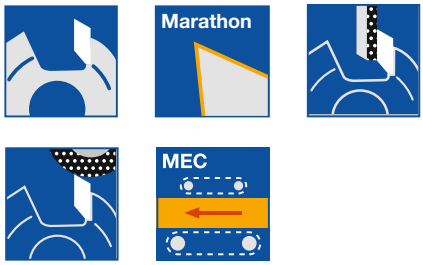
Minifinger joint cutter combinations with the finger lengths 10 and 15 mm.

Minifinger joint cutter
WF 621-2-05/WF 623-02-06
Z = 6 with shoulders
Basic, extension and shoulder cutters
Finger length 10 mm and 15 mm
D = 250 mm and 260 mm
Finger pitch = 3.8 mm

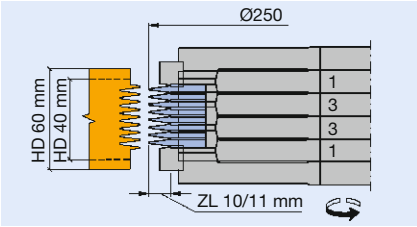
Assembly of the high performance minifinger joint cutters on request to suit the wood thickness.



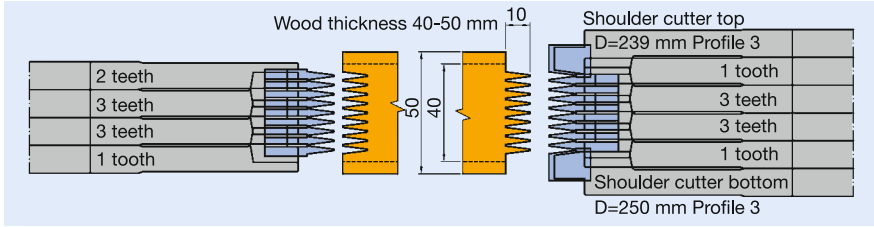
High performance minifinger joint cutters, real Z = 6



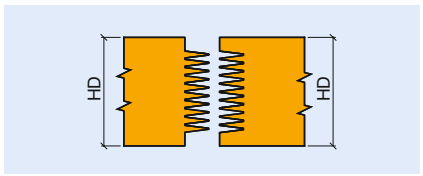
Application	For self locking finger joints for load bearing components with shoulder cuts for high performance finger joint machines.
Machines	High performance finger joint machines with cut off saw.
Workpiece material	Solid woods across grain
Number of wings	Real Z = 6 for D = 260 mm
Cutting material	HS and Marathon (MC)
Tool design	Solid steel tool body with individually brazed finger cutters. High number of wings for higher feed speeds and improved joint cut quality.
RPM	n_{max} = 6000 min^{-1}
Feed	MEC
Resharpening area	12 mm
Particular benefit	A tool set, comprising of basic, top and bottom shoulder cutters and shoulder cut for the required working width/height. The spiral arranged wings reduces the power consomption and noise.



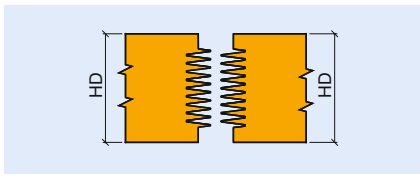
Minifinger joint cutter set real Z = 6
Shoulder cutters central, Profile 5.



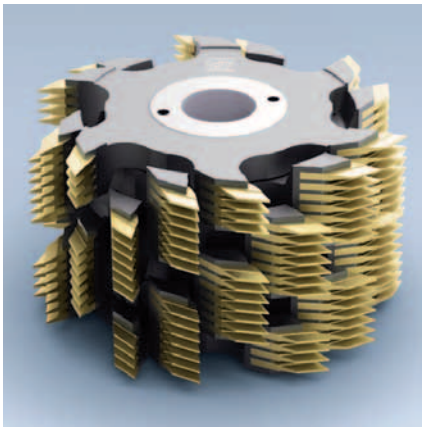
Minifinger joint cutter set real Z = 6, shoulder cutters in gap

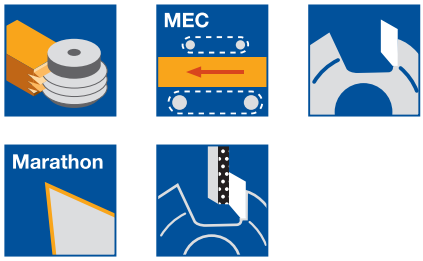


Profile 3

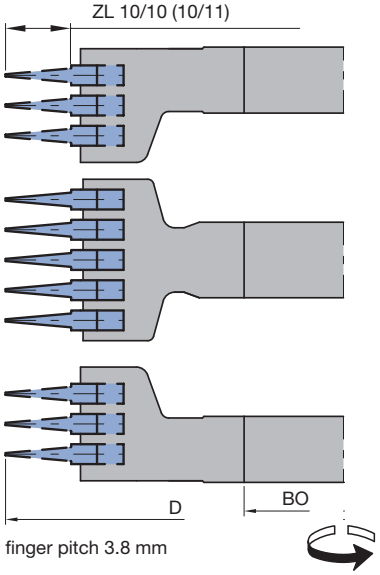


Profile 5

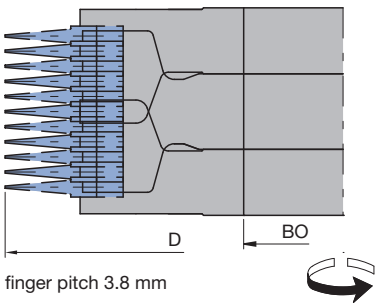




ZL 15/15 (15/16,5)
ZL 10/10 (10/11)



finger pitch 3.8 mm



finger pitch 3.8 mm

Minifinger joint cutter, Marathon, real Z 3/4

Application:
For self locking longitudinal joints. See section introduction for additional information.

Machine:
High performance finger joint machines with/without cut off saws.

Workpiece material:
Softwood, across grain; also suitable for hardwood.

Technical information:
High number of teeth tool design, top and bottom final cutters required. Assembly of tool set: see section introduction. Version with enlarged tip gap suitable for PU adhesives and for finger joint machines without cut off saws for horizontal spindle. Marathon coating allows up to 4 times longer tool life compared to HS version. Resharpening area 12 mm.

ZL 10 mm, TG 3.8 mm
WF 620-2-06

Tool Type	D mm	SB mm	ND mm	BO mm	Z	ZA PCS	QAL	ID ZL 10/10		ID ZL 10/11	
Top final cutter	160	20,2	16,6	50	4	3	MC	**121600**	□	**121604**	□
Basic cutter	160	35,4	19	50	4	5	MC	**120604**	□	**120606**	□
Bottom final cutter	160	20,2	16,6	50	4	3	MC	**121601**	□	**121607**	□

ZL 10 mm, TG 3.8 mm, larger basic clearance
WF 620-2-06

Tool Type	D mm	SB mm	ND mm	BO mm	Z	ZA PCS	QAL	ID ZL 10/10		ID ZL 10/11	
Top final cutter	160	20,2	16,6	50	4	3	MC	**121602**	□	**121605**	●
Basic cutter	160	35,4	19	50	4	5	MC	**120605**	□	**120607**	●
Bottom final cutter	160	20,2	16,6	50	4	3	MC	**121603**	□	**121606**	●

ZL 15 mm, TG 3.8 mm
WF 620-2-06

Tool Type	D mm	SB mm	ND mm	BO mm	Z	ZA PCS	QAL	ID ZL 15/15		ID ZL 15/16,5	
Top final cutter	170	20,2	16,6	50	4	3	MC	**121700**	□	**121704**	□
Basic cutter	170	35,4	19	50	4	5	MC	**120705**	□	**120707**	□
Bottom final cutter	170	20,2	16,6	50	4	3	MC	**121701**	□	**121705**	□

ZL 15 mm, TG 3.8 mm, larger basic clearance
WF 620-2-06

Tool Type	D mm	SB mm	ND mm	BO mm	Z	ZA PCS	QAL	ID ZL 15/15		ID ZL 15/16,5	
Top final cutter	170	20,2	16,6	50	4	3	MC	**121702**	●	**121706**	□
Basic cutter	170	35,4	19	50	4	5	MC	**120706**	●	**120708**	□
Bottom final cutter	170	20,2	16,6	50	4	3	MC	**121703**	●	**121707**	□

● available ex stock
□ available at short notice
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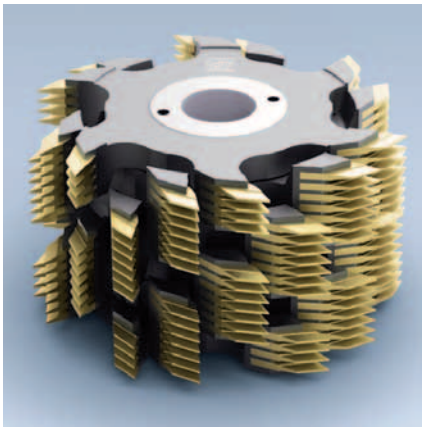
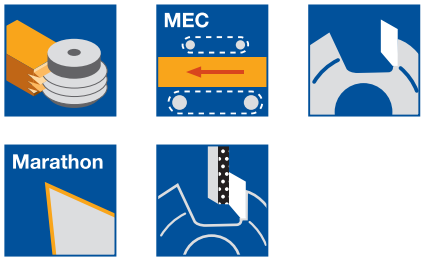
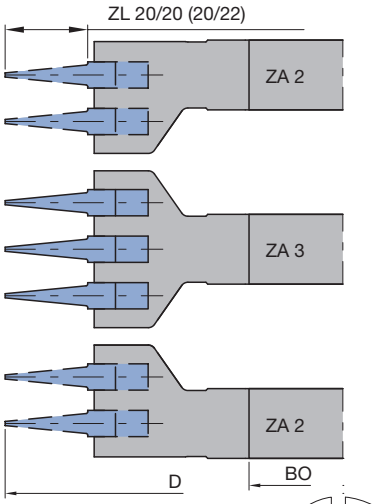
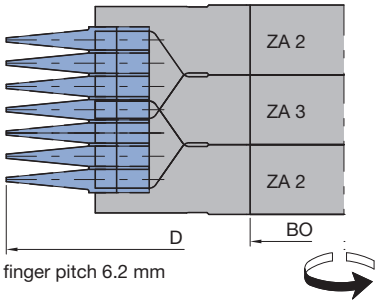






finger pitch 6.2 mm



finger pitch 6.2 mm

Minifinger joint cutter, Marathon, real Z 3/4

Application:
For self locking longitudinal joints. See section introduction for additional information.

Machine:
High performance finger joint machines with/without cut off saws.

Workpiece material:
Softwood, across grain; also suitable for hardwood.

Technical information:
High number of teeth tool design, top and bottom final cutters required. Assembly of tool set: see section introduction. Version with enlarged tip gap suitable for PU adhesives and for finger joint machines without cut off saws for horizontal spindle. Marathon coating allows up to 4 times longer tool life compared to HS version. Resharpening area 12 mm.

ZL 20 mm, TG 6.2 mm
WF 620-2-06

Tool Type	D mm	SB mm	ND mm	BO mm	Z	ZA PCS	QAL	ID ZL 20/20		ID ZL 20/22	
Top final cutter	180	18,6	18,6	50	3	2	MC	**121800**	□	**121804**	□
Basic cutter	180	31	18,6	50	3	3	MC	**120805**	□	**120807**	□
Bottom final cutter	180	18,6	18,6	50	3	2	MC	**121801**	□	**121805**	□

ZL 20 mm, TG 6.2 mm, larger basic clearance
WF 620-2-06

Tool Type	D mm	SB mm	ND mm	BO mm	Z	ZA PCS	QAL	ID ZL 20/20		ID ZL 20/22	
Top final cutter	180	18,6	18,6	50	3	2	MC	**121802**	□	**121806**	□
Basic cutter	180	31	18,6	50	3	3	MC	**120806**	□	**120808**	□
Bottom final cutter	180	18,6	18,6	50	3	2	MC	**121803**	□	**121807**	□

Finger length 10 and 15 mm
TG: 3,8 mm
Real Z4

		Basic cutter	Final cutter top	Final cutter bottom
ZA		5	3	3
ND		19	16,6	16,6
HD	KLH	Cutter quantity	Cutter quantity	Cutter quantity
19	33,2	0	1	1
38	52,2	1	1	1
57	71,2	2	1	1
76	90,2	3	1	1
95	109,2	4	1	1
114	128,2	5	1	1
133	147,2	6	1	1
152	166,2	7	1	1
171	185,2	8	1	1
190	204,2	9	1	1
209	223,2	10	1	1
228	242,2	11	1	1
247	261,2	12	1	1
266	280,2	13	1	1
285	299,2	14	1	1
304	318,2	15	1	1
323	337,2	16	1	1

HD = wood thickness
KLH = clamping height

Finger length 20 mm
TG: 6,2 mm
Real Z3

		Basic cutter	Final cutter top	Final cutter bottom
ZA		3	2	2
ND		18,6	18,6	18,6
HD	KLH	Cutter quantity	Cutter quantity	Cutter quantity
19	37,2	0	1	1
37	55,8	1	1	1
56	74,4	2	1	1
74	93	3	1	1
93	111,6	4	1	1
112	130,2	5	1	1
130	148,8	6	1	1
149	167,4	7	1	1
167	186	8	1	1
186	204,6	9	1	1
205	223,2	10	1	1
223	241,8	11	1	1
242	260,4	12	1	1
260	279	13	1	1
279	297,6	14	1	1
298	316,2	15	1	1
316	334,8	16	1	1

HD = wood thickness
KLH = clamping height

● available ex stock
□ available at short notice
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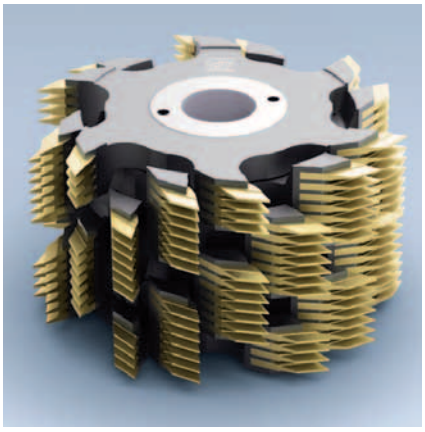
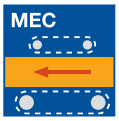
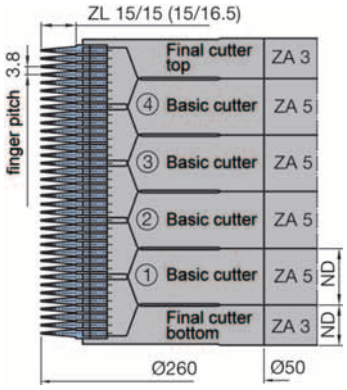




Finger length 10 mm and 15 mm
TG: 3,8 mm
Real Z6

		Basic cutter	Final cutter top	Final cutter bottom
ZA		7	4	4
ND		26,6	19	19
HD	KLH	Cutter quantity	Cutter quantity	Cutter quantity
27	38	0	1	1
53	64,6	1	1	1
80	91,2	2	1	1
106	117,8	3	1	1
133	144,4	4	1	1
160	171	5	1	1
186	197,6	6	1	1
213	224,2	7	1	1
239	250,8	8	1	1
266	277,4	9	1	1
293	304	10	1	1

HD = wood thickness
KLH = clamping height



Minifinger joint cutter, Marathon, real Z 6

Application:
For self locking longitudinal joints. See section introduction for additional information.

Machine:
High performance finger joint machines with/without cut off saws.

Workpiece material:
Softwood, across grain; also suitable for hardwood.

Technical information:
High number of teeth tool design, top and bottom final cutters required. Assembly of tool set: see section introduction. Version with enlarged tip gap suitable for PU adhesives and for finger joint machines without cut off saws for horizontal spindle. Marathon coating allows up to 4 times longer tool life compared to HS version. Resharpening area 12 mm.

ZL 10 mm, TG 3.8 mm
WF 620-2-06, WF 623-2-06

Tool Type	D mm	SB mm	ND mm	BO mm	Z	ZA PCS	QAL	ID ZL 10/10		ID ZL 10/11	
Top final cutter	250	26,6	19	50	6	4	MC	**121010**	□	**121012**	●
Basic cutter	250	49,4	26,6	50	6	7	MC	**120600**	□	**120601**	●
Bottom final cutter	250	26,6	19	50	6	4	MC	**121011**	□	**121013**	●

ZL 10 mm, TG 3.8 mm, larger basic clearance
WF 620-2-06, WF 623-4-06

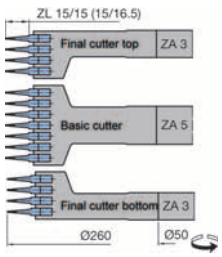
Tool Type	D mm	SB mm	ND mm	BO mm	Z	ZA PCS	QAL	ID ZL 10/10		ID ZL 10/11	
Top final cutter	250	26,6	19	50	6	4	MC	**121014**	□	**121016**	□
Basic cutter	250	49,4	26,6	50	6	7	MC	**120602**	□	**120603**	□
Bottom final cutter	250	26,6	19	50	6	4	MC	**121015**	□	**121017**	□

ZL 15 mm, TG 3.8 mm
WF 620-2-06, WF 623-3-06

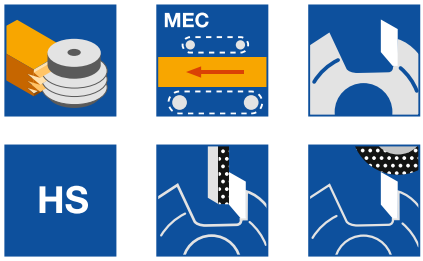
Tool Type	D mm	SB mm	ND mm	BO mm	Z	ZA PCS	QAL	ID ZL 15/15		ID ZL 15/16,5	
Top final cutter	260	26,6	19	50	6	4	MC	**121110**	□	**121112**	□
Basic cutter	260	49,4	26,6	50	6	7	MC	**120700**	□	**120701**	□
Bottom final cutter	260	26,6	19	50	6	4	MC	**121111**	□	**121113**	□

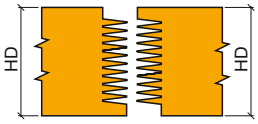
ZL 15 mm, TG 3.8 mm, larger basic clearance
WF 620-2-06, WF 623-5-06

Tool Type	D mm	SB mm	ND mm	BO mm	Z	ZA PCS	QAL	ID ZL 15/15		ID ZL 15/16,5	
Top final cutter	260	26,6	19	50	6	4	MC	**121114**	□	**121116**	□
Basic cutter	260	49,4	26,6	50	6	7	MC	**120702**	□	**120703**	□
Bottom final cutter	260	26,6	19	50	6	4	MC	**121115**	□	**121117**	□

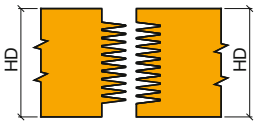


● available ex stock
□ available at short notice
Instruction manual visit www.leitz.org

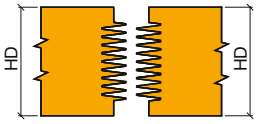




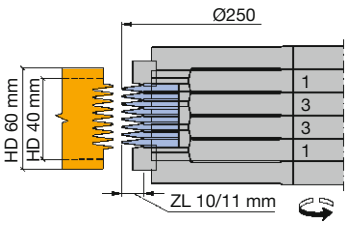
Profile 2



Profile 3



Profile 5 with half shoulder



Minifinger tool set Z = 6 with shoulder cutters

Minifinger joint cutter and shoulder cutter, HS, real Z 6

Application:
For self locking longitudinal joints with visible joint for horizontal joints, e.g. solid wood panels or finger jointed profile strips. See section introduction for additional information.

Machine:
High performance finger joint machines with cut off saw.

Workpiece material:
Softwood, across grain; limited suitability for hardwood.

Technical information:
High number of teeth tool design. Tool set consists of basic cutter, extension cutter and shoulder cutters for different positions of the visible joint. Cutting width adjusted to wood thickness. Mounted on clamping sleeve. Cutting material HS. Resharpening area 12 mm.

Basic- / extension cutter ZL 10/11 mm, TG 3.8 mm
WF 620-2

Tool Type	D mm	SB mm	ND mm	BO mm	Z	ZA PCS	QAL	DRI	ID	
Basic cutter	250	20,2	11,2	60	6	3	HS	RL	**120320**	□
Extension cutter	250	5,0	11,2	60	6	1	HS	LL	**121317**	□
Extension cutter	250	5,0	11,2	60	6	1	HS	RL	**121318**	□
Extension cutter	250	12,6	11,2	60	6	2	HS	LL	**121319**	□
Extension cutter	250	12,6	11,2	60	6	2	HS	RL	**121320**	□

Shoulder cutter profile 2 and 3 for ZL 10/11 mm, TG 3.8 mm
WF 621-2

D mm	SB mm	BO mm	Z	QAL	ID LL		ID RL	
249,7	12	60	6	HS	**122200**	□	**122201**	□

Shoulder cutter profile 5 for ZL 10/11 mm, TG 3.8 mm
WF 621-2

D mm	SB mm	BO mm	Z	QAL	ID LL		ID RL	
239,7	12	60	6	HS	**122202**		**122203**	
239	12	60	6	HS	**122204**	□	**122205**	□

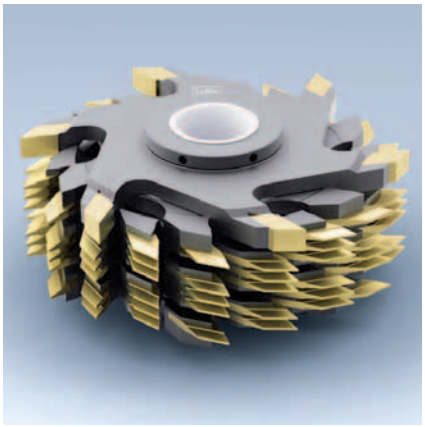
Clamping sleeve with threaded nut
TB 270-0

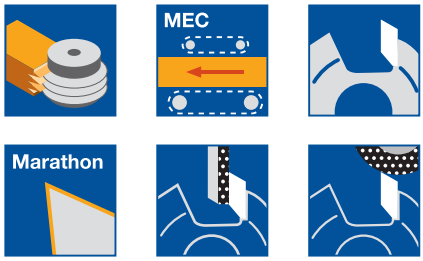
D mm	BO mm	NL mm	GL mm	ID LL		ID RL	
60	50	85	110	**029470**	●	**029471**	●

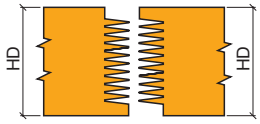
Spacer
TR 100-0

D mm	B mm	BO mm	ID	
90	3,8	60	**028447**	●
90	11,4	60	**028448**	●

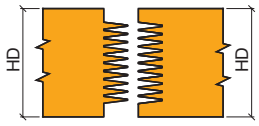
● available ex stock
□ available at short notice
Instruction manual visit www.leitz.org



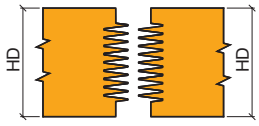




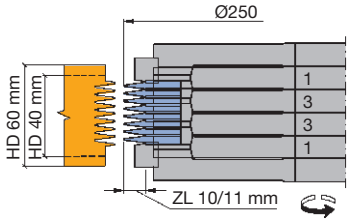
Profile 2



Profile 3



Profile 5 with half shoulder



Minifinger tool set Z = 6 with shoulder cutters

Minifinger joint cutter and shoulder cutter, Marathon, real Z 6

Application:
For self locking longitudinal joints with straight visible joint for horizontal joints, e.g. solid wood panels or finger jointed profile strips. See section introduction for additional information.

Machine:
High performance finger joint machines with cut off saw.

Workpiece material:
Softwood, across grain; also suitable for hardwood.

Technical information:
High number of teeth tool design. Tool set consists of basic cutter, extension cutter and shoulder cutters for different positions of the visible joint. Cutting width adjusted to wood thickness. Mounted on clamping sleeve. Marathon coating allows up to 4 times longer tool life compared to HS version. Resharpening area 12 mm.

Basic- / extension cutter ZL 10/11 mm, TG 3.8 mm
WF 620-2-06

Tool Type	D mm	SB mm	ND mm	BO mm	Z	ZA PCS	QAL	DRI	ID	
Basic cutter	250	20,2	11,2	60	6	3	MC	RL	**120624**	□
Extension cutter	250	5,0	11,2	60	6	1	MC	LL	**121608**	□
Extension cutter	250	5,0	11,2	60	6	1	MC	RL	**121609**	□
Extension cutter	250	12,6	11,2	60	6	2	MC	LL	**121610**	□
Extension cutter	250	12,6	11,2	60	6	2	MC	RL	**121611**	□

Shoulder cutter profile 2 and 3 for ZL 10/11 mm, TG 3.8 mm
WF 621-2-06

D mm	SB mm	BO mm	Z	QAL	ID LL		ID RL	
249,7	12	60	6	MC	**122400**	□	**122401**	□

Shoulder cutter profile 5 for ZL 10/11 mm, TG 3.8 mm
WF 621-2-06

D mm	SB mm	BO mm	Z	QAL	ID LL		ID RL	
239,7	12	60	6	MC	**122402**	□	**122403**	□
239	12	60	6	MC	**122404**	□	**122405**	□

Clamping sleeve with threaded nut
TB 270-0

D mm	BO mm	NL mm	GL mm	ID LL		ID RL	
60	50	85	110	**029470**	●	**029471**	●

Spacer
TR 100-0

D mm	B mm	BO mm	ID	
90	3,8	60	**028447**	●
90	11,4	60	**028448**	●

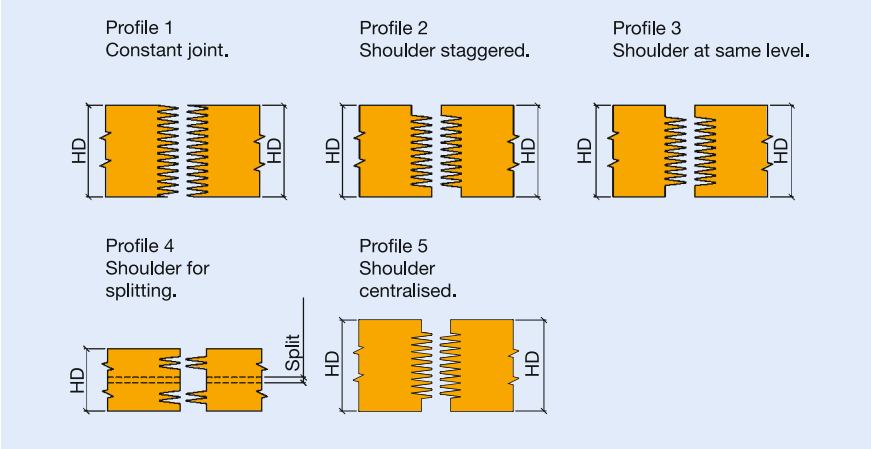
● available ex stock
□ available at short notice
Instruction manual visit www.leitz.org

WM 620-2/WM 620-2-06 **Minifinger joint cutterhead**	Minifinger joint cutterhead with resharpenable profile knives. Knives individually replaceable. Secure against twisting by pins. Cutting material with Leitz Marathon coating increases the tool life by 3-5 times compared with conventional HS, depending on the conditions of use. Finger length 10 can also be supplied in HW.

Application	For self locking finger joints for supporting components, solid wooden panels, strips, window blanks.
Cutting material	HS, Marathon (MC), HW
Resharpenable area	Marathon (MC) = 10 mm, HW = 6 mm
Feed rate	RPM dependent up to 24 m min^{-1}.

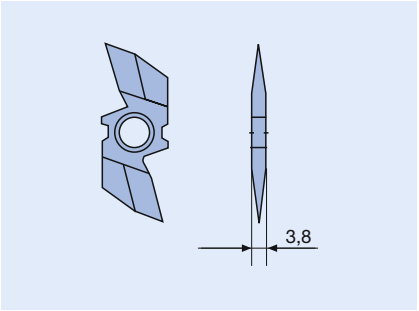
WM 620-2-01 Minifinger cutterhead

Minifinger cutterhead with resharpenable minifinger turnblade knives.
Wood thickness max. 60 mm adjustable with or without shoulders.
The resharpenable turnblade knives and the replaceable finger knives guarantee high flexibility and economic efficiency.
Knives are resharpened on standard multi purpose sharpening machines with cooling.

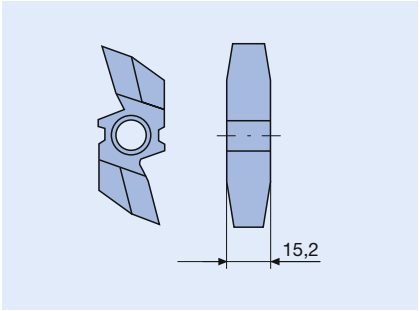


Application	For self locking longitudinal joints for panel and moulding production with or without shoulders.
Machines	Double end tenoners, double sided finger jointing lines with cut off saw, single sided finger jointing lines with cut off saw.
Cutting material	HW.
Resharpening area	2 x 6 mm.
No. of teeth/finger length	Z = 6 or 3 + 3 at D = 250 mm , 10/11 mm finger lenght. Z = 4 or 2 + 2 at D = 160 mm, 10/11 mm finger lenght.
Feed rate	up to 36 m min^{-1}, depending on spindle RPM and cutting edge arrangement.

Note
For wood up to 60 mm thick: joints with/ without shoulders. Positioning the shoulder knives in 3.8 mm steps enables adjustment to different wood thicknesses.



Minifinger knife, 2-edges.



Shoulder knife, 2-edges.

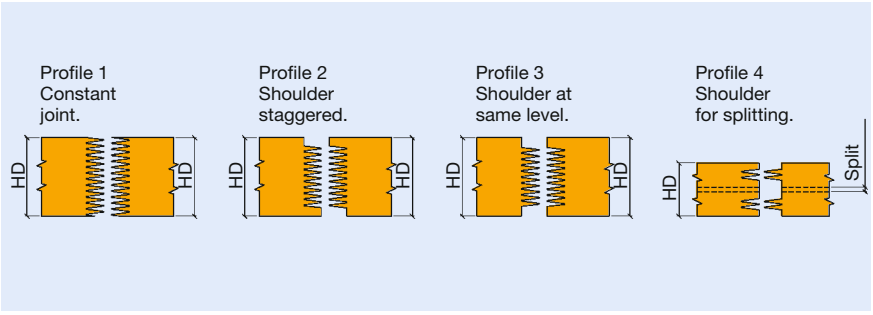
Table to determination of required no. of spare knives:

HD from-to mm	ZB mm	ZA	Half shoulder (HS) mm
16 – 22	9.4	3	3.3 – 6.3
19 – 25	13.2	4	2.9 – 5.9
23 – 29	17	5	3.0 – 6.0
27 – 33	20.8	6	3.1 – 6.1
31 – 37	24.6	7	3.2 – 6.2
35 – 41	28.4	8	3.3 – 6.3
38 – 44	32.2	9	2.9 – 5.9
42 – 48	36	10	3.0 – 6.0
46 – 52	39.8	11	3.1 – 6.1
50 – 56	43.6	12	3.2 – 6.2

HD from-to mm	ZB mm	ZA	Half shoulder (S) mm
17 – 23	10.7	3	
21 – 27	14.5	4	3.2 – 6.2
25 – 31	18.3	5	3.3 – 6.3
29 – 35	22.1	6	3.4 – 6.4
33 – 39	25.9	7	3.5 – 6.5
36 – 42	29.7	8	3.1 – 6.1
40 – 46	33.5	9	3.2 – 6.2
44 – 50	37.3	10	3.3 – 6.3
48 – 54	41.1	11	3.4 – 6.4
52 – 58	44.9	12	3.5 – 6.5

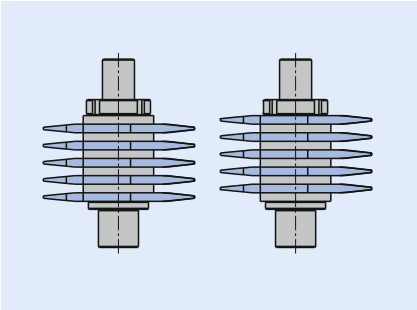
Minifinger cutterhead Turbo-Hawk

Resharpenable cutterhead system with individually replaceable HS circular knives. Production of different profiles with the same tool body. Flexible cutting edge arrangement with or without shoulders. Wood thickness to max. 50 mm.

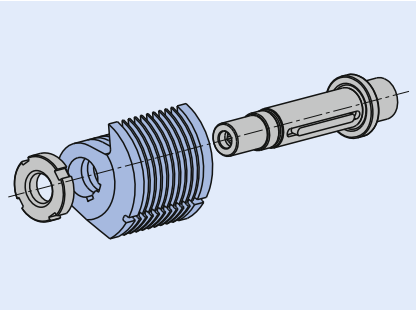


3.4 Finger jointing
3.4.4 Minifinger joint cutterheads

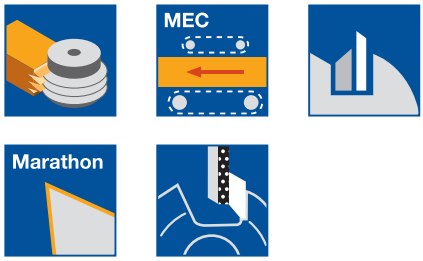
Application	For cutting self locking longitudinal joints for exactly measured componente, e. g. all kinds of finger joint profile moudlings, solid wood panels.
Machines	High performance finger jointing lines with cut off saw.
Cutting material	HS, Marathon (MC).
Resharpening area	100 mm.
No. of teeth/finger length	Z = 5/5 at finger length 10 mm. Z = 10 at finger length 6.35 mm (1/4“), 9.52 mm (3/8“).
RPM	4800 min^{-1} at HD up to 40 mm 4000 min^{-1} at HD up to 41 – 55 mm
Feed rate	Up to 48 m min^{-1} depending on spindle RPM and cutting edge arrangement.
Advantages	Constant diameter, adjustable on the machine by gauge. Knife set can be changed as one unit on the clamping arbor resulting in short set up times when changing wood thickness. Constant balance due to clamping of the knives by a keyway on the arbor.
Note	With the Z 10 design, the knives are mounted without spacers. This design can only be used on machines with a raker. On other machines the knives must be mounted with spacers (Z5/5 design).

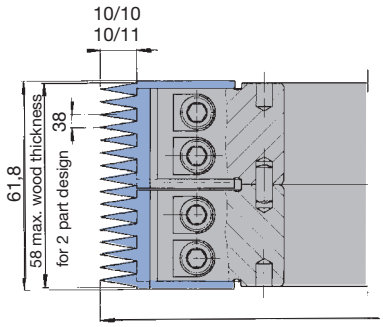


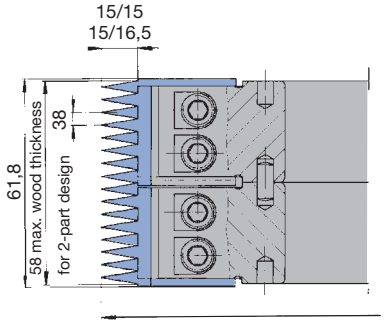
Arbor as change unit.
Knives mounted with spacer.
Z 5/5 design.

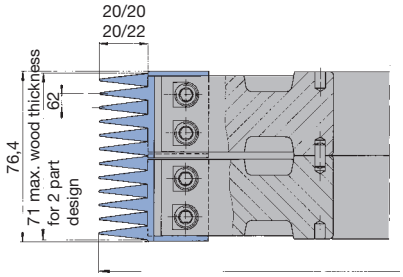


Knife mounting on the arbor.
Anti-twist keyway for the knives.









Minifinger joint cutterhead with replaceable Marathon knives

Application:
For self locking longitudinal joints. See section introduction for additional information.

Machine:
Finger joint machines with and without cut off saw, continuous machines.

Workpiece material:
Softwood, across grain; also suitable for hardwood.

Technical information:
Steel tool body with block knives. Individually replaceable knives if damaged. Always resharpen sets of tools to the same diameter. Marathon coating allows up to 4x the tool life compared with HS. Resharpening area 10 mm.

ZL 10/10 and 10/11 mm
WM 620-2-06

D mm	SB mm	BO mm	ND mm	Z	TG	ZA PCS	$n_{max.}$ min^{-1}	ID ZL 10/10	ID ZL 10/11
160	31,4	50	30,4	2/2	3,8	8	8000	**135900**	**135902**
250	31,4	50	30,4	3/3	3,8	8	4500	**135901**	**135903**

ZL 15/15 and 15/16.5 mm
WM 620-2-06

D mm	SB mm	BO mm	ND mm	Z	TG	ZA PCS	$n_{max.}$ min^{-1}	ID ZL 15/15	ID ZL 15/16,5
170	31,4	50	30,4	2/2	3,8	8	8000	**135904**	**135906**
260	31,4	50	30,4	3/3	3,8	8	4500	**135905**	**135907**

ZL 20/20 and 20/22 mm
WM 620-2-06

D mm	SB mm	BO mm	ND mm	Z	TG	ZA PCS	$n_{max.}$ min^{-1}	ID ZL 20/20	ID ZL 20/22
180	39,2	50	37,2	2/2	6,2	6	8000	**135908**	**135910**
260	39,2	50	37,2	3/3	6,2	6	4500	**135909**	**135911**

Minifinger knives with larger tip gap for supporting components particularly suitable for finger joint machines with horizontal working spindle and without cut off saws and for PU adhesives.

Spare knives:

Cut off saws	Tip gap	Profile knife	ZL mm	TG	ZA PCS	ID 2		ID 3	
without	standard	right	10/10	3,8	4	**611452**	□	**611552**	□
without	standard	left	10/10	3,8	4	**611453**	□	**611553**	□
without	standard	right	15/15	3,8	4	**611454**	□	**611554**	□
without	standard	left	15/15	3,8	4	**611455**	□	**611555**	□
without	standard	right	20/20	6,2	3	**611456**	□	**611556**	□
without	standard	left	20/20	6,2	3	**611457**	□	**611557**	□
with	standard	right	10/11	3,8	4	**611450**	□	**611550**	□
with	standard	left	10/11	3,8	4	**611458**	□	**611558**	□
with	standard	right	15/16,5	3,8	4	**611459**	□	**611559**	□
with	standard	left	15/16,5	3,8	4	**611460**	□	**611560**	□
with	standard	right	20/22	6,2	3	**611461**	□	**611561**	□
with	standard	left	20/22	6,2	3	**611451**	□	**611551**	□
without	large	right	10/10	3,8	4	**611474**	□	**611574**	□
without	large	left	10/10	3,8	4	**611475**	□	**611575**	□
without	large	right	15/15	3,8	4	**611476**	□	**611576**	□
without	large	left	15/15	3,8	4	**611477**	□	**611577**	□
without	large	right	20/20	6,2	3	**611478**	□	**611578**	□
without	large	left	20/20	6,2	3	**611479**	□	**611579**	□

Cutterhead - block knife with pitch 3.8 mm

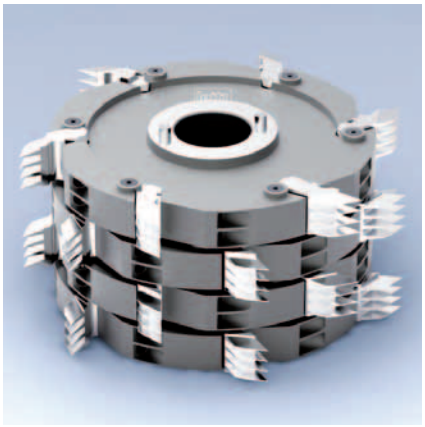
Finger length 10 and 10/11 mm 15 and 15/16.5 mm	
SB	31.4 mm
Hub	30.4 mm
ZA	Tooth row 8
Wood thickness	Quantity of cutterheads
28	1
58	2
89	3
119	4
150	5
180	6
210	7
241	8
271	9
302	10
332	11
362	12

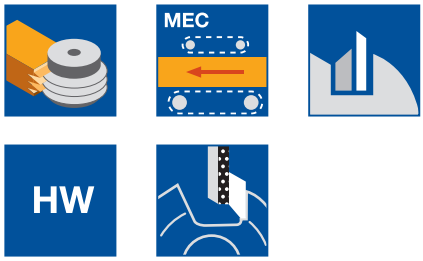
Cutterhead - block knife with pitch 6.2 m

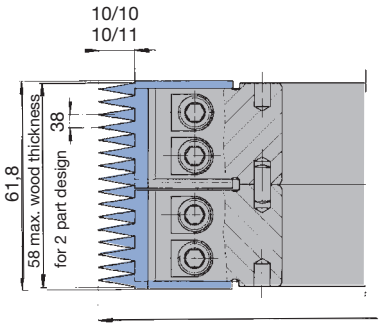
Finger length 20/20 mm 22/22 mm	
SB	39.2 mm
Hub	37.2 mm
ZA	Tooth row 6
Wood thickness	Quantity of cutterheads
34	1
71	2
108	3
145	4
183	5
220	6
257	7
294	8
331	9
368	10

Table to determine the quantity of cutterheads for given wood thickness.

● available ex stock
□ available at short notice
Instruction manual visit www.leitz.org







Minifinger cutterhead with replaceable HW knives

Application:
For self locking longitudinal joints. See section introduction for additional information.

Machine:
Finger joint machines with and without cut off saw, continuous machines.

Workpiece material:
Hardwood, across grain.

Technical information:
Steel tool body with block knives. Individually replaceable knives if damaged. Always sharpen sets of tools to the same diameter. Cutting material HW. Resharpening area 10 mm.

ZL 10/10 and 10/11 mm, TG 3.8 mm.
WM 620-2

D mm	SB mm	BO mm	ND mm	Z	TG	ZA PCS	$n_{max.}$ min^{-1}	ID ZL 10/10		ID ZL 10/11	
160	31,4	50	30,4	2/2	3,8	8	8000	**022730**	□	**022731**	□
250	31,4	50	30,4	3/3	3,8	8	4500	**022732**	□	**022733**	□

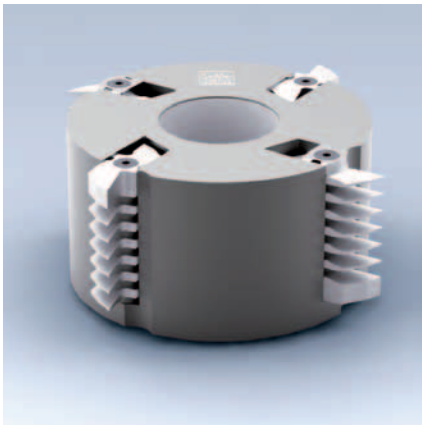
Spare knives:

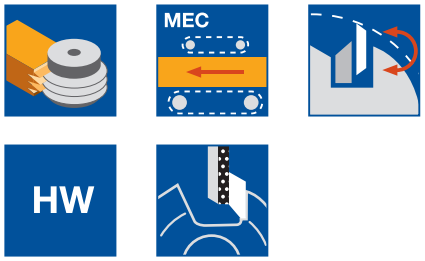
Cut off saws	Tip gap	Profile knife	ZL mm	TG	ZA PCS	ID 2		ID 3	
without	standard	right	10/10	3,8	4	**611300**	□	**611350**	□
without	standard	left	10/10	3,8	4	**611302**	□	**611352**	□
with	standard	right	10/11	3,8	4	**611304**	□	**611354**	□
with	standard	left	10/11	3,8	4	**611306**	□	**611356**	□

Table to determine the number of cutters for a given wood thickness.

Minifinger cutterhead with a pitch of 3.8 mm.

Finger length 10 and 10/11 mm; 15 and 15/16.5 mm.	
SB	31.4 mm
Boss	30.4 mm
ZA	Tooth row 8
Wood thickness	Quantity of cutterheads
28	1
58	2
89	3
119	4
150	5
180	6
210	7
241	8
271	9
302	10
332	11
362	12

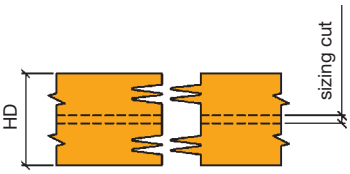




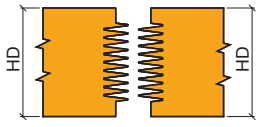
Profile 1 with continuous finger jointing

Profile 2 with staggered shoulder cutters

Profile 3 with shoulder cutters on the same level



Profile 4 with shoulder cutters for splitting



Profile 5 with half-shoulder

Minifinger cutterhead with HW turnblade knives

Application:
For self locking longitudinal joints for non supporting components, e.g. panels and strips.

Machine:
Finger joint machines and continuous machines with cut off saw.

Workpiece material:
Softwood and hardwood, across grain.

Technical information:
Steel tool body with HW turnblade knives. Particularly suitable for hardwood, e.g. for horizontal joints with and without shoulders. Variable design for defined wood thicknesses from 15 to 60 mm. The rest of the knife seating must be filled with spacers and a safety washer (spare part no. 4). Individual cutting edges can be replaced if a cutting edge breaks. Resharpening area 2 x 6 mm.

Profile 1, ZL 10/11 mm, TG 3.8 mm
WM 620-2-01

D mm	SB mm	BO mm	Z	HD mm	$n_{max.}$ min^{-1}	ID LL		ID RL	
160	60	50	2/2	60	8000	**135001**	□	**135000**	□
250	60	50	3/3	60	5000	**135005**	□	**135004**	□

Profile 2, ZL 10/11 mm
WM 620-2-01

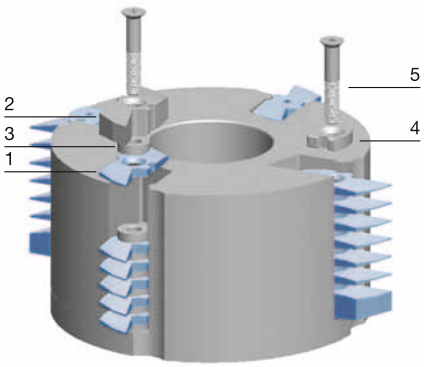
D mm	SB mm	BO mm	Z	HD mm	$n_{max.}$ min^{-1}	ID LL		ID RL	
160	60	50	2/2	20 - 32	8000	**135007**	□	**135006**	□
160	60	50	2/2	30 - 42	8000	**135009**	□	**135008**	□
160	60	50	2/2	40 - 49	8000	**135011**	□	**135010**	□
160	60	50	2/2	50 - 57	8000	**135013**	□	**135012**	□
250	60	50	3/3	20 - 32	5000	**135023**	□	**135022**	□
250	60	50	3/3	30 - 42	5000	**135025**	□	**135024**	□
250	60	50	3/3	40 - 49	5000	**135027**	□	**135026**	□
250	60	50	3/3	50 - 57	5000	**135029**	□	**135028**	□

Profile 3, ZL 10/11 mm
WM 620-2-01

D mm	SB mm	BO mm	Z	HD mm	$n_{max.}$ min^{-1}	ID LL		ID RL	
160	60	50	2/2	20 - 32	8000	**135031**	□	**135030**	□
160	60	50	2/2	30 - 42	8000	**135033**	□	**135032**	□
160	60	50	2/2	40 - 49	8000	**135035**	□	**135034**	□
160	60	50	2/2	50 - 57	8000	**135037**	□	**135036**	□
250	60	50	3/3	20 - 32	5000	**135047**	□	**135046**	□
250	60	50	3/3	30 - 42	5000	**135049**	□	**135048**	□
250	60	50	3/3	40 - 49	5000	**135051**	□	**135050**	□
250	60	50	3/3	50 - 57	5000	**135053**	□	**135052**	□

Attention: When assembling, always finish by fitting spacers with the securing device (spare part no. 4).

● available ex stock
□ available at short notice
Instruction manual visit www.leitz.org



Spare knives:

Part-no.	BEZ	P	ZL mm	SB mm	TG	QAL	ID	
1	Minifinger knife		10/11	3,8	3,8	HW	**618002**	●
2	Shoulder knife	2, 3, 4	10/11	11,4	3,8	HW	**618005**	●
2	Shoulder knife	5	10/11	11,4	3,8	HW	**618006**	●

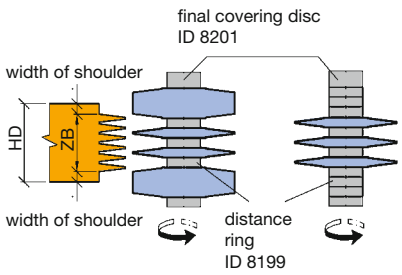
Spare parts:

Part-no.	BEZ	ABM mm	ID	
3	Spacer for ZL 10/11	13x3,8x6,1	**008199**	●
3	Spacer	15x17x5	**008230**	●
4	Spacer with safety device	24,9x21x3,8	**008200**	●
4	Spacer with safety device	24,9x20x6,2	**008201**	●
5	Countersink screw, Torx® 20	M6x40	**006090**	●
5	Countersink screw, Torx® 20	M6x50	**007856**	●
5	Countersink screw, Torx® 20	M6x65	**007882**	●
5	Countersink screw, Torx® 20	M6x70	**007880**	●
	Torx® key	Torx® 20	**006091**	●

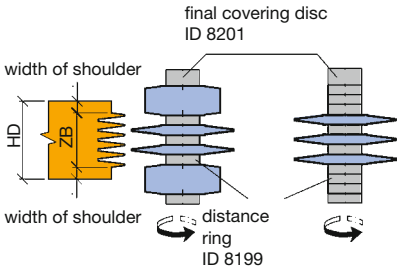
HD from to mm	ZB mm	ZA	Half-shoulder (HS) mm
16 - 22	9,4	3	3,3 - 6,3
19 - 25	13,2	4	2,9 - 5,9
23 - 29	17	5	3,0 - 6,0
27 - 33	20,8	6	3,1 - 6,1
31 - 37	24,6	7	3,2 - 6,2
35 - 41	28,4	8	3,3 - 6,3
38 - 44	32,2	9	2,9 - 5,9
42 - 48	36	10	3,0 - 6,0
46 - 52	39,8	11	3,1 - 6,1
50 - 56	43,6	12	3,2 - 6,2

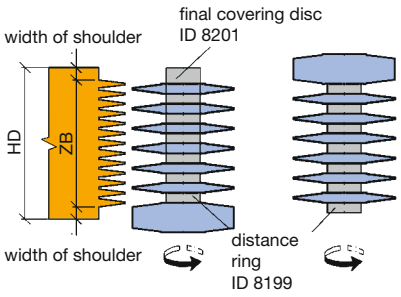
HD from to mm	ZB mm	ZA	Shoulder (S) mm
17 - 23	10,7	3	
21 - 27	14,5	4	3,2 - 6,2
25 - 31	18,3	5	3,3 - 6,3
29 - 35	22,1	6	3,4 - 6,4
33 - 39	25,9	7	3,5 - 6,5
36 - 42	29,7	8	3,1 - 6,1
40 - 46	33,5	9	3,2 - 6,2
44 - 50	37,3	10	3,3 - 6,3
48 - 54	41,1	11	3,4 - 6,4
52 - 58	44,9	12	3,5 - 6,5

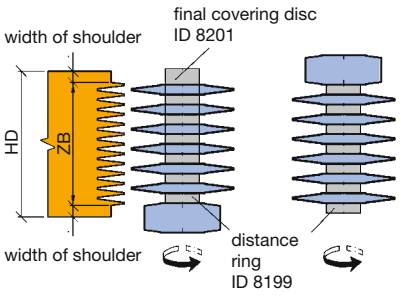
shoulder cutters to one side

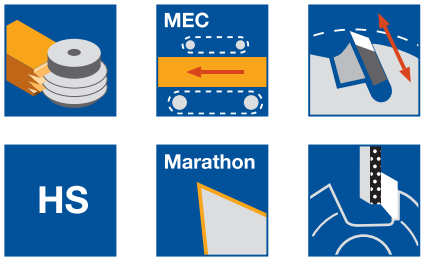


shoulder cutters at centre





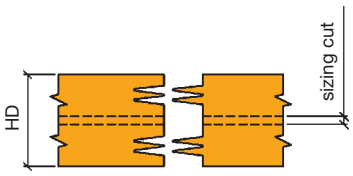




Profile 1 with continuous finger jointing

Profile 2 with staggered shoulder cutters

Profile 3 with shoulder cutters on the same level



Profile 4 with shoulder cutters for splitting

Hydro minifinger cutterhead TurboHawk with curved knives

Application:
For self locking longitudinal joints for non supporting components, e.g. panels and strips.

Machine:
High performance finger joint machines and continuous machines with cut off saw.

Workpiece material:
Softwood; limited suitability for hardwood.

Technical information:
Resharpenable, constant diameter and constant profile tool system with hydro clamping. No machine adjustment required. Particularly suitable for horizontal joints with and without shoulders. Variable for defined wood thicknesses from 15 to 50 mm. The remaining knife seatings must be filled with spacers and a locking nut. Minifinger curved knives with extremely large resharpening area.

With curved knives ZL 6.35 mm (1/4“), TG 3.53 mm
HM 620-2-05

P	D mm	BO mm	$HD_{max.}$ mm	Z	QAL	$n_{max.}$ min^{-1}	ID LL		ID RL	
1	266,67	50	50	5/5	HS	4000	**135524**	□	**135525**	□
2	266,67	50	50	5/5	HS	4000	**135532**	□	**135533**	□
3	266,67	50	50	5/5	HS	4000	**135540**	□	**135541**	□

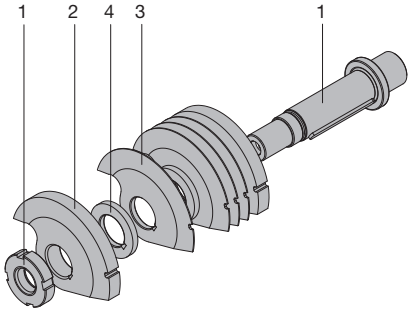
Please note the spindle arrangement. Arrangement for other wood thicknesses on request.

Spare knives:

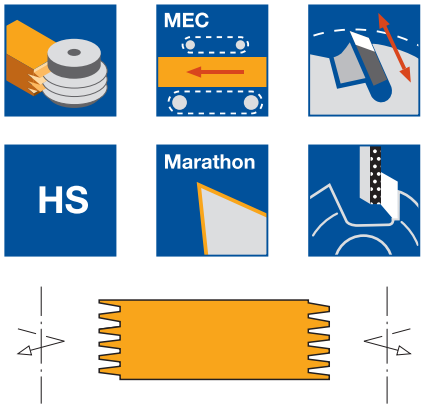
Part-no.	BEZ	ABM mm	ID HS		ID MC	
3	Minifinger knife ZL 6,35	38,1x3,53x19,05, KN	**618202**	●	**618221**	●
2	Shoulder knife	38,1x8,74x19,05, KN	**618252**	●	**618270**	●

Spare parts:

Part-no.	BEZ	ABM mm	ID	
	Setting gauge	D266,67x80	**005377**	●
1	Clamping arbor	HD 50 mm KL 55 mm	**008226**	●
1	Clamping arbor	HD 38 mm KL 43 mm	**008227**	●
1	Clamping arbor	HD 32 mm KL 34,5 mm	**008228**	●
1	Clamping arbor	HD 25 mm KL 29 mm	**008229**	●
	Sickle spanner	34/36 DIN 1810 A	**117510**	●
	Screw driver	SW 6, L50	**117508**	●
4	Filler piece	33x3,53x19,05,KN1,8x4,2	**008224**	●



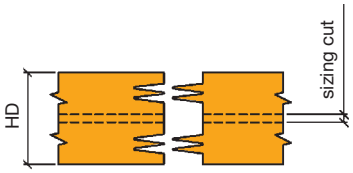
● available ex stock
□ available at short notice
Instruction manual visit www.leitz.org



Profile 1 with continuous finger jointing

Profile 2 with staggered shoulder cutters

Profile 3 with shoulder cutters on the same level



Profile 4 with shoulder cutters for splitting

Hydro minifinger cutterhead TurboHawk with curved knives

Application:
For self locking longitudinal joints for non supporting components, e.g. panels and strips.

Machine:
High performance finger joint machines and continuous machines with cut off saw.

Workpiece material:
Softwood; limited suitability for hardwood.

Technical information:
Resharpenable, constant diameter and constant profile tool system with hydro clamping. No machine adjustment required. Particularly suitable for horizontal joints with and without shoulders. Variable for defined wood thicknesses from 15 to 50 mm. The remaining knife seatings must be filled with spacers and a locking nut. Minifinger curved knives with extremely large resharpening area.

With curved knives ZL 9.52 mm (3/8“), TG 4.3 mm
WM 620-2-05

P	D mm	BO mm	$HD_{max.}$ mm	Z	QAL	$n_{max.}$ min^{-1}	ID LL		ID RL	
1	266,67	50	50	5/5	HS	4000	**135548**	□	**135549**	□
2	266,67	50	50	5/5	HS	4000	**135556**	□	**135557**	□
3	266,67	50	50	5/5	HS	4000	**135564**	□	**135565**	□

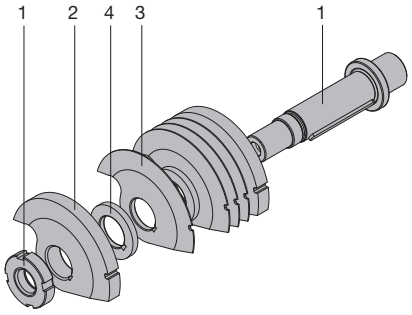
Please note the spindle arrangement. Arrangement for other wood thicknesses on request.

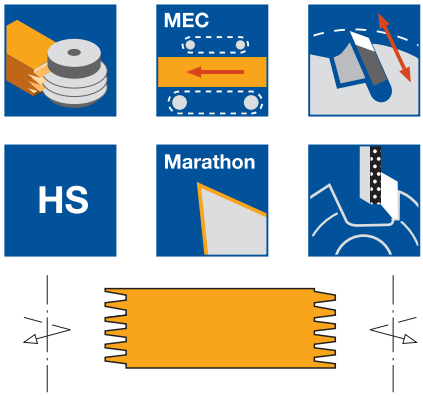
Spare knives:

Part-no.	BEZ	ABM mm	ID HS		ID MC	
3	Minifinger knife ZL 9,52	38,1x4,3x19,05, KN	**618208**	●	**618222**	●
2	Shoulder knife	38,1x9,51x19,05, KN	**618258**	●	**618271**	●

Spare parts:

Part-no.	BEZ	ABM mm	ID	
	Setting gauge	D266,67x80	**005377**	●
1	Clamping arbor	HD 50 mm KL 55 mm	**008226**	●
1	Clamping arbor	HD 38 mm KL 43 mm	**008227**	●
1	Clamping arbor	HD 32 mm KL 34,5 mm	**008228**	●
1	Clamping arbor	HD 25 mm KL 29 mm	**008229**	●
	Sickle spanner	34/36 DIN 1810 A	**117510**	●
	Screw driver	SW 6, L50	**117508**	●
4	Filler piece	33x4,3x19,05,KN1,8x4,2	**008225**	●

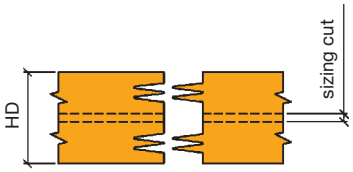




Profile 1 with continuous finger jointing

Profile 2 with staggered shoulder cutters

Profile 3 with shoulder cutters on the same level



Profile 4 with shoulder cutters for splitting

Hydro minifinger cutterhead TurboHawk with curved knives

Application:
For self locking longitudinal joints for non supporting components, e.g. panels and strips.

Machine:
High performance finger joint machines and continuous machines with cut off saw.

Workpiece material:
Softwood; limited suitability for hardwood.

Technical information:
Resharpenable, constant diameter and constant profile tool system with hydro clamping. No machine adjustment required. Particularly suitable for horizontal joints with and without shoulders. Variable for defined wood thicknesses from 15 to 50 mm. The remaining knife seatings must be filled with spacers and a locking nut. Minifinger curved knives with extremely large resharpening area.

With curved knives ZL 10/11 mm, TG 3.8 mm
HM 620-2-05

P	D mm	BO mm	$HD_{max.}$ mm	Z	QAL	$n_{max.}$ min^{-1}	ID LL		ID RL	
1	266,67	50	50	5/5	HS	4000	**135500**	□	**135501**	□
2	266,67	50	50	5/5	HS	4000	**135508**	□	**135509**	□
3	266,67	50	50	5/5	HS	4000	**135516**	□	**135517**	□

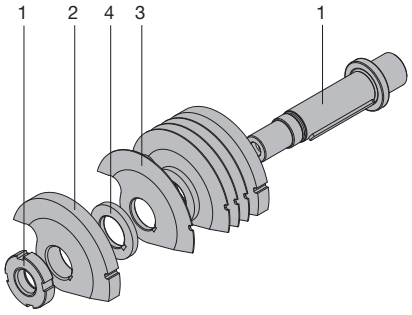
Please note the spindle arrangement. Arrangement for other wood thicknesses on request.

Spare knives:

Part-no.	BEZ	ABM mm	ID HS		ID MC	
3	Minifinger knife ZL 10/11	38,1x3,8x19,05, KN	**618200**	●	**618220**	●
2	Shoulder knife	38,1x11,4x19,05, KN	**618250**	●	**618269**	●

Spare parts:

Part-no.	BEZ	ABM mm	ID	
	Setting gauge	D266,67x80	**005377**	●
1	Clamping arbor	HD 50 mm KL 55 mm	**008226**	●
1	Clamping arbor	HD 38 mm KL 43 mm	**008227**	●
1	Clamping arbor	HD 32 mm KL 34,5 mm	**008228**	●
1	Clamping arbor	HD 25 mm KL 29 mm	**008229**	●
	Sickle spanner	34/36 DIN 1810 A	**117510**	●
	Screw driver	SW 6, L50	**117508**	●
4	Filler piece	33x3,8x19,05,KN1,8x4,2	**008223**	●



● available ex stock
□ available at short notice
Instruction manual visit www.leitz.org

WF 624-2
Disc cutter, minifinger profile with and without shoulders

Minifinger disc cutter tipped with HW or DP cutting edges. Variable arrangement for defined wood thicknesses, with or without shoulder cutter, mounted on screwed sleeve as tool set.

Application

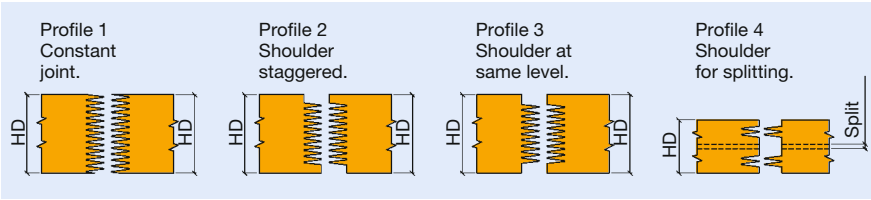
For self locking longitudinal joints for precise measured components, e. g. finger joint solid wood panels, all kinds of mouldings, floors, parquet, stair and furniture parts, especially narrow mouldings.
Finger jointing lines with cut off saw for high feed speeds.

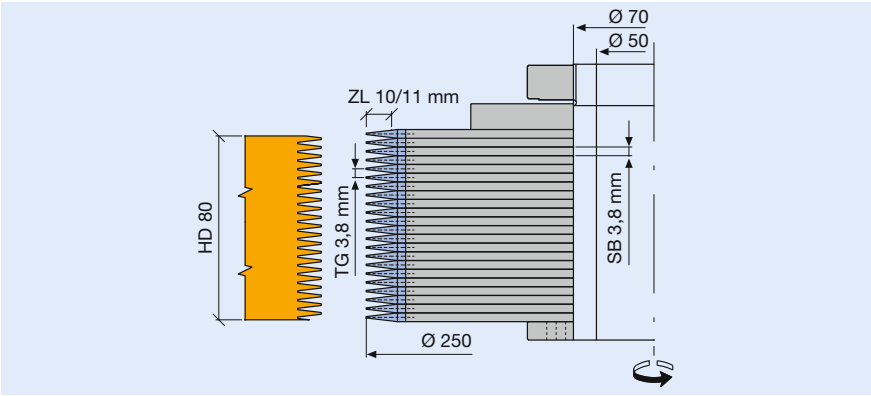
Cutting material

HW, DP.

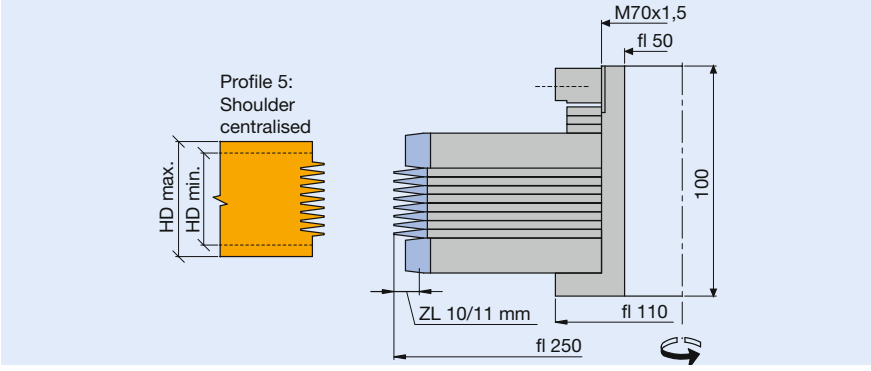
Resharpening area

HW = 3.5 mm, DP = 3-5 times resharpenable.

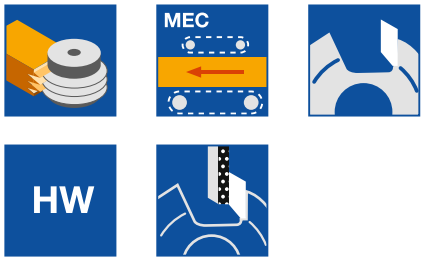


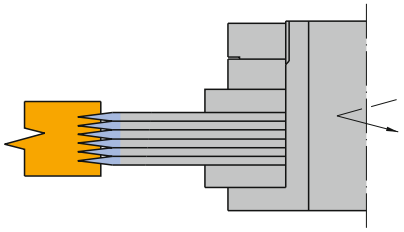


22 HW disc cutter for 80 mm wood thickness

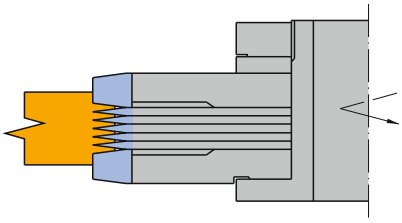


Minifinger shoulder cutter set with 8 finger

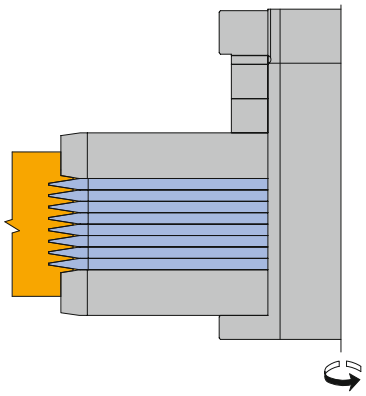




Minifinger joint cutterset without shoulder cutters



Minifinger joint cutterset with shoulder cutters P3



Minifinger joint cutterset with shoulder cutters P5

Minifinger disc cutter, HW with and without shoulder cutter

Application:
For self locking longitudinal joints for non supporting components, e.g. panels and strips.

Machine:
Finger joint machines with cut off saws.

Workpiece material:
Hardwood and abrasive tropical wood.

Technical information:
HW tipped cutters. Tool body thickness corresponds to finger pitch. Particularly suitable for horizontal joints with and without shoulders. Variable design for defined wood thicknesses from 15 to 80 mm. Suitable for small wood thicknesses. Resharpening area 3.5 mm.

HW, ZL 10/11 mm, TG 3.8 mm
WF 624-2, WF 621-2

Tool Type	D mm	SB mm	BO mm	Z	$n_{max.}$ min^{-1}	ID	
Minifinger joint cutter	160	3,8	70	2	9000	**022200**	●
Minifinger joint cutter	160	3,8	70	4	9000	**021511**	●
Minifinger joint cutter	250	3,8	70	6	6000	**021513**	●
Shoulder cutter	159,8	15,2	70	4	9000	**021762**	●
Shoulder cutter P3	249,7	15,2	70	6	6000	**021764**	●
Shoulder cutter P5	239,7	15,2	70	6	6000	**022153**	●
Shoulder cutter P5	239	15,2	70	6	6000	**022154**	□

HW, ZL 10/11.5 mm, TG 4.0 mm
WF 624-2, WF 621-2

Tool Type	D mm	SB mm	BO mm	Z	$n_{max.}$ min^{-1}	ID	
Minifinger joint cutter	160	4	70	2	9000	**021509**	●
Minifinger joint cutter	160	4	70	4	9000	**021517**	
Shoulder cutter	159,8	16	70	4	9000	**021769**	

HW, ZL 10/11.5 mm, TG 4.0 mm, up to wood thickness 50 mm
WF 624-2, WF 621-2

Tool Type	D mm	SB mm	BO mm	Z	$n_{max.}$ min^{-1}	ID	
Minifinger joint cutter	160	4	70	2	9000	**022203**	●
Shoulder cutter	159,9	16	70	2	9000	**022204**	●

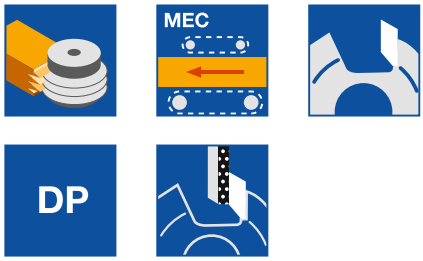
Clamping element with threaded nut
TB 270-0

D mm	BO mm	NL mm	GL mm	ID LL		ID RL	
70	50	120	146	**029694**	●	**029695**	●
70	50	80	110	**029472**	●	**029473**	●

Spare parts:

BEZ	ABM mm	D mm	ID	
Mounting arbor	D100	50	**079007**	●
Sickle spanner adjustable	D90/155; L290; DIN1816; tenon 6		**005462**	●

● available ex stock
□ available at short notice
Instruction manual visit www.leitz.org



Minifinger disc cutter, DP with and without shoulder cutter

Application:
For self locking longitudinal jointings of non supporting components, e.g. sollid wood panels, friezes and strips.

Machine:
Finger joint machines with cut off saws.

Workpiece material:
Hardwood and abrasive tropical wood, wood derived material e.g. chipboard, MDF, HDF etc.

Technical information:
DP tipped cutters. High strength steel tool body. Tool body thickness corresponds to the finger pitch. Suitable for horizontal joints with and without shoulders. Variable design for defined wood thicknesses of 15 to 80 mm. 3 - 5 times resharpenable.

DP, ZL 10/11 mm, TG 3.8 mm
WF 625-2-DP

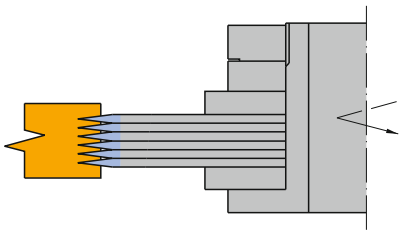
Tool Type	D mm	SB mm	BO mm	Z	$n_{max.}$ min^{-1}	ID	
Minifinger joint cutter	160	3,8	70	2	9000	**192542**	□
Minifinger joint cutter	160	3,8	70	4	9000	**192543**	□
Minifinger joint cutter P3	160	11,4	70	4	9000	**192544**	□
Minifinger joint cutter	250	3,8	70	6	6000	**192545**	□
Minifinger joint cutter P3	250	11,4	70	6	6000	**192546**	□

DP, ZL 10/11 mm, TG 4.0 mm
WF 625-2-DP

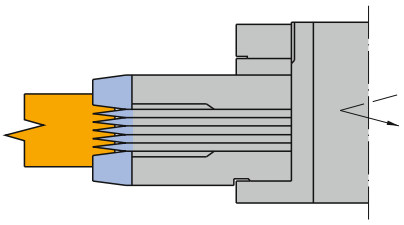
Tool Type	D mm	SB mm	BO mm	Z	$n_{max.}$ min^{-1}	ID	
Minifinger joint cutter	160	4	70	2	9000	**192547**	□
Minifinger joint cutter	160	4	70	4	9000	**192548**	□
Minifinger joint cutter P3	160	10	70	4	9000	**192549**	□
Minifinger joint cutter	250	4	70	6	6000	**192550**	□
Minifinger joint cutter P3	250	10	70	6	6000	**192551**	□

Spacers
TR 100-0

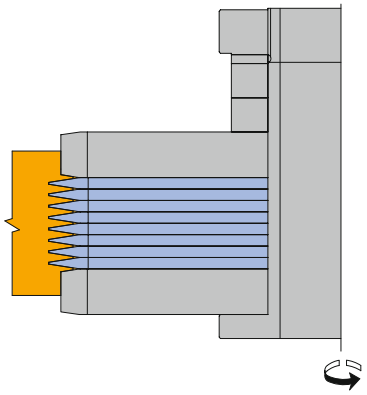
D mm	B mm	BO mm	TG	ID	
100	3,8	70	3,8	**028437**	●
100	11,4	70	3,8	**028450**	●
100	15,2	70	3,8	**028439**	●
100	4,0	70	4	**028438**	●
100	16,0	70	4	**028441**	



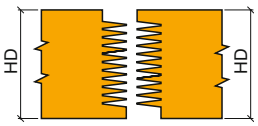
Minifinger joint cutterset without shoulder cutters



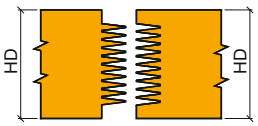
Minifinger joint cutterset with shoulder cutters P3



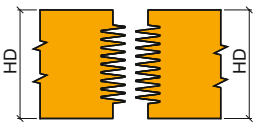
Minifinger joint cutterset with shoulder cutters P5



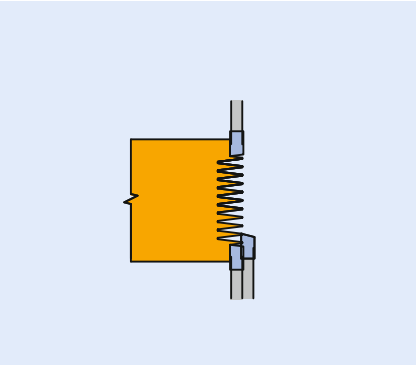
Profile 3



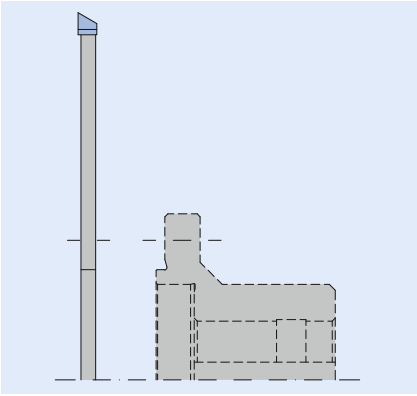
Profile 3

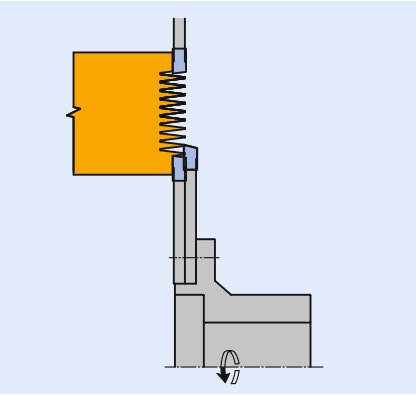


Profile 5 with half-shoulder



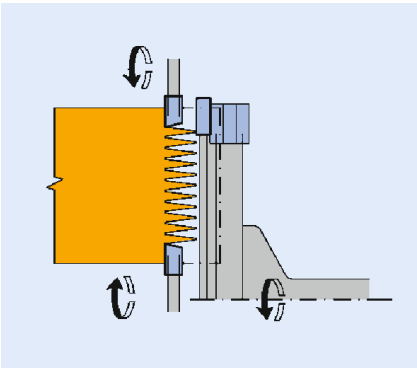
Process step	Scoring across grain against feed
Workpiece materials	Soft and hardwood, wood derived material
Cutting material	HW
Machines	Finger jointing lines with scoring and cut off saw
Application	Scoring minifingers with shoulders
Tool design **Scoring saw**	HW scoring sawblade, possibly double scoring sawblade mounted on flanged sleeve with bevel one side tooth shape



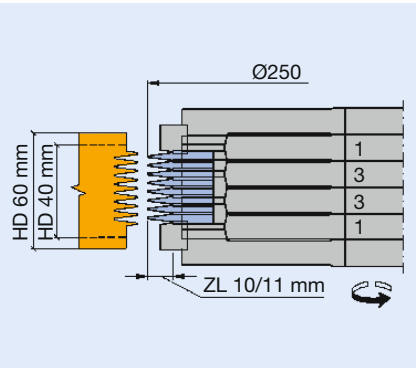


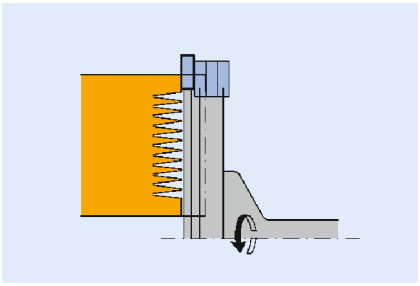
Double scorer scoring shoulders with minifinger joint cutters.

Advantage	Bevel one side teeth used with feed, for cleaner, tear out-free shoulders.



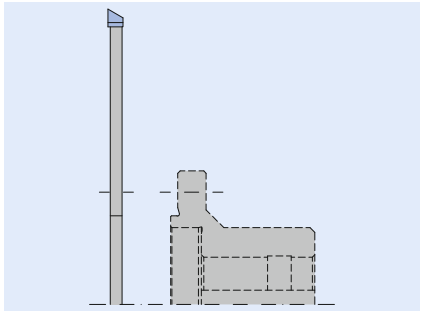
Hogger and scorer for trimming the minifinger joints and scoring the shoulder joint.



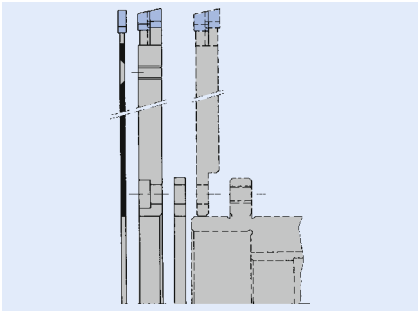


Hogger for trimming minifingers.

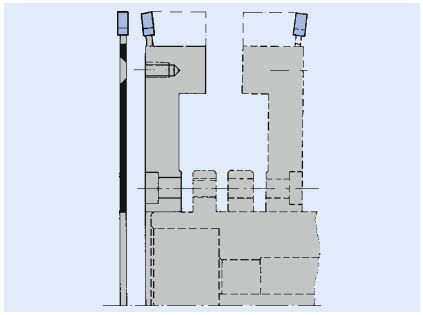
Process step	Hogging across grain
Workpiece materials	Soft- and hardwood, wood derived material
Cutting material	HW
Machines	Finger jointing lines with cut off saw
Application	Trimming mini fingers
Cutting width	Saw hogger 6.35 mm Hogger 12 mm Segment hogger 10 – 25 mm
Tool design	



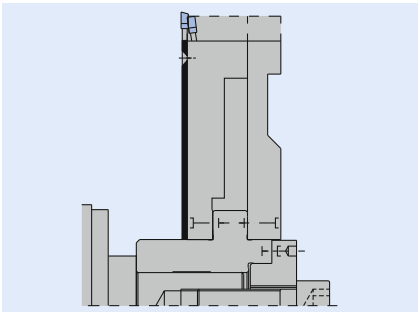
Saw hogger
HW circular sawblade mounted directly on flanged sleeve, bevel one side teeth



Saw hogger
HW circular sawblade with hogger discs mounted on flanged sleeve

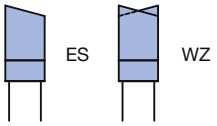


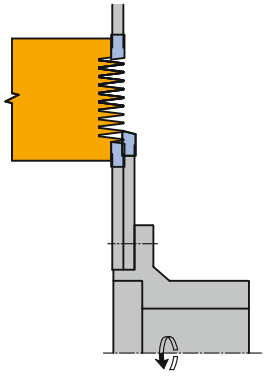
Segment hogger
HW circular sawblade with segmental tool body mounted on flanged sleeve



Tool set for edging station mounted on flanged sleeve

Advantage	One side bevel HW teeth for clean, tear out free end grain





Single/double scorer for scoring of shoulder and minifinger points.

Scorer for shoulder minifinger joints

Application:
For scoring before the trimming hogger or for machining the face edge of shoulder joints.

Machine:
Short length finger joint machines with trimming and scoring.

Workpiece material:
Softwood, hardwood and wood derived materials

Technical information:
Single sided bevel tooth shape reduces tear outs; with shear angle on request. Particularly suitable for scoring the shoulders on short length finger joint machines with feed. Tear free shoulders guaranteed. Double scorer prevents tear outs on the finger tips.

Single scoring saw mounted on flanged sleeve
SK 499-2

D mm		SB mm	BO mm	Z	ZF	QAL	$n_{max.}$ min^{-1}	ID LL		ID RL	
200	*	4,75	40 KN	64	ES	HW	7200	**061970**	●	**061974**	●
200		4,75	40 KN	64	ES	HW	7200	**061982**	●	**061983**	●
200		6	40 KN	48	WZ	HW	7200	**061975**	●	**061976**	●

* with shear angle

Double scoring saw mounted on flanged sleeve
SK 499-2

D mm	SB mm	BO mm	Z	ZF	QAL	$n_{max.}$ min^{-1}	ID LL		ID RL	
200	6 - 12,8	40 KN	48	WZ	HW	7200	**061978**	●	**061979**	●
200	5,5 - 11	40 KN	48	ES	HW	7200			**061971**	●

Circular sawblade for single scoring saw
WK 801-2, WK 850-2

D mm		SB mm	BO mm	Z	ZF	NLA mm	QAL	$n_{max.}$ min^{-1}	ID LL		ID RL	
200	*	4,75	75	64	ES	6NL TK95	HW	7200	**061968**	●	**061969**	●
200		4,75	75	64	ES	6NL TK95	HW	7200	**061984**	●	**061985**	●
200		6	75	48	WZ	6NL TK95	HW	7200	**061977**	●	**061977**	●

* with shear angle

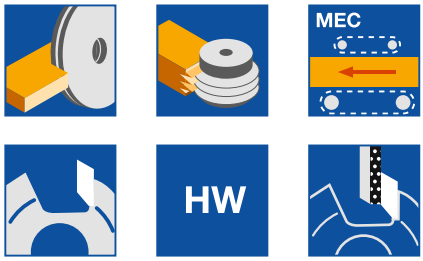
Circular sawblade for double scoring saw
WK 101-2, WK 850-2

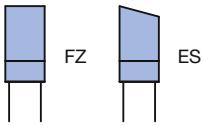
D mm	SB mm	BO mm	Z	ZF	NLA mm	QAL	$n_{max.}$ min^{-1}	ID LL		ID RL	
193	6	75	48	WZ	6NL TK95	HW	7200	**061981**	●	**061981**	●
200	5,5	75	48	ES	6NL TK95	HW	7200			**061972**	●
190	5,5	75	48	ES	6NL TK95	HW	7200			**061973**	●

Flanged sleeve

D mm	BEM	L mm	BO mm	ID
80	3 mm clamping length	61	40 KN	**065605**
80	9 mm clamping length	61	40 KN	**061680**

● available ex stock
□ available at short notice
Instruction manual visit www.leitz.org





Hogger for trimming minifingers

Application:
Defined trimming in front of the finger cut for adjusting the finger fit. Tear free sizing along the grain and across the grain, for working against the feed only with scoring sawblade.

Machine:
Finger joint machines with cut off saw, double end tenoner.

Workpiece material:
Solid wood and wood derived materials.

Technical information:
Steel tool body with HW circular sawblade and hogger elements mounted on flanged sleeve. Can be extended for larger hogger widths. Single sided bevel tooth shape reduces tear outs.

Steel hogger set, mounted on flanged sleeve
SZ 211-2

D mm	SB mm	BO mm	Z	BEM	QAL	ID LL		ID RL	
251	15,6	40	54 (9/9)	KNH	HW	**062608**	●	**062609**	●

Basic hogger - steel tool body without flanged sleeve
WZ 210-2-01

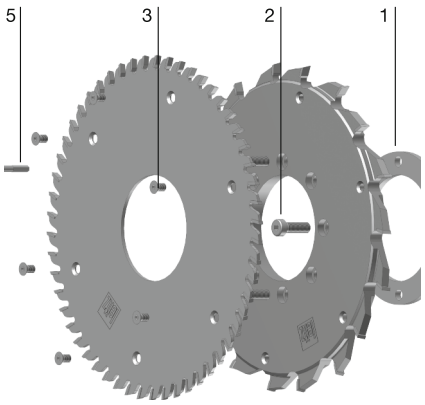
BEZ	ABM mm	QAL	Z	ID LL		ID RL	
Basic hogger	251x12x80	HW	18	**062602**	●	**062603**	●
Basic hogger	301x12x80	HW	24	**062604**	●	**062605**	●

Additional hogger - steel tool body
WZ 210-2-02

D mm	SB mm	BO mm	Z	QAL	ID LL		ID RL	
251	80	12	18	HW	**062652**	●	**062653**	●
251	80	12	24	HW	**062654**	●	**062655**	●

Circular sawblade
WK 800-2-09, WK 800-2-38, WK 801-2, WK 801-2-05

D mm	SB mm	BO mm	Z	ZF	QAL	ID LL		ID RL	
250	4,4	80	54	FZ	HW	**061825**	●	**061826**	●
250	4,4	80	54	ES	HW	**061837**	●	**061838**	●
250	4,4	80	72	FZ	HW	**061945**	●	**061946**	●
260	4,4	80	54	ES	HW	**061858**	●	**061859**	●
260	4,4	80	72	ES	HW	**061860**	●	**061861**	●
300	4,4	80	48	FZ	HW	**061827**	●	**061828**	●
300	4,4	80	72	FZ	HW	**061949**	●	**061950**	●
300	4,4	80	48	ES	HW	**062028**	●	**062029**	●

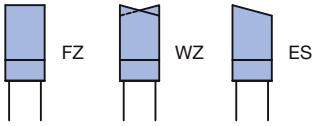


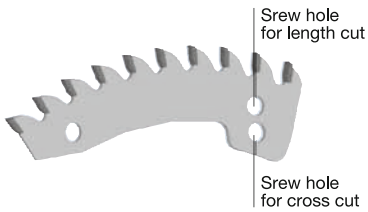
Spare parts:

Part-no.	BEZ	ABM mm	BEM	ID	
1	Spacer	115x5x80		**028046**	●
2	Cylindrical screw with ISK	M8x20		**005946**	●
3	Countersink screw, Torx® 20	M6x10	Torx® 20	**006083**	●
4	Screw with ISK	M8x17	for D = 250/350/305/355	**006237**	●
5	Allen Key	SW 6		**005494**	●
6	Torx® key	Torx® 20		**117503**	●

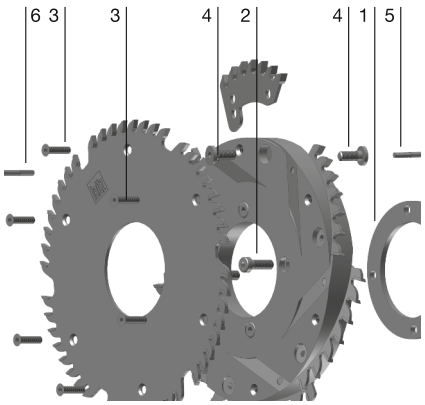
● available ex stock
□ available at short notice
Instruction manual visit www.leitz.org

HW





Spare segments for segment hogger



Segment hogger for trimming minifingers

Application:
Defined trimming in front of the finger cut for adjusting the finger fit. Tear free sizing along the grain and across the grain, for working against the feed only with scoring sawblade.

Machine:
Finger joint machines with cut off saw, double end tenoners.

Workpiece material:
All solid wood, chipboard and fibre materials (MDF ect. uncoated, veneered, plastic and paper coated).

Technical information:
Steel tool body with HW circular sawblade and segment hogging elements. Staggered cut through six hogger segments. Mounted on flanged sleeve. Can be extended for larger hogging width. Single sided bevel tooth shape to improve the cutting quality and to reduce tear outs.

Segment hogging set, mounted on flanged sleeve
SZ 301-2

D mm	SB mm	BO mm	Z	ZF	QAL	DRI	ID
250	29,6	40 KN	48	ES	HW	LL	**064722**
250	29,6	40 KN	48	ES	HW	RL	**064723**

Steel basic and extension hoggers without flanged sleeve
WZ 300-2

D mm	SB mm	BO mm	Z	ZF	QAL	ID LL	ID RL
350	36,5	30	6x10	FZ	HW	**064414** ●	**064415** ●
300	31,5	30	6x9	FZ	HW	**064412** ●	**064413** ●
250	26,0	80	6x7	FZ	HW	**064410** ●	**064411** ●

Spare circular sawblade for segment hogging set
WK 800-2-46, WK 800-2-45, WK 801-2, WK 850-2-45

D mm	SB mm	BO mm	Z	ZF	QAL	ID LL	ID RL
250	4,4	80	48	ES	HW	**061878** ●	**061879** ●
350	3,2	30	66	WZ	HW	**058223** ●	**058224** ●
300	3,2	30	54	WZ	HW	**058221** ●	**058222** ●
300	4,4	30	66	FZ	HW	**061055** ●	**061056** ●
300	4,4	30	42	FZ	HW	**061833** ●	**061834** ●
260	4,4	80	66	ES	HW	**061965** ●	**061966** ●
260	4,4	80	48	ES	HW	**061963** ●	**061964** ●
250	3,2	80	42	WZ	HW	**058219** ●	**058220** ●
250	4,4	80	66	FZ	HW	**061953** ●	**061954** ●
250	4,4	80	48	FZ	HW	**061831** ●	**061832** ●

Spare segments for segment hogger

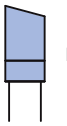
BEZ	ABM mm	SB mm	QAL	ZF	Z	DRI	ID
Hogging segment	D 250	5,7	HW	FZ	7	LL	**064958** ●
Hogging segment	D 300	5,7	HW	FZ	9	RL	**064961** ●
Hogging segment	D 300	5,7	HW	FZ	9	LL	**064960** ●
Hogging segment	D 250	5,7	HW	FZ	7	RL	**064959** ●
Hogging segment	D 350	5,7	HW	FZ	10	RL	**064963** ●
Hogging segment	D 350	5,7	HW	FZ	10	LL	**064962** ●

● available ex stock
□ available at short notice
Instruction manual visit www.leitz.org

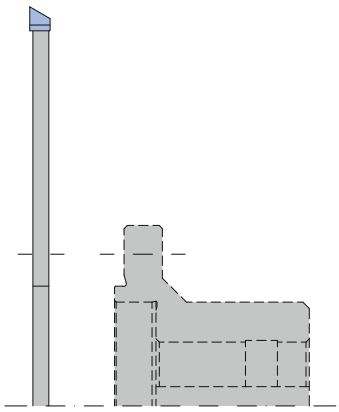
Spare parts:

Part-no.	BEZ	ABM mm	BEM	ID	
1	Spacer	115x5x80		**028046**	●
2	Cylindrical screw with ISK	M8x20		**005946**	●
3	Countersink screw, Torx® 20	M6x10	Torx® 20	**006083**	●
4	Screw with ISK	M8x17	for D = 250/350/305/355	**006237**	●
5	Allen Key	SW 6		**005494**	●
6	Torx® key	Torx® 20		**117503**	●

HW



ES



Sawblade hogger
HW circular sawblade mounted on flanged sleeve, tooth shape single sided bevel

Sawblade hogger for trimming minifingers

Application:
Defined trimming in front of the finger cut for adjusting the finger fit on exactly right angled cut working pieces.

Machine:
Finger joint machine with cut off saw, double end tenoners.

Workpiece material:
Solid wood and wood derived materials.

Technical information:
HW circular sawblades with high number of teeth. Single sided bevel tooth shape to improve the cut quality and reduce tear outs. For high concentricity mount on flanged sleeve as a unit on the motor spindle.

Sawblade hogger mounted on flanged sleeve
SK 999-2

D mm	SB mm	BO mm	Z	ZF	QAL	ID LL	ID RL
250 *	6,35	40 KN	80	ES	HW	**062610**	**062611**
250	8,0	40 KN	54	ES	HW	**062612**	**062613**
350	10,0	40 KN	72	ES	HW		**062616**
250	29,6	40 KN	48	ES	HW	**064722**	**064723**

*with shear angle

Circular sawblade for sawblade hogger
WK 801-2

D mm	SB mm	BO mm	Z	ZF	BEM	QAL	DRI	ID	
250 *	6,35	75	80	ES	6NL TK 95	HW	LL	**062606**	●
250 *	6,35	75	80	ES	6NL TK 95	HW	RL	**062607**	●
250	8,0	80 KN	54	ES	6NL TK 200	HW	LL	**062614**	
250	8,0	80 KN	54	ES	6NL TK 200	HW	RL	**062615**	
350	10	80 KN	72	ES	6NL TK 195	HW	RL	**062617**	

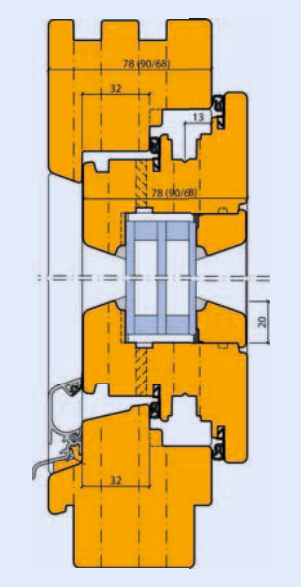
*with shear angle

Flanged sleeve for hoggers

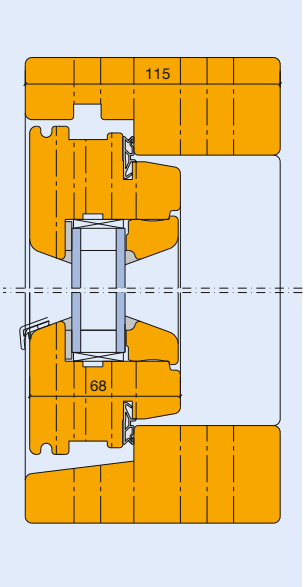
D mm	L mm	BO mm	ID	
80	59	40 KN	**061679**	●
80	61	40 KN	**065605**	

International window systems

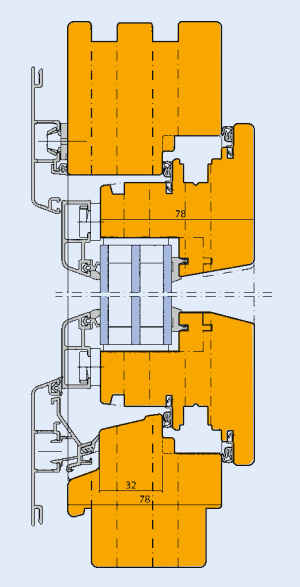
There are many window systems around the world which have developed because of different climatic conditions. Accordingly, todays window systems have country-specific characteristics and differ in individual details to differentiate them from rival window makers. As well as typical hand tools, wooden windows are produced using special continuous machines and stationary machines which differ in production output and flexibility. The increasing demand for a wide range of different designs for low energy and passive house windows or wooden and wooden/aluminium windows and external house doors needs customer specific tool designs and machine layouts. This is why profiles are often no longer produced by full profile tools but in successive working steps with profile splitting.



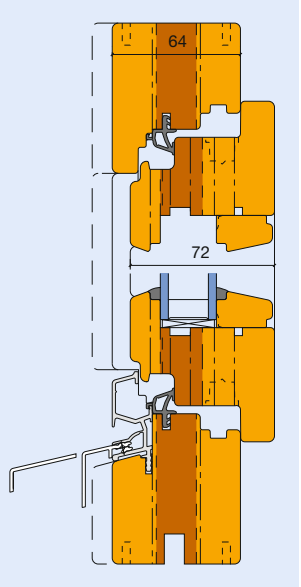
IV window “ClimaTrend”
Typical of Germany, Austria, Baltic countries and Asia.



IV window single rebate, opening outwards, no rain protection strip.
Typical of Scandinavia and Baltic countries.



Wood/aluminium window “ClimaTrend”
Typical of Germany, Austria, Baltic countries and Asia.



IV window “Minergie”, compound frame, low-energy window.
Typical of Switzerland.

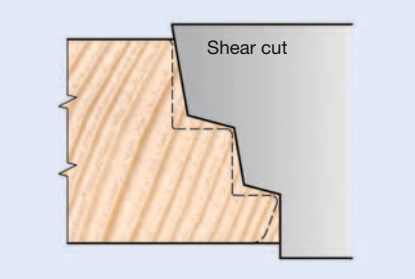
Tool systems and machining technology

Depending on the volume and required flexibility, Leitz offers two highly efficient tool systems for window production, ProFix and ProfilCut.

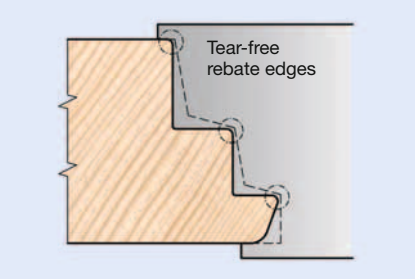
ProFix and ProFix C, the resharpenable constant diameter and profile tool with multiple tool lives is ideal for high production or if profile flexibility is required.

ProfilCut, the throw away knife system, when the production volume does not justify a resharpenable system or the local infrastructure does not have a resharpening capability.

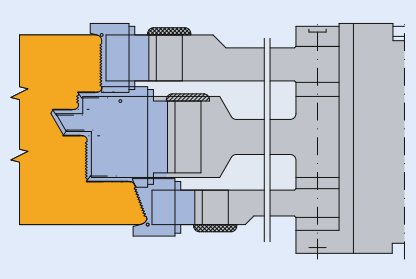
Cutting technologies developed specifically for wooden windows such as “RipTec” or bevel relieving of rebates and tool sets designed for machine specific characteristics give full machine utilisation and excellent machining quality, so the machines are operated with high productivity.



Bevel pre-relieving to prevent splintering at the rebate edge.



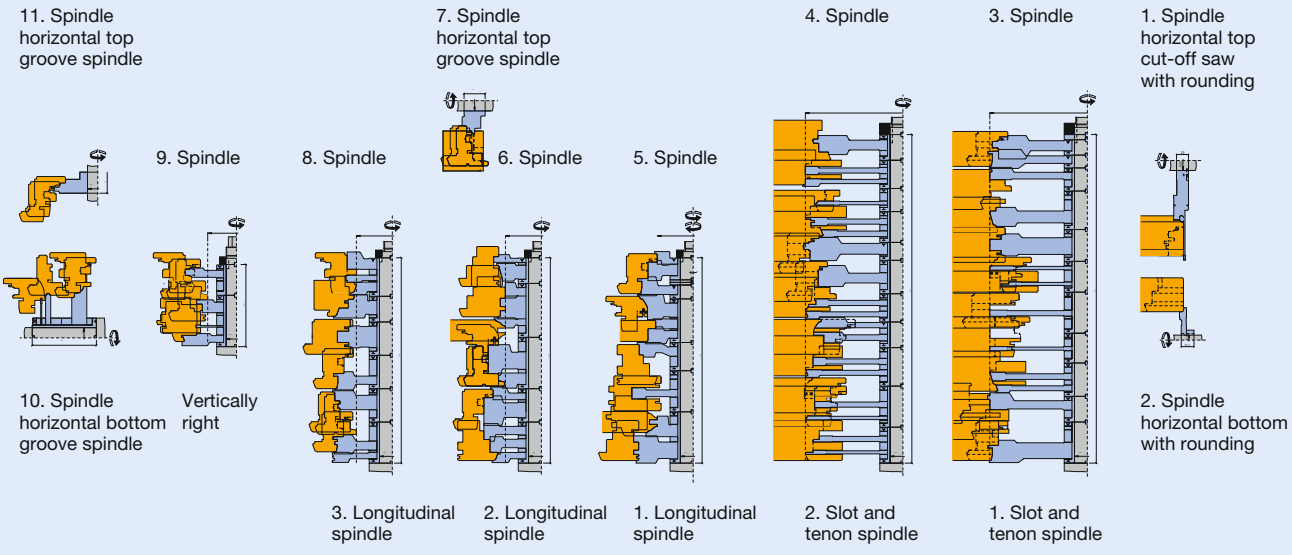
Rebate cutting.



Tool set for counter profile
in RipTec design
Patent No. DE 10 2006 040 901

Leitz window tool systems ProFix, ProFix C and ProfilCut.

Process layout



Tool layout for a window machine using profile splitting.

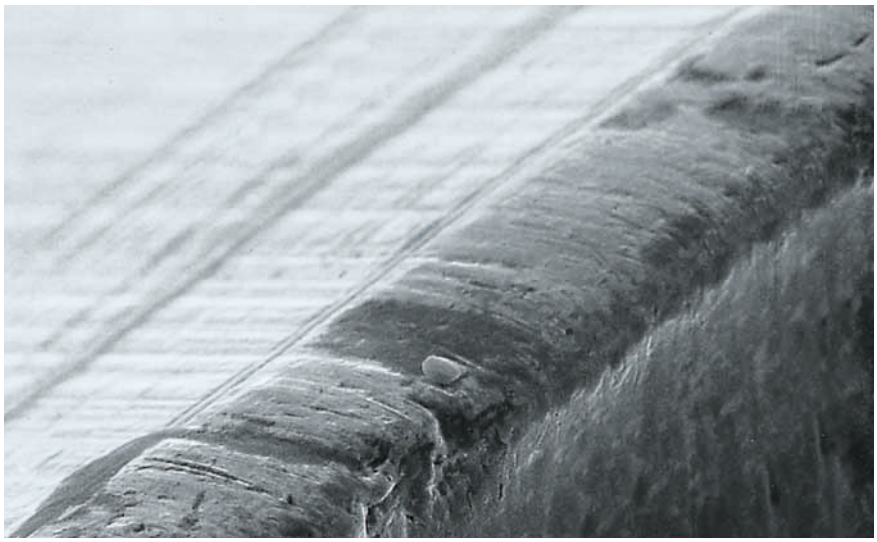
Leitz tooling systems are described in detail in section 11.
You will find detailed information about “Window production” in our special industry brochures.
Machining solutions for producing glazing beads and mouldings can be found on page 254.

Our window specialists will be happy to help you with your projects.

Problem	Possible cause	Action
Surface defect Cutting size	– RPM too low	Increase RPM and thus cutting speed increase tool diameter
	– Wrong angle geometry	Measure, change tool
	– Spindle and tool tolerances too high	Check motor bearing and tolerances
	– Tool unbalance	Check and re-balance
	– Cutting speed too high (no chip formation), relation feed to number of teeth not adequate	Increase feed speed, Reduce number of teeth and RPM
	– Number of teeth too low, feed to high	Match number of teeth and feed speed
Wavy, rough surface	– Workpiece transport not consistent	Check feed speed and/or transport equipment
	– Infeed rollers with insufficient pressure or worn	Increase pressure of in feed rollers and recut serrations
	– Workpiece too thin or too short	Observe the machine manufacturer guidelines
	– Chip removal too high	Use for several working steps or pre relieve
	– Resin built up on tool, tool is blunt	Remove resin or resharpen
Surface defect Burn marks	– Cutting speed too high	Reduce cutting speed
	– Relation feed speed to number of teeth not adequate	Match number of teeth and feed speed
	– Tool continues to rotate against station dry standing workpiece	Provide for continuous feed
Surface defect Tear outs	– Wood moisture too low	Check drying control
	– Wood with many branches (loose branches)	Optimisation with crosscut saws and longitudinal joints
Surface defect Chip marks	– Angle geometry not matched to workpiece material	Check and adjust and/or new tool
	– Gap between knife and clamping element	Clean and carefully mount clamping element and knives
	– Gullet too small	Check and increase
	– Extraction hood and extraction not suitable	Contact machine manufacturer to clarify
	– Extraction performance insufficient in tool area	Guideline: 30 m s^{-1} air supply speed
Profile defect Workpiece – Angle error – uneven	– Tool set profiles not the same, e. g. sets with feed/against feed	Check and match tool sets
	– Stacked spindle positioned in feed direction or not at right angle to table	Check angle with clock gauge on vertically running spindle in two planes
	– Support table and fence worn out	Reprocess and/or replace support table and fence
	– Angle tolerance between support table and fence too big or fence and process edge not correctly adjusted	Check and adjust angles, align plane from fence to process edge including tool
Motor power Feed speed	– High resin built up on tool, tool blunt	Remove resin from tool and resharpen more frequently
	– Tool gullet too small	Check and increase
	– Cutting angle too small	Adjust or new tool
	– Cutting across grain too deep	Use several working steps or pre cut

Wear of HS cutting edges
When planing solid wood (soft-, hardwood) the HS cutting edges are subject to mechanical and chemical wear.
This leads to blunting of the cutting edges and will consequently affect the quality of the wood surface.

Significant blunting requires considerably more work when resharpening the knives and reduces the number of possible resharpens.



Wear of HS cutting edges.

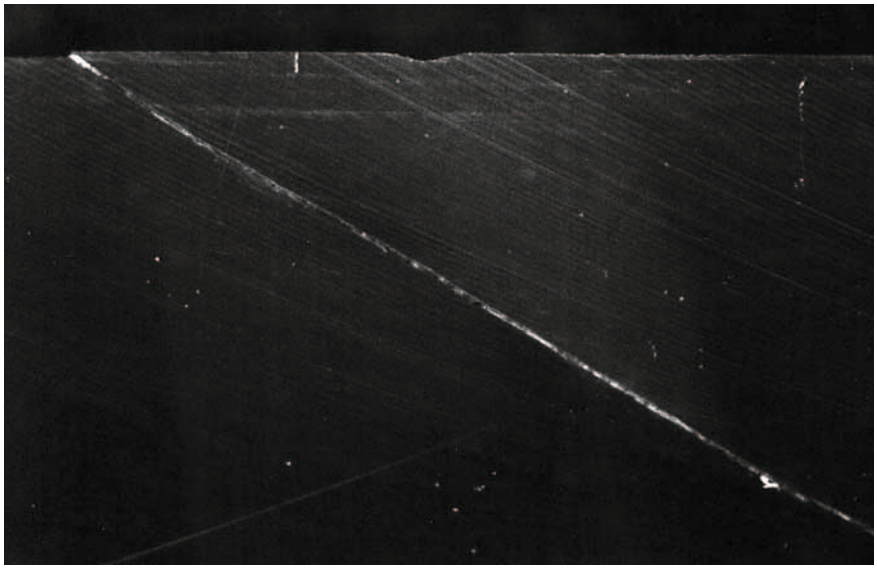
Pitting wear at the face HS
Chemical wear can be very high because of the consistency of the wood, e. g. machining wet wood, can lead to pitting of the face.

The pitting weakens the cutting edge and results in chipping/breakage.

Pitting wear.

Destruction of HW cutting edges
Too large knife projection or tipping material overhang will result in breakages when machining very hard wood.
Too large projection of carbide tipped planer knives, plus a low cutting angle can overstress the knife when machining very hard timber.
This can result in hairline cracks or knife breakages.

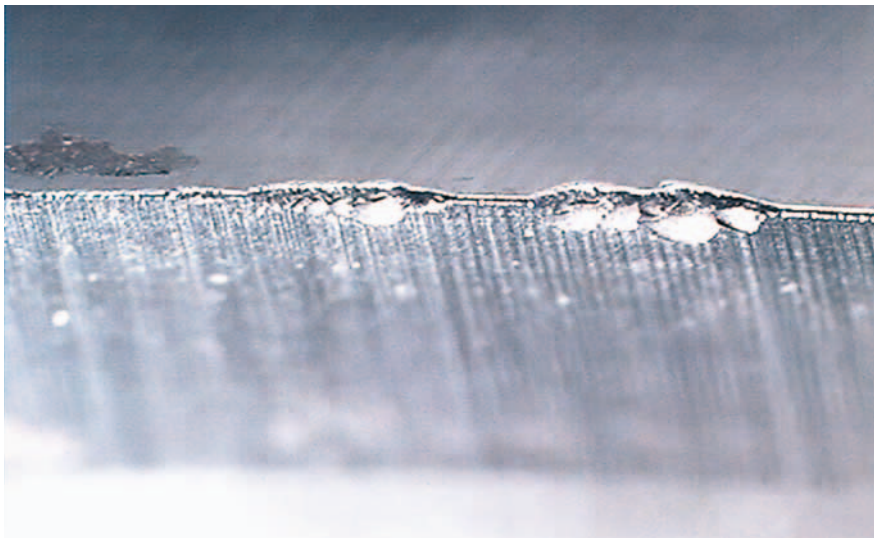
The maximum knife projection, angle geometry and minimum clamping length given in the handling instructions must be adhered to.



Destruction of HW cutting edges.

Cutting edge fractures
Dull cutting edges, unbalancing or weak feed pressure can create vibrations in the machine, especially when machining very hard materials.

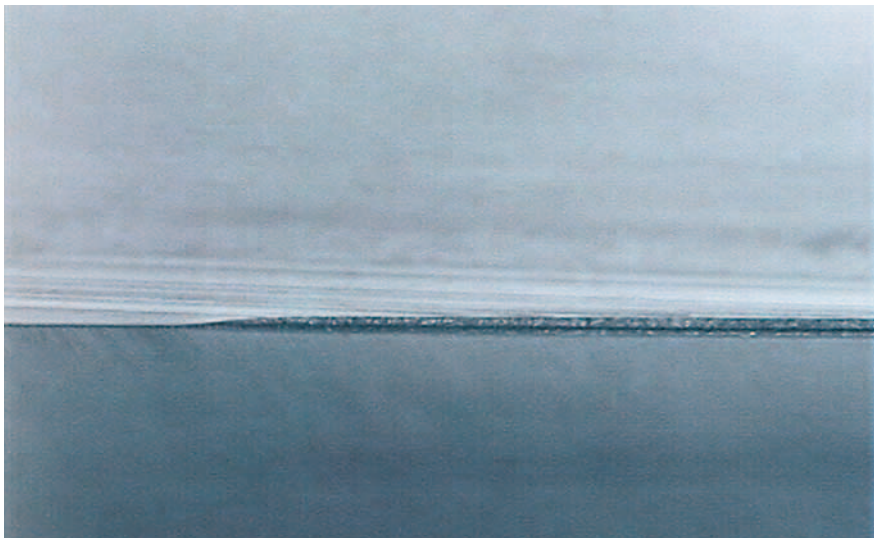
An uneven cutting force can result in chipping to the cutting edge. When tools are in constant use, it is important the tools are sharpened frequently and not allowed to become too blunt.
A higher cutting angle may help.



Cutting edge fractures.

Wear to HW cutting edges
The photograph shows the wear of a uniformly blunt cutting edge.

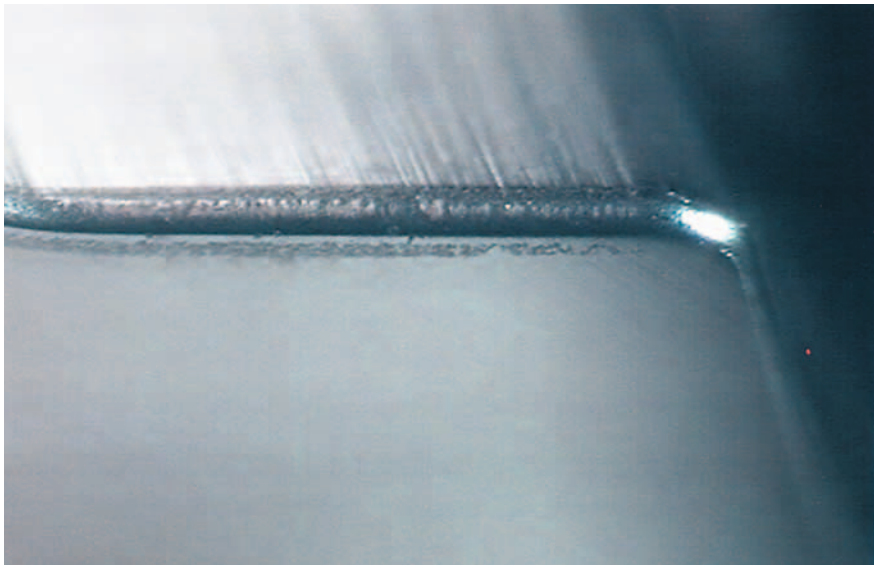
The cutting edge can be resharpened without a significant material loss. This increases the overall performance time of the tool.



Wear of HW cutting edges.

Too much wear to cutting edges
When the cutting edges are very blunt, the cutting force becomes too high, the surface quality deteriorates, resulting in additional resharpening and loss of tool life.

If the cutting edge is not resharpened correctly, the performance time is reduced, resulting in cutting edge fractures.

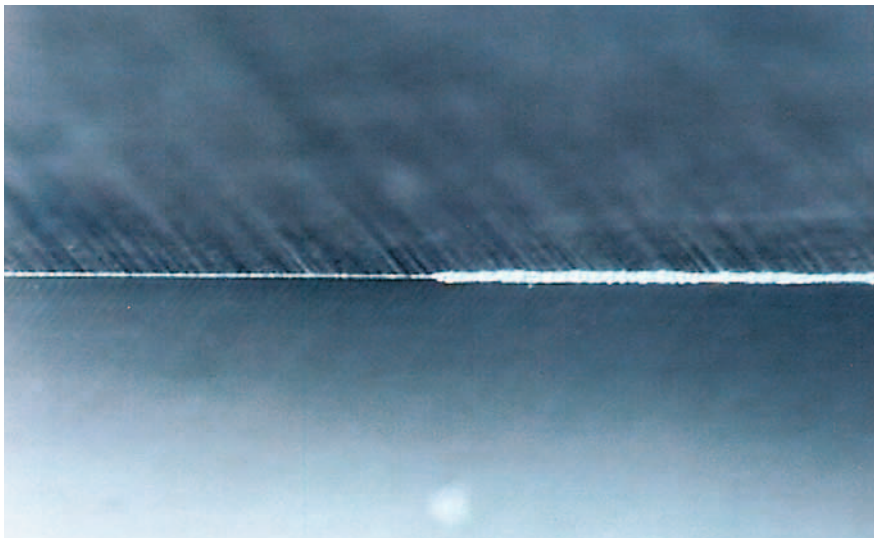


Too much wear on cutting edges.

Cutting edge abrasion
For largely homogenised materials, mechanical wear will lead to continuous rounding of the cutting edges.

The quality of the surface determined the level of abrasion and should normally be, as a guideline, between 0.2 to 0.3 mm maximum.

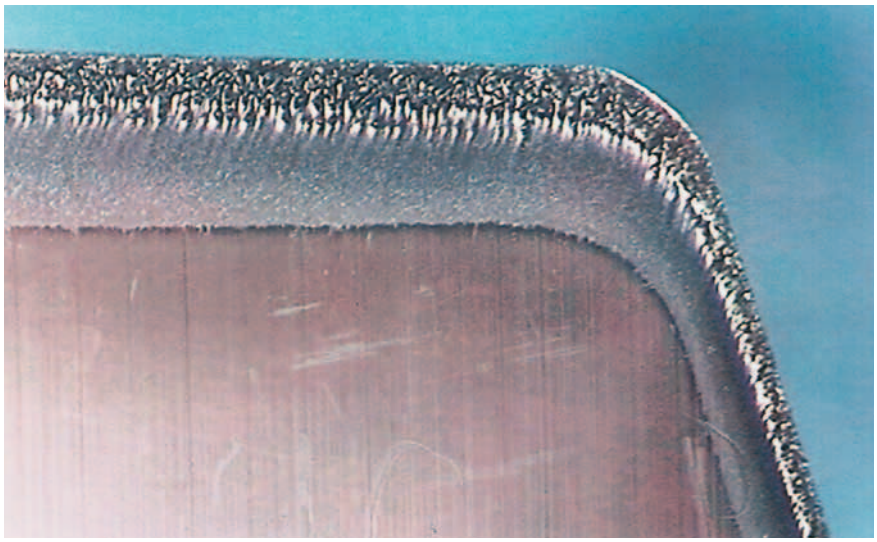
Tipped tools require resharpening to ensure the efficiency of the tools.



Common rounding of cutting edges after use for spruce

Cutting edge abrasion by chemical impact
When processing workpiece materials with a high content of tannic acids (e.g. oak), the cutting edge abrasion is mainly caused by mechanical plus chemical wear.

Cobalt, a binding agent in tungsten carbide, is washed out by chemical reaction leading to early damages of the cutting edge.

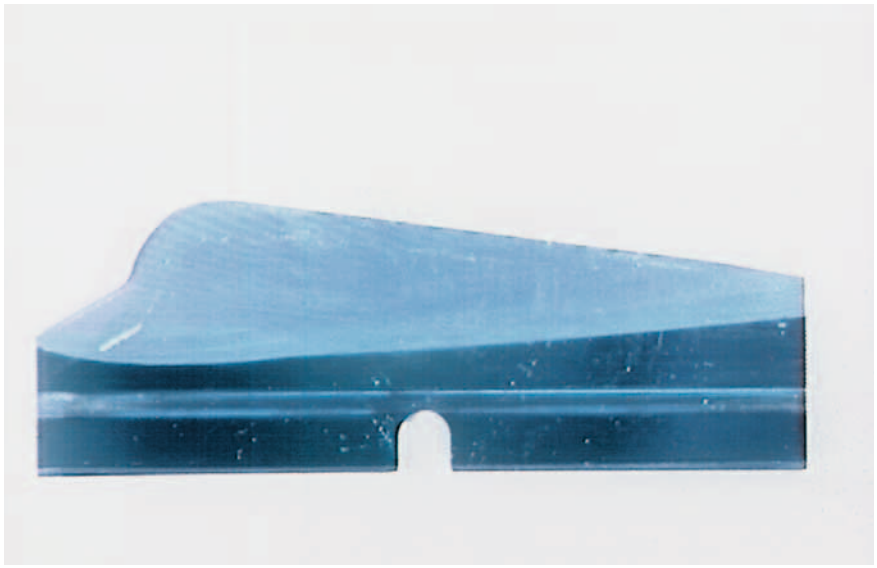


Chemical impact – Cutting edge abrasion – Application oak

Cutting edge damages caused by improper repair
For cutterheads/ sets with HW cutting elements, the knives must be turned or replaced after reaching the end of their performance time.

Resharpening parallel to face will reduce the essential clamping forces, creating gaps between knives and clamping wedges, impair the surface quality, and is not permitted for safety reasons.

Ensure careful cleaning and mounting when changing the knives of tools with turnblade/throw away knives.



Cutting edge abrasion caused by improper repair

Inquiry/order form special tools – planing and profiling

Customer details: Customer number: (if known)

☐ Inquiry
☐ Order

Delivery date: (not binding) CW

Company:

Street:

Post code/place:

Country:

Phone/fax:

Contact person:

Signature:

Date:

Inquiry/order no.:

Tool ID: (if known)

No. of pieces:

Workpiece material:

☐ Solid wood Type:
☐ Wood material Type:
☐ Coating Type:
☐ Other Type:
☐ Finish hogging

Moisture: %
Density: g/cm³
Further information:

Maschine:

(e. g. spindle moulders, four side moulders edging machines, window making machines, etc.)

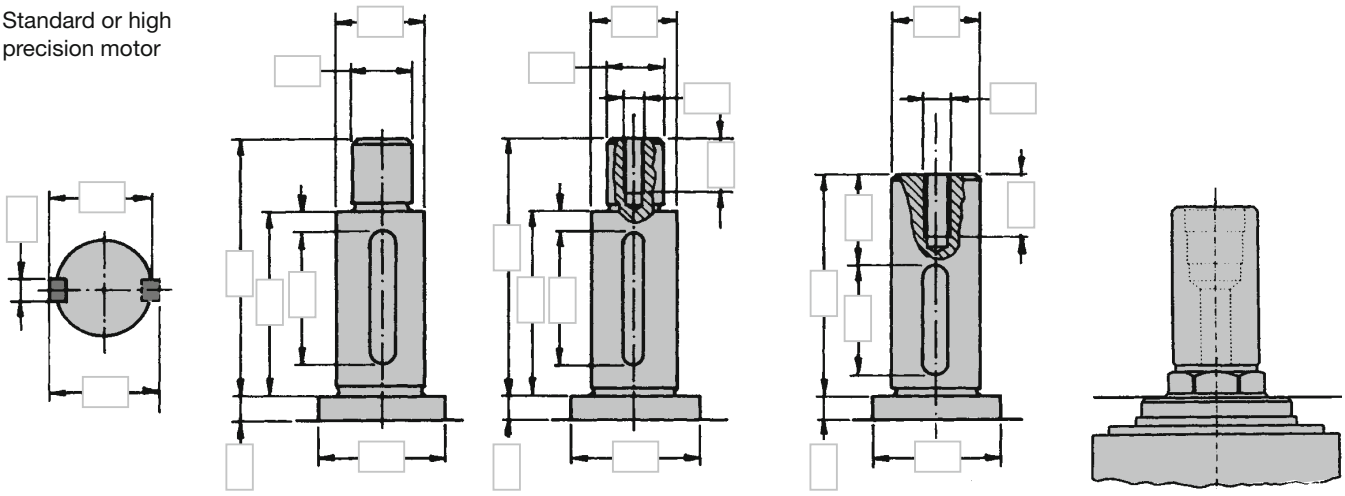
Manufacturer:
Type/construction year:
Model:

Specification of spindle sequence in feed direction e. g.: 1 bottom, 2 right, 3 left, 4 top, 5 multi purpose…
or: 1 scraping, 2 hogging, 3 cutting, 4 finish cutting, 5 post cutting…
or: 1 sawing, 2 slot/tenon, 3 cutting with feed, 4 cutting against feed…

Motor no.	Power	RPM	Spindle dimension	Additional information
1	kW	min⁻¹	mm	
2	kW	min⁻¹	mm	
3	kW	min⁻¹	mm	
4	kW	min⁻¹	mm	
5	kW	min⁻¹	mm	

Direction of rotation (LHR/RHR)or cutting direction (with feed/against feed) must be specified for each spindle.

Standard or high precision motor



Tool:

Tool type (e. g. one part/tipped tools/assmbld. tool, see product information)

Dimension:

Diameter: mm

Cutting width: mm

Bore: mm

Number of teeth:

Cutting material:
- ☐ HL
- ☐ HS
- ☐ ST
- ☐ HW
- ☐ DP

Cutting point:
- ☐ no cutting point
- ☐ sleeve with interlock
- ☐ sleeve without interlock
- ☐ quick clamping sleeve
- ☐ hydro sleeve

Direction of rotation:
- ☐ right hand rotation
- ☐ left hand rotation

Cutting direction:
- ☐ with feed
- ☐ against feed

Kind of feed:
- ☐ manual (MAN)
- ☐ mechanical (MEC)

Feed speed: min^{-1}

Cutting width (SB): mm

Cutting depth: mm

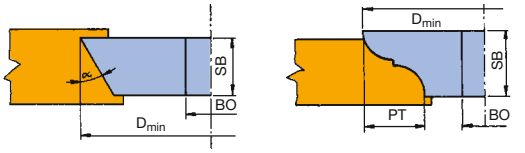
Remark:

zero diameter: mm

max. diam.: mm

zero height: mm

clamping length: mm



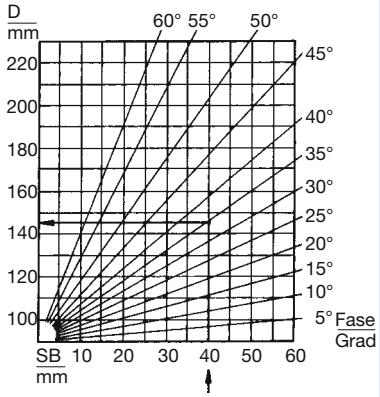
Application:

Solid wood / Wood materials
- ☐ longitudinal
- ☐ top layer
- ☐ crosscut
- ☐ Medium layer
- ☐ front
- ☐ Top and medium layer

Technical information:

Tipped tools (bevel trimming cutters/profile routers):
Design: bending test, Z2, mech. feed, Z3, Z4, round shape
Tooth shape: with/ without spur

Table for min. tool diameter.
Applicable for bevel trimming cutter
BO – 30 mm:
For bore 40 mm:
D + 10 mm
For bore 50 mm:
D + 20 mm



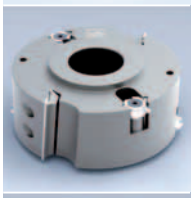
Formula for min. tool diameter:
Applicable for profile routers BO – 30 mm:
For bore 40 mm: D + 10 mm
For bore 50 mm: D + 20 mm
Formula: D_{min} = 100 + 2 x PT (mm)

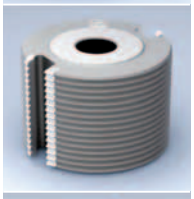
Note:
Bevels of more than 45° and large profile depths require large diameters. The maximum permitted RPM must be considered when calculated the cutting diameter and must not be exceeded. Profile sketches must clearly indicate whether the material (wood) or cutter is shown. Please specify motor side, direction of rotation, dimensions and any other conditions on the material sample or the drawings.

Assembled tools with turnblade/throw away knives:
Formula: D_{min} = 90 + 2 x PT (mm) – Applicable for BO – 30 mm

Sketch for application plan, profile drawing, special motor spindle, etc.
Please specify workpiece support and fence side and/or workpiece face side top/bottom.

4. Manual feed





Application

To produce different groove widths, manual or mechanical feed, along or across the grain.

Workpiece material

Solid wood, wood derived materials without coating, with plastic coating, with veneer, glulam.

Machines

Portable machines, spindle moulders, moulders, double end tenoners, machining-centres, edging machines, etc.

Type of feed

Manual feed:
Application only against feed.

Mechanical feed:
Application with or against feed,
for minimum tear out, use with feed recommended.

Design

Tipped tools:
With HW or DP, DP tips suitable for abrasive materials.

Replacable tip tools:
Design with HW turnblade cutters for constant diameter and constant cutting widths.

Two and multiple part tools:
Designed so the cutting width can be adjusted either by spacers (adjustment steps of 0.10 mm) or by a continuously adjustable sleeve for HW or DP tipped tools.

Single tools:
Suitable for use as set.

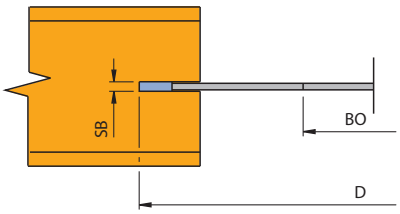
Optimised gullet design DFC:
The DFC concept directs the chips away from the workpiece, so leaving the tool cutting area unhindered. DFC increases tool performance.

Benefits:
– Better product quality by eliminating chip marks or damage to the workpiece edges.
– Reduced tool cutting edge wear by eliminating multiple cutting.

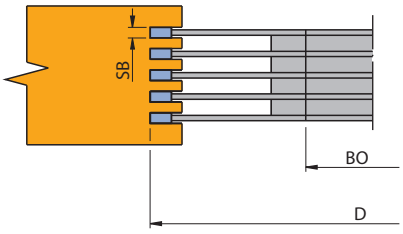
Recommended value for tooth feed rate f_z (in mm)

Solid wood	
along	0.60 – 0.80 mm
across	0.30 – 0.40 mm
Gluam	0.40 – 0.50 mm
Chipboard and fibre material	
Without coating	0.50 – 0.70 mm
Coated	0.20 – 0.40 mm
Veneered	0.10 – 0.15 mm
Wood derived materials	
Middle layer	0.30 – 0.60 mm
Top layer	0.08 – 0.12 mm
Plastic	0.20 – 0.50 mm
Polymer compound	0.05 – 0.05 mm
Non-ferrous metals	0.03 – 0.05 mm

$v_f = f_z \cdot n \cdot Z/1000$



Grooving in middle layer



Set assembly for lock corner joint

Grooving cutter for manual feed

Application:
For grooving with (MEC) or against feed (MAN).

Machine:
Spindle moulders, moulders and double end tenoners.

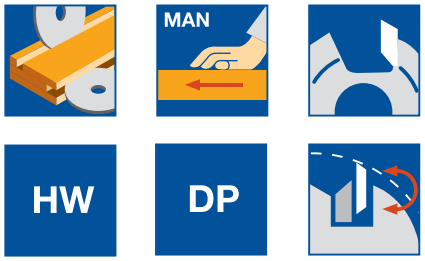
Workpiece material:
Solid wood; uncoated, coated and veneered wood derived materials.

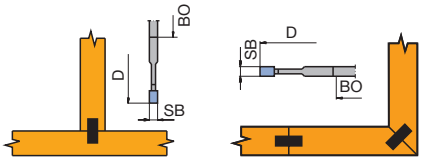
Technical information:
Tool body design with round, closed tooth shape.

Z 12
WF 100-1-05

D mm	SB mm	TDI mm	BO mm	$BO_{max.}$ mm	Z	n min^{-1}	ID	
125	1,5	0,8	30	50	12	6200 - 13700	**020241**	●
125	1,8	1,0	30	50	12	6200 - 13700	**020242**	●
125	2,0	1,2	30	50	12	6200 - 13700	**020243**	●
125	2,2	1,2	30	50	12	6200 - 13700	**020244**	●
125	2,5	1,4	30	50	12	6200 - 13700	**020245**	●
125	3,0	2,0	30	50	12	6200 - 13700	**020246**	●
125	3,5	2,2	30	50	12	6200 - 13700	**020247**	●
125	4,0	2,5	30	50	12	6200 - 13700	**020248**	●
125	4,5	3,0	30	50	12	6200 - 13700	**020249**	●
150	1,5	0,8	30	60	12	5200 - 11400	**020265**	●
150	1,8	1,0	30	60	12	5200 - 11400	**020266**	●
150	2,0	1,2	30	60	12	5200 - 11400	**020267**	●
150	2,2	1,2	30	60	12	5200 - 11400	**020268**	●
150	2,5	1,4	30	60	12	5200 - 11400	**020269**	●
150	3,0	2,0	30	60	12	5200 - 11400	**020250**	●
150	3,5	2,2	30	60	12	5200 - 11400	**020251**	●
150	4,0	2,5	30	60	12	5200 - 11400	**020252**	●
150	4,5	3,0	30	60	12	5200 - 11400	**020253**	●
150	5,0	3,5	30	60	12	5200 - 11400	**020254**	●
150	6,0	4,5	30	60	12	5200 - 11400	**020255**	●
150	7,0	5,0	30	60	12	5200 - 11400	**020256**	●
150	8,0	6,0	30	60	12	5200 - 11400	**020257**	●
150	9,0	6,5	30	60	12	5200 - 11400	**020258**	●
150	10,0	7,0	30	60	12	5200 - 11400	**020259**	●
180	4,0	2,5	30	70	12	4300 - 9500	**020260**	●
180	5,0	3,5	30	70	12	4300 - 9500	**020261**	●
180	6,0	4,5	30	70	12	4300 - 9500	**020262**	●
180	8,0	6,0	30	70	12	4300 - 9500	**020263**	●
180	10,0	7,0	30	70	12	4300 - 9500	**020264**	●

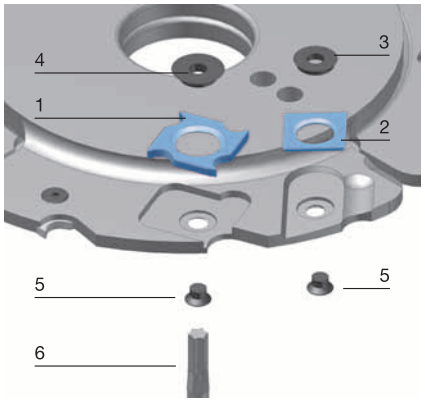
For spacers TR 100-0 used as a set, see section 9 - knives / spare parts.





Lamello - T-joint

Lamello - Longitudinal/ corner joint



Grooving cutter - lamello joints

Application:
For grooving lamello joints and for cutting grooves for corner joints and longitudinal joints (e.g. picture frames, furniture doors).

Machine:
Portable power tools - grooving cutters (e.g. Lamello etc.).

Workpiece material:
Solid wood; uncoated, coated and veneered wood derived materials.

Technical information:
Tool body design with round, closed tooth shape.

HW tipped
WF 102-1-01

D mm	SB mm	BO mm	NLA mm	Z	V	QAL	n min^{-1}	ID	
100	4,0	22	4/4,5/36	2	4	HW	7800 - 13300	**020124**	●

DP tipped
WF 100-1-DP

D mm	SB mm	BO mm	NLA mm	Z	QAL	n min^{-1}	ID	
100	4	22	4/4,5/36	4	DP	7800 - 13300	**090017**	●

Grooving cutterhead
WW 102-1-01

D mm	SB mm	BO mm	NLA mm	Z	V	QAL	n min^{-1}	ID	
100	4	22	4/4,5/36	2/2	2/2	HW	7800 - 13300	**020131**	●

Spare knives:

Part-no.	BEZ	QAL	VE PCS	ID	
1	Turnblade knife	HW	10	**005114**	●
2	Turnblade spur VS4	HW	10	**005130**	●

Spare parts:

Part-no.	BEZ	ID	
3	Special nut for VS	**005654**	●
4	Special nut for WPL	**005653**	●
5	Countersink screw, Torx® 9	**006057**	●
6	Torx® key	**005463**	●

● available ex stock
□ available at short notice
Instruction manual visit www.leitz.org

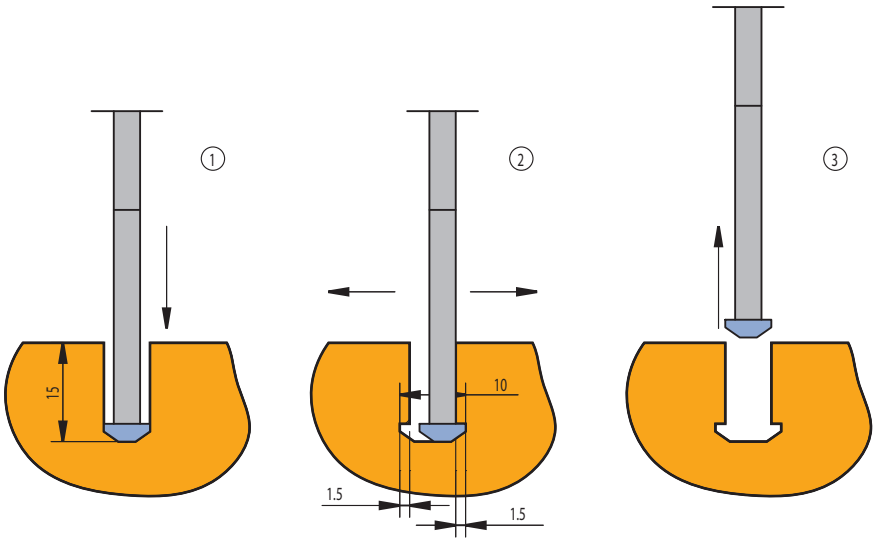
DP

Machine:
Portable power tools - grooving cutters (e.g. Lamello etc.). Clamex P - cutter for the use only on CNC machining centres.

DP tipped for Clamex P - connector
WK 100-3-DP

D mm	SB mm	BO mm	NLA mm	Z	QAL	n min^{-1}	ZF	ID	
100,4	7	30	4/6,6/48	3	DP	7800 - 13300	TR	**090018**	●

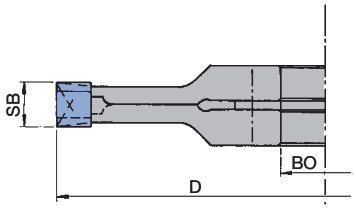
Suitable arbors see section 8. Drills for access bore see section 6.



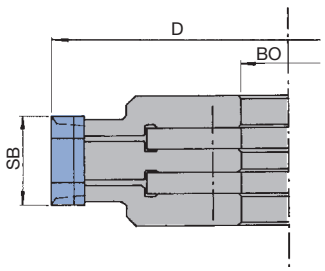
1. 15 mm plunge.
2. 1.5 mm left and right side recesses.
3. Leaving from the middle position.

4

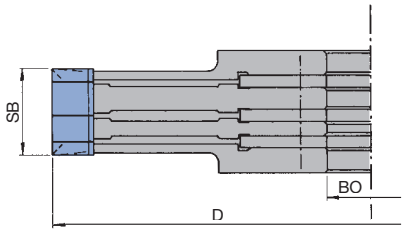




Grooving cutterset 2 part design



Grooving cutterset with 1 additional extension part



Grooving cutterset with 2 additional extension parts

Grooving cutterset, adjustable with spacers

Application:
For cutting different groove widths.

Machine:
Spindle moulders, moulders, edging machines and overhead routers with/without CNC, double end tenoners.

Workpiece material:
Solid wood along grain and across grain; uncoated, coated and veneered wood derived materials in top layer and middle layer.

Technical information:
Adjustment of cutting width with spacers (adjustment 0.10mm).

2 part with spurs; SB 1.8 - 23.5 mm
SF 501-1-01

D mm	SB mm	BO mm	$BO_{max.}$ mm	Z	V	NT mm	n min^{-1}	ID	
140	1,8 - 3,4	30	35	4	4	20	5500 - 9500	**020545**	●
140	1,8 - 3,4	35	35	4	4	20	5500 - 9500	**020546**	□
140	1,8 - 3,4	40	45	4	4	20	5500 - 9500	**020548**	□
140	2,2 - 4,0	30	35	4	4	20	5500 - 9500	**020549**	●
140	2,2 - 4,0	35	35	4	4	20	5500 - 9500	**020550**	□
140	2,2 - 4,0	40	40	4	4	20	5500 - 9500	**020551**	□
140	2,2 - 4,0	50	50	4	4	20	5500 - 9500	**020552**	□
150	4,0 - 7,5	30	35	4	4	37,5	5200 - 8900	**020573**	●
150	4,0 - 7,5	40	45	4	4	30	5200 - 8900	**020575**	□
150	4,0 - 7,5	50	50	4	4	27,5	5200 - 8900	**020576**	□
150	7,5 - 14,5	30	35	4	4	37,5	5200 - 8900	**020580**	●
150	7,5 - 14,5	35	45	4	4	30	5200 - 8900	**020581**	□
150	7,5 - 14,5	40	45	4	4	30	5200 - 8900	**020582**	□
150	7,5 - 14,5	50	50	4	4	27,5	5200 - 8900	**020583**	□
180	6,0 - 11,5	30	35	4	4	45	4300 - 7400	**020584**	●
180	12,0 - 23,5	30	35	4	4	45	4300 - 7400	**020585**	●
180	12,0 - 23,5	40	45	4	4	45	4300 - 7400	**020586**	●

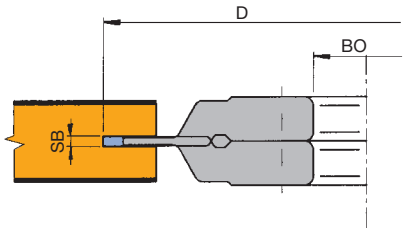
3 / 4 part; SB 5.0 - 30 mm
SF 501-1-02

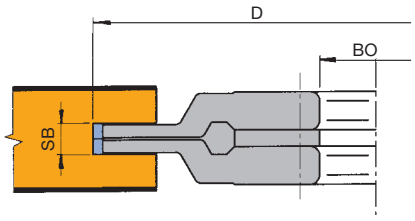
D mm	SB mm	BO mm	$BO_{max.}$ mm	NLA mm	Z	V	NT mm	n min^{-1}	ID	
150	7,5 - 28	50	50		4+4	4	22	5200 - 8900	**020661**	□
220	5 - 30	30	35	2/10/60	4+4	4	55	3500 - 6000	**020662**	●

2 part; SB 5.2 - 14 mm
SF 501-1-03

D mm	SB mm	BO mm	$BO_{max.}$ mm	NLA mm	Z	V	NT mm	n min^{-1}	ID	
250	5,2 - 10	30	35	2/10/60	8	8	40	3500 - 6000	**020693**	●
250	5,2 - 10	35	60		8	8	40	3100 - 5300	**020694**	□
250	7,2 - 14	35	60		8	8	40	3100 - 5300	**020697**	□

● available ex stock
□ available at short notice
Instruction manual visit www.leitz.org





Grooving in the middle layer

Grooving cutterset, adjustable with spacers

Application:
For cutting different groove widths. 2 part design.

Machine:
Spindle moulders, moulders, edging machines and double end tenoners.

Workpiece material:
Uncoated, coated and veneered wood derived materials.

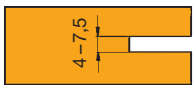
Technical information:
Adjustment of cutting width with spacers (adjustment 0.10mm). Diamaster PRO design. Tip height 3.0 mm.

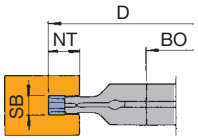
2 part; Diamaster PRO; SB 5.0 - 9.5 mm
SF 501-1-DP

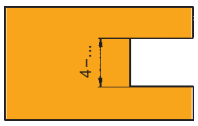
D mm	SB mm	BO mm	$BO_{max.}$ mm	NT mm	Z	n min^{-1}	ID	
180	5,0 - 9,5	30	50	25	4/4	4300 - 7400	**090301**	●

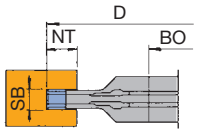
4

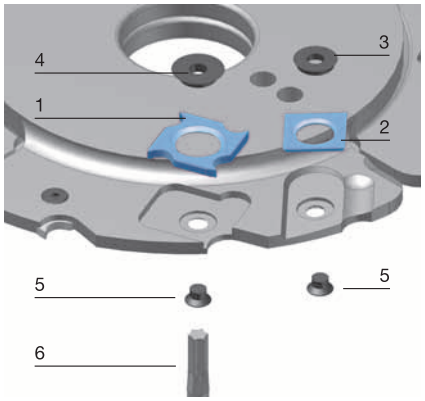
HW











Grooving cutterhead set adjustable with spacers

Application:
For cutting different groove widths.

Machine:
Spindle moulders, moulders, edging machines and overhead routers with/without CNC, double end tenoners.

Workpiece material:
Solid wood along grain and across grain; uncoated, coated and veneered wood derived materials in top layer and middle layer.

Technical information:
Adjustment of cutting widths with spacers (adjustment 0.10 mm).

2 part; SB 4.0 - 7.5 mm
SW 501-1-01

D mm	SB mm	BO mm	$BO_{max.}$ mm	NT mm	Z	n min^{-1}	ID	
150	4,0 - 7,5	30	50	20	2/2	5200 - 10100	**128100**	●
180	4,0 - 7,5	30	50	35	2/2	4300 - 8400	**128101**	●

Extension parts SB 3.8 mm
WW 200-1-NN

D mm	SB mm	BO mm	$BO_{max.}$ mm	Z	n min^{-1}	ID	
150	3,8	30	50	2	5200 - 10100	**128130**	●
180	3,8	30	50	2	4300 - 8400	**128131**	●

Each extension part increases the cutting widths by 3.6 mm.

Spare knives:

Part-no.	BEZ	ABM mm	QAL	VE PCS	ID	
1	Turnblade knife	18x18x1,95	HW	10	**005114**	●
2	Turnblade spur VS4	14x14x1,2	HW	10	**005130**	●

Spare parts:

Part-no.	BEZ	ABM mm	ID	
3	Special nut for VS	M9,9/1,60	**005654**	●
4	Special nut for WPL	M 11,9/2,20	**005653**	●
5	Countersink screw, Torx® 9	M4x0,5x3,2	**006057**	●
6	Torx® key	Torx® 9	**005463**	●
	Setting gauge	0,3/0,8	**005374**	●

● available ex stock
□ available at short notice
Instruction manual visit www.leitz.org

HW

Grooving cutterhead set adjustable with spacers

Application:
For cutting different groove widths.

Machine:
Spindle moulders, moulders, edging machines and overhead routers with/without CNC, double end tenoners.

Workpiece material:
Solid wood along grain and across grain; uncoated, coated and veneered wood derived materials.

Technical information:
Adjustment of cutting widths with spacers (adjustment range 0.10 mm). 2 part design.

4

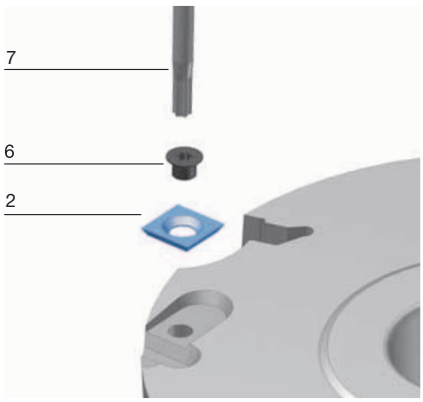
2 part; SB 8.0 - 15.4 mm
SW 501-1-01

D mm	SB mm	BO mm	NT mm	Z	n min^{-1}	ID	
150	8,0 - 15,4	30	20	2/2	5200 - 10100	**128104**	●
180	8,0 - 15,4	30	35	2/2	4300 - 8400	**128105**	●
200	8,0 - 15,4	30	45	2/2	3900 - 7600	**128106**	●

Extension part SB 7.7 mm
WW 200-1-NN

D mm	SB mm	BO mm	$BO_{max.}$ mm	Z	n min^{-1}	ID	
150	7,7	30	50	2	5200 - 10100	**128134**	●
180	7,7	30	50	2	4300 - 8400	**128135**	●
200	7,7	30	50	2	3900 - 7600	**128136**	●

Each extension part increases the cutting width by 7.5 mm.

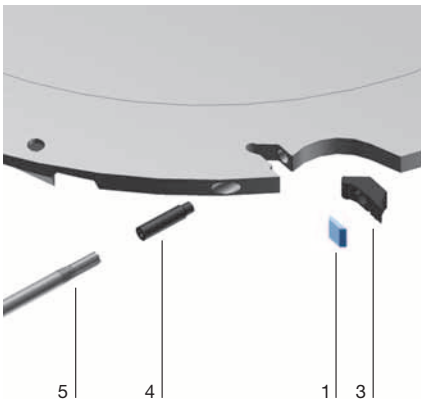


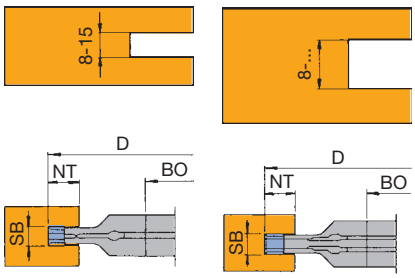
Spare knives:

Part-no.	BEZ	ABM mm	QAL	VE PCS	ID	
1	Turnblade knife	7,7x8x1,5	HW-05	10	**005053**	●
2	Turnblade spur VS1	14x14x2	HW-F	10	**005099**	●

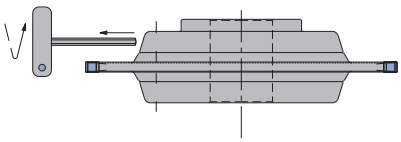
Spare parts:

Part-no.	BEZ	ABM mm	ID	
3	Clamping wedge	7x18,75x8,27	**009763**	●
4	Allen screw with shank, Torx® 15	M5x20	**007380**	●
5	Torx® key	Torx® 15	**117507**	●
6	Countersink screw, Torx® 20	M6x0,5x4,9	**006243**	●
7	Torx® key	Torx® 20	**117503**	●
	Setting gauge	0,3/0,8	**005374**	●

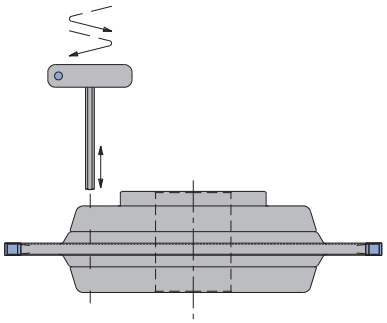




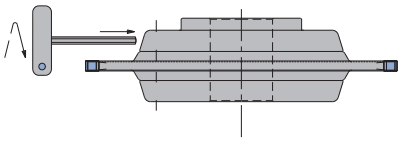
HW



Opening the clamping system



Adjustment: SB larger “+”, SB smaller “-”



Closing the clamping system

After the tool is mounted on the spindle it can be adjusted and clamped using a hexagon key.

Grooving cutterhead - steplessly adjustable

Application:
For cutting different groove widths.

Machine:
Spindle moulders, moulders, edging machines and double end tenoners.

Workpiece material:
Solid wood; uncoated, coated and veneered wood derived materials.

Technical information:
Adjustment of cutting width possible when installed on machine. 2 part design.

Mounted on sleeve; SB 4.0 - 15.0 mm
SW 502-1-01

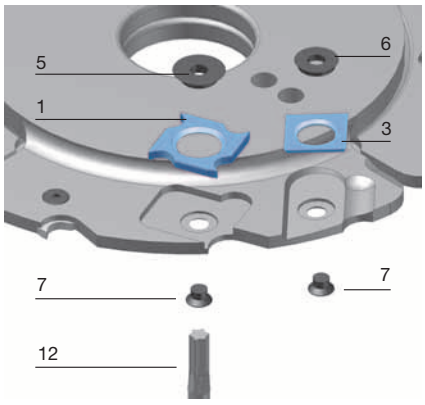
D mm	SB mm	BO mm	$BO_{max.}$ mm	NT mm	Z	n min^{-1}	ID	
180	4,0 - 7,5	30	35	40	2/2	4300 - 8400	**128154**	●
180	8,0 - 15,0	30	35	40	2/2	4300 - 8400	**128155**	●
180	4,0 - 7,8	40	50	35	2/2	4300 - 8400	**128156**	●
180	8,0 - 15,0	40	50	35	2/2	4300 - 8400	**128157**	●

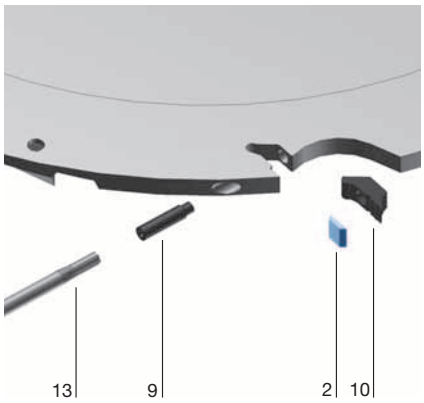
Spare knives:

Part-no.	BEZ	ABM mm	QAL	VE PCS	ID	
1	Turnblade knife	18x18x1,95	HW	10	**005114**	●
2	Turnblade knife	7,7x8x1,5	HW-05	10	**005053**	●
3	Turnblade spur VS4	14x14x1,2	HW	10	**005130**	●
4	Turnblade spur VS2	19x19x2	HW-F	10	**005115**	●

Spare parts:

Part-no.	BEZ	ABM mm	ID	
5	Special nut for WPL	M 11,9/2,20	**005653**	●
6	Special nut for VS	M9,9/1,60	**005654**	●
7	Countersink screw, Torx® 9	M4x0,5x3,2	**006057**	●
8	Countersink screw, Torx® 20	M6x0,5x4,9	**006243**	●
9	Allen screw with shank, Torx® 15	M5x20	**007380**	●
10	Clamping wedge	7x18,75x8,27	**009763**	●
11	Torx® key	Torx® 20	**117503**	●
12	Torx® key	Torx® 9	**005463**	●
13	Torx® key	Torx® 15	**117507**	●
	Setting gauge	0,3/0,8	**005374**	●





● available ex stock
□ available at short notice
Instruction manual visit www.leitz.org

Type of operation	Rebate tools cut on the periphery and the side. The rebated edge is produced by spurs.
Workpiece material	Softwood and hardwood; glulam, chipboard and fibre material uncoated, veneered, plastic coated, paper coated.
Machines	Spindle moulders. Edging machines; double end tenoners. Four side moulders.
Application	Jointing and rebating against feed: all panel materials with or without coating. Jointing and rebating with feed: machining solid wood with heavily twisted fibres and risk of tear outs. Only for machines with mechanical feed. Note: Difficult chip removal. Jump cutting: jointing with or against feed across grain to avoid tear outs at the front and rear workpiece edges after edge banding or lipping.

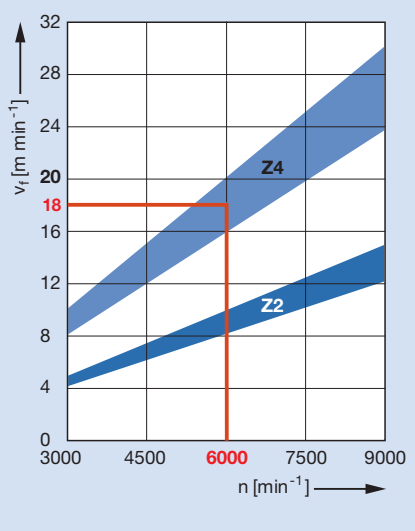
Tool Designs

Turnblade rebating cutterhead without shear angle:
Suitable for solid wood and uncoated panel materials.

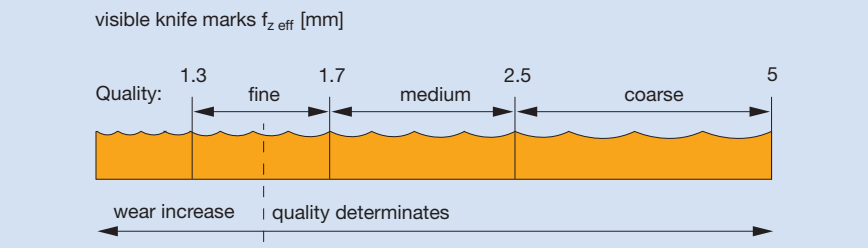
Turnblade rebating cutterhead with alternate shear angle:
Reduced feed and cutting forces achieve clean and tear out free rebating edges. Suitable for all coated and uncoated panel materials.

2 part tools with alternate shear angle:
Can also be used as adjustable grooving tools.

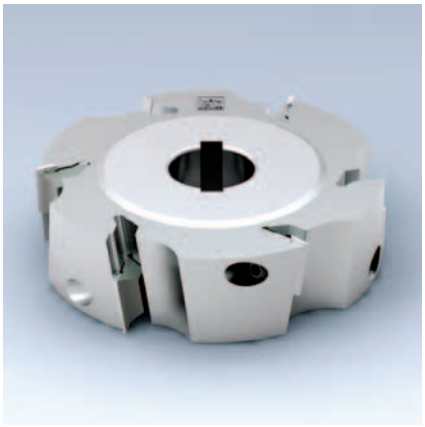
Feed speed depending on RPM and no. of teeth



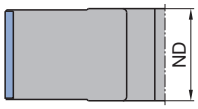
Relation between surface quality and length of knife marks $f_{z\,eff}$



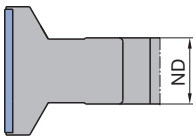
With multi blade tools, only the marks of one knife show on the surface (one knife finish).
Z2 and Z4 tools produce the same surface quality with the same machine setting.
High numbers of teeth are required for a high hogging performance.



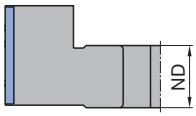

HW



Position of boss (NAL) 1



Position of boss (NAL) 2



Position of boss (NAL) 3

Jointing cutterhead in turnblade design

Application:
For jointing with feed and against feed (e.g. jump cutting). Manual feed only against feed.

Machine:
Spindle moulder, edge processing machines and double end tenoners.

Workpiece material:
Soft and hardwood, gluelam, particle and fibre materials (MDF etc.) uncoated, veneered, plastic or paper coated.

Technical information:
Cutterhead with turnblade knives, staggered cutting edges and alternate shear angle for tear free edges. Tool produces curved surface (approx. 0.10 mm) if larger material thicknesses are used. For perfectly straight cutting surfaces **Diamaster** jointing cutter WF 499-2 is recommended.

Manual feed
WW 230-1, WW 230-2

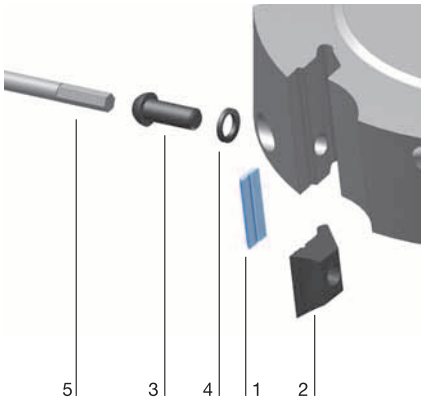
D mm	SB mm	BO mm	$BO_{max.}$ mm/in	NAL	Z	$n_{max.}$ min^{-1}	ID LL		ID RL	
100	56	30 DKN	31,75/1 1/4“	3	3x2	12000	**024692**	●	**024691**	●
125	56	30 DKN	50	1	3x2	10000	**024685**	●	**024685**	●
150	56	30 DKN	50	1	3x2	10000	**024686**	●	**024686**	●
180	56	35 DKN	50	2	3x2	8000	**024690**	●	**024690**	●

Spare knives:

Part-no.	BEZ	ABM mm	QAL	VE PCS	ID	
1	Turnblade knife	30x8x1,5	HW-05	10	**005059**	●

Spare parts:

Part-no.	BEZ	ABM mm	ID	
2	Clamping wedge	28x18,75x8,27	**009673**	●
3	Clamping screw, Torx® 25	M6x18,5	**007818**	●
4	Washer	9/6,2x1,2	**006753**	●
5	Torx® key	Torx® 25	**117504**	●



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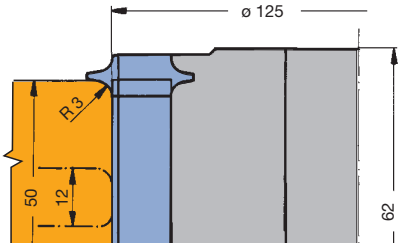
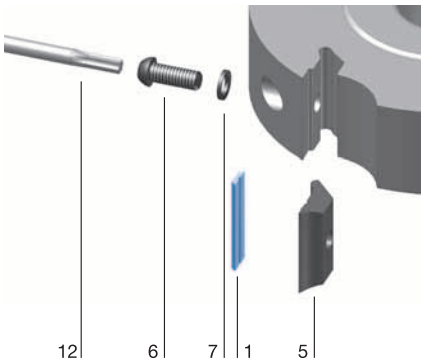
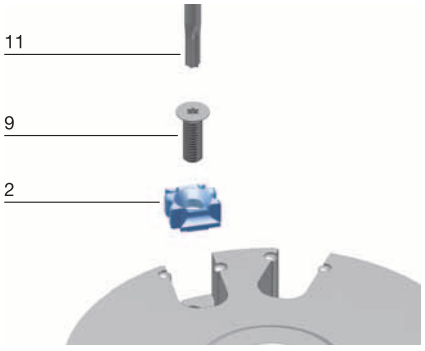


Jointing cutterhead with radius knives





Jointing cutterhead

Application:
For jointing, bevelling, rounding and profiling at the same time.

Machine:
Spindle moulders and moulders, double end tenoners. Routers with/without CNC control.

Workpiece material:
Solid wood.

Technical information:
Cutterhead with turnblade knives and seatings for edging knives.

Cutterhead with seatings for edging knives
WW 211-1

D mm	SB mm	BO mm	Z	KM PCS	n min^{-1}	QAL	ID
85	50	30	2	4	9100 - 15700	HW	**029069** ●
100	120	30	2	4	7600 - 13300	HW	**029070** ●
125	50	30	2	4	6200 - 10600	HW	**029071** ●
125	100	30	2	4	6200 - 10600	HW	**029072** ●

Spare knives:

Part-no.	BEZ	ABM mm	R mm	QAL	VE PCS	ID
1	Turnblade knife	50x8x1,5		HW-30F	10	**005075** ●
1	Turnblade knife	100x8x1,5		HW-30F		**007529** ●
1	Turnblade knife	120x8x1,5		HW-30F		**007530** ●
2	Edging knife 45°	KM 21/0	45°	HW-F		**008292** ●
2	Edging knife R1.5	KM 22/4	1,5	HW-F		**008295** ●
2	Edging knife R2	KM 22/3	2	HW-F		**008309** ●
2	Edging knife	KM 22/0	3	HW-F		**008293** ●
2	Edging knife R5	KM 24/0	5	HW-F		**008305** ●
2	Edging knife R5	KM 24/1	5	HW-F		**008306** ●

Spare parts:

Part-no.	BEZ	ABM mm	ID
5	Clamping wedge	48x18,75x8,27	**009677** ●
6	Clamping screw, Torx® 25	M6x18,5	**007818** ●
7	Washer	9/6,2x1,2	**006753** ●
9	Countersink screw, Torx® 20	M6x30	**006089** ●
11	Torx® key	Torx® 20	**117503** ●
12	Torx® key	Torx® 25	**117504** ●
	Setting gauge for knives	1,0	**005350** ●
	Spacer	13/6,1x0,1	**028034** ●
	Spacer	13/6,1x0,3	**028035** ●
	Spacer	13/6,1x0,5	**028036** ●
	Spacer	13/6,1x1	**028037** ●
	Spacer	13/6,1x3	**028040** ●
	Spacer	13/6,1x5	**028042** ●

Edging knife set: 2 edging knives each + countersunk screw + set of spacers
TE 540-0

BEZ	R mm	FAW	QAL	ID
Edge cutterset		45°	HW	**009091** ●
Edge cutterset	1,5		HW	**009092** ●
Edge cutterset	3		HW	**009093** ●
Edge cutterset	R5 top		HW	**009097** ●
Edge cutterset	R5 bottom		HW	**009098** ●

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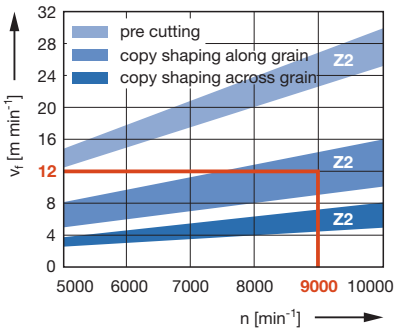


Feed speed v_f depending on the number of teeth Z and speed n for solid wood (pre-trimming and copy shaping)
Example:
n = 9000 rpm, Z2/copy shaping along the grain: v_f = 12 m min^{-1}

Copy shaping cutterset with spiral cutting edges

Application:
For pre cutting, jointing and copy shaping large cutting depths. For copy shaping curved workpieces using template, ball bearing and guide ring.

Machine:
Spindle moulders and moulders, double end tenoners. Routers with/without CNC control.

Workpiece material:
Softwood and hardwood, gluelam, chipboard and fibre materials (MDF etc.) uncoated, plastic coated, veneered etc.

Technical information:
Noise reduced design with staggered cutting edges and very deep gullets for improved chip removal. Rebating tools cut on the periphery and on the side.

Cutterhead for copy shaping, grooving, rebating
WW 220-1

D mm	SB mm	BO mm	$BO_{max.}$ mm	AM PCS	Z	V	n min^{-1}	ID	
85	54,9	30		8	2	4	6200 - 10600	**411196**	●
125	80,9	30	40	12	2	4	6200 - 10600	**407196**	●
125	94,8	30	40	14	2	4	6200 - 10600	**410696**	●
125	120,8	30	40	18	2	4	6200 - 10600	**411197**	□

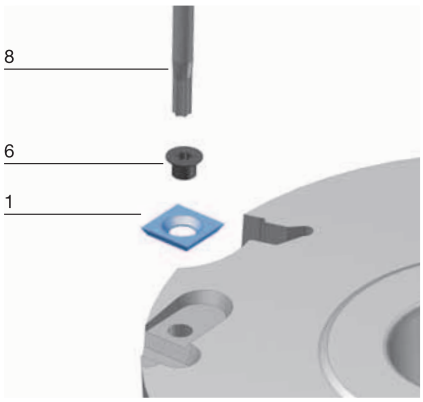
Note: If several copy shaping cutterheads are combined, the total cutting width is reduced by 0.7 mm for each joint due to the overlap of the tools.

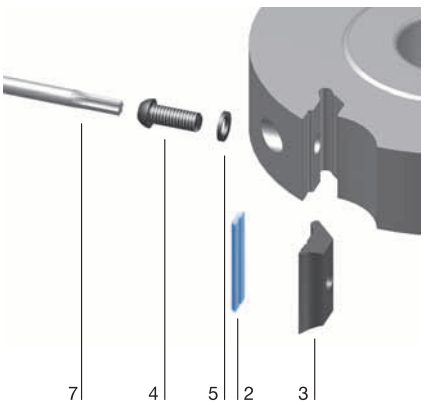
Spare knives:

Part-no.	BEZ	ABM mm	QAL	VE PCS	ID	
1	Turnblade spur VS1	14x14x2	HW-F	10	**005099**	●
2	Turnblade knife	14,7x8x1,5	HW-30F	10	**005070**	●

Spare parts:

Part-no.	BEZ	ABM mm	ID	
3	Clamping wedge	13x18,75x8,27	**009670**	●
4	Clamping screw, Torx® 25	M6x18,5	**007818**	●
5	Washer	9/6,2x1,2	**006753**	●
6	Countersink screw, Torx® 20	M5x8,5	**007808**	●
7	Torx® key	Torx® 25	**117504**	●
8	Torx® key	Torx® 20	**117503**	●
	Setting gauge	0,3/0,8	**005374**	●
	Guide ring with ball bearing	D=125,BO=30	**027858**	●
	Spacer for set assembling	D=60, BO=30, B36	**028658**	●





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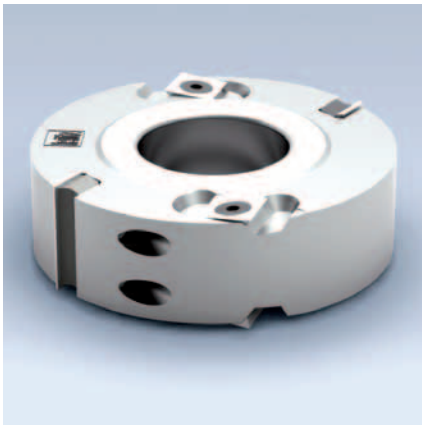
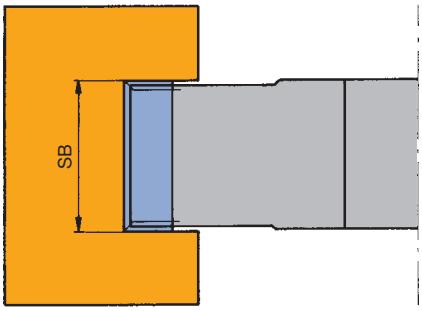
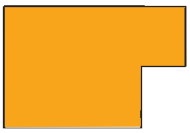


HW



Tool set



Rebating from below

Rebating from above

Grooving

Rebating cutterhead

Application:
For jointing, rebating and grooving.

Machine:
Spindle moulders (running against feed), double end tenoners, edging machines etc. (running with feed or against feed e.g. jump cutting).

Workpiece material:
Chipboard and fibre materials, uncoated or plastic coated, glulam, laminated materials (e.g. Trespa), plastics (thermosetting, thermoplastic).

Technical information:
Cutterhead with straight cut and spurs. Spurs can be turned four times.

4

Turnblade knives 12 mm
WW 420-1-01

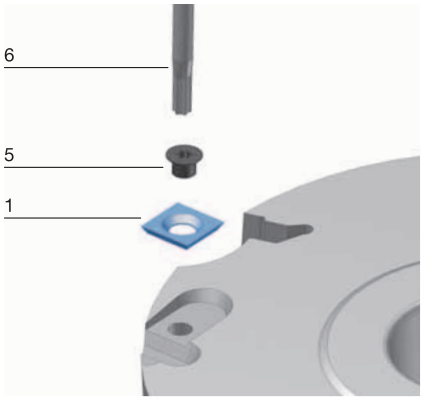
D mm	SB mm	BO mm	$BO_{max.}$ mm	Z	V	n min^{-1}	ID	
85	50,4	30	35	2	4	9100 - 15700	**024490**	●
100	30,4	30	40	2	4	7800 - 13300	**024491**	●
100	50,4	30	40	2	4	7800 - 13300	**024492**	●
125	30,4	30	50	2	4	6200 - 10600	**024493**	●
125	30,4	40	50	2	4	6200 - 10600	**024496**	□
125	30,4	50	50	2	4	6200 - 10600	**024497**	□
125	50,4	30	50	2	4	6200 - 10600	**024498**	●
125	50,4	40	50	2	4	6200 - 10600	**024501**	□
125	50,4	50	50	2	4	6200 - 10600	**024502**	□

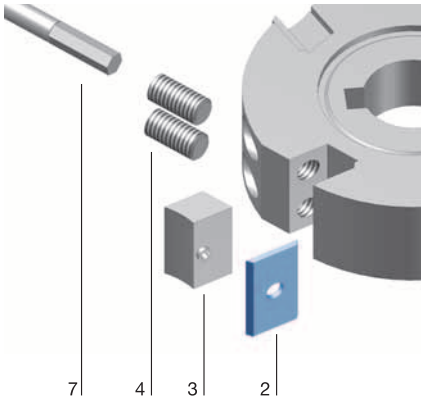
Spare knives:

Part-no.	BEZ	ABM mm	QAL	VE PCS	ID	
1	Turnblade spur VS1	14x14x2	HW-F	10	**005099**	●
2	Turnblade knife	30x12x1,5	HW-05	10	**005084**	●
2	Turnblade knife	50x12x1,5	HW-05	10	**005086**	●

Spare parts:

Part-no.	BEZ	ABM mm	ID	
3	Clamping wedge with pin	28x11,5x7	**005273**	●
3	Clamping wedge with pin	48x11,5x7	**005275**	●
4	Allen screw	M6x12	**006035**	●
5	Countersink screw, Torx® 20	M6x0,5x4,9	**006243**	●
6	Torx® key	Torx® 20	**117503**	●
7	Allen Key	SW 3	**005444**	●
	Setting gauge for knives	1,0	**005350**	●





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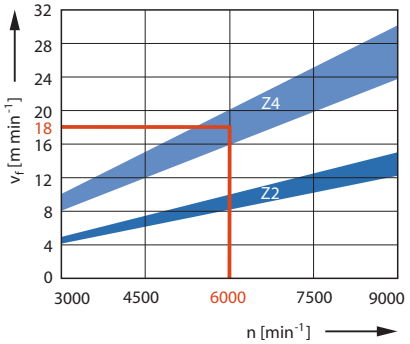
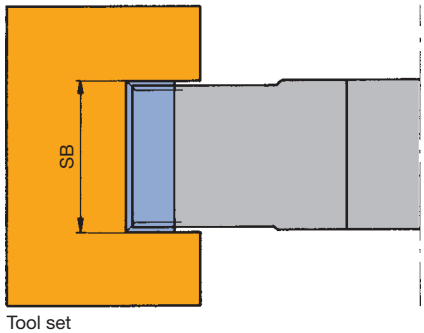


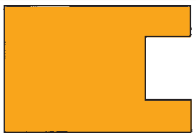
Feed speed v_f depending on the number of teeth Z and speed n for solid wood along grain
Example:
n = 6000 min^{-1}, Z 4: v_f = 18 m min^{-1}



Tool set


Rebating from below


Rebating from above


Grooving

Rebating cutterhead

Application:
For jointing, rebating and grooving.

Machine:
Spindle moulders (running against feed), double end tenoners, edging machines etc. (running with feed or against feed e.g. jump cutting). Routers with/without CNC control.

Workpiece material:
Softwood and hardwood, gluelam etc.

Technical information:
Cutterhead with alternate shear angle and triangular spurs.

Turnblade knives 8 mm
WW 420-1-02

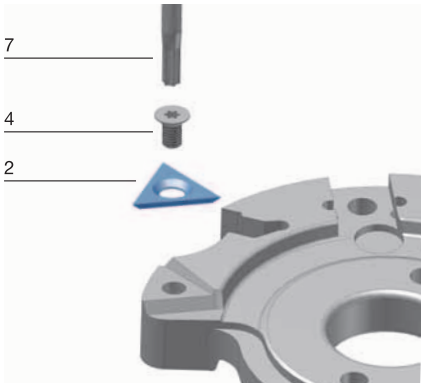
D mm	SB mm	BO mm	$BO_{max.}$ mm	Z	V	n min^{-1}	ID	
125	41	30	40	2	4	6200 - 10600	**024546**	●
150	51	30	40	2	4	5200 - 8900	**024548**	●
150	61	30	50	4	4	5200 - 8900	**024543**	●

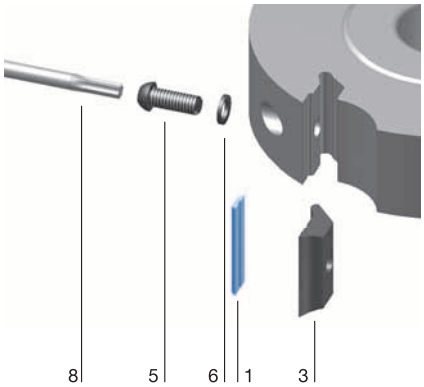
Spare knives:

Part-no.	BEZ	ABM mm	QAL	VE PCS	ID	
1	Turnblade knife	40x8x1,5	HW-30F	10	**005074**	●
1	Turnblade knife	50x8x1,5	HW-30F	10	**005075**	●
1	Turnblade knife	60x8x1,5	HW-30F	10	**005076**	●
2	Turnblade spur VS2	19x19x2	HW-F	10	**005115**	●

Spare parts:

Part-no.	BEZ	ABM mm	ID	
3	Clamping wedge	38x18,75x8,27	**009675**	●
3	Clamping wedge	58x18,75x8,27	**009678**	●
3	Clamping wedge	48x18,75x8,27	**009677**	●
4	Countersink screw, Torx® 20	M5x8,5	**007808**	●
5	Clamping screw, Torx® 25	M6x18,5	**007818**	●
6	Washer	9/6,2x1,2	**006753**	●
7	Torx® key	Torx® 20	**117503**	●
8	Torx® key	Torx® 25	**117504**	●
	Setting gauge	0,3/0,8	**005374**	●





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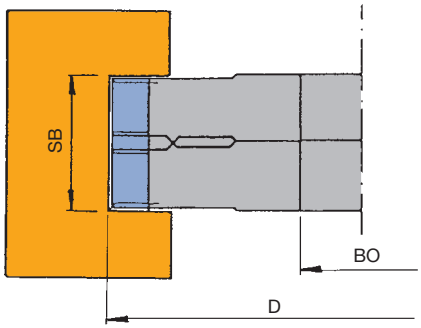
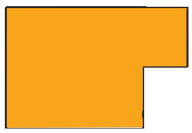
HW

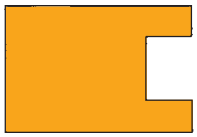


Tool set



Rebating from below

Rebating from above



Grooving

Rebating cutterset 2 part

Application:
For jointing, rebating and grooving.

Machine:
Spindle moulders (running against feed), double end tenoners and edging machines etc. (running with feed or against feed).

Workpiece material:
Softwood and hardwood, gluelam.

Technical information:
Two part adjustable tool set with alternate shear angle and triangular spurs.

SB 26.4 - 98 mm
SW 531-1-01

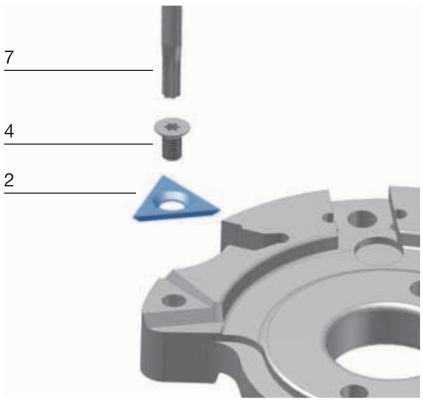
D mm	SB mm	VSB mm	BO mm	$BO_{max.}$ mm	Z	V	n min^{-1}	ID	
160	20	26,4 - 38	30	45	4	4	4900 - 9500	**024456**	●
160	20	26,4 - 38	50	50	4	4	4900 - 9500	**024458**	□
160	50	56,4 - 98	40	45	4	4	4900 - 9500	**024455**	●

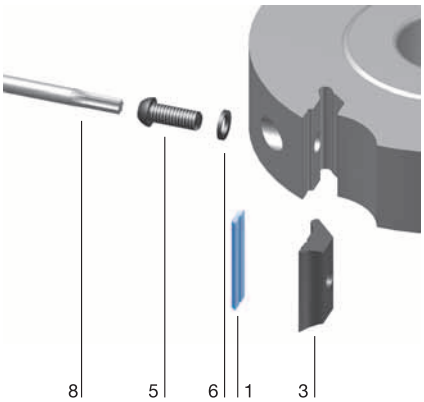
Spare knives:

Part-no.	BEZ	ABM mm	QAL	VE PCS	ID	
1	Turnblade knife	19,7x8x1,5	HW-30F	10	**005071**	●
1	Turnblade knife	50x8x1,5	HW-30F	10	**005075**	●
1	Turnblade knife	30x8x1,5	HW-30F	10	**005072**	●
2	Turnblade spur VS2	19x19x2	HW-F	10	**005115**	●

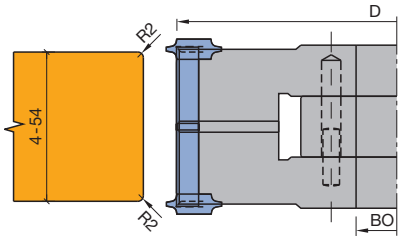
Spare parts:

Part-no.	BEZ	ABM mm	ID	
3	Clamping wedge	18x18,75x8,27	**009671**	●
3	Clamping wedge	48x18,75x8,27	**009677**	●
3	Clamping wedge	28x18,75x8,27	**009673**	●
4	Countersink screw, Torx® 20	M6x0,5x4,9	**006243**	●
5	Clamping screw, Torx® 25	M6x18,5	**007818**	●
6	Washer	9/6,2x1,2	**006753**	●
7	Torx® key	Torx® 20	**117503**	●
8	Torx® key	Torx® 25	**117504**	●
	Setting gauge	0,3/0,8	**005374**	●

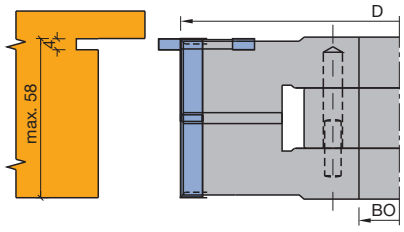




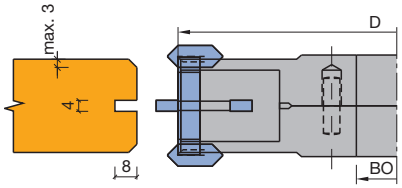

HW



Jointing, rounding



Rebating and seal groove



Groove and chamfers

Rebate cutterset UniCut

Application:
For rebating, jointing, grooving, bevelling and rounding.

Machine:
Spindle moulders, moulders etc.

Workpiece material:
Softwood and hardwood.

Technical information:
Two part adjustable tool set for multi purpose application.

With seatings for edging knives and turnblade grooving knives; SB 30 - 60 mm
AW 330-1-01

Tool no.	D mm	SB mm	BO mm	$BO_{max.}$ mm	Z	V	n min^{-1}	ID	
1 + 2	160	30 - 60	30	50	2/2	2/2	4900 - 8300	**024056**	●
1 + 2	160	30 - 60	40		2/2	2/2	4900 - 8300	**024062**	□

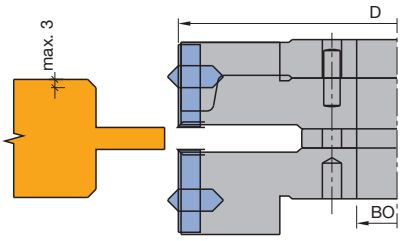
Tool complete with edge rounding knife R2
Additionally:
2 grooving knives SB 4 with countersunk screws
1 set of spacers D 70 mm for adjusting the tool parts
1 set of spacers D 13.70 mm to adjust the edging / grooving knives
1 setting gauge 0.3/0.8 mm
Tool set in wooden box, BO 30

Spare knives:

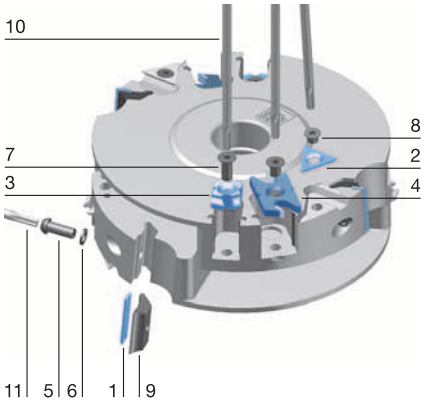
Part-no.	BEZ	ABM mm	QAL	VE PCS	ID	
1	Turnblade knife	30x8x1,5	HW-30F	10	**005072**	●
2	Turnblade spur VS2	19x19x2	HW-F	10	**005115**	●
3	Edging knife 45°	KM 21/0	HW-F		**008292**	●
3	Edging knife R2	KM 22/3	HW-F		**008309**	●
4	Turnblade grooving knife NB4	36x20x4	HW-F		**008323**	●

Spare parts:

Part-no.	BEZ	ABM mm	ID	
5	Clamping screw, Torx® 25	M6x18,5	**007818**	●
6	Washer	9/6,2x1,2	**006753**	●
7	Countersink screw, Torx® 20	M6x30	**006089**	●
8	Countersink screw, Torx® 20	M6x0,5x4,9	**006243**	●
9	Clamping wedge	7x18,75x8,27	**009763**	●
10	Torx® key	Torx® 20	**117503**	●
11	Torx® key	Torx® 25	**117504**	●
	Setting gauge	0,3/0,8	**005374**	●



Tongue profile



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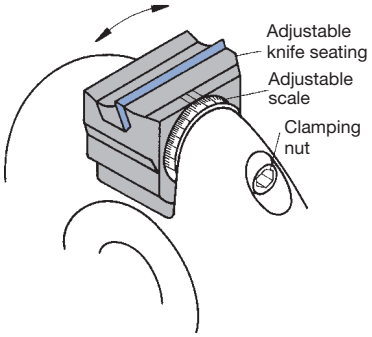
□ available at short notice
Instruction manual visit www.leitz.org


HW



Bevel cutterhead with swivelling knife holder

Variangle bevel cutterhead

Application:
For different bevels or straight jointed edges and panel raising. Large swivelling range up to 85 °.

Machine:
Spindle moulders, moulders, edging machines and double end tenoners.

Workpiece material:
Softwood and hardwood, uncoated, coated and veneered chipboard and fibre materials, gluelam.

Technical information:
Knife holder swivel. Accurate, easy readable angle scale for precise adjustment to required bevel angle.

Adjustable bevel angle
WW 341-1

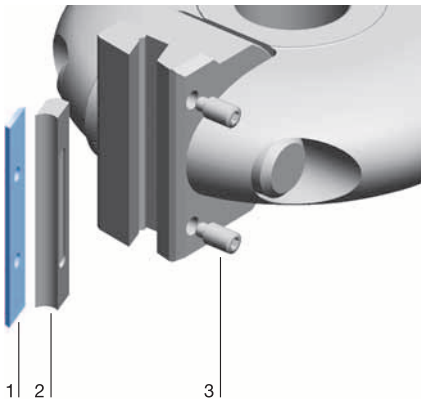
D mm	D max. mm	SB mm	BO mm/in	$BO_{max.}$ mm	Swivel range Degree	n min^{-1}	Z	ID	
130	147	40	30	30	0 - 85	6000 - 8000	2	**024279**	●
150	174	50	30	40	0 - 85	5000 - 8000	2	**024275**	●
150	174	50	31,75/1 1/4“	40	0 - 85	5000 - 8000	2	**024281**	□
150	174	50	40	40	0 - 85	5000 - 8000	2	**024288**	□
160	191	60	30	40	0 - 85	5000 - 6000	2	**024280**	●
170	194	50	50	60	0 - 85	4500 - 6000	2	**024278**	●

Spare knives:

Part-no.	BEZ	ABM mm	QAL	VE PCS	ID	
1	Turnblade knife	40x12x1,5	HW-05	10	**005085**	●
1	Turnblade knife	50x12x1,5	HW-05	10	**005086**	●
1	Turnblade knife	60x12x1,5	HW-05	10	**005087**	●

Spare parts:

Part-no.	BEZ	ABM mm	ID	
2	Clamping wedge with pin	38x10,88x6	**005348**	●
2	Clamping wedge with pin	48x10,88x6	**005346**	●
2	Clamping wedge with pin	58x11x6	**005349**	●
2	Clamping wedge with pin	78x11x6	**009273**	●
3	Allen screw	M6x12	**006035**	●
3	Allen screw	M6x16	**006036**	●
	Allen Key	SW 8, L 100	**005437**	●
	Allen Key	SW 3	**005433**	●
	Setting gauge for knives	80x12x9,5	**005352**	●



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Types of operation	The tools in the following section are suitable for producing glue joints, divided into glue joints (along the grain) and mitre joints.

Glue joints along grain

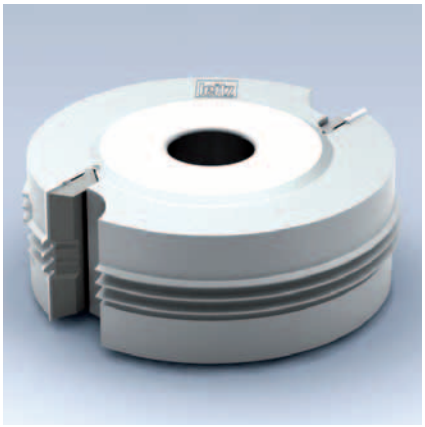
Glue joint profiles for length grain glue joints have a low profile depth to minimise the material loss at each glue joint. Glue joint profiles do not increase the stability of the glue joint. The profile is used to position the wood precisely, so it does not slip during pressing. Length grain glue joint profiles are not self-locking. The workpieces must remain pressed together until the glue has hardened completely. Profile tools for glue joints along the grain are not suitable for mitre joints.

Workpiece material	Soft and hardwood.
Machine	Spindle moulders with or without power feed. Four side moulders. Double end tenoners.
Application	Against the feed, always along the grain.

Mitre joint

Solid wood and wood-derived materials cannot be glued on the end faces side without glue joint profiles. Compared to glue joints along the grain, mitre glue joint profiles increase the stability of the joint. These profiles have a greater profile depth, generally 10 mm. Mitre joint profiles must have a straight edge area to create a defined straight joint in the visible area. The profiles are slightly self locking. This means the workpieces needs to be pressed together briefly and can only be machined after the glue has hardened. Mitre joints are typically used to produce segments for arched windows or profiled mouldings.

Workpiece material	Soft and hardwood.
Machine	Spindle moulders with clamping device and sliding table. Double end tenoners. Window machines. Stationary routers with or without CNC control.
Application	Against feed across or along the grain.



Profile cutterhead ProfilCut for glue joint profiles

Application:
To cut glue joint profiles with high fit accuracy. Profile P2 - 4 for processing with the grain for precise positioning of the wood to be glued. Profile 1 is especially suitable for mitre joint profile / longitudinal glue joint profile and for frames.

Machine:
Spindle moulders and moulders.

Workpiece material:
Softwood and hardwood.

Technical information:
Finger profile in rounded design (Softline). Effective wood use through small profile depth.

MAN feed
WE 600-1-50

P	D mm	SB mm	BO mm	$BO_{max.}$ mm	Z	n min^{-1}	ID
P1	135	30	30	50	2	5700 - 9900	**125120** ●
P2	135	50	30	50	2	5700 - 9900	**125025** ●
P3	135	60	30	50	2	5700 - 9900	**125118** ●
P4	135	80	30	50	2	5700 - 9900	**125119** ●

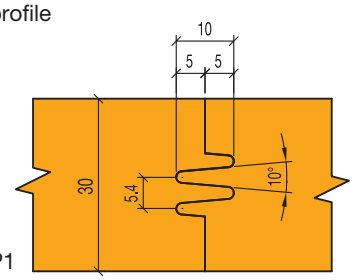
Spare knives:

Part-no.	BEZ	ABM mm	QAL	ID
1	ProfilCut knife	50x16x2	HW	**619098** ●
1	ProfilCut knife	60x16x2	HW	**619213** ●
1	ProfilCut knife	80x16x2	HW	**619214** ●
1	ProfilCut knife	30x16x2	HW	**619215** ●

Spare parts:

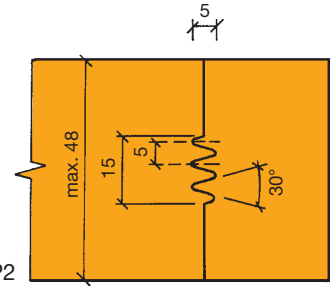
Part-no.	BEZ	ABM mm	ID
2	Clamping wedge profiled	48x23,73x8,27	**629028** ●
2	Clamping wedge profiled	58x23,73x8,27	**629108** ●
2	Clamping wedge profiled	78x23,73x8,27	**629109** ●
2	Clamping wedge profiled	38x23,73x8,27	**629110** ●
3	Clamping screw, Torx® 25	M6x18,5	**007818** ●
4	Washer	9/6,2x1,2	**006753** ●
5	Torx® key	Torx® 25	**117504** ●

Mitre joint profile / longitudinal glue joint profile

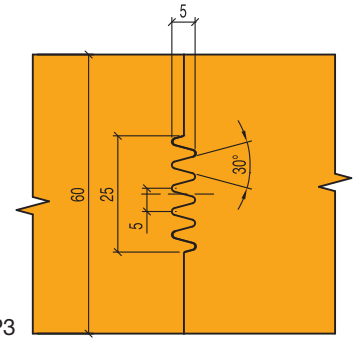


P1

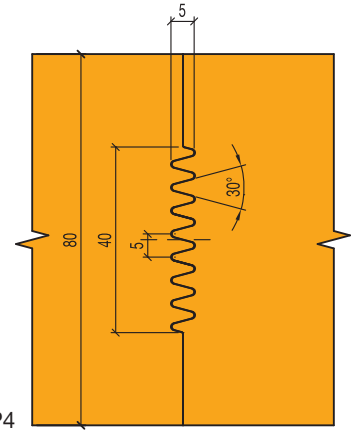
Width glue joint profile



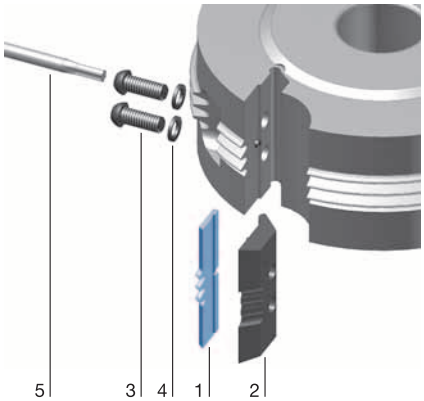
P2



P3



P4



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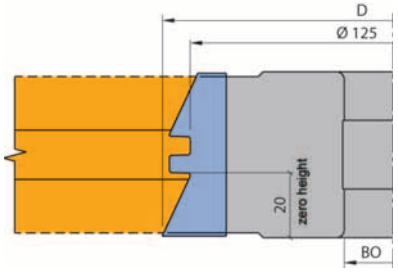
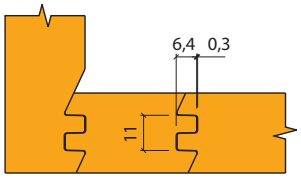


Adjustment scheme



Profile example

Profile cutterhead ProfilCut for glue joints along the grain and mitre joints

Application:
For glue joint profiles along grain with precise positioning. Exact positioning of the wood to be glued together and for producing corner joints.

Machine:
Spindle moulders and moulders.

Workpiece material:
Softwood and hardwood, veneered panel materials.

Technical information:
Wood thickness 15 to 48 mm; basic clearance 0.3 mm, side clearance 0.1 mm. Economic wood use due to small profile depth.

Profile depth 6.4 mm
WE 600-1-50

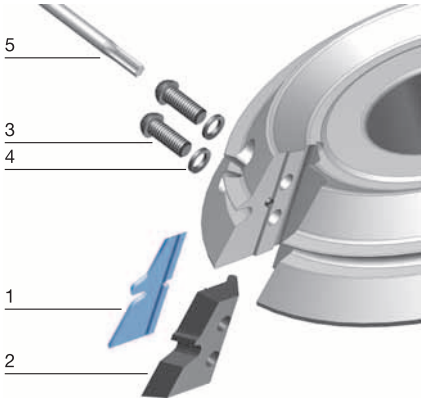
D mm	SB mm	BO mm	$BO_{max.}$ mm	Z	n min^{-1}	ID	
142	50	30	50	2	5500 - 9400	**029064**	●

Spare knives:

Part-no.	BEZ	ABM mm	QAL	ID	
1	ProfilCut knife	50x22x2	HW	**009498**	●

Spare parts:

Part-no.	BEZ	ABM mm	ID	
2	Clamping wedge profiled	48x31,93x8,27	**009744**	□
3	Clamping screw, Torx® 25	M6x18,5	**007818**	●
4	Washer	9/6,2x1,2	**006753**	●
5	Torx® key	Torx® 25	**117504**	●



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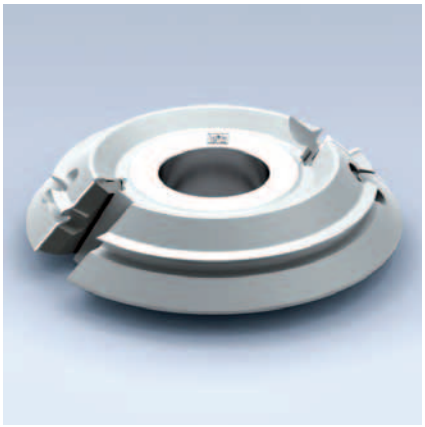
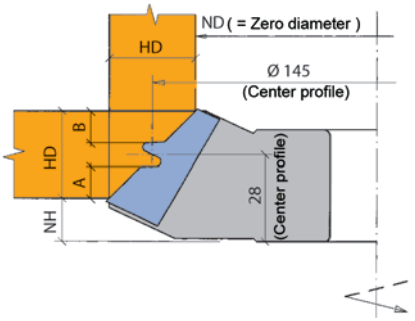




$$\text{0-height (NH)} = 28 - \frac{\text{wood thickness (HD)}}{2}$$

0-diameter (ND) = Ø 145 – wood thickness (HD)

Profile cutterhead ProfilCut for glue joints along the grain and mitre joints

Application:
For 45° glue joint profiles along grain with precise positioning. Exact positioning of the wood to be glued together and for producing corner joints.

Machine:
Spindle moulders and moulders.

Workpiece material:
Softwood and hardwood, veneered panel materials.

Technical information:
Not suitable for melamine or paper coated panel materials.

4

Profile cutterhead ProfilCut 45°
WE 610-1-50

D mm	SB mm	HD mm	BO mm	Z	$BO_{max.}$ mm	n min^{-1}	ID	
175	40	28	30	2	50	4400 - 7600	**125026**	●
175	40	28	50	2	50	4400 - 7600	**125061**	●

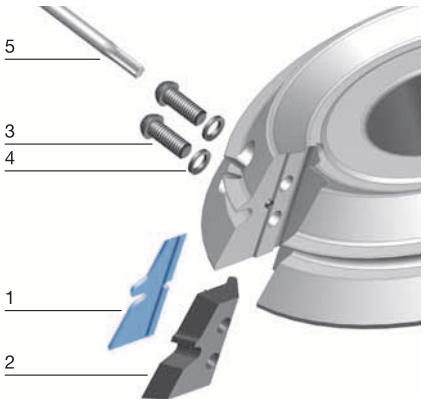
Profile adjustment
Height adjustment by profiling the workpiece flat on the table and vertical against the fence:
Profile height: PH 8.00 mm
Correct adjustment, if dimension A is the same as dimension B.
Formula: A(B) = (HD-PH) /2

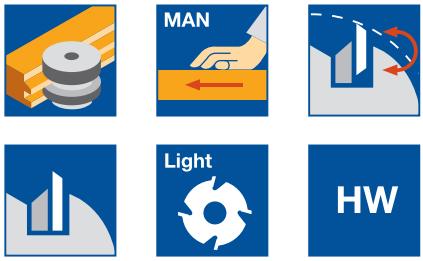
Spare knives:

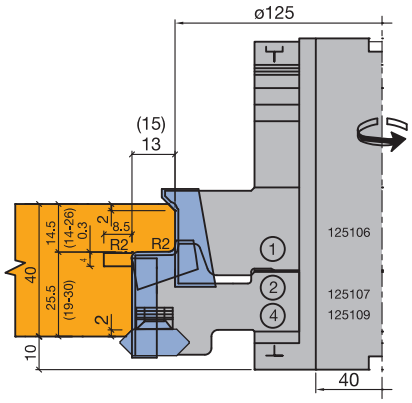
Part-no.	BEZ	ABM mm	QAL	ID	
1	ProfilCut knife	40x22x2	HW	**619099**	●

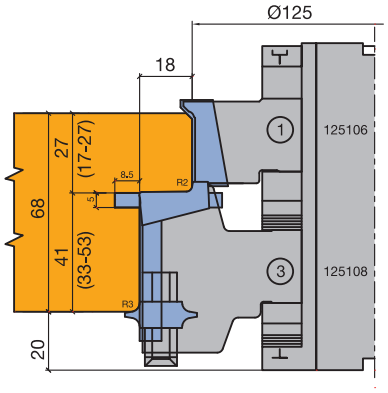
Spare parts:

Part-no.	BEZ	ABM mm	ID	
2	Clamping wedge profiled	38x32,11x8,27	**629029**	□
3	Clamping screw, Torx® 25	M6x18,5	**007818**	●
4	Washer	9/6,2x1,2	**006753**	●
5	Torx® key	Torx® 25	**117504**	●









Turnblade ProfilCut profile cutterhead set for internal door production

Application:
For external door profiles with single rebate, rebating depth 13/15/18 mm. Extendable for double rebate 12/15 and 15/15.

Machine:
Spindle moulder and moulder.

Workpiece material:
Soft and hardwood, composite materials.

Technical information:
Combinable for front door, single and double rebate. Double rebate profiles by using additional tools. Carrier body of aluminium. ProfilCut jointing cutterhead with chamfers to edges, rebate cutterhead with turnblade knives, spurs and seatings for edge knives and seal groove knives.

Turnblade/profile cutterhead set
SE 540-1, SE 540-1-50

BEM	Tool no.	D0 mm	BO mm	Z	FAT mm	$n_{max.}$ min^{-1}	ID
Single rebate	1,2	125	40	2	13	7200	**126041** □
Single rebate	1,4	125	40	2	15	7200	**126042** □
Single rebate	1,3	125	40	2	18	7200	**126043** □
Double rebate	1,4,5	125	40	2	15/12	7200	**126044** □
Double rebate	1,4,6	125	40	2	15/15	7200	**126045** □

Set completely mounted on VDS-sleeve

Single tools
WE 600-1-50

BEZ	Tool no.	ABM mm	Z	ID
ProfilCut tool	1	133x30x50	2	**125106** ●
ProfilCut tool	2	51.2x35x50	2	**125107** ●
ProfilCut tool	3	161.2x54.5/58.5x50	2	**125108** ●
ProfilCut tool	4	155.2x35x50	2	**125109** ●
ProfilCut tool	5	179.2x35x50	2	**125110** ●
ProfilCut tool	6	185.2x35x50	2	**125111** ●
Reducing sleeve without collar		40x96x30		**028302** ●

Spare knives:

BEZ	Tool no.	ABM mm	ID
ProfilCut-knife	1	30.2x14.1x2	**619184** □
ProfilCut-knife	2	20.1x12.62x2	**407790** □
ProfilCut-knife	3	25x12.76x2	**407230** □
ProfilCut-knife	4	20.1x12.61x2	**407792** □
ProfilCut-knife	5	20.1x11.89x2	**407749** □
ProfilCut-knife	6	20.1x12.9x2	**407753** □
Turnblade knife	2, 4, 5, 6	30x8x1,5	**005059** ●
Turnblade knife	3	50x8x1,5	**007526** ●
Edging knife 45°	2, 4	KM 21/0	**008292** ●
Edging knife R2	5, 6	KM 22/3	**008309** ●
Edging knife	3	KM 22/0	**008293** ●
Turnblade grooving knife NB4	2, 4	36x20x4	**008323** ●
Turnblade grooving knife NB5	2 - 6	36x20x5	**008324** ●

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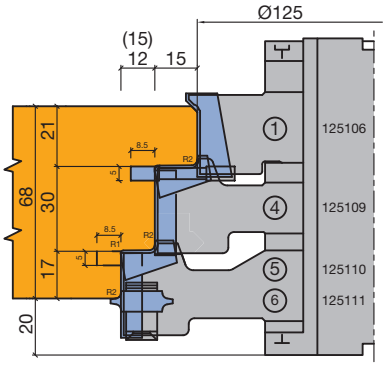


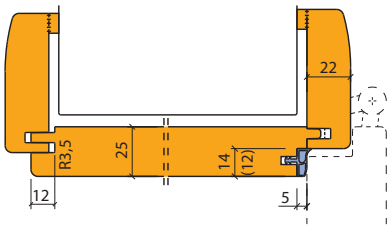
BEZ	Tool no.	ABM mm	ID	
Clamping wedge ProfilCut	1	28x20x8.27	**629094**	□
Clamping wedge ProfilCut	2, 4, 6	17x21.22x7.25	**629079**	□
Clamping wedge	2, 4, 5, 6	28x18,75x8,27	**009673**	●
Clamping wedge ProfilCut	3	22x21.11x7.25	**629080**	□
Clamping wedge	3	48x18,75x8,27	**009677**	●
Clamping wedge ProfilCut	5	17x20x7.25	**629078**	●
Clamping screw, Torx® 25	1 - 6	M6x18,5	**007818**	●
Washer	1 - 6	9/6,2x1,2	**006753**	●
Countersink screw, Torx® 20	2, 4	M6x20	**006087**	●
Countersink screw, Torx® 20	3	M6x40	**006090**	●
Countersink screw, Torx® 20	5, 6	M6x25	**006088**	●
Countersink screw, Torx® 20	2, 3, 4, 5, 6	M6x12	**006084**	●
Cylindrical screw with ISK		M6x93	**007834**	●
Torx® key	1 - 6	Torx® 25	**117504**	●
Torx® key	1 - 6	Torx® 20	**117503**	●
Allen Key		SW 5	**005452**	●

R 1.5 = ID 619185
R 2.0 = ID 619186
R 3.0 = ID 619187
R 4.0 = ID 619188
R 5.0 = ID 619189

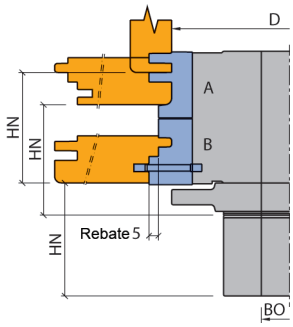
ID 619190

ID 619191

ID 184008678
Cut-out for DP edging knives on request



Door lining profile



Lining / decorative panel and rebate lining

Profile cutterhead ProfilCut

Application:
For door casing and door linings with 5 mm rebate.

Machine:
Spindle moulders and moulders.

Workpiece material:
Softwood and hardwood, uncoated, plastic coated and veneered chipboard and fibre material.

Technical information:
Material thickness: 24 to 27 mm (option up to 32 mm with jointing). Seal 14 and 12 mm possible by fitting spacers. Adjustable rebate of 5 mm or 4 mm by throwaway profile knives. Rebate 7 mm, 8 mm and 11 mm on request.

Rebate 5 mm
SE 640-1-50

Tool Type	D mm	BO mm	$BO_{max.}$ mm	Z	FAT mm	n min^{-1}	ID	
With jointing and rounding	125	30	50	2	5	5100 - 8800	**045345**	●
Without jointing and rounding	125	30	50	2	5	5100 - 8800	**045346**	□

Rebate 4 mm
SE 640-1-50

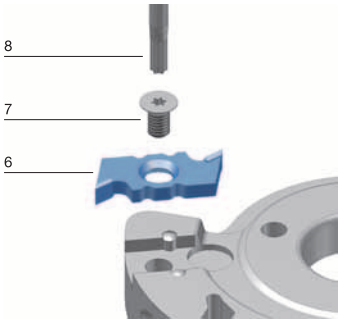
Tool Type	D mm	BO mm	$BO_{max.}$ mm	Z	FAT mm	n min^{-1}	ID	
With jointing and rounding	125	30	50	2	4	5100 - 8800	**045347**	□
Without jointing and rounding	125	30	50	2	4	5100 - 8800	**045348**	□

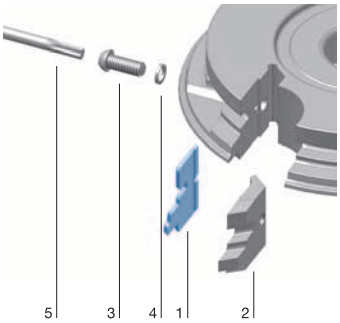
Spare knives:

Part-no.	BEZ	ABM mm	QAL	ID	
1	ProfilCut knife A with jointing	35x22,75x2	HW	**619127**	●
1	ProfilCut knife B 5 mm rebate	35x23,82x2	HW	**619128**	●
1	ProfilCut knife A without jointing	35x22,75x2	HW	**619129**	●
1	ProfilCut knife B 4 mm rebate	35x23,29x2	HW	**619130**	●
6	Turnblade grooving knife NB4	36x20x4	HW-F	**008323**	●

Spare parts:

Part-no.	BEZ	ABM mm	ID	
2	Clamping wedge A	33x27,89x8,27	**629051**	●
2	Clamping wedge B	33x32,72x2	**629052**	●
3	Clamping screw, Torx® 25	M6x18,5	**007818**	●
4	Washer	9/6,2x1,2	**006753**	●
5	Torx® key	Torx® 25	**117504**	●
7	Countersink screw, Torx® 20	M6x12	**006084**	●
8	Torx® key	Torx® 20	**117503**	●





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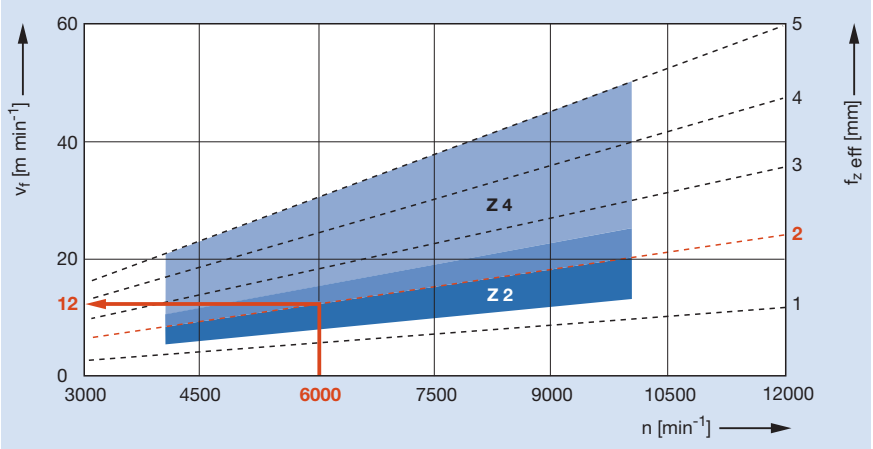
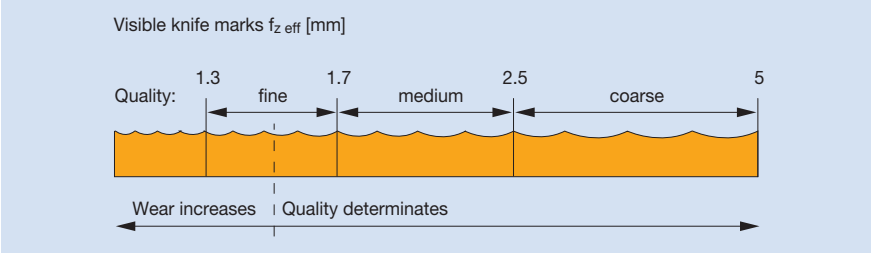
Type of operation

Profiling in craft and industry. As there are many different applications, the features of the tool and the wood types to be processed are described in the respective product pages.

Feed speeds depending on RPM, length of knife marks and number of teeth



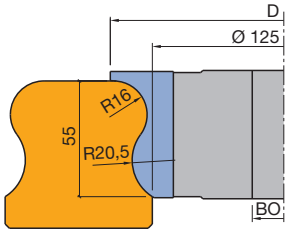
Relation between surface quality and length of knife marks $f_{z\ eff}$



With multi blade tools, only the marks of one knife show on the surface (one knife finish).
Z2 and Z4 tools produce the same surface quality with the same machine setting.
High numbers of teeth are required for a high hogging performance.

Workpiece material
Machines
Application

Please refer to the relevant product pages, depends on the operation and profile.



Handrail profile

Profile cutterhead ProfilCut PLUS for handrail profile

Application:
For handrails. Copy shaping of curved workpieces using template and ball bearing guide ring.

Machine:
Spindle moulders and moulders, double end tenoners, machines with/without CNC.

Workpiece material:
Softwood and hardwood.

Technical information:
Cutterhead with resharpenable throwaway knives straight cut.

Handrail profile
WE 500-1-51

D mm	SB mm	BO mm	$BO_{max.}$ mm	Z	n min^{-1}	ID	
165	60 - 61	30	50	2	4700 - 8100	**125114**	●

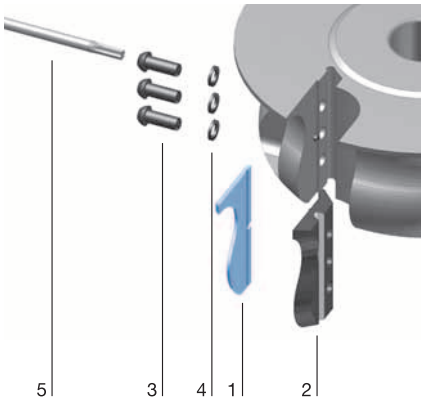
Tool in wooden box complete with profile knives and key.

Spare knives:

Part-no.	BEZ	ABM mm	QAL	ID	
1	ProfilCut PLUS knife	60x32,7x2	HW	**619212**	●

Spare parts:

Part-no.	BEZ	ABM mm	ID	
2	Clamping wedge profiled	58x33x8,27	**629100**	□
3	Clamping screw, Torx® 25	M6x18,5	**007818**	●
4	Washer	9/6,2x1,2	**006753**	●
5	Torx® key	Torx® 25	**117504**	●



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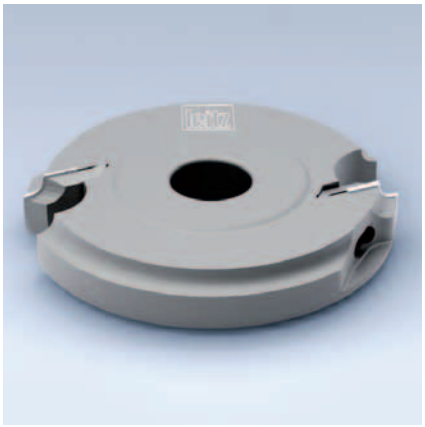
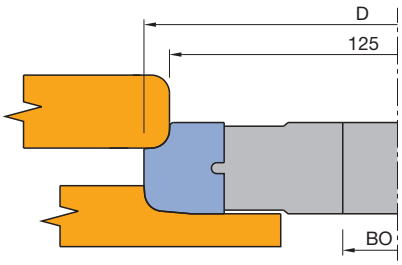
Instruction manual visit www.leitz.org





Radii profile cutterhead

Profile cutterhead ProfilCut PLUS

Application:
For different radius profiles with 5 different profile knives. Copy shaping of curved workpieces using template and ball bearing guide ring.

Machine:
Spindle moulders and moulders.

Workpiece material:
Softwood and hardwood.

Technical information:
Production of counter profile possible by combining with the fluting profile. Tool can be used on both sides as panel raising cutter (straight panel raising). Cutterhead with resharpenable throwaway knives.

Radii profile R 2; 3; 5; 7 mm
AE 540-1-51

exist. of	D mm	SB mm	BO mm	$BO_{max.}$ mm	Z	R mm	n min^{-1}	ID	
Profile cutterhead	139	25	30	50	2	5	5500 -	**126526**	●
Profile knife						2	9600		
Profile knife						3			
Profile knife						7			

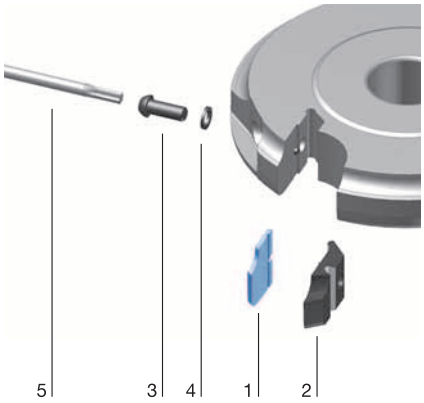
Tool set in wooden box with profile knives and key.

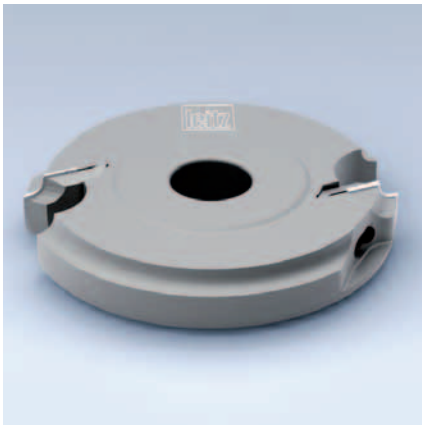
Spare knives:

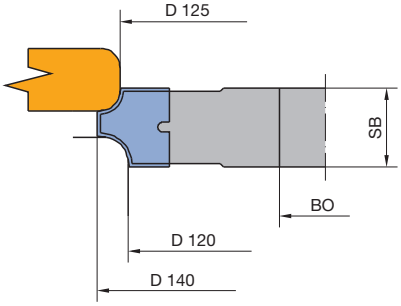
Part-no.	BEZ	ABM mm	QAL	R mm	ID	
1	ProfilCut PLUS knife	25x22x2	HW	2	**619216**	●
1	ProfilCut PLUS knife	25x22x2	HW	3	**619217**	●
1	ProfilCut PLUS knife	25x22x2	HW	4	**619218**	●
1	ProfilCut PLUS knife	25x22x2	HW	5	**619203**	●
1	ProfilCut PLUS knife	25x22x2	HW	7	**619205**	●

Spare parts:

Part-no.	BEZ	ABM mm	ID	
2	Clamping wedge	23x32,5x8,27	**629097**	□
3	Clamping screw, Torx® 25	M6x18,5	**007818**	●
4	Washer	9/6,2x1,2	**006753**	●
5	Torx® key	Torx® 25	**117504**	●







Profile cutterhead D-140 mm

Profile cutterhead ProfilCut PLUS

Application:
For 6 radii profiles with 3 different profile knives. Copy shaping of curved workpieces using template and ball bearing guide ring.

Machine:
Spindle moulders and moulders.

Workpiece material:
Softwood and hardwood.

Technical information:
Cutterhead with resharpenable throwaway knives and straight cut. Multi purpose application for different profiles.

Radii profile R 5 - 10 mm
AE 540-1-51

exist. of	D mm	SB mm	BO mm	$BO_{max.}$ mm	Z	R mm	n min^{-1}	ID	
Profile cutterhead Profile knife Profile knife Profile knife	140	25	30	50	2	5/8 6/9 7/10	5500 - 5900	**126527**	●

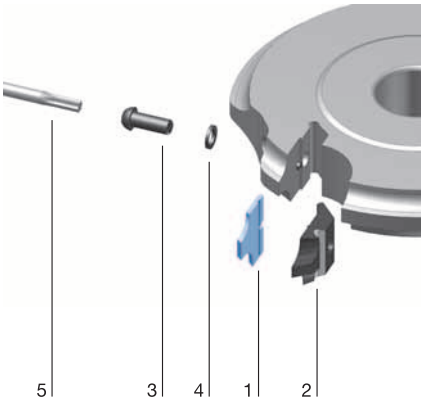
Tool set in wooden box with profile knives and key.

Spare knives:

Part-no.	BEZ	ABM mm	QAL	R mm	ID	
1	ProfilCut PLUS knife	25x22x2	HW	5/8	**619206**	●
1	ProfilCut PLUS knife	25x22x2	HW	6/9	**619207**	●
1	ProfilCut PLUS knife	25x22x2	HW	7/10	**619208**	●

Spare parts:

Part-no.	BEZ	ABM mm	ID	
2	Clamping wedge profiled	23x32,5x8,27	**629098**	●
3	Clamping screw, Torx® 25	M6x18,5	**007818**	●
4	Washer	9/6,2x1,2	**006753**	●
5	Torx® key	Torx® 25	**117504**	●



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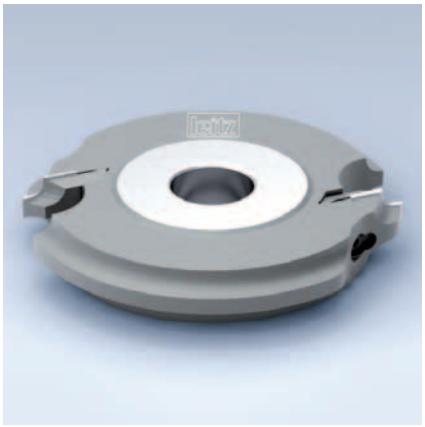
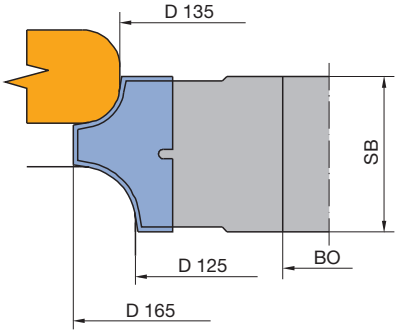
Instruction manual visit www.leitz.org





Profile cutterhead D-165 mm

Profile cutterhead ProfilCut PLUS

Application:
For radii and bevel profiles with 3 different profile knives. Copy shaping of curved workpieces using template and ball bearing guide ring.

Machine:
Spindle moulders and moulders.

Workpiece material:
Softwood and hardwood.

Technical information:
Cutterhead with resharpenable throwaway knives and straight cut. Multi purpose application for different profiles.

Radii profile R 12 - 20 mm or 45° bevel
AE 540-1-51

exist. of	D mm	SB mm	BO mm	$BO_{max.}$ mm	Z	R mm	n min^{-1}	ID	
Profile cutterhead Profile knife Profile knife Profile bevelling knife	165	50	30	50	2	12/18 14/20 45°	5500 - 5900	**126528**	●

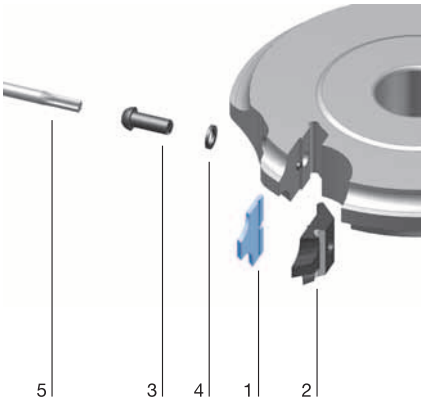
Tool set in wooden box with profile knives and key.

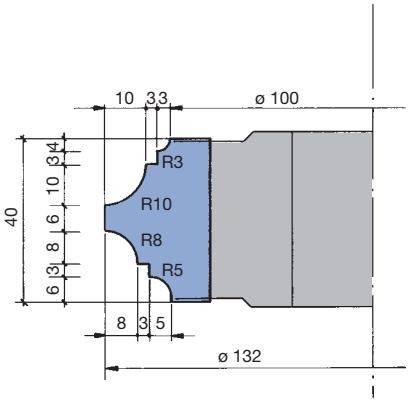
Spare knives:

Part-no.	BEZ	ABM mm	QAL	R mm	ID	
1	ProfilCut PLUS knife 45°	50x33x2	HW		**619209**	●
1	ProfilCut PLUS knife	50x33x2	HW	14/20	**619210**	●
1	ProfilCut PLUS knife	50x33x2	HW	12/18	**619211**	●

Spare parts:

Part-no.	BEZ	ABM mm	ID	
2	Clamping wedge profiled	48x43,5x8,27	**629099**	●
3	Clamping screw, Torx® 25	M6x18,5	**007818**	●
4	Washer	9/6,2x1,2	**006753**	●
5	Torx® key	Torx® 25	**117504**	●





Standard values for feed speed v_f:
Machining along grain: 8 to 10 m / min.
Machining across grain: 3 to 5 m / min.
at speed n = 6000 rpm

Profile cutterhead ProfilCut PLUS

Application:
For radii and counter profiles. Copy shaping of curved workpieces using template and ball bearing guide ring.

Machine:
Spindle moulders and moulders etc.

Workpiece material:
Softwood and hardwood.

Technical information:
Cutterhead with throwaway knives, straight cut. Multi purpose use for different profiles in one or several working steps.

Radii profile R 3 - 10 mm
WE 500-1-51

D mm	SB mm	BO mm	$BO_{max.}$ mm	Z	n min^{-1}	ID	
132	40	30	40	2	5900 - 10100	**125121**	●

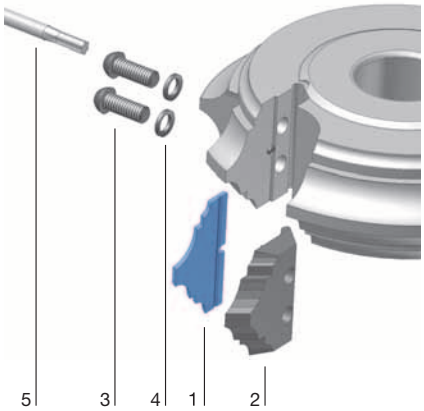
For ball bearings and guide rings see section 9 spare parts.

Spare knives:

Part-no.	BEZ	ABM mm	QAL	ID	
1	ProfilCut-knife	40x39x2	HW	**619219**	●

Spare parts:

Part-no.	BEZ	ABM mm	ID	
2	Clamping wedge	38x49,5x8,27	**629111**	●
3	Clamping screw, Torx® 25	M6x18,5	**007818**	●
4	Washer	9/6,2x1,2	**006753**	●
5	Torx® key	Torx® 25	**117504**	●



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Instruction manual visit www.leitz.org




Profile cutterhead set ProfilCut - bevelling / rounding

Application:
Multi purpose tool set for bevelling, rounding and jointing the workpiece edges at the same time.

Machine:
Spindle moulders, copy shaping and profile moulders.

Workpiece material:
Softwood and hardwood.

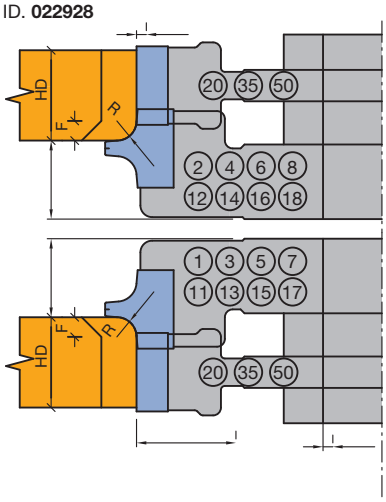
Technical information:
With a combination of jointing and bevelling/rounding cutterheads, different profiles and wood thicknesses can be machined. Profile knives with different radii/bevels can be mounted in one cutterhead.

4

Manual feed
SE 541-1-50

Tool Type	D0 mm	AW PCS	n min^{-1}	Z	ID	
Jointing-rounding	125	2	4200 - 7100	2	**022928**	□
Rounding-jointing-rounding	125	3	4200 - 7100	2	**022929**	□
Rounding-rounding	125	2	4200 - 7100	2	**022930**	□

ID. **022928**



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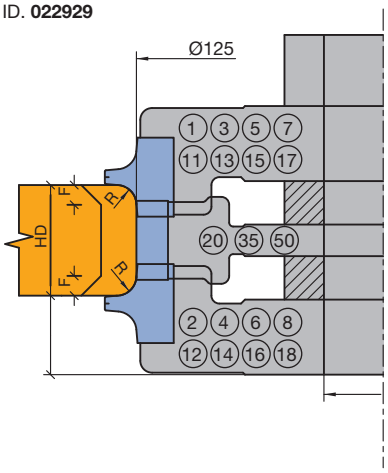
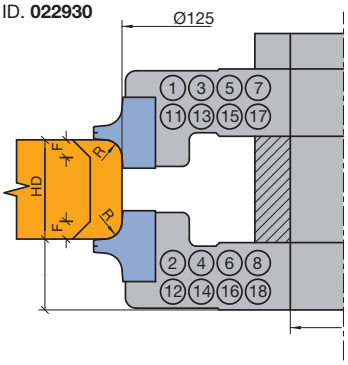


Single tools
WE 500-1-50, WW 211-1-NN

Tool Type	Tool no.	ABM mm	QAL	Z	R mm	FAW	ID	
Profile cutterhead	1	141x20/28x30	HW	2	3 - 5	45°	**023018**	□
Profile cutterhead	2	141x20/28x30	HW	2	3 - 5	45°	**023019**	□
Profile cutterhead	11	141x20/28x30	HW	2	6 - 8	45°	**023020**	□
Profile cutterhead	12	141x20/28x30	HW	2	6 - 8	45°	**023021**	□
Profile cutterhead	3	155.5x35x30	HW	2	10 - 12	45°	**023022**	□
Profile cutterhead	4	155.5x35x30	HW	2	10 - 12	45°	**023023**	□
Profile cutterhead	13	155.5x35x30	HW	2	13 - 15	45°	**023024**	□
Profile cutterhead	14	155.5x35x30	HW	2	13 - 15	45°	**023025**	□
Profile cutterhead	5	167x40/45x30	HW	2	16 - 17	40°	**023026**	□
Profile cutterhead	6	167x40/45x30	HW	2	16 - 17	40°	**023027**	□
Profile cutterhead	15	167x40/45x30	HW	2	18 - 20	40°	**023028**	□
Profile cutterhead	16	167x40/45x30	HW	2	18 - 20	40°	**023029**	□
Profile cutterhead	7	187x50/55x30	HW	2	25 - 27		**023030**	□
Profile cutterhead	8	187x50/55x30	HW	2	25 - 27		**023031**	□
Profile cutterhead	17	187x50/55x30	HW	2	28 - 30		**023032**	□
Profile cutterhead	18	187x50/55x30	HW	2	28 - 30		**023033**	□
Jointing cutterhead	20	125x20/22x30	HW	2			**023015**	●
Jointing cutterhead	35	125x35/37x30	HW	2			**023016**	●
Jointing cutterhead	50	125x50/52x30	HW	2			**023017**	●
Set of spacers		60x20x30	HW				**028560**	●

ID. **022930**



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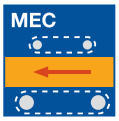




Profile cutterhead set ProfilCut - bevelling / rounding

Application:
Multi purpose tool set for bevelling, rounding and jointing the workpiece edges at the same time.

Machine:
Spindle moulders, copy shaping and moulders, double end tenoner.

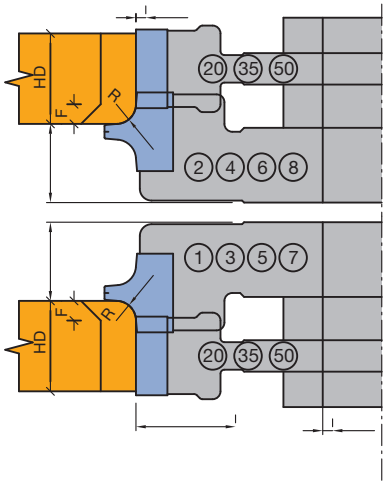
Workpiece material:
Softwood and hardwood.

Technical information:
With a combination of jointing and bevelling/rounding cutterheads, different profiles and wood thicknesses can be machined. Profile knives with different radii/bevels can be mounted in one cutterhead.

Mechanical feed
SE 541-2-50

Tool Type	D0 mm	AW PCS	n max. min^{-1}	Z	ID
Jointing-rounding	125	2	8000	2	**022925** □
Rounding-jointing-rounding	125	3	8000	2	**022926** □
Rounding-rounding	125	2	8000	2	**022927** □

ID. **022925**

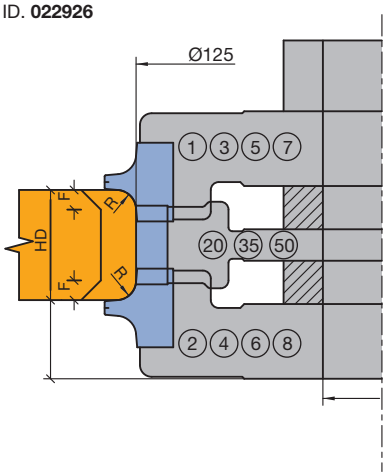


Single tools
WE 500-2-50, WW 211-1-NN

Tool Type	Tool no.	ABM mm	QAL	Z	R mm	FAW	ID
Profile cutterhead	1	141x20/28	HW	2	2 - 8	45°	**023007** □
Profile cutterhead	2	141x20/28x30	HW	2	2 - 8	45°	**023008** □
Profile cutterhead	3	155.5x35	HW	2	10 - 15	45°	**023009** □
Profile cutterhead	4	155.5x35	HW	2	10 - 15	45°	**023010** □
Profile cutterhead	5	167x40/45	HW	2	16 - 20	45°	**023011** □
Profile cutterhead	6	167x40/45	HW	2	16 - 20	45°	**023012** □
Profile cutterhead	7	187x50/55	HW	2	25 - 30		**023013** □
Profile cutterhead	8	187x50/55	HW	2	25 - 30		**023014** □
Jointing cutterhead	20	125x20/22x30	HW	2			**023015** ●
Jointing cutterhead	35	125x35/37x30	HW	2			**023016** ●
Jointing cutterhead	50	125x50/52x30	HW	2			**023017** ●
Set of spacers		60x20x30	HW				**028560** ●

Spare knives are suitable for MAN and MEC - feed.

ID. **022926**

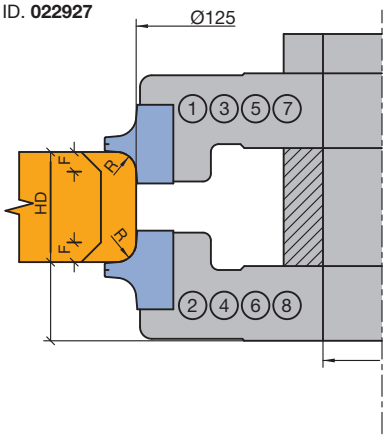


Spare knives:

Part-no.	BEZ	Tool no. MAN	Tool no. MEC	QAL	R mm	FAW	VE PCS	ID
1	Turnblade knife	20	20	HW-30F			10	**005071** ●
1	Turnblade knife	35	35	HW-30F			10	**005073** ●
1	Turnblade knife	50	50	HW-30F			10	**005075** ●
2	ProfilCut-knife		1,2	HW	2			**619012** □
2	ProfilCut knife	1,2	1,2	HW	3			**008583** ●
2	ProfilCut knife	1,2	1,2	HW	4			**008584** ●
2	ProfilCut knife	1,2	1,2	HW	5			**008585** ●
2	ProfilCut knife	11,12	1,2	HW	6			**008586** ●
2	ProfilCut knife	11,12	1,2	HW	7			**008587** ●
2	ProfilCut knife	11,12	1,2	HW	8			**008588** ●
2	ProfilCut-knife	1,2		HW	3	45°		**619013** □
2	ProfilCut knife	11,12	1,2	HW	5	45°		**008589** ●

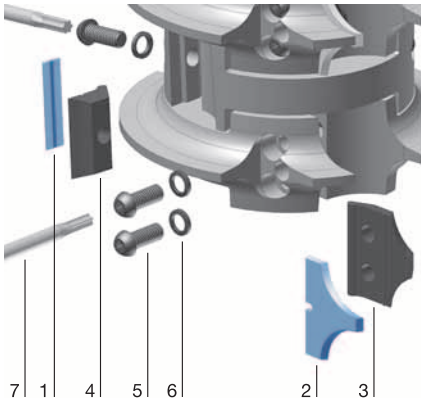
● available ex stock
□ available at short notice
Instruction manual visit www.leitz.org

ID. **022927**



Part-no.	BEZ	Tool no. MAN	Tool no. MEC	QAL	R mm	FAW	VE PCS	ID	
2	ProfilCut-knife	3,4	3,4	HW	10			**619014**	●
2	ProfilCut-knife	3,4	3,4	HW	11			**619015**	□
2	ProfilCut-knife	3,4	3,4	HW	12			**619016**	□
2	ProfilCut-knife	13,14	3,4	HW	13			**619017**	□
2	ProfilCut-knife	13,14	3,4	HW	14			**619018**	□
2	ProfilCut-knife	13,14	3,4	HW	15			**619019**	●
2	ProfilCut-knife		3,4	HW	10	45°		**619020**	●
2	ProfilCut-knife	3,4		HW	7	45°		**619021**	□
2	ProfilCut-knife	13,14		HW	10	45°		**619022**	●
2	ProfilCut-knife	5	5	HW	16			**619023**	□
2	ProfilCut-knife	5	5	HW	17			**619024**	□
2	ProfilCut-knife	15	5	HW	18			**619025**	□
2	ProfilCut-knife	15	5	HW	19			**619026**	□
2	ProfilCut-knife	15	5	HW	20			**619027**	●
2	ProfilCut-knife		5	HW	15	45°		**619028**	●
2	ProfilCut-knife	5		HW	9	40°		**619029**	□
2	ProfilCut-knife	15		HW	10	40°		**619030**	●
2	ProfilCut-knife	6	6	HW	16			**619031**	□
2	ProfilCut-knife	6	6	HW	17			**619032**	□
2	ProfilCut-knife	16	6	HW	18			**619033**	□
2	ProfilCut-knife	16	6	HW	19			**619034**	□
2	ProfilCut-knife	16	6	HW	20			**619035**	●
2	ProfilCut-knife		6	HW	15	45°		**619036**	●
2	ProfilCut-knife	6		HW	9	40°		**619037**	□
2	ProfilCut-knife	16		HW	10	40°		**619038**	●
2	ProfilCut-knife	7	7	HW	25			**619041**	●
2	ProfilCut-knife	7	7	HW	26			**619042**	□
2	ProfilCut-knife	7	7	HW	27			**619043**	□
2	ProfilCut-knife	17	7	HW	28			**619044**	□
2	ProfilCut-knife	17	7	HW	29			**619045**	□
2	ProfilCut-knife	17	7	HW	30			**619046**	●
2	ProfilCut-knife	8	8	HW	25			**619047**	●
2	ProfilCut-knife	8	8	HW	26			**619048**	□
2	ProfilCut-knife	8	8	HW	28			**619049**	□
2	ProfilCut-knife	18	8	HW	28			**619050**	□
2	ProfilCut-knife	18	8	HW	29			**619051**	□
2	ProfilCut-knife	18	8	HW	30			**619052**	●

Spare parts:



Part-no.	BEZ	Tool no. MAN	Tool no. MEC	ABM mm	ID	
3	Clamping wedge	1,2,11,12	1,2	18x22x8,27	**009649**	●
3	Clamping wedge	3,4,13,14	3,4	33x28x8.27	**629007**	□
3	Clamping wedge	5,15	5	38x29.71x8.27	**629008**	□
3	Clamping wedge	6,16	6	38x29.71x8.27	**629009**	□
3	Clamping wedge	7,17	7	48x31.73x8.27	**629010**	□
3	Clamping wedge	8,18	8	48x31.73x8.27	**629011**	□
4	Clamping wedge	20	20	18x18,75x8,27	**009671**	●
4	Clamping wedge	35	35	33x18,75x8,27	**009674**	●
4	Clamping wedge	50	50	48x18,75x8,27	**009677**	●
5	Clamping screw, Torx® 25			M6x18,5	**007818**	●
6	Washer			D9x1,2	**006747**	●
7	Torx® key			Torx® 25	**117504**	●

● available ex stock
□ available at short notice
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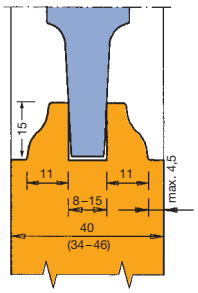
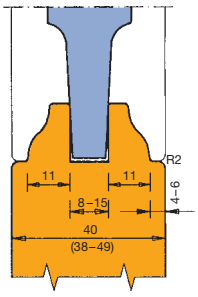
HW



Profile P 1 closed joint



Profile P 1.1 with open joint

Profile cutterhead ProfilCut for internal doors

Application:
For internal door profiles and counter profiles.

Machine:
Spindle moulders and moulders.

Workpiece material:
Softwood and hardwood.

Technical information:
Cutterhead with throwaway knives, straight cut.

Tool combination DOUBLE profile with jointing
AE 341-1-50

Tool Type	Tool no.	BO mm	$BO_{max.}$ mm	ID	
Profile 1 (P2-P5 on request)	1,2,3	30	50	**126500**	●
Profile 1.1 (P2.1-P5.1 on request)	1,2,3,4,5	30	50	**126501**	●
Profile 6, 7	2, 4, 5, 6, 7	30	50	**126502**	●
Profile 6.1, 7	2, 4.1, 5.1, 6, 7	30	50	**126503**	□
Profile 8	2, 8, 9, 10	30	50	**126504**	●
Profile 8.1	2, 8.1, 9.1, 10	30	50	**126505**	
Addition for rebates and/or one side	15, 16	30	50	**126512**	●

Combinations complete in wooden boxes.

Single tools
WE 500-1-50, SW 501-1

Tool Type	Tool no.	D mm	SB mm	BO mm	ID	
Profile cutterhead *	1	155	25	30	**125000**	●
Grooving cutterhead	2	155,2	8 - 15	30	**125089**	●
Profile cutterhead	3	155	25	30	**125002**	●
Profile cutterhead	4	161	30	30	**125003**	●
Profile cutterhead	5	161	30	30	**125005**	●
Profile cutterhead	6	155,1	25	30	**125007**	
Profile cutterhead	7	155,1	25	30	**125008**	
Profile cutterhead	8	165	25	30	**125009**	
Profile cutterhead bevel	8, 1	165	25	30	**125010**	
Profile cutterhead	9	165	25	30	**125011**	
Profile cutterhead bevel	9, 1	165	25	30	**125012**	
Profile cutterhead	10	125	15	30	**125013**	
Profile cutterhead	15	155	35	30	**125018**	
Profile cutterhead	16	125	30	30	**125019**	

* = Profile cutterheads supplied with profile P1.

Spare knives:

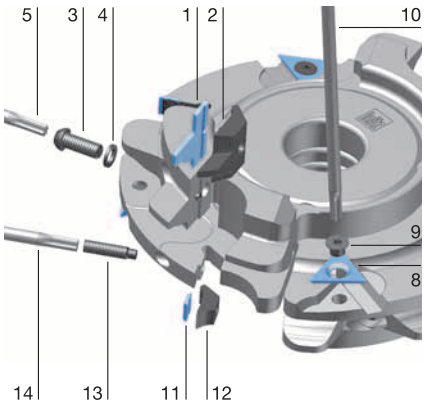
Part-no.	Tool no.	BEZ	VE PCS	P	ABM mm	QAL	ID	
1	1	ProfilCut knife		1	25x27x2	HW	**619054**	●
1	1	ProfilCut knife		2	25x27x2	HW	**619055**	●
1	1	ProfilCut knife		3	25x27x2	HW	**619056**	●
1	1	ProfilCut knife		4	25x27x2	HW	**619057**	●
1	1	ProfilCut knife		5	25x27x2	HW	**619058**	●
1	1	ProfilCut knife		1	25x27x2	HW	**619059**	●
1	3	ProfilCut knife		2	25x27x2	HW	**619060**	●
1	3	ProfilCut knife		3	25x27x2	HW	**619061**	●

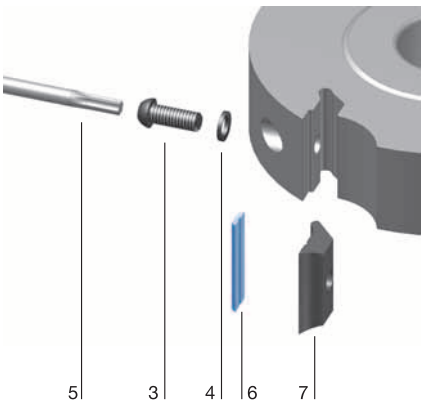
● available ex stock
□ available at short notice
Instruction manual visit www.leitz.org

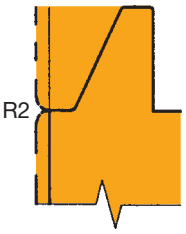
Part-no.	Tool no.	BEZ	VE PCS	P	ABM mm	QAL	ID	
1	3	ProfilCut knife		4	25x27x2	HW	**619062**	●
1	3	ProfilCut knife		5	25x27x2	HW	**619063**	●
1	3	ProfilCut knife		6,7	30x31x2	HW	**619064**	●
1	5	ProfilCut knife		6,7	30x31x2	HW	**619066**	●
1	6	ProfilCut knife		6, 6,1, 7	25x27x2	HW	**619068**	●
1	7	ProfilCut knife		6, 6,1, 7	25x27x2	HW	**619069**	●
1	8	ProfilCut knife		8	25x32x2	HW	**619070**	●
1	8.1	ProfilCut knife		8,1	25x32x2	HW	**619071**	●
1	9	ProfilCut knife		8	25x32x2	HW	**619072**	●
1	9.1	ProfilCut knife		8,1	25x32x2	HW	**619073**	●
6	10	Turnblade knife	10		14,7x8x1,5	HW-30F	**005070**	●
6	16	Turnblade knife	10		30x8x1,5	HW-30F	**005072**	●
6	15	Turnblade knife	10		35x8x1,5	HW-30F	**005073**	●
8	2, 5	Turnblade spur VS2	10		19x19x2	HW-F	**005115**	●
11	2	Turnblade knife	10		7,7x8x1,5	HW-30F	**005068**	●

Spare parts:

Part-no.	Tool no.	BEZ	P	ABM mm	ID	
2	1	Clamping wedge profiled		23x34x8,27	**629012**	
2	3	Clamping wedge profiled		23x34x8,27	**629013**	
2	4, 4.1	Clamping wedge profiled	6, 6,1, 7	28x38x8,27	**629014**	
2	5, 5.1	Clamping wedge profiled	6, 6,1, 7	28x38x8,27	**629015**	
2	6	Clamping wedge profiled	6, 6,1, 7	23x37,32x8,27	**629016**	
2	7	Clamping wedge profiled	6, 6,1, 7	23x37,32x8,27	**629017**	
2	8, 8.1	Clamping wedge profiled	8, 8,1	23x37,2x8,27	**629018**	
2	9, 9.1	Clamping wedge profiled	8, 8,1	23x37,2x8,27	**629019**	
3		Clamping screw, Torx® 25		M6x18,5	**007818**	●
4		Washer		9/6,2x1,2	**006753**	●
5		Torx® key		Torx® 25	**117504**	●
7	10	Clamping wedge		13x18,75x8,27	**009670**	●
7	16	Clamping wedge	1,2,16	28x18,75x8,27	**009673**	●
7	15	Clamping wedge	15	33x18,75x8,27	**009674**	●
9		Countersink screw, Torx® 20		M6x0,5x4,9	**006243**	●
10		Torx® key		Torx® 20	**117503**	●
12	2	Clamping wedge	2	7x18,75x8,27	**009763**	●
13		Allen screw with shank, Torx® 15		M5x20	**007380**	●
14		Torx® key		Torx® 15	**117507**	●
		Magnetic setting gauge		0,3/0,8	**005376**	●

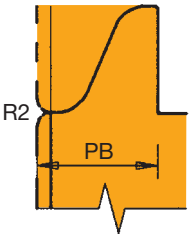




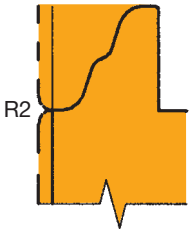


P2/P2.1

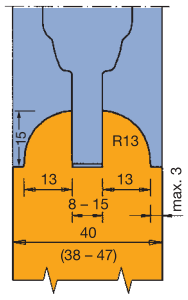
P3/P3.1



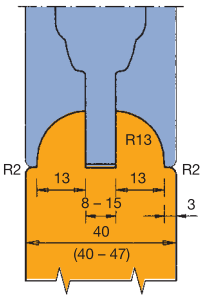
P4/P4.1



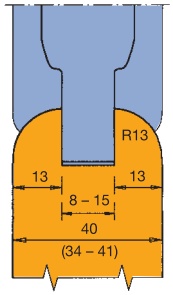
P5/P5.1



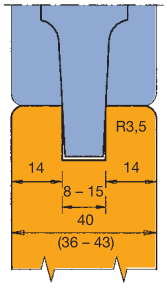
P6



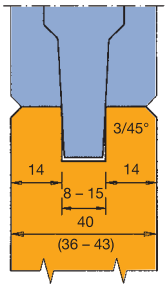
P6.1



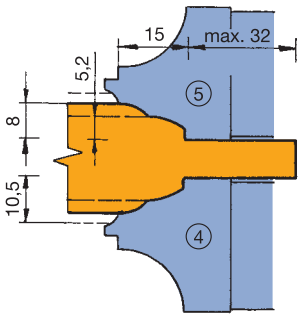
P7



P8

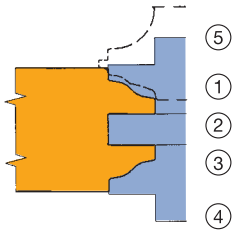


P8.1

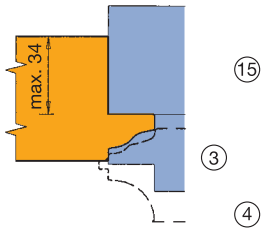


These profile cutterheads can be used for panel raising.

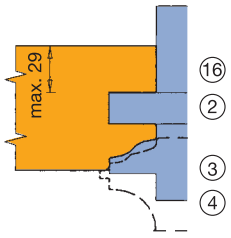
Fig.: Combination options of single tools
Double profile



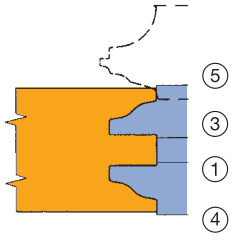
Profiles P1 - P5.1 along grain



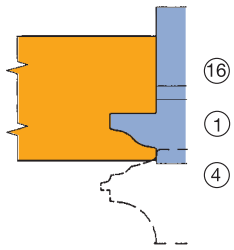
Rebate*



On one side*



Profiles P1 - P5.1 counter profile



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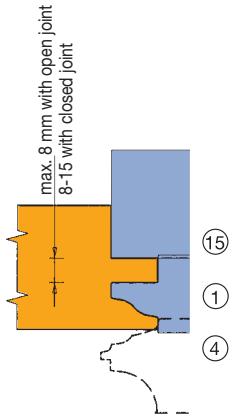
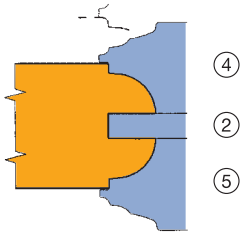
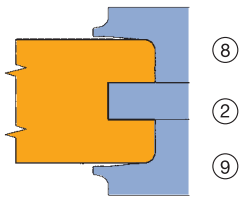


On one side*

* Profiles P1 - P8
(rebate possible and on one side)

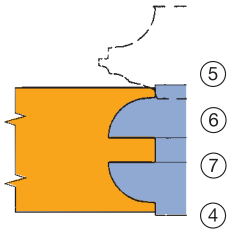


Profiles P6 - P7 along grain

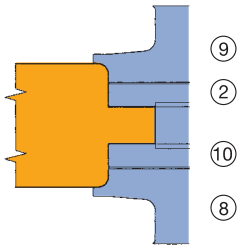


Profile P8 along grain

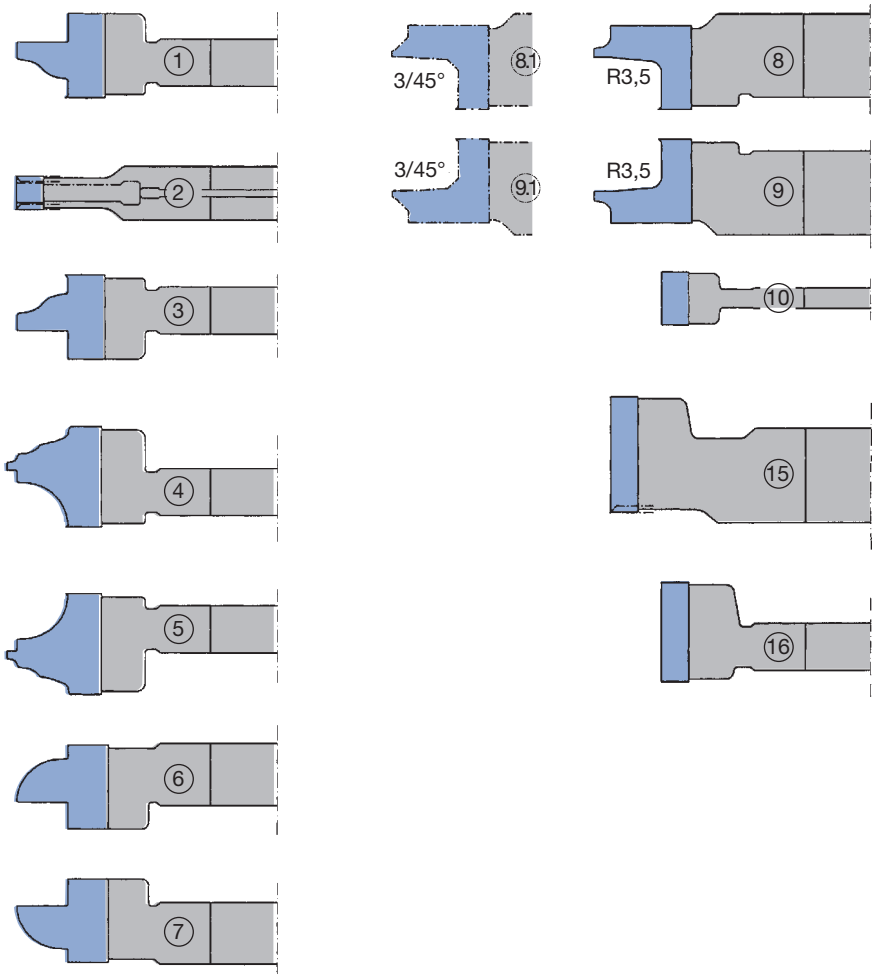
● available ex stock
□ available at short notice
Instruction manual visit www.leitz.org



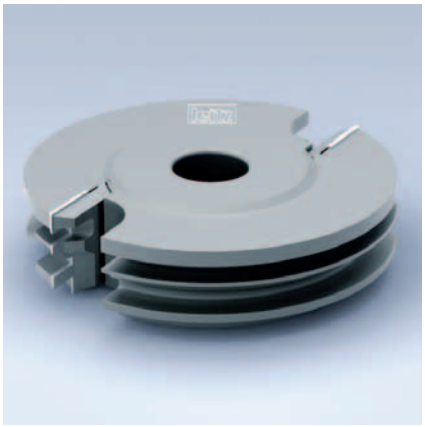
Profiles P6 - P7 counter profile

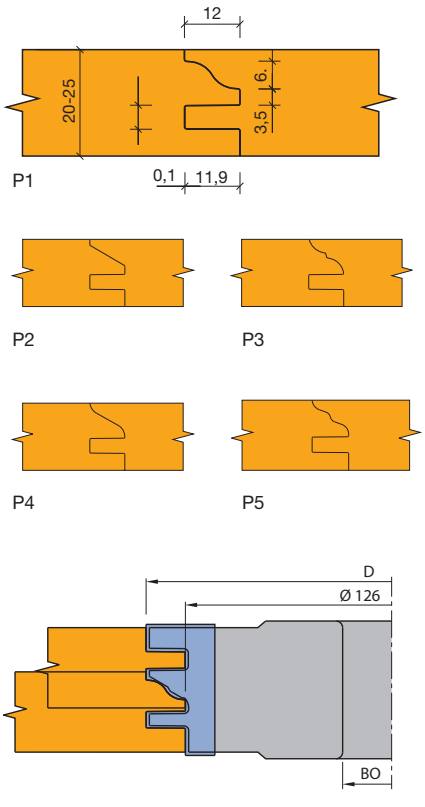


Profile P8 counter profile



Single tools





Profile cutterhead

Profile cutterhead ProfilCut for furniture doors

Application:
For profiles and counter profiles for furniture doors.

Machine:
Spindle moulders and moulders.

Workpiece material:
Softwood and hardwood.

Technical information:
Cutterhead with throwaway knives, straight cut.

SB 20 - 25 mm; with closed joint
AE 341-1-50

D mm	SB mm	BO mm	$BO_{max.}$ mm	Z	n min^{-1}	ID	
150	40	30	50	2	5200 - 8900	**023813**	●

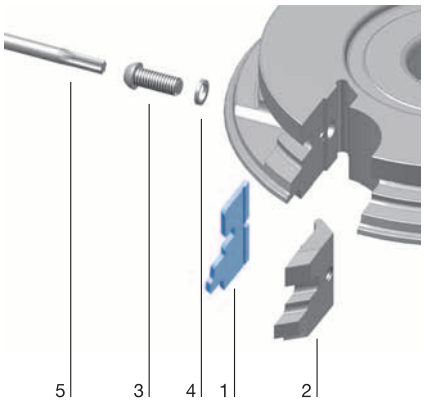
Tool in wooden box complete with profile knives P1 and key.

Spare knives:

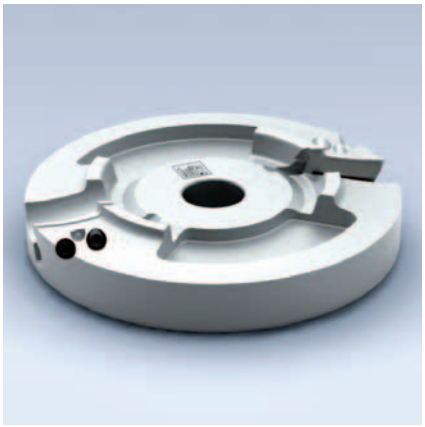
Part-no.	BEZ	ABM mm	QAL	P	ID	
1	ProfilCut knife	40x26x2	HW	1	**009484**	●
1	ProfilCut knife	40x26x2	HW	2	**009485**	●
1	ProfilCut knife	40x26x2	HW	3	**009486**	●
1	ProfilCut knife	40x26x2	HW	4	**009487**	●
1	ProfilCut knife	40x26x2	HW	5	**009488**	●

Spare parts:

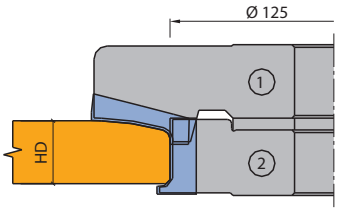
Part-no.	BEZ	ABM mm	ID	
2	Clamping wedge profiled	38x36,5x8,27	**009738**	●
3	Clamping screw, Torx® 25	M6x18,5	**007818**	●
4	Washer	9/6,2x1,2	**006753**	●
5	Torx® key	Torx® 25	**117504**	●



● available ex stock
□ available at short notice
Instruction manual visit www.leitz.org

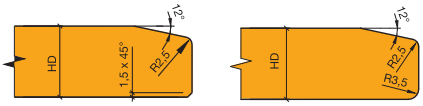


Profile 1.1



P1.1 P1.2

P1.3 P2.2



P2.1 P2.3

Profile cutterhead set ProfilCut

Application:
For panel raising of cabinet doors, table tops and worktops.

Machine:
Spindle moulders and moulders, double end tenoners.

Workpiece material:
Softwood and hardwood, wood derived materials.

Technical information:
Cutterhead with throwaway knives and shear angle. Can be used either as single tool without jointing or as set with jointing cutterhead.

Profile cutterhead set with jointing
SE 500-1-50

Tool no.	D mm	SB mm	BO mm	$BO_{max.}$ mm	Z	n min^{-1}	ID	
1	185	10 - 38	30	50	2	4200 - 7200	**023151**	●
2	135	29 - 29,5	30	50	2	5700 - 9800		

Tool set complete with spacer set for profile 1.1 in wooden box.

Single tools
WE 500-1-50, WE 550-1-50

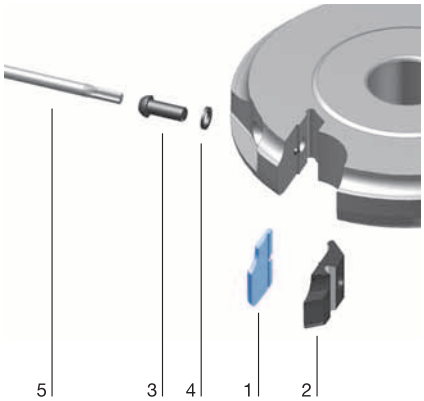
Tool no.	D mm	SB mm	BO mm	$BO_{max.}$ mm	Z	n min^{-1}	ID	
1	185	10 - 38	30	50	2	4200 - 7200	**023240**	●
2	135	29 - 29,5	30	50	2	5700 - 9800	**023242**	●

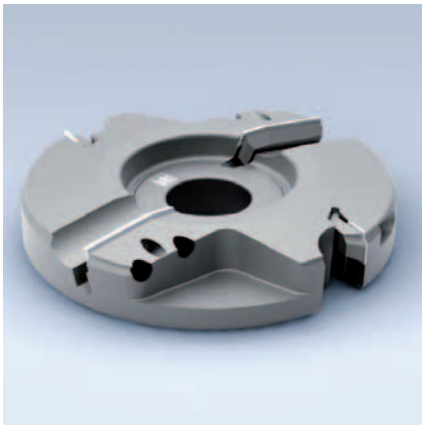
Spare knives:

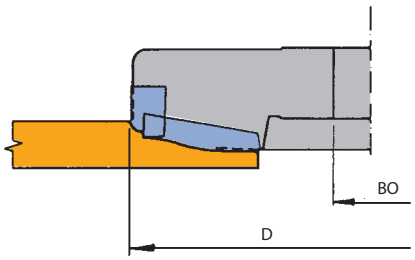
Part-no.	BEZ	ABM mm	QAL	Tool no.	P	ID	
1	ProfilCut knife	40x13,21x2	HW	1	1	**619005**	●
1	ProfilCut knife	40x13,21x2	HW	1	2	**619117**	●
1	ProfilCut knife	30x15,9x2	HW	2	1	**619009**	●
1	ProfilCut knife	30x15,9x2	HW	2	2	**619010**	●
1	ProfilCut knife	30x15,9x2	HW	2	3	**619011**	●

Spare parts:

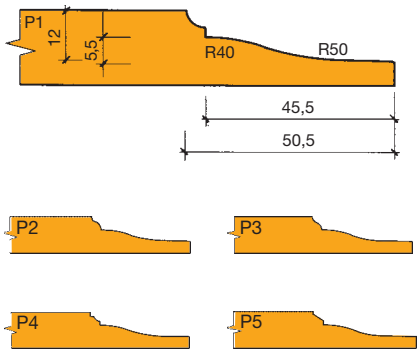
Part-no.	BEZ	ABM mm	Tool no.	ID	
2	Clamping wedge profiled	37x21,38x8,27	1	**629003**	●
2	Clamping wedge profiled	28x24x8,27	2	**629005**	●
3	Clamping screw, Torx® 25	M6x18,5		**007818**	●
4	Washer	9/6,2x1,2		**006753**	●
5	Torx® key	Torx® 25		**117504**	●







Single side panel raising



Profile cutterhead ProfilCut

Application:
For profiling and panel raising 5 defined profiles by knife change.

Machine:
Spindle moulders and moulders, double end tenoners.

Workpiece material:
Softwood and hardwood.

Technical information:
Cutterhead with throwaway knives, shear angle.

Profiling and panel raising, panel raising profile, curved
AE 342-1-50

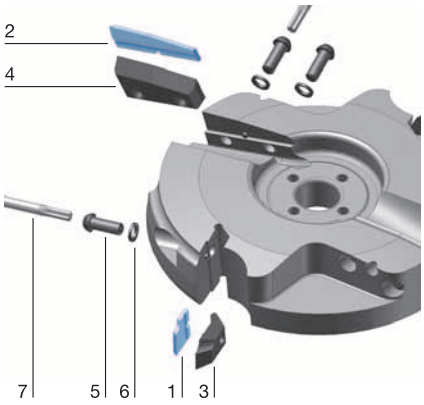
P	D mm	SB mm	BO mm	$BO_{max.}$ mm	Z	n min^{-1}	DRI	ID	
P1	190	40	30	50	2/2	4100 - 7000	RL	**023129**	●

Spare knives:

Part-no.	BEZ	ABM mm	P	ID	
1	ProfilCut knife	20x16x2	1	**007650**	●
1	ProfilCut knife	20x16x2	2	**007651**	●
1	ProfilCut knife	20x16x2	3	**007652**	●
1	ProfilCut knife	20x16x2	4	**007653**	●
1	ProfilCut knife	20x16x2	5	**007654**	●
2	ProfilCut knife (pan.rais.)	50x11,68x2		**007599**	●

Spare parts:

Part-no.	BEZ	ABM mm	ID	
3	Clamping wedge profiled	18x26,46x8,27 (P1-5)	**009724**	●
4	Clamping wedge profiled	47x20.18x7.25 (raised panel)	**009980**	●
5	Clamping screw, Torx® 25	M6x18,5	**007818**	●
6	Washer	9/6,2x1,2	**006753**	●
7	Torx® key	Torx® 25	**117504**	●



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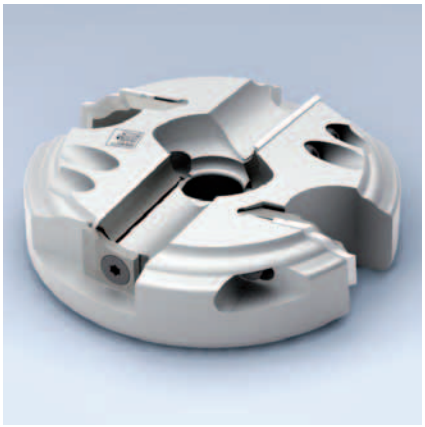
□ available at short notice
Instruction manual visit www.leitz.org



Profile cutterhead ProfilCut

Application:
For profiling and panel raising 5 defined profiles by knife change.

Machine:
Spindle moulders and moulders, double end tenoners.

Workpiece material:
Softwood and hardwood (along and across grain).

Technical information:
Cutterhead with throwaway knives, shear angle.

Profiling and panel raising, panel raising profile, straight
AE 342-1-50

P	D mm	SB mm	BO mm	$BO_{max.}$ mm	Z	n min^{-1}	DRI	ID	
P1	204	33	30	50	2/2	3800 - 6500	RL	**023126**	●
P1	220	33	30	50	2/2	3500 - 6000	RL	**023132**	●
P1	220	33	50	50	2/2	3500 - 6000	RL	**023135**	□

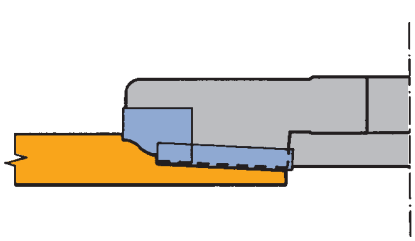
P1 = Profile cutterhead P1

Spare knives:

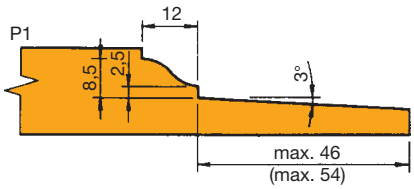
Part-no.	BEZ	P	ABM mm	VE PCS	ID	
1	Profile knife	1	20x27x2		**007555**	●
1	Profile knife	2	20x27x2		**007556**	●
1	Profile knife	3	20x27x2		**007557**	●
1	Profile knife	4	20x27x2		**007558**	●
1	Profile knife	5	20x27x2		**007559**	●
2	Turnblade knife		50x8x1,5	10	**005075**	●
2	Turnblade knife		60x8x1,5	10	**005076**	●

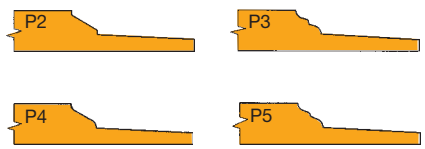
Spare parts:

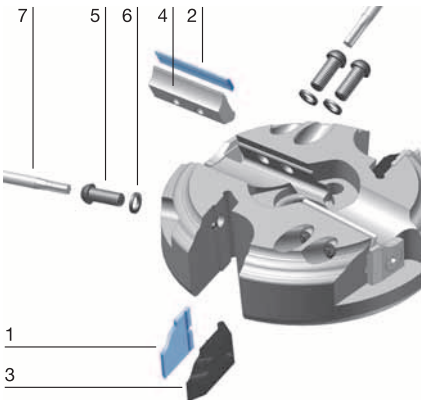
Part-no.	BEZ	ABM mm	P	ID	
3	Clamping wedge profiled	18x37,46x8,27	1-5	**009721**	●
4	Clamping wedge panel raising cutter	47x16,8x7,25		**009578**	●
4	Clamping wedge panel raising cutter	57x16,8x7,25		**009579**	●
5	Clamping screw, Torx® 25	M6x18,5		**007818**	●
6	Washer	9/6,2x1,2		**006753**	●
7	Torx® key	Torx® 25		**117504**	●



Single side panel raising







Profile cutterhead ProfilCut

Application:
For profiling and panel raising 2 different profiles by knife change.

Machine:
Spindle moulders and moulders, double end tenoners.

Workpiece material:
Softwood and hardwood, three layer laminate.

Technical information:
Cutterhead with throwaway knives and shear angle. Tool with 2 profile variants (bevel and quarter round).

Profiling and panel raising using one knife, panel raising profile, straight
WE 550-1-50

P	D mm	SB mm	BO mm	$BO_{max.}$ mm	Z	n min^{-1}	ID	
P1	200	10 - 37	30	50	2	3900 - 6600	**023235**	●

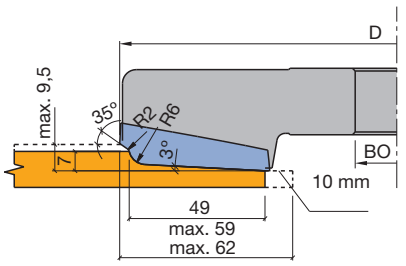
Tool in wooden box including profile knives P1.

Spare knives:

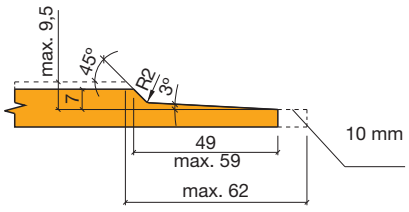
Part-no.	BEZ	ABM mm	QAL	P	ID	
1	ProfilCut knife	60x14,5x2	HW	1	**009494**	●
1	ProfilCut knife	60x14,56x2	HW	2	**009495**	●

Spare parts:

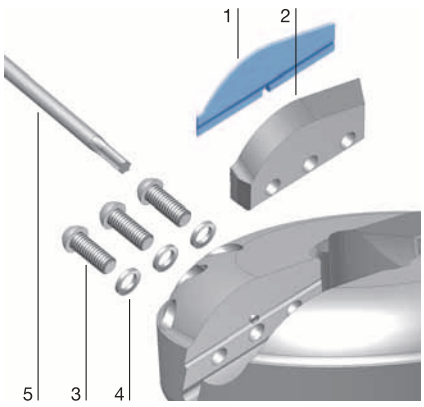
Part-no.	BEZ	ABM mm	ID	
2	Clamping wedge profiled	57x23x7,25	**009742**	●
3	Clamping screw, Torx® 25	M6x18,5	**007818**	●
4	Washer	9/6,2x1,2	**006753**	●
5	Torx® key	Torx® 25	**117504**	●



Single side panel raising profile 1



Profile 2



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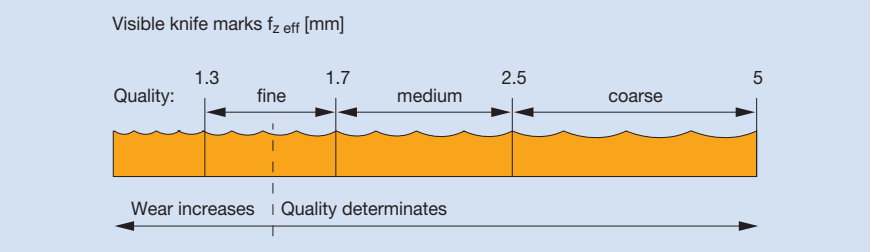
Instruction manual visit www.leitz.org

Type of operation

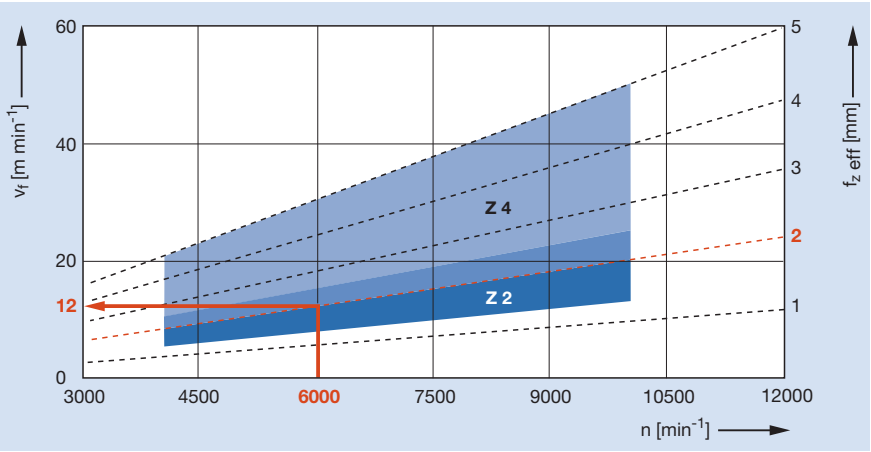
The tools described in the following section are suitable for making many different profiles. This includes profiling in craft or industry, the relevant product descriptions provide a reference when using a specific tool, and the type of woods processed.

The introduction to each section gives general notes and application regulations.

Relation between surface quality and length of knife marks $f_{z\ eff}$



Feed speeds depending on RPM, length of knife marks and number of teeth



With multi blade tools, only the marks of one knife show on the surface (one knife finish). Z2 and Z4 tools produce the same surface quality with same machine setting. High numbers of teeth are required for a high hogging performance.

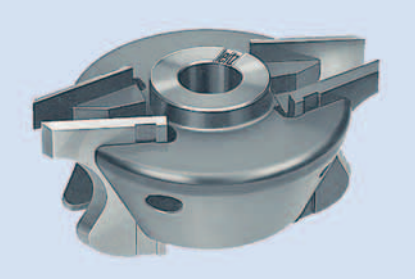
Workpiece materials, Machines, Application

Please refer to the relevant product pages depending on the operation and profile.

Tool System

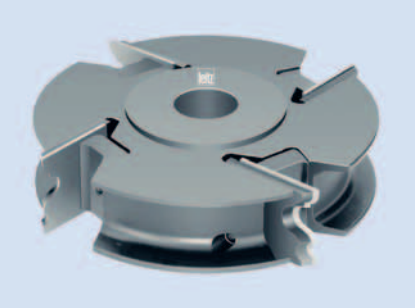
WM 500-1-04 Profile cutterhead with limitor, tool body in aluminium.

For profile depths up to max 15 mm and cutting widths of 50 mm. (WM 510-1-03)
For profile depths up to max 15 mm and cutting widths of 40 mm. (WM 500-1-04)
For small companies or craft. For spindle moulders or combination machines. More than 127 standard profile cutters and limitors available. If required Leitz can supply profile knives and limitors in HS quality to a special shape. Only a drawing or wood sample of the required profile is necessary to produce the special knives.



WM 530-1-01 Profile cutterhead.
WM 530-1-02 Profile cutterhead.
WM 520-1 Profile cutterhead.
WM 540-1 Profile cutterhead.

For deep profile depths up to max. 45 mm and cutting widths up to 80 mm. Suitable for small and medium sized companies to produce special profiles. For machines with manual feed. Special profile knives in HS quality can be produced the Leitz service stations on request. Only a sketch or wood sample of the required profile necessary to produce special profile knives.



Profile cutterhead VariForm.

VariForm cutterheads are available in different designs and dimensions. The tool body is designed for mech. feed without limitor or for manual feed with limitor depending on the application. Please select the correct type of cutterhead for each application from the diagram below.

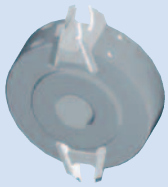
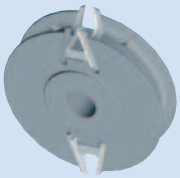
Design variation	Profile depth up to 15/19 mm	Profile depth up to 20 mm	Profile depth up to 35 mm
MAN-feed For spindle moulders	 Multi purpose tool body	 Part profiled tool body, U-profile	 Profiled tool body, cranked right/left
Cutting width	40/45 mm a. 50/60 mm	45/45 mm a. 50/60 mm	40 mm to 60 mm

Table for diameters when using rebating and profile knives:

D-mm Tool body	D-mm with rebating knife	D-mm with profile knife
93	108	130
114	128	150

Profile cutterhead, aluminium tool body

Application:
For profiling, jointing and rebating.

Machine:
Spindle moulders and moulders.

Workpiece material:
Softwood and hardwood.

Technical information:
Profile cutterhead with aluminium tool body for standard and special profile knives up to 50 mm cutting width and max. profile depth 15 mm. Constant diameter by using throwaway profile knives. Knife thickness 4 mm.

4

D 108 mm - 148 mm
WM 500-1-04, WM 500-1-06

D mm	SB mm	BO mm	$BO_{max.}$ mm	Z	n min^{-1}	QAL	ID
108	40	30	30	2	6000 - 10000	SP	**025685** ●
128	40 - 50	30	40	2	6000 - 9000	SP	**025815** ●
148	40 - 50	30	50	2	5500 - 7000	SP	**025691** ●

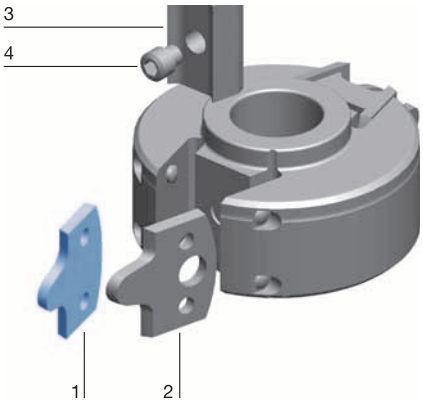
See section 9 knives / spare parts

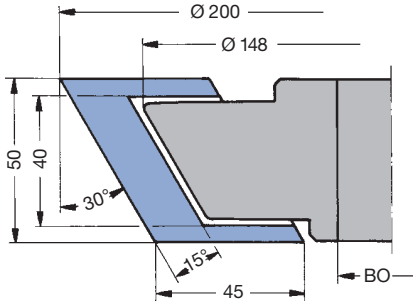
Spare knives:

Part-no.	BEZ	ABM mm	QAL	ID
1	Rebate knife	40x32,8x4	SP	**007104** ●
2	Limitor	38,4x32,8x4	ST	**005586** ●

Spare parts:

Part-no.	BEZ	ABM mm	ID
3	Clamping wedge	36x13,21x26	**009756** ●
4	Allen screw with ISK 5	M10x12	**006044** ●
	Allen Key	SW 5	**005446** ●





Profile cutterhead, steel tool body

Application:
For deep onesided profiles, max. 45 mm depth.

Machine:
Spindle moulders and moulders.

Workpiece material:
Softwood and hardwood.

Technical information:
Cutting width up to 50 mm. See illustration for usable profile area. Knife thickness 4.0 mm. Only use cutterhead with original Leitz profile knives and limitors.

MAN feed, for one sided profiles with SB 50 mm
WM 530-1-01

D mm	TD mm	SB mm	BO mm	$BO_{max.}$ mm	Z	n min^{-1}	ID	
200	148	50	30	40	2	4500 - 7000	**029636**	●

Sales unit incl. key, but without knives and limitors.
Note: State direction of rotation when ordering knives.

Spare parts:

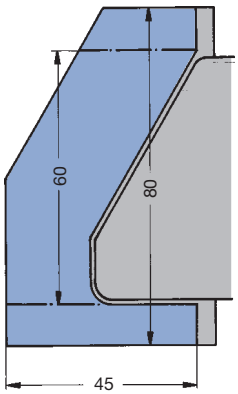
BEZ	ABM mm	ID	
Allen screw	M10x16	**006046**	●
Allen Key	SW 5	**005446**	●
Double wedge	49,2x13,2x26	**009927**	●

HS-special profiles and SP-profile limitors

Profile knives set inc. limitor	PG I	SB = 50 mm
Profile knives set inc. limitor	PG II	SB = 50 mm
Set consists of:	2 HS-Profile knives; 2 SP-Limitors	

Profile knives and limitors produced to customer's profile.
Only use this cutterhead with original Leitz profile knives and limitors!

● available ex stock
□ available at short notice
Instruction manual visit www.leitz.org



Profile cutterhead, steel tool body

Application:
For deep one sided profiles, max. 45 mm depth. Easy to use, no setting gauge required.

Machine:
Spindle moulders and moulders.

Workpiece material:
Softwood and hardwood.

Technical information:
Cutting width up to 80 mm. See illustration for usable profile area. Knife thickness 4.0 mm. Only use cutterhead with original Leitz profile knives and limitors.

4

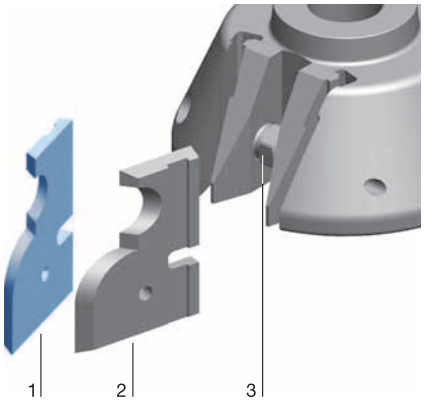
MAN feed, for one sided profiles with SB 60 - 80 mm
WM 530-1-02

D mm	SB mm	BO mm	$BO_{max.}$ mm	HD mm	$PT_{max.}$ mm	Z	n min^{-1}	ID	
180	60 - 80	30	40	80	45	2	4500 - 6000	**026768**	●
180	60 - 80	40	40	80	45	2	4500 - 6000	**026769**	●

Sales unit incl. key, but without knives and limitors.
Note: State direction of rotation when ordering knives.

Spare parts:

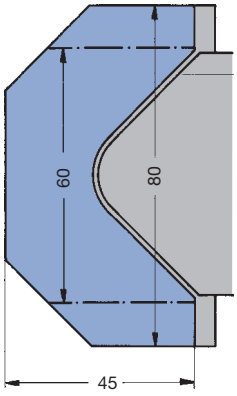
Part-no.	BEZ	ABM mm	ID	
3	Clamping screw	M16x1.5x36 LL/RL	**005958**	●
	Key	SW 17	**005456**	●



HS-special profiles and SP-profile limitors

PG I	Set of profile knives	SB = 60 mm
PG II	Set of profile knives	SB = 60 mm
PG I	Set of profile knives	SB = 80 mm
PG II	Set of profile knives	SB = 80 mm
Set consists of:		2 HS-Profile knives 2 SP-Limitors

Profile knives and limitors are produced to customer's profile.
Only use this cutterhead with original Leitz profile knives and limitors!



Profile cutterhead, steel tool body

Application:
For deep profiles, max. 45 mm depth, with resharpenable profile knives and limitors. Easy to use, no setting gauge required.

Machine:
Spindle moulders and moulders.

Workpiece material:
Softwood and hardwood.

Technical information:
Cutting width up to 80.0 mm. Symetrical tool body for right hand or left hand rotation as required. Only use cutterhead with original Leitz profile knives and limitors.

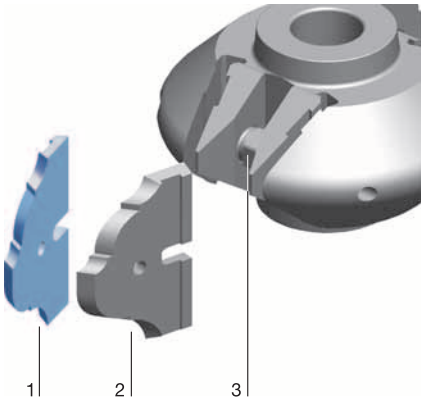
MAN feed for symmetric profiles SB 60 - 80 mm
WM 520-1

D mm	SB mm	BO mm	$BO_{max.}$ mm	HD mm	$PT_{max.}$ mm	Z	n min^{-1}	ID	
180	60 - 80	30	40	80	45	2	4500 - 6000	**026651**	●

Sales unit incl. key, but without knives and limitors.
Note: State direction of rotation when ordering knives.

Spare parts:

Part-no.	BEZ	ABM mm	ID	
3	Clamping screw	M16x1.5x36 LL/RL	**005958**	●
	Key	SW 17	**005456**	●

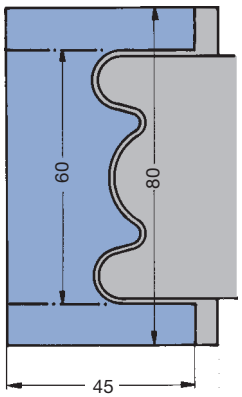


HS-special profiles and SP-profile limitors

PG I	Set of profile knives	SB = 60 mm
PG II	Set of profile knives	SB = 60 mm
PG I	Set of profile knives	SB = 80 mm
PG II	Set of profile knives	SB = 80 mm
Set consists of:		2 HS-Profile knives
		2 SP-Limitors

Profile knives and limitors are produced to customer's profile.
Only use this cutterhead with original Leitz profile knives and limitors!

● available ex stock
□ available at short notice
Instruction manual visit www.leitz.org



Profile cutterhead, steel tool body

Application:
For deep profiles, max. 45 mm depth, with resharpenable profile knives and limitors. Easy to use, no setting gauge required.

Machine:
Spindle moulders and moulders.

Workpiece material:
Softwood and hardwood.

Technical information:
Cutting width up to 80.0 mm. Symetrical tool body for right hand or left hand rotation as required. Only use cutterhead with original Leitz profile knives and limitors.

4

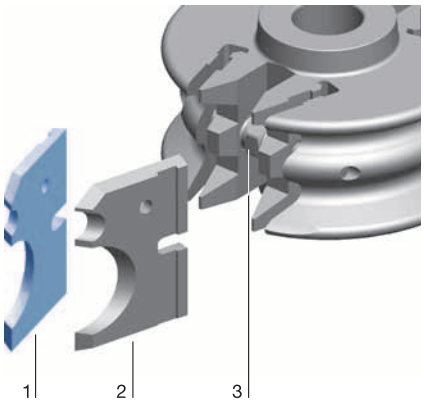
MAN feed for symmetric closed profiles SB 60 - 80 mm
WM 540-1

D mm	SB mm	BO mm	$BO_{max.}$ mm	HD mm	$PT_{max.}$ mm	Z	n min^{-1}	ID	
180	60 - 80	30	40	80	45	2	4500 - 6000	**026865**	●
180	60 - 80	40	40	80	45	2	4500 - 6000	**026866**	□

Sales unit incl. key, but without knives and limitors.
Note: State direction of rotation when ordering knives.

Spare parts:

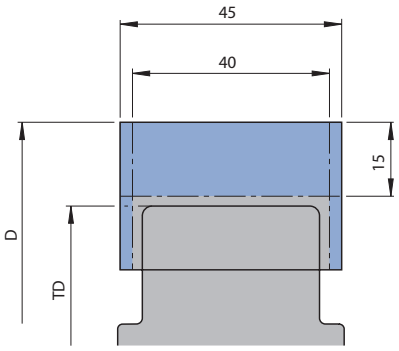
Part-no.	BEZ	ABM mm	ID	
3	Clamping screw	M16x1.5x36 LL/RL	**005958**	●
	Key	SW 17	**005456**	●



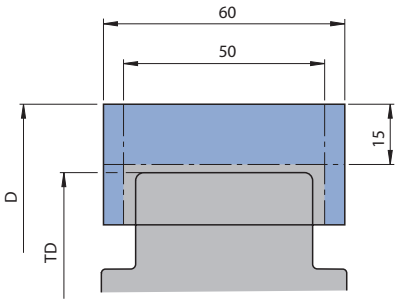
HS-special profiles and SP-profile limitors

PG I	Set of profile knives	SB = 60 mm
PG II	Set of profile knives	SB = 60 mm
PG I	Set of profile knives	SB = 80 mm
PG II	Set of profile knives	SB = 80 mm
Set consists of:		2 HS-Profile knives 2 SP-Limitors

Profile knives and limitors are produced to customer's profile.
Only use this cutterhead with original Leitz profile knives and limitors!



Tool body, SB 40/45 mm



Tool body, SB 50/60 mm

Profile cutterhead VariForm

Application:
For profiles with max. 15 mm profile depth.

Machine:
Spindle moulders and moulders, double end tenoners, edge banding machines etc.

Workpiece material:
Softwood and hardwood (HW-30F), panel materials or glued wood (HW-10F).

Technical information:
Multi purpose cutterhead for MAN feed with tungsten carbide profile knives and backing plates and limitors. Resharpenable 3 to 4 times.

Tool body, MAN feed, Z 2
TT 531-1

D mm	TD mm	SB mm	BO mm	$BO_{max.}$ mm	$PT_{max.}$ mm	Z	$n_{max.}$ min^{-1}	ID	
150	116	40 - 45	30	50	15	2	8000	**135100**	●
150	116	50 - 60	30	50	15	2	8000	**135101**	●

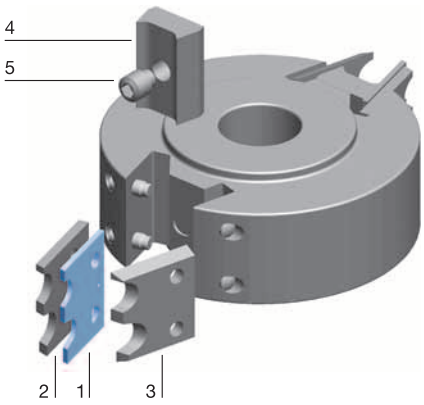
Supplied with clamping wedges, but without backing plates, limitors and knives.

Spare knives:

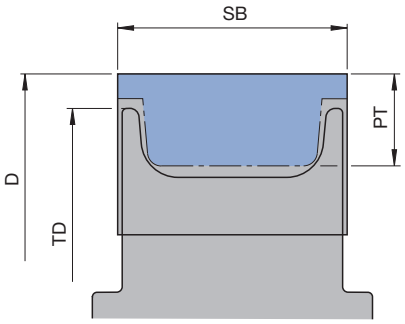
Part-no.	H mm	SB mm	$PT_{max.}$ mm	ID HW-10F		ID HW-30F	
1	40	40	15	**636227**	●	**636240**	●
1	40	45	15	**636231**	●	**636244**	●
1	40	50	15	**636284**	●	**636272**	●
1	40	60	15	**636288**	●	**636276**	●

Spare parts:

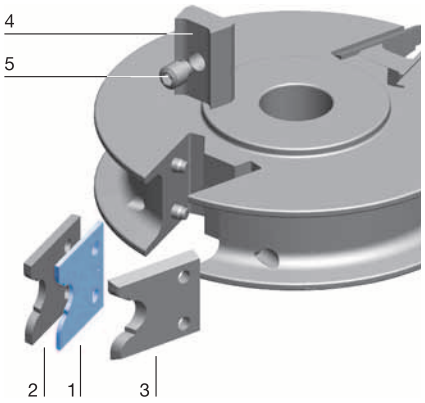
Part-no.	BEZ	ABM mm	for SB mm	ID	
2	Backing plate VariForm	for knives 40x40x2.1	40	**645000**	●
2	Backing plate VariForm	for knives 45x40x2.1	45	**645001**	●
2	Backing plate VariForm	for knives 50x40x2.1	50	**645002**	●
2	Backing plate VariForm	for knives 60x40x2.1	60	**645003**	●
3	Limitor VariForm	for knives 40x40x2.1		**640000**	●
3	Limitor VariForm	for knives 45x40x2.1		**640001**	●
3	Limitor VariForm	for knives 50x40x2.1		**640002**	●
3	Limitor VariForm	for knives 60x40x2.1		**640003**	●
4	Clamping wedge	36x13,21x26	40/45	**009756**	●
4	Clamping wedge VariForm	44x13,21x24,25	50/60	**009760**	●
5	Allen screw with ISK 5	M10x12		**006044**	●
	Allen Key	SW 5, L100		**117506**	●



● available ex stock
□ available at short notice
Instruction manual visit www.leitz.org



Tool body, U-profile



Profile cutterhead VariForm

Application:
For cutting profiles. Different profiles with max. 20 mm profile depth can be mounted.

Machine:
Spindle moulders and moulders, double end tenoners, edge banding machines etc.

Workpiece material:
Softwood and hardwood (HW-30F), panel materials or glued wood (HW-10F).

Technical information:
Multi purpose cutterhead for MAN feed with tungsten carbide profile knives and backing plates and limitors. Resharpenable 3 to 4 times.

Part profiled tool body, MAN feed, Z 2 (U-profile)
TT 531-1

D mm	TD mm	SB mm	BO mm	$BO_{max.}$ mm	$PT_{max.}$ mm	Z	$n_{max.}$ min^{-1}	ID	
180	165	40	30	50	20	2	7200	**135120**	●
180	165	50	30	50	20	2	7200	**135121**	●
180	165	60	30	50	20	2	7200	**135122**	●

Supplied with clamping wedges, but without backing plates, limitors and knives.

Spare knives:

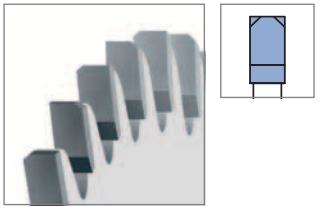
Part-no.	H mm	SB mm	PT mm	ID HW-10F		ID HW-30F	
1	45	40	20	**636226**	●	**636239**	●
1	45	50	20	**636283**	●	**636271**	●
1	45	60	20	**636287**	●	**636275**	●

Spare parts:

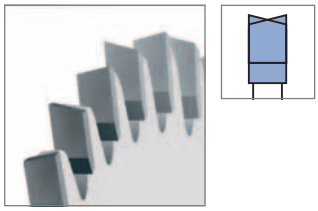
Part-no.	BEZ	ABM mm	for SB mm	ID	
2	Backing plate VariForm	for knives 40x45x2.1		**645004**	●
2	Backing plate VariForm	for knives 50x45x2.1		**645005**	●
2	Backing plate VariForm	for knives 60x45x2.1		**645006**	●
3	Limitor VariForm	for knives 40x45x2.1		**640004**	●
3	Limitor VariForm	for knives 50x45x2.1		**640005**	●
3	Limitor VariForm	for knives 60x45x2.1		**640006**	●
4	Clamping wedge	36x13,21x26	40/45	**009756**	●
4	Clamping wedge	56x13,21x26	60	**009757**	●
4	Clamping wedge VariForm	44x13,21x24,25	50/60	**009760**	●
5	Allen screw with ISK 5	M10x12		**006044**	●
	Allen Key	SW 5, L100		**117506**	●

Working process	For sizing, trimming and splitting.
Workpiece materials	Softwood and hardwood, chipboard and fibre materials (MDF, HF, etc.), without coating, with plastic coating, with veneer, glulam, plywood, duro plastics, thermo plastics, plastic polymers (Corian, Varicor, etc.), compound materials (HPL, Trespa, etc.), non-ferrous metals (aluminium, copper, etc.).
Machines	Portable saws, trimming, mitre-joint machines, table saws and radial arm cross cut, light sizing saws.
Types of application	For cutting along and across grain, trimming and mitre cut.

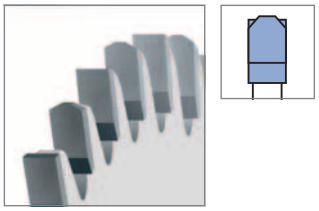
Tooth shapes



FZFA/FZFA
(alternative tooth with bevel flat)



WZ (alternative top bevel teeth)



FZ/TR (square/trapezoidal teeth)

Teeth shape	Machine	Area of application
Square teeth	Portable saws	Solid wood along and across the grain, glued materials.
Alternative top bevel teeth – positive	Pull push saw, table and radial arm cross cut saws, light sizing saws.	Uncoated, plastic coated, veneered wood derived materials. Plywood, multiplex. Composite/laminated materials.
Alternative top bevel teeth – negative	Trimming-, pull push saw, table saws and radial arm cross cut saws.	Solid wood across grain. Plastic hollow wall profiles. Non-ferrous metals – extruded profiles and pipes.
Flat/trapezoidal teeth – positive	Portable saws, pul push saw, table saws and radial arm cross cut saws, light sizing saws.	Uncoated wood derived materials, plastic coated, veneered. Non-ferrous metals – extruded profiles and pipes. NE-metals. Al-PU sandwich panels. Plastic hollow wall profiles. Plastic polymers (Corian, Varicor, etc.).
Flat/trapezoidal teeth – negative	Portable saws, trimming-, mitre saws, table saws and radial arm cross cut saws.	Non-ferrous metals – extruded profiles/pipes. Plastic hollow wall profiles. Al-PU sandwich panels.
Alternative flat tooth with bevel	Portable saws, trimming-, mitre saws, table saws and radial arm cross cut saws, light sizing saws.	Flat and angle steel, steel plates, pipes, profiles, sandwich panels, composite materials.

Tooth pitch/cut quality

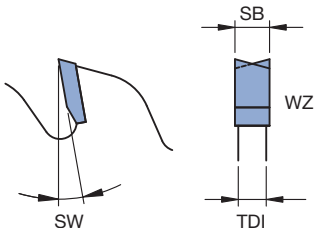
The saw cut quality is determined by the correct choice of the tooth shape and by the distance between the teeth. The distance between the teeth is determined by the tooth pitch.

Number of teeth	Tooth pitch	Cut quality
Low	~ 25 – 50 mm	Coarse – cutting to size without special quality demands.
Medium	~ 14 – 25 mm	Medium – cutting to size with higher quality demands.
High	~ 9 – 14 mm	Fine – for clean cuts to a high quality.

Technical features

Negative cutting angle saws are used to prevent:
a) the sawblade from grabbing the workpiece e.g. cutting to length non-ferrous hollow profiles and pipes, sizing AL-PU sandwich panels
b) the workpiece from moving away from the stop or fence during cutting (trimming and mitre saws).

HW



Multi purpose cut

Application:
For cutting along and across grain and sizing.

Workpiece material:
Solid wood along, across grain and glued, raw wood derived materials, plastic and paper coated, veneered, plywood (e.g. Multiplex), compound working materials, gluelam, thermoplastics, plasterboards etc.

Tooth shape WZ

Machine	D mm	SB mm	TDI mm	BO mm	Z	ZF	SW Degree	ID	
Elu/DeWalt, Peugeot	100	2,4	1,6	12	30	WZ	10	**060542**	●
Elu/DeWalt	100	2,4	1,6	22	30	WZ	10	**060544**	●
Bosch	105	2,8	2,0	20	10	WZ	15	**070077**	●
Bosch	105	2,8	2,0	20	22	WZ	15	**070078**	●
Haffner	120	2,4	1,6	20	24	WZ	15	**060549**	●
Haffner, Mafell	125	2,4	1,6	20	24	WZ	15	**060550**	●
Haffner, Mafell	125	2,4	1,6	20	36	WZ	10	**060551**	●
AEG, Atlas Copco Holz Her, Peugeot	130	2,2	1,5	20	30	WZ	12	**060556**	●
AEG, Bosch Holz Her, Metabo	140	2,4	1,6	20	24	WZ	15	**060560**	●
AEG, Atlas Copco, Elu/DeWalt, Metabo Scheer, Skil	150	2,8	1,8	20	24	WZ	10	**060571**	●
AEG, Atlas Copco Elu/DeWalt, Metabo Scheer, Skil	150	2,8	1,8	20	48	WZ	10	**060572**	●
Black&Decker Bosch, Skil	160	2,5	1,6	16	24	WZ	15	**070081**	●
Black&Decker, Bosch Skil	160	2,5	1,6	16	48	WZ	10	**070082**	●
AEG, Atlas Copco Festool, Haffner Holz Her, Mafell Narex, Protool Scheer	160	2,5	1,6	20	12	WZ	20	**060734**	●
AEG, Atlas Copco Festool, Haffner Holz Her, Mafell Narex, Protool Scheer	160	2,5	1,6	20	48	WZ	12	**070037**	●
Makita	165	2,5	1,6	20	24	WZ	15	**070085**	●
Metabo	167	2,4	1,6	20	40	WZ	10	**060789**	●
Bosch, Elu/DeWalt Festool, Haffner	170	2,5	1,6	30	24	WZ	15	**070087**	●
Bosch, Elu/DeWalt Festool, Haffner	170	2,5	1,6	30	48	WZ	10	**070049**	●
Skil	180	2,5	1,6	16	24	WZ	15	**070088**	●
Haffner, Makita	180	2,5	1,6	20	24	WZ	15	**070089**	●
Haffner, Makita	180	2,5	1,6	20	48	WZ	10	**070090**	●
Bosch, Elu/DeWalt Mafell	180	2,5	1,6	30	24	WZ	15	**070091**	●
Bosch, Elu/DeWalt Mafell	180	2,5	1,6	30	30	WZ	10	**070092**	●
Bosch, Elu/DeWalt Mafell	180	2,5	1,6	30	58	WZ	10	**070093**	●
Makita	185	2,5	1,6	20	24	WZ	15	**070094**	●
Bosch, Skil	190	2,8	1,8	16	24	WZ	15	**060606**	●
Bosch, Skil	190	2,8	1,8	16	48	WZ	10	**060607**	●

4

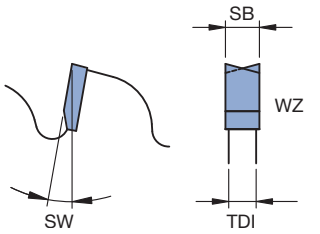
Machine	D mm	SB mm	TDI mm	BO mm	Z	ZF	SW Degree	ID	
Metabo	190	2,6	1,8	20	14	WZ	20	**060790**	●
Metabo	190	2,6	1,8	20	24	WZ	15	**070096**	●
Metabo	190	2,6	1,8	20	48	WZ	10	**070097**	●
AEG, Atlas Copco Bosch, Elu/DeWalt Festool, Holz Her Mafell, Makita Scheer, Skil	190	2,8	1,8	30	16	WZ	20	**060742**	●
AEG, Atlas Copco Bosch	190	2,5	1,8	30	24	WZ	20	**070095**	●
AEG, Atlas Copco Bosch, Elu/DeWalt Festool, Holz Her Mafell, Makita Scheer, Skil	190	2,8	1,8	30	48	WZ	8	**070036**	●
AEG, Bosch Elektra Beckum, Festool Haffner, Holz Her Mafell, Scheer	200	3,0	2,0	30	16	WZ	15	**070121**	●
AEG, Bosch Elektra Beckum, Festool Haffner, Holz Her Mafell, Scheer	200	3,0	2,0	30	34	WZ	10	**060627**	●
AEG, Bosch Elektra Beckum, Festool Haffner, Holz Her Mafell, Scheer	200	3,0	2,0	30	48	WZ	10	**070122**	●
AEG, Bosch Elektra Beckum, Festool Haffner, Holz Her Mafell, Scheer	200	3,0	1,6	30	64	WZ	10	**070123**	●
AEG, Atlas Copco Elektra Beckum, Fein Haffner, Holz Her Mafell, Makita Metabo, Skil	210	2,4	1,6	30	24	WZ	15	**070100**	●
AEG, Atlas Copco Elektra Beckum, Fein Haffner, Holz Her Mafell, Makita Metabo, Skil	210	2,4	1,6	30	30	WZ	22	**070101**	●
AEG, Atlas Copco Elektra Beckum, Fein Haffner, Holz Her Mafell, Makita Metabo, Skil	210	2,4	1,6	30	42	WZ	22	**070103**	●
Mafell, Metabo	210	2,6	1,8	30	56	WZ	10	**070106**	●
AEG, Atlas Copco Elektra Beckum, Fein Haffner, Holz Her Mafell, Makita Metabo, Skil	210	2,4	1,6	30	64	WZ	10	**070104**	●
Haffner, Holz Her Metabo, Scheer	220	3,2	2,2	30	34	WZ	15	**060644**	●
Elektra Beckum	220	2,6	1,6	30	36	WZ	25	**070109**	●
Haffner, Holz Her Metabo, Scheer	220	3,2	2,2	30	64	WZ	10	**060646**	●
Festool, Mafell	225	2,6	1,8	30	32	WZ	20	**070112**	●
Festool, Mafell	225	2,6	1,8	30	48	WZ	10	**070113**	●
AEG, Atlas Copco Bosch, Holz Her	230	3,2	2,2	30	12	FZ	15	**060647**	●

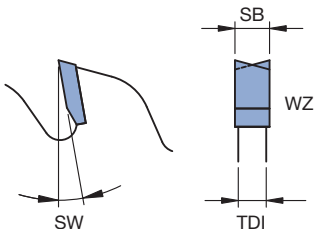
● available ex stock
□ available at short notice
Instruction manual visit www.leitz.org

Machine	D mm	SB mm	TDI mm	BO mm	Z	ZF	SW Degree	ID	
Mafell	230	2,5	1,8	30	24	WZ	20	**070114**	●
AEG, Atlas Copco Bosch, Holz Her	230	3,2	2,2	30	34	WZ	15	**060648**	●
Skil	235	3,2	2,2	16	24	WZ	15	**060649**	●
Haffner, Makita Skil	235	3,2	2,2	30	24	WZ	15	**060652**	●
Haffner, Makita Skil	235	3,2	2,2	30	34	WZ	15	**060653**	●
Elu/DeWalt, Festool Haffner, Holz Her Metabo	240	3,0	1,8	30	22	WZ	20	**070046**	●
Elu/DeWalt, Festool Haffner, Holz Her Metabo	240	3,0	2,0	30	34	WZ	15	**060656**	●
Elu/DeWalt, Festool Haffner, Holz Her Metabo	240	3,0	1,8	30	48	WZ	10	**070060**	●
Elektra Beckum, Elu/DeWalt Lurem, Mafell Metabo, PHM Scheppach	250	2,8	2,0	30	24	WZ	25	**070068**	●
Elektra Beckum, Elu/DeWalt Mafell, Metabo PHM, Scheppach	250	3,2	2,2	30	40	WZ	10	**058055**	●
Elektra Beckum, Elu/DeWalt Lurem, Mafell Metabo, PHM Scheppach	250	2,8	2,0	30	60	WZ	20	**070069**	●
Elektra Beckum, Elu/DeWalt Mafell, Metabo PHM, Scheppach	250	3,2	2,2	30	60	WZ	10	**058382**	●
Elektra Beckum, Elu/DeWalt Lurem, Mafell Metabo, PHM Scheppach	250	2,8	1,8	30	80	WZ	10	**070118**	●
Elektra Beckum, Elu/DeWalt Mafell, Metabo PHM, Scheppach	250	3,2	2,2	30	80	WZ	10	**058304**	●
Makita	260	3,2	2,2	30	60	WZ	10	**070124**	●
Lurem, Mafell	280	3,2	2,2	30	28	WZ	15	**060671**	●
Lurem, Mafell	280	3,2	2,2	30	48	WZ	10	**060672**	●
Lurem, Mafell	280	3,2	2,2	30	60	WZ	10	**060673**	●
Elektra Beckum, Elu/DeWalt Lurem, Scheppach	300	3,2	2,2	30	28	WZ	20	**057125**	●
Elektra Beckum, Elu/DeWalt Lurem, Scheppach	300	3,2	2,2	30	48	WZ	10	**058057**	●
Elektra Beckum, Elu/DeWalt Elcon, Holz Her Homag Esp., Lurem Scheppach, Striebig Putsch	300	3,2	2,2	30	72	WZ	10	**058384**	●

4

Machine	D mm	SB mm	TDI mm	BO mm	Z	ZF	SW Degree	ID	
Elektra Beckum, Elu/DeWalt Lurem, Scheppach	300	3,2	2,2	30	96	WZ	10	**058311**	●
Elektra Beckum, Lurem Scheppach	315	3,2	2,2	30	28	WZ	20	**070065**	●
Elektra Beckum, Lurem Scheppach	315	3,0	2,0	30	48	WZ	15	**060675**	●
Festool	350	3,5	2,5	30	24	WZ	10	**070063**	●
Mafell	355	3,2	2,2	30	16	WZ	20	**070053**	●
Mafell	355	3,2	2,2	30	32	WZ	20	**070120**	●





End trimming cut

Application:
For cross cutting, trimming and cutting to length.

Workpiece material:
Soft and hardwood across the grain, hollow wall profiles (plastics and non-ferrous metals), extruded profiles.

Tooth shape WZ

Machine	D mm	SB mm	TDI mm	BO mm	Z	ZF	SW Degree	ID	
AEG, Atlas Copco Elektra Beckum, Fein Haffner, Holz Her Mafell, Makita Metabo, Skil	210	2,4	1,8	30	40	WZ	3	**070102**	●
Metabo	210	2,8	2,0	30	60	WZ	-5	**060717**	●
Elu/DeWalt	216	3,0	2,0	30	24	WZ	-5	**060688**	●
Elu/DeWalt	216	3,0	2,0	30	48	WZ	-5	**060684**	●
Elu/DeWalt	216	3,0	2,0	30	64	WZ	-5	**060685**	●
Elektra Beckum, Elu/DeWalt Lurem, Mafell Metabo, PHM Scheppach	250	2,8	2,0	30	24	WZ	-3	**070115**	●
Elektra Beckum, Elu/DeWalt Lurem, Mafell Metabo, PHM Scheppach	250	2,4	1,8	30	48	WZ	-5	**070116**	●
Elektra Beckum, Elu/DeWalt Lurem, Mafell Metabo, PHM Scheppach	250	2,4	1,8	30	60	WZ	-5	**070117**	●
Elektra Beckum, Elu/DeWalt Mafell, Metabo PHM, Scheppach	250	3,2	2,6	30	80	WZ	-5	**065873**	●

● available ex stock
□ available at short notice
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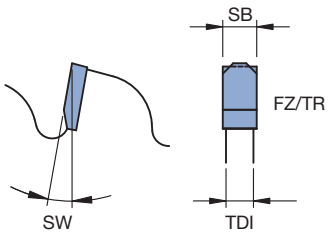
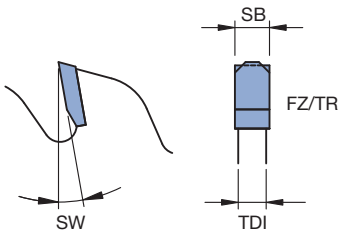




End trimming cut

Application:
For cross cutting, trimming and cutting to length.

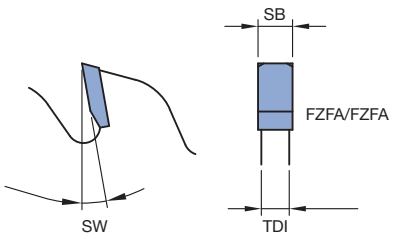
Workpiece material:
Hollow wall profiles and panels (plastics and non-ferrous metals), gluelam (HPL, Trespa), plastics (duromers), mineral materials (Corian, Varicor), extruded profiles.

Tooth shape FZ/TR

Machine	D mm	SB mm	TDI mm	BO mm	Z	ZF	SW Degree	ID	
AEG, Atlas Copco Festool, Haffner Holz Her, Mafell Narex, Protool Scheer	160	2,6	1,8	20	48	FZ/TR	4	**070071**	●
AEG, Atlas Copco Festool, Haffner Holz Her, Mafell Narex, Protool Scheer	160	2,5	1,8	20	56	FZ/TR	-5	**070047**	●
Bosch, Elu/DeWalt Festool, Haffner	170	2,0	1,6	30	56	FZ/TR	8	**070050**	●
Metabo	190	2,6	1,8	20	54	FZ/TR	-5	**060707**	●
Bosch, Festool Holz Her, Mafell Makita, Skil	190	2,8	1,8	30	54	FZ/TR	4	**070099**	●
AEG, Atlas Copco Bosch, Elu/DeWalt Festool, Holz Her Mafell, Makita Scheer, Skil	190	2,8	2,2	30	68	FZ/TR	-5	**070054**	●
Metabo	210	2,8	1,8	30	42	FZ/TR	-1	**070107**	●
Metabo	210	2,8	2,0	30	60	FZ/TR	-5	**070067**	●
AEG, Atlas Copco Elektra Beckum, Fein Haffner, Holz Her Mafell, Makita Metabo, Skil	210	2,4	1,6	30	64	FZ/TR	-5	**070105**	●
Elu/DeWalt	216	3,0	2,4	30	64	FZ/TR	-5	**060686**	●
Festo, Mafell	225	2,6	1,8	30	68	FZ/TR	-5	**070041**	●
Makita	235	3,2	2,6	25	54	FZ/TR	-5	**070732**	●
Elu/DeWalt, Festo Haffner, Holz Her Metabo	240	2,8	2,2	30	80	FZ/TR	-5	**070062**	●
Elek. Beckum, Elu/DeWalt Mafell, Makita Metabo, PHM Scheppach	250	3,4	2,8	30	60	FZ/TR	-5	**060134**	●
Elektra Beckum, Elu/DeWalt Lurem, Mafell Metabo, PHM Scheppach	250	2,8	2,0	30	80	FZ/TR	-5	**070119**	●

Maschine	D mm	SB mm	TDI mm	BO mm	Z	ZF	SW Grad	ID
Elektra Beckum, Elu/DeWalt Haffner, Mafell Makita, Metabo PHM, Rapid Scheppach	250	3,2	2,6	30	80	FZ/TR	5	**059950** ●
Elek. Beckum, Elu/DeWalt Mafell, Metabo PHM, Scheppach	250	3,2	2,6	30	80	FZ/TR	-5	**060250** ●
Elek. Beckum, Elu/DeWalt Fezer, Lurem Rapid, Scheppach Ulmia	300	3,2	2,6	30	96	FZ/TR	-5	**060252** ●

HW



Metal sawblade, dry-cut

Application:
For splitting, trimming and sizing

Workpiece material:
Flat and angle bar, pipes, sheets, profiles, compound materials

Sawblade - thickness up to 5 mm
WK 357-2

D mm	SB mm	TDI mm	BO mm	Z	SW Degree	ID
160	1,6	1,2	20	48	0	**169000** ●
165	1,6	1,2	20	48	0	**169001** ●
190	1,8	1,4	30	54	0	**169002** ●
210	1,8	1,4	30	60	0	**169003** ●
225	2,2	1,8	30	64	0	**169004** ●
254	2,2	1,8	30	72	0	**169005** ●
355	2,4	2,0	25,4	80	0	**169006** ●

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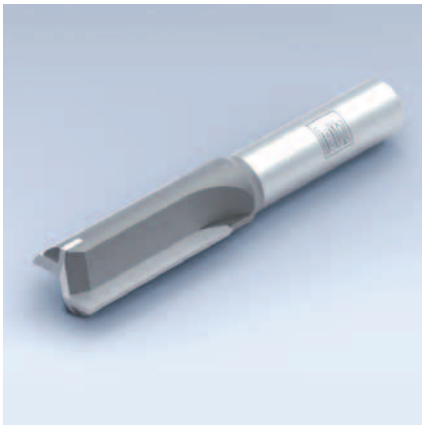
Working step/Application	Sizing, jointing, grooving and profiling.
Workpiece material (recommended cutting material)	Soft and hardwood (HS, HW). Chipboard and fibre materials (MDF, HF, etc.), uncoated, with plastic coating, with veneer, etc. (HW, HW solid, DP). Plywood (HW). Duro plastics (HW). Thermoplastics (HS, HW). Solid surface (Corian, Varicor, etc.) (HW).
Machine	Portable routers
Operation	Conventional cut, limited chip removal.
Technical features	Tools for portable routers are: Straight routers: HS solid HW tipped HW solid HW turnblade DP tipped (Only for special applications with known workpieces). Profile routers: HW tipped DP tipped (Only for special applications with known workpieces).
Application Data	**RPM** Recommended RPM for routing and boring tools on portable router machines:

	Recommended RPM n [min^{-1}]
Dowel drill	3000 – 9000
Hinge drill	3000 – 9000
Router cutter with cylindrical shank	18000 – 30000
Router cutter with internally thread shank	16000 – 24000
Turnblade router cutter WL 101-1	16000 – 18000
Profile cutters HW tipped	18000 – 27000

The RPM speeds marked on the shank are mandatory.

Feed	The manual feed speed of portable routers depends on the required cut quality and machine load.
Machining method	Portable routers are usually used either with guide bearings or templates when producing components in batches. Router cutters with guide bearings are suitable for additional machining operations on part finished components. Tools without guide bearings are generally used with either a pilot pin or fence.



Grooving cutters, shank 8 mm

Application:
Router cutter for sizing and grooving.

Machine:
Portable routers.

Workpiece material:
Softwood and hardwood, chipboard and fibre materials (chipboard, MDF, HF etc.), uncoated, plastic coated, veneered etc., gluelam (plywood etc.).

Technical information:
Straight cut, ground on end or tungsten carbide plunging tip.

HW / HW solid
WO 120-1-09, WO 120-1-16

D mm	GL mm	NL mm	S mm	QAL	DRI	ID	
3	45	6	8x30	HW solid	RL	**072612**	□
4	45	10	8x30	HW solid	RL	**072608**	□
5	45	12	8x30	HW solid	RL	**072613**	□
6	55	14	8x40	HW solid	RL	**041984**	●
7	55	17	8x30	HW solid	RL	**041958**	●
8	55	20	8x30	HW solid	RL	**041985**	●
8	60	30	8x30	HW solid	RL	**072650**	□
9	55	25	8x30	HW	RL	**040304**	●

HW, Z 2, short cutting length
WO 120-1-10

D mm	GL mm	NL mm	S mm	QAL	DRI	ID	
10	60	20	8x40	HW	RL	**040440**	●
10	60	25	8x30	HW	RL	**072614**	□
11	60	20	8x40	HW	RL	**040441**	●
12	60	20	8x40	HW	RL	**072368**	●
13	60	20	8x40	HW	RL	**072369**	●
14	60	20	8x40	HW	RL	**072370**	●
15	60	20	8x40	HW	RL	**072371**	●
16	60	20	8x50	HW	RL	**072372**	●
18	60	20	8x30	HW	RL	**072374**	□
19	60	20	8x30	HW	RL	**072376**	□
20	60	20	8x50	HW	RL	**072377**	●
22	60	20	8x50	HW	RL	**072379**	●
24	60	20	8x40	HW	RL	**072380**	●
25	60	20	8x40	HW	RL	**072381**	●
30	60	20	8x40	HW	RL	**072382**	●

HW, Z 2, long cutting length
WO 120-1-10

D mm	GL mm	NL mm	S mm	QAL	DRI	ID	
10	60	30	8x30	HW	RL	**072651**	□
12	60	30	8x30	HW	RL	**072652**	□
16	65	30	8x35	HW	RL	**072373**	●
18	60	30	8x30	HW	RL	**072375**	●
20	60	30	8x30	HW	RL	**072378**	●

RPM: n = 18000 - 30000 min^{-1}

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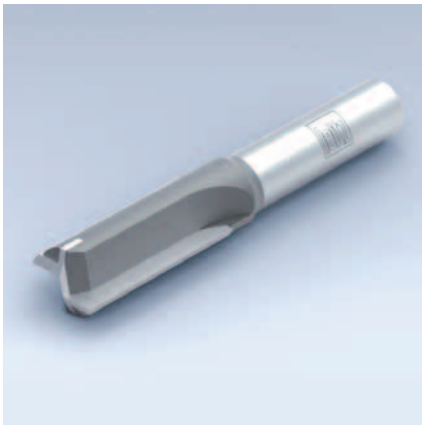


HW

Grooving cutter, shank 12 mm

Application:
Router cutter for sizing and grooving. Door seal groove.

Machine:
Portable routers.

Workpiece material:
Softwood and hardwood, chipboard and fibre materials (MDF, HF, etc.) uncoated, plastic coated, veneered, etc. gluelam (plywood, etc.).

Technical information:
Straight cut, plunging tip in tungsten carbide (only WO 120-1-10). Ground on end (only WO 110-2), suitable for plunging. Long design for deep cutting (recommended in several steps).

HW, Z 2
WO 120-1-01, WO 120-1-10

D mm	GL mm	NL mm	S mm	DRI	ID	
10	90	35	12x40	RL	**072495**	●
12	90	40	12x40	RL	**072496**	●
13,2	85	35	12x40	RL	**072741**	□
14	85	40	12x40	RL	**072104**	□
14	100	50	12x40	RL	**072233**	●
15	85	35	12x40	RL	**072742**	□
16	90	45	12x40	RL	**072105**	●
16	100	60	12x40	RL	**072234**	●
18	90	45	12x40	RL	**072106**	●
20	90	45	12x40	RL	**072107**	●
22	90	45	12x40	RL	**072108**	●
24	90	45	12x40	RL	**072109**	●
30	90	35	12x40	RL	**072498**	●

RPM: n = 18000 - 30000 min^{-1}

Table for selection of grooving cutter depending on door seal:

Door seal	Width mm	Depth mm	ID
Doppeldicht	12	40	**072496**
Kältefeind	12	40	**072496**
Planet HS	13,1	30	**072741**
Schall-Ex L	14,8	32	**072742**
Schall-Ex RD	14,8	28	**072742**
Schall-Ex Ultra	19,7	30	**072107**

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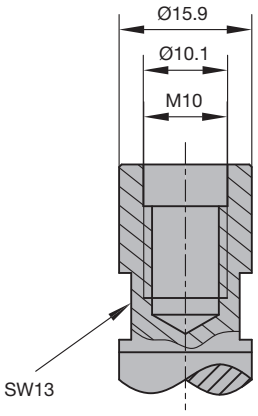
HW



Threaded shank M 10

Grooving cutter with internal threaded shank M10

Application:
Router cutter for sizing and grooving.

Machine:
Portable routers, Scheer.

Workpiece material:
Softwood and hardwood, chipboard and fibre materials (chipboard, MDF, HF etc.), uncoated, plastic coated, veneered etc., laminated wood (plywood etc.).

Technical information:
Straight cut, ground on end or tungsten carbide plunging tip.

HW, Z 2
WO 120-1-05, WO 120-1-06

D mm	GL mm	NL mm	S mm	QAL	DRI	ID	
6	55	14	M10	HW	RL	**042203**	●
10	67	35	M10	HW	RL	**042050**	●
12	67	35	M10	HW	RL	**042051**	●
16	55	25	M10	HW	RL	**042213**	●
16	75	45	M10	HW	RL	**042053**	●
20	55	25	M10	HW	RL	**042216**	●
20	75	45	M10	HW	RL	**042056**	●
24	75	45	M10	HW	RL	**042058**	●

RPM: n = 16000 - 24000 min^{-1}

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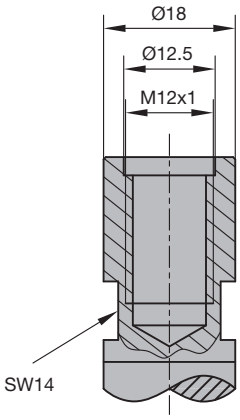
HS HW



Threaded shank M12x1

Grooving cutter with internal threaded shank M12x1

Application:
Router cutter for sizing and grooving.

Machine:
Portable routers, De Walt (previously ELU).

Workpiece material:
Softwood and hardwood, chipboard and fibre materials (chipboard, MDF, HF etc.), uncoated, plastic coated, veneered etc., laminated wood (plywood etc.).

Technical information:
HS design for softwood. Tungsten carbide design suitable for hardwood and wood derived materials. Straight cut, ground on end or tungsten carbide plunging tip.

HS / HW, Z 2
WO 120-1-11, WO 120-1-12

D mm	GL mm	NL mm	S mm	QAL	DRI	ID	
12	75	45	M12	HS	RL	**040023**	●
10	67	35	M12	HW	RL	**040081**	●
12	75	45	M12	HW	RL	**040082**	●
16	60	25	M12	HW	RL	**039938**	●
16	75	45	M12	HW	RL	**040084**	●
18	60	25	M12	HW	RL	**039940**	●
18	75	45	M12	HW	RL	**040085**	●
20	60	25	M12	HW	RL	**039942**	●
22	60	25	M12	HW	RL	**039943**	●
24	60	25	M12	HW	RL	**039945**	●

RPM: n = 16000 - 24000 min^{-1}


HS

Spiral grooving cutter HS

Application:
Router cutter for sizing and grooving.

Machine:
Portable router.

Workpiece material:
Softwood and hardwood.

Technical information:
HS solid, spiral edges, ground plunging tip.

HS, Z 2
WO 160-1

D mm	GL mm	NL mm	S mm	Z	Twist	DRI	ID	
6	50	16	8x30	2	RD	RL	**072387**	□
8	50	19	8x30	2	RD	RL	**072391**	□
10	60	30	8x30	2	RD	RL	**072393**	□
12	52	20	8x30	2	RD	RL	**072185**	□
14	52	20	8x30	2	RD	RL	**072186**	□
16	52	20	8x30	2	RD	RL	**072187**	□
18	57	25	8x30	2	RD	RL	**072188**	□
20	57	25	8x30	2	RD	RL	**072189**	□

RPM: n = 18000 - 30000 min^{-1}


HW

Spiral grooving cutter HW

Application:
Router cutter for sizing and grooving.

Machine:
Portable router.

Workpiece material:
Softwood and hardwood, chipboard and fibre materials (MDF, HF, etc.) uncoated, plastic coated, veneered, etc. gluelam (plywood, etc.).

Technical information:
HW solid, spiral edges, ground plunging tip.

HW, Z 2
WO 160-1

D mm	GL mm	NL mm	S mm	QAL	Z	Twist	DRI	ID	
4	45	10	8x25	HW solid	2	RD	RL	**072615**	□
6	50	16	8x30	HW solid	2	RD	RL	**072395**	□
8	55	25	8x30	HW solid	2	RD	RL	**072397**	□
10	60	30	8x30	HW solid	2	RD	RL	**072399**	□

RPM: n = 18000 - 30000 min^{-1}

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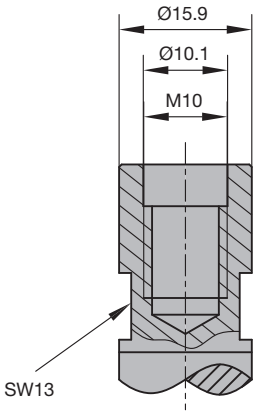
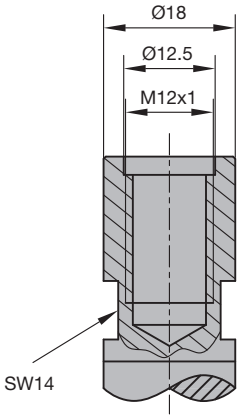
HW



Threaded shank M 10



Threaded shank M12x1

Router cutter in turnblade design

Application:
Router cutter for sizing and grooving in finish quality.

Machine:
Portable routers.

Workpiece material:
Softwood and hardwood, chipboard and fibre materials (chipboard, MDF, HF etc.), uncoated, plastic coated, veneered etc., laminated wood (plywood etc.), duromers, plastomers, mineral materials (Corian, Varicor etc.).

Technical information:
Straight cut with tungsten carbide turnblade knife plunging tip. For grooving with constant tool diameter. One piece knife cutting edge. Teflon coated tool body to reduce resin and glue build up.

HW, Z 1+1, with plunging tip
WL 101-1

D mm	GL mm	NL mm	S mm	DRI	ID	
16	70	30	8x30	RL	**071050**	□
18	70	30	8x30	RL	**071051**	□
20	54	12	8x25	RL	**040824**	●
16	64	30	M10	RL	**040911**	●
20	64	30	M10	RL	**040915**	●
16	64	30	M12x1	RL	**040917**	●
18	64	30	M12x1	RL	**040919**	●
20	64	30	M12x1	RL	**040921**	●

RPM: n = 16000 - 18000 min^{-1}

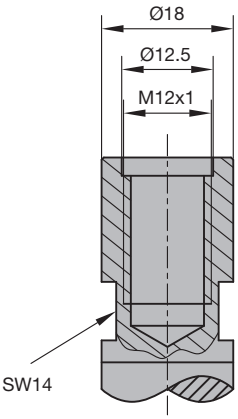
Spare knives:

BEZ	Knife	ABM mm	QAL	for D mm	VE PCS	ID	
Turnblade knife	Plunging tip	7,5x12x1,5	HW-05	16 - 18	10	**005080**	●
Turnblade knife	Plunging tip	9x12x1,5	HW-05	20 - 24	10	**005158**	●
Turnblade knife	Peripheral tip	12x12x1,5	HW-05		10	**005081**	●
Turnblade knife	Peripheral tip	30x12x1,5	HW-05		10	**005161**	●

Spare parts:

BEZ	Knife	ABM mm	for D mm	ID	
Screw	Plunging tip	M3,5x4 (head D7)	16 - 20	**006068**	●
Screw	Peripheral tip	M3,5x4 (head D9)	16 - 20	**006226**	●
Torx® key		Torx® 15		**005457**	●

HW



Threaded shank M12x1

Router cutter in turnblade design

Application:
Router cutter for sizing and grooving in finish quality.

Machine:
Portable routers.

Workpiece material:
Softwood and hardwood, chipboard and fibre materials (chipboard, MDF, HF etc.), uncoated, plastic coated, veneered etc.

Technical information:
Tungsten carbide turnblade knife clamped by wedges. Design without plunging tip only suitable for ramp plunging. Design with plunging tip suitable for axial plunging.

HW, Z 1, with plunging tip
WL 100-1

D mm	GL mm	NL mm	S mm	DRI	ID	
14	107	45	12x40	RL	**041722**	●

RPM: n = 16000 - 24000 min^{-1}

HW, Z 1, without plunging tip
WL 100-1

D mm	GL mm	NL mm	S mm	DRI	ID	
8	55	20	8x30	RL	**041622**	●
10	60	25	8x30	RL	**041641**	●
12	66	30	8x30	RL	**041665**	●
14	66	30	8x30	RL	**041670**	●
16	82	50	M12x1	RL	**041688**	●

RPM: n = 16000 - 24000 min^{-1}

Spare knives:

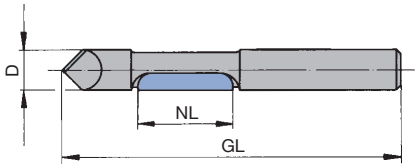
BEZ	ABM mm	for D mm	NL mm	VE PCS	ID	
Turnblade knife	20x4,1x1,1	8 - 9	20	10	**005186**	●
Turnblade knife	25x5,5x1,1	10	25	10	**005188**	●
Turnblade knife	30x5,5x1,1	11 - 24	30	10	**005189**	●
Turnblade knife	50x5,5x1,1	14 - 24	50	10	**005191**	●

Spare parts:

BEZ	ABM mm	for D mm	NL mm	ID	
Clamping wedge profiled	17,5x5,15x2,8	8 - 9	20	**009258**	●
Clamping wedge profiled	22,5x6,54x4	10	25	**009260**	●
Clamping wedge profiled	27,5x7,35x3,7	12 - 14	30	**009263**	●
Clamping wedge profiled	47,5x10,28x4,2	16 - 24	50	**009266**	●
Clamping wedge with plunging tip	45x3,7x7,35	14	45	**009749**	●
Countersink screw Torx® 8	M2,5x5,7	8 - 11		**006231**	●
Countersink screw, Torx ® 8	M3x7.6	12 - 14		**006233**	●
Countersink screw, Torx ® 15	M4x11.5	16 - 20		**006234**	●
Torx® key	Torx® 8, L=40			**006092**	●

● available ex stock
□ available at short notice
Instruction manual visit www.leitz.org

HW



Panel pilot router cutter Z 1 with bottom knife

Panel pilot router cutter

Application:
Router cutter for edge trimming veneer or coatings and for plunging and cutting veneered or coated openings in panel materials.

Machine:
Portable routers.

Workpiece material:
Chipboard and fibre materials (MDF, HF etc.), uncoated, plastic coated, veneered etc., gluelam (HPL, CPL etc.).

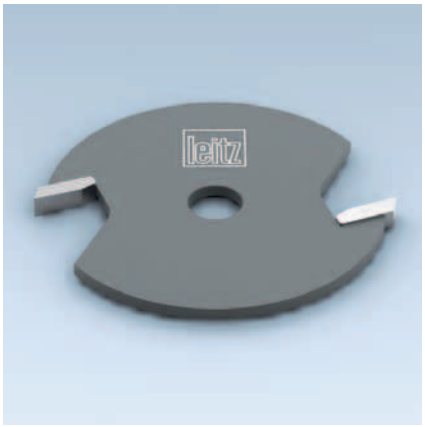
Technical information:
Straight cut with V point plunging tip.

4

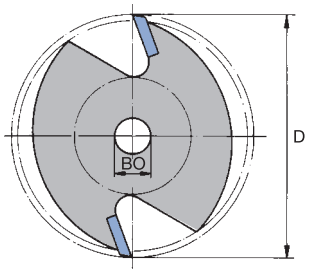
HW, Z 1, with guide pin
WO 250-0-01

D mm	GL mm	NL mm	S mm	DRI	ID	
6	65	19	6x27	RL	**039610**	●
8	65	19	8x30	RL	**041586**	●

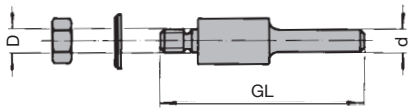
RPM: n = 18000 - 30000 min^{-1}



HW



WK 200-3-01 grooving cutter Z 2



PM 100-0 arbor

Grooving cutter

Application:
Router cutter with guide ring for grooving panel edges.

Machine:
Portable routers.

Workpiece material:
Softwood and hardwood, chipboard and fibre materials (MDF, HF etc.), uncoated, plastic coated, veneered etc., gluelam (plywood etc.).

HW, Z 2, flat tooth, without arbor
WK 200-3-01

D mm	BO mm	SB mm	ID	
40	6	1,5	**039644**	●
45	6	1,5	**039646**	●
40	6	1,8	**039648**	●
40	6	2	**039652**	●
45	6	2	**039654**	●
40	6	2,2	**039656**	●
40	6	2,5	**039660**	●
40	6	2,8	**039664**	●
40	6	3	**039668**	●
45	6	3	**039670**	●
40	6	3,5	**039672**	●
40	6	4	**039676**	●
45	6	4	**039678**	●
40	6	5	**070653**	●

RPM: n = 12000 - 14000 min^{-1}

Application:
For grooving cutter WK 200-3-01 without ball bearing guide.

Arbor without ball bearing guide ring
PM 100-0

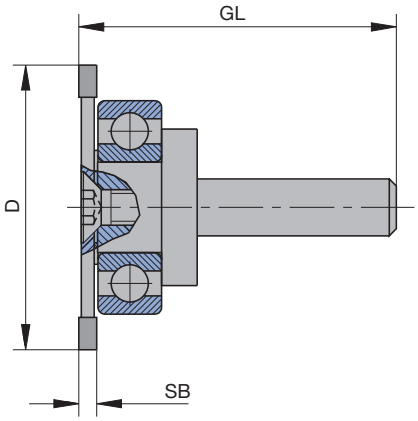
D mm	GL mm	S mm	DRI	ID	
6	58	8x30	RL	**039786**	□

Spare parts:

BEZ	ABM mm	ID	
Washer	6,4	**006704**	●
Nut	M6	**005651**	●

● available ex stock
□ available at short notice
Instruction manual visit www.leitz.org

HW



SO 100-1 Grooving cutter with guide ring

Grooving cutter

Application:
Router for recutting the groove after trimming the laminate floor (ID 072489) or parquet flooring (ID 072745).

Machine:
Portable routers.

Workpiece material:
Softwood and hardwood, chipboard and fibre materials (MDF, HF etc.), uncoated, plastic coated, veneered etc., gluelam (plywood etc.).

Technical information:
Grooving cutter on arbor with ball bearing guide. Tungsten carbide flat tooth Z 2.

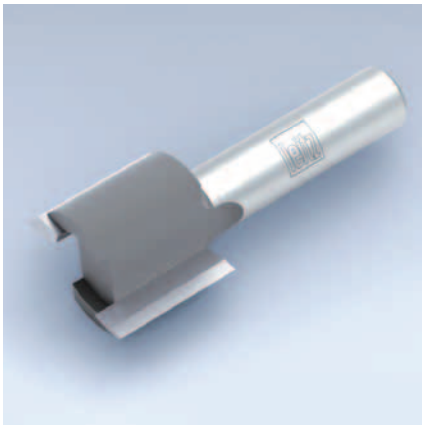
HW, Z 2, with arbor and ball bearing guide ring
SO 100-1

D mm	GL mm	SB mm	SLT mm	S mm	DRI	Type	ID
40	47,5	2,8	6	8x30	RL	1	**072489** □
40	46	4	12	8x30	RL	2	**072745** □

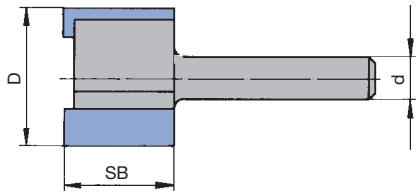
RPM: n = 12000 - 14000 min^{-1}

Spare parts:

BEZ	ABM mm	QAL	Type	ID
Grooving cutter	40x2,8x6, FZ	HW	1	**039614** □
Grooving cutter	40x4x6,35, FZ	HW	2	**072746** □
Ball bearing	10x28x8		1	**008122** ●
Ball bearing	6,35x15,88x5		2	**008081** ●
Washer	10x16x1		1	**008480** ●
Washer	7x12x1		2	**116003** ●
Screw with ISK	M5x8		1	**007402** ●
Countersink screw with ISK	M4x10		2	**005777** ●



HW



Edge trimming cutter straight Z 2

Edge trimming cutter

Application:
Router cutter for edge trimming with template, guide ring, stop unit or guide rail system.

Machine:
Portable routers.

Workpiece material:
Softwood and hardwood, chipboard and fibre materials (MDF, HF etc.), uncoated, plastic coated, veneered etc., gluelam (plywood etc.).

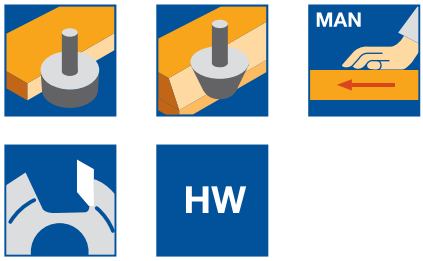
Technical information:
Straight cut.

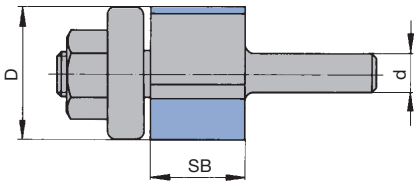
Edge trimming cutter, straight, HW, Z 2
WO 201-1

D mm	SB mm	S mm	DRI	ID	
18	16	6x30	RL	**039260**	●
18	16	8x30	RL	**039261**	●

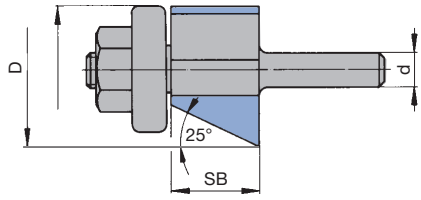
RPM: n = 18000 - 27000 min^{-1}

● available ex stock
□ available at short notice
Instruction manual visit www.leitz.org





Edge trimming cutter with guide ringe on bottom



Square bevel trimming cutter with guide ring on bottom

Edge trimming cutter

Application:
Router for edge trimming or chamfering veneer and gluelam. Tool guided on the workpiece by ball bearing guide ring.

Machine:
Portable routers.

Workpiece material:
Softwood and hardwood, chipboard and fibre materials (MDF, HF etc.), uncoated, plastic coated, veneered etc., gluelam (plywood etc.).

Technical information:
Ball bearing guide ring on bottom for use with template or guided by the workpiece edge.

Edge trimming cutter, HW, Z 2 with guide ring on bottom
WO 203-1, WO 203-1-01

D mm	SB mm	S mm	DRI	ID	
21	15	6x30	RL	**039440**	●
12,7	25	8x30	RL	**072509**	●
19	25	8x30	RL	**072572**	□

RPM: n = 18000 - 27000 min^{-1}

Spare parts:

BEZ	BEM	ABM mm	ID	
Ball bearing	to ID **072509**	4,76x12,7x4,97	**008088**	●
Ball bearing	to ID **072572**	19,05x12,7x4,97	**008105**	●
Ball bearing guide	to ID **039440**	21x7,2x15,88	**072157**	●

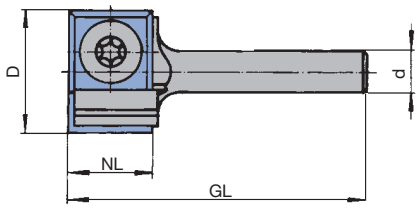
Square bevel trimming cutter, HW, Z 1+1/bevel 45°
WO 314-1-01

D mm	SB mm	S mm	FAW	DRI	ID	
24/18	11	8x30	45°	RL	**070477**	●

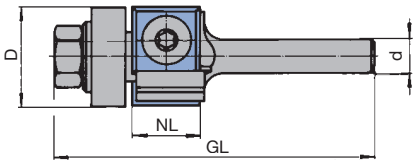
RPM: n = 18000 - 27000 min^{-1}

Spare parts:

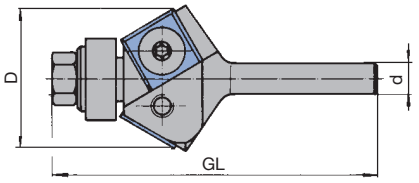
BEZ	BEM	ABM mm	ID	
Ball bearing guide	to ID **070477**	18x8x15,88	**070828**	●



WL 200-1/0°-jointing cutter without guide ring



WL 220-1/0°-jointing cutter with guide ring



WL 320-1/30°-bevel cutter with guide ring

Turnblade jointing/bevel cutter

Application:
Router cutter for edge trimming or bevelling on machines with copy shaping, guide ring, stop unit or guide rail systems.

Machine:
Portable routers.

Workpiece material:
Softwood and hardwood, chipboard and fibre materials (MDF, HF etc.), uncoated, plastic coated, veneered etc., gluelam (plywood etc.).

Technical information:
Tools with ball bearing guide ring for use with template or guided by the workpiece edge. Replaceable tungsten carbide turnblade knives.

HW, Z 2, without ball bearing guide ring
WL 200-1

Class.	D mm	GL mm	NL mm	S mm	FAW	DRI	ID	
WL 200 1	19	43	12	8x30	0°	RL	**040721**	●

RPM: n = 18000 - 30000 min^{-1}

HW, Z 2, with ball bearing guide ring
WL 220-1, WL 320-1

Class.	D mm	GL mm	NL mm	S mm	FAW	DRI	ID	
WL 220 1	19	56,5	12	6x30	0°	RL	**040770**	●
WL 220 1	19	56,5	12	8x30	0°	RL	**040771**	●
WL 220 1	19	64,5	20	8x30	0°	RL	**040765**	●
WL 220 1	19	74,5	30	8x30	0°	RL	**040774**	●
WL 320 1	30,5	61,5		8x30	45°	RL	**040769**	●

RPM: n = 18000 - 30000 min^{-1}

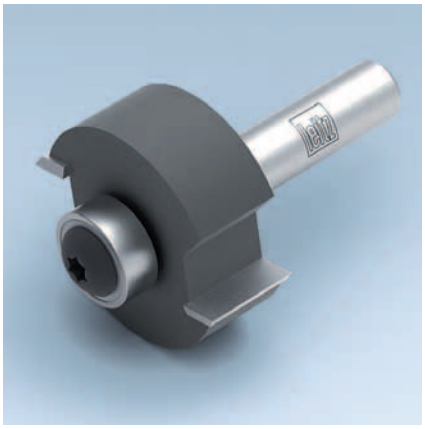
Spare knives:

BEZ	for article	ABM mm	QAL	for Bevel Degree	VE PCS	ID	
Turnblade knife	WL 300-1 / WL 320-1	12x12x1,5	HW-05	8 - 45	10	**005081**	●
Turnblade knife	WL 200-1 / WL 220-1	20x12x1,5	HW-05	0	10	**005083**	●
Turnblade knife	WL 220-1	30x12x1,5	HW-05		10	**005084**	●

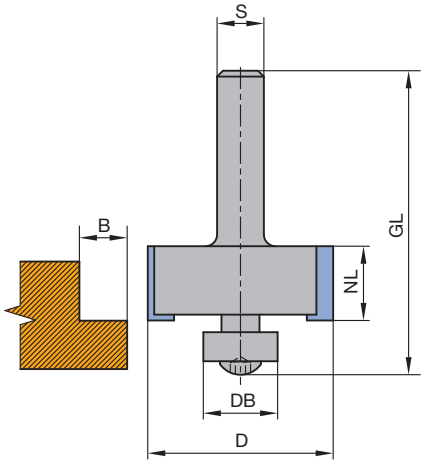
Spare parts:

BEZ	for article	ABM mm	for Bevel Degree	ID	
Ball bearing	WL 220-1	6x19x6	0°	**008082**	●
Ball bearing	WL 320-1	7x22x7	8°	**008086**	●
Ball bearing	WL 320-1	6,35x15,88x5	20° - 45°	**008081**	●
Washer	WL 220-1/WL 320-1	6,4	0° - 45°	**006704**	●
Nut	WL 220-1/WL 320-1	M6	0° - 45°	**005651**	●
Oval head screw Torx® 15		M4x6		**006225**	●
Torx® key		Torx® 15		**005457**	●

● available ex stock
□ available at short notice
Instruction manual visit www.leitz.org



HW



Note:
Variable rebating widths by changing the guide rings.

DB	9,53	12,7	16	19	22
B	11	9,5	7,9	6,35	4,9

Rebating cutter

Application:
Router for cutting rebates.

Machine:
Portable routers.

Workpiece material:
Softwood and hardwood, chipboard and fibre materials (MDF, HF etc.), uncoated, plastic coated, veneered etc., gluelam (plywood etc.).

Technical information:
Straight cut, ball bearing guide ring. Variable rebating width by changing the guide rings.

HW, Z 2
WO 434-1

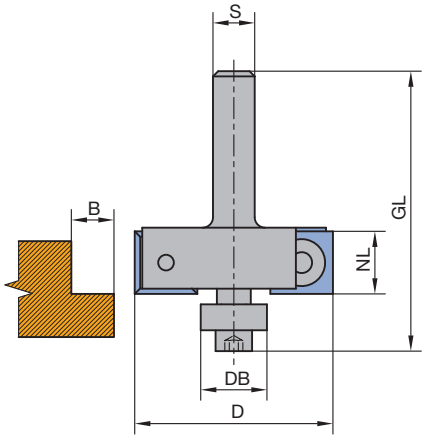
D mm	DB mm	GL mm	NL mm	S mm	QAL	DRI	ID	
31,7	12,7	54	12,7	8x30	HW	RL	**072479**	□

RPM: n = 16000 - 22000 min^{-1}

Spare parts:

BEZ	ABM mm	B mm	ID	
Ball bearing	4,76x9,53x3,17	11	**008087**	●
Ball bearing	4,76x12,7x4,97	9,5	**008088**	●
Ball bearing guide	16x8x4,76	7,9	**072629**	●
Ball bearing guide	19x8x4,76	6,35	**072630**	●
Ball bearing guide	22x8x4,76	4,9	**072631**	●
Oval head screw Torx® 15	M4x8		**007407**	●

HW



Note:
Set of ball bearing guide rings consists of DB = 9.53 / 12.7 / 16 / 19 and 22 mm

DB	9,53	12,7	16	19	22
B	14,2	12,6	11	9,5	8

Turnblade rebating cutter

Application:
Router for cutting rebates.

Machine:
Portable routers.

Workpiece material:
Softwood and hardwood, chipboard and fibre materials (MDF, HF etc.), uncoated, plastic coated, veneered etc., gluelam (plywood etc.).

Technical information:
Straight cut, ball bearing guide ring. Variable rebating width by changing the guide rings.

HW, Z 2, with set of ball bearing guide rings
AL 630-1

D mm	DB mm	GL mm	NL mm	S mm	QAL	DRI	ID	
38	12,7	54	12,7	8x30	HW	RL	**072521**	□

RPM: n = 18000 - 27000 min^{-1}

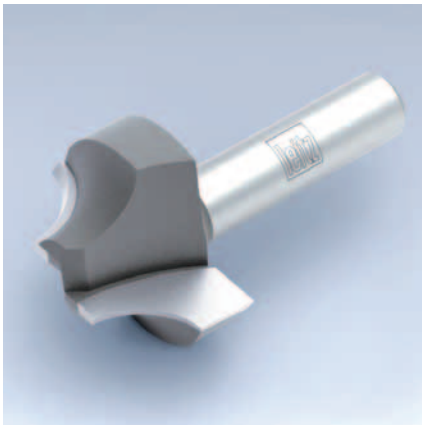
Spare knives:

BEZ	ABM mm	QAL	ID	
Turnblade knife	12x12x1,5	HW-05	**005081**	●

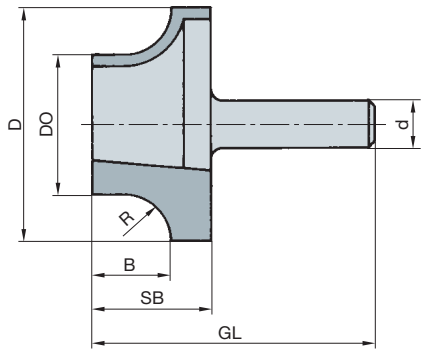
Spare parts:

BEZ	ABM mm	ID	
Oval head screw Torx® 15	M4x8	**007407**	●
Oval head screw Torx® 15	M4x6	**006225**	●
Torx® key	Torx® 15	**005457**	●

● available ex stock
□ available at short notice
Instruction manual visit www.leitz.org



HW



Quarter round cutter Z 2

Quarter round cutter

Application:
Router cutter for rounding with template, guide ring, stop unit or guide rail system.

Machine:
Portable routers.

Workpiece material:
Softwood and hardwood, chipboard and fibre materials (MDF, HF etc.), uncoated, plastic coated, veneered etc., gluelam (plywood etc.).

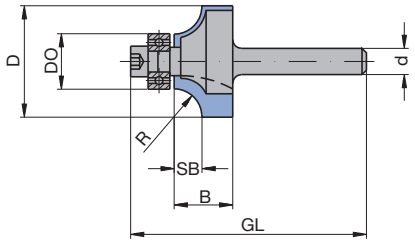
Technical information:
Edges with shear angle, without plunging tip.

Quarter round cutter, HW, Z 2
WO 531-1-01

D mm	D0 mm	SB mm	GL mm	S mm	R mm	DRI	ID	
17	11	10	41	8x30	3	RL	**072429**	●
19	11	11	42	8x30	4	RL	**072431**	●
21	11	12	43	8x30	5	RL	**072433**	●
23	11	13	44	8x30	6	RL	**072435**	●
27	11	15	45	8x30	8	RL	**072437**	●

RPM: n = 18000 - 27000 min^{-1}

HW



Radius cutter

Radius cutter

Application:
Router cutter for bevelling workpiece edges. Tool guided along workpiece by ball bearing guide.

Machine:
Portable routers.

Workpiece material:
Softwood and hardwood, chipboard and fibre materials (MDF, HF etc.), uncoated, plastic coated, veneered etc., gluelam (plywood etc.).

Technical information:
Ball bearing guide ring on bottom for use with template or guided by the workpiece edge.

Radius cutter, HW, Z 2, shank 6 / 8 mm
WO 551-1-01

D mm	D0 mm	GL mm	SB mm	B mm	S mm	R mm	DRI	ID	
16,7	12,7	49	2	12	6x30	2	RL	**072456**	●
18,7	12,7	50	3	7	6x30	3	RL	**072458**	●
25,5	12,7	54	6	12	6x30	6,35	RL	**072462**	●
17,1	12,7	49	2	12	8x30	2	RL	**072636**	●
19,1	12,7	50	3	7	8x30	3	RL	**072635**	●
20,7	12,7	51	4	11	8x30	4	RL	**072641**	□
22,7	12,7	52	5	9	8x30	5	RL	**072634**	●
25,5	12,7	54	6	12	8x30	6,35	RL	**072633**	●
28,7	12,7	55	8	12	8x30	8	RL	**072632**	●
31,7	12,7	56	9,5	16,5	8x30	9,5	RL	**072637**	□
38,1	12,7	59	12,7	19	8x30	12,7	RL	**072638**	□
42,7	12,7	62	15	22	8x30	15	RL	**072639**	□

RPM: n = 18000 - 27000 min^{-1}

Radius cutter, HW, Z 2, shank 12 mm
WO 551-1

D mm	D0 mm	GL mm	SB mm	B mm	S mm	R mm	DRI	ID	
43	12,7	70	16	22	12x40	15	RL	**072500**	●
63	12,7	80	26	32	12x40	25	RL	**072501**	●

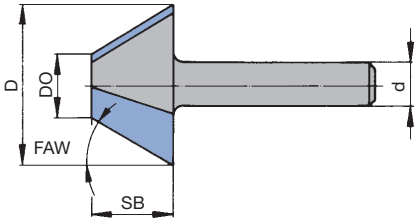
RPM: n = 16000 - 22000 min^{-1}

Spare parts:

BEZ	ABM mm	ID	
Ball bearing	4,76x12,7x4,97	**008088**	●
Screw with ISK	M4x10	**005846**	●

● available ex stock
□ available at short notice
Instruction manual visit www.leitz.org

HW



Bevel cutter Z 2

Bevel cutter

Application:
Router cutter for bevelling with template, guide ring, stop unit or guide rail system.

Machine:
Portable routers.

Workpiece material:
Softwood and hardwood, chipboard and fibre materials (MDF, HF etc.), uncoated, plastic coated, veneered etc., gluelam (plywood etc.).

Technical information:
Straight cut.

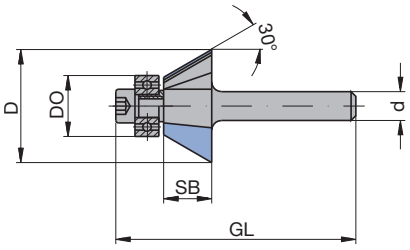
Bevel cutter, HW, Z 2
WO 311-1

D mm	SB mm	S mm	FAW	DRI	ID	
24	12	6x30	30°	RL	**039322**	●
24	10	8x30	45°	RL	**072600**	●

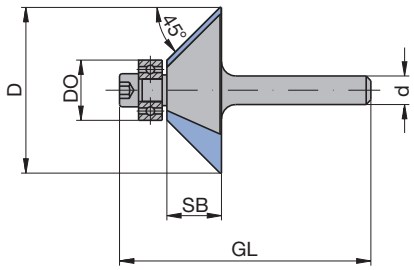
RPM: n = 18000 - 27000 min^{-1}

4

HW



WO 314-1-02 bevel cutter 30°



WO 314-1-03 bevel cutter 45°

Bevel cutter

Application:
Router cutter for bevelling workpiece edges. Tool guided along workpiece by ball bearing guide.

Machine:
Portable routers.

Workpiece material:
Softwood and hardwood, chipboard and fibre materials (MDF, HF etc.), uncoated, plastic coated, veneered etc., gluelam (plywood etc.).

Technical information:
Ball bearing guide ring on bottom for use with template or guided by the workpiece edge.

Bevel cutter, HW, Z 2, shank 6 / 8 mm
WO 314-1-02, WO 314-1-03

D mm	D0 mm	GL mm	SB mm	FAW	S mm	DRI	ID	
24	12,7	50	10	30°	6x30	RL	**072504**	●
20	15,88	54	14	10°	8x30	RL	**072503**	□
25,7	12,7	70	25,1	15°	8x30	RL	**072522**	□
24	12,7	50	10	30°	8x30	RL	**072505**	□
38,5	12,7	64,5	23	30°	8x30	RL	**072523**	□
36	12,7	50	11,5	45°	8x30	RL	**072507**	●

RPM: n = 18000 - 27000 min^{-1}

Spare parts:

BEZ	ABM mm	for D0 mm	ID	
Ball bearing	4,76x12,7x4,97	12,7	**008088**	●
Ball bearing	6,35x15,88x5	15,88	**008081**	●
Screw with ISK	M4x10		**005846**	●

Bevel cutter, HW, Z 2, shank 12 mm
WO 314-1-02, WO 314-1-03

D mm	D0 mm	GL mm	SB mm	FAW	S mm	DRI	ID	
44	12,7	78	30	30°	12x40	RL	**072516**	●
55	12,7	74	26	45°	12x40	RL	**072517**	●

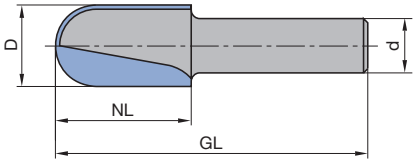
RPM: n = 18000 - 27000 min^{-1}

Spare parts:

BEZ	ABM mm	for D0 mm	ID	
Ball bearing	4,76x12,7x4,97	12,7	**008088**	●
Screw with ISK	M4x10		**005846**	●

● available ex stock
□ available at short notice
Instruction manual visit www.leitz.org

HW



Fluting cutter without guide ring

Fluting cutter

Application:
Router cutter for cutting flutes and grooves.

Machine:
Portable routers.

Workpiece material:
Softwood and hardwood, chipboard and fibre materials (MDF, HF etc.), uncoated, plastic coated, veneered etc., gluelam (plywood etc.).

Technical information:
Guidance by separate template, guide ring, stop unit or guide rail system.

Fluting cutter, HW, Z 2, shank 8 mm
WO 531-1-06

D mm	GL mm	NL mm	S mm	R mm	DRI	ID	
8	38	8	8x30	4	RL	**041153**	□
16	65	25	8x30	5	RL	**072616**	□
12,7	40	10	8x30	6,35	RL	**072403**	□
16	41	11	8x30	8	RL	**072405**	□
19,4	41	11	8x30	9,7	RL	**072057**	□
25,4	44	14	8x30	12,7	RL	**072058**	□

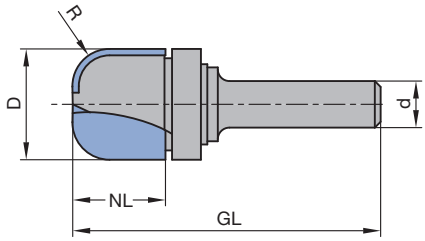
RPM: n = 18000 - 27000 min^{-1}

Fluting cutter, HW, Z 2, shank 12 mm
WO 531-1

D mm	GL mm	NL mm	S mm	R mm	DRI	ID	
25,4	58	18	12x40	12,7	RL	**072238**	□
30	60	20	12x40	15	RL	**072222**	□
40	65	25	12x40	20	RL	**072239**	□

RPM: n = 18000 - 27000 min^{-1}

HW



Fluting cutter with guide ring

Fluting cutter with guide ring

Application:
Router cutter for cutting flutes and grooves.

Machine:
Portable routers.

Workpiece material:
Softwood and hardwood, chipboard and fibre materials (MDF, HF etc.), uncoated, plastic coated, veneered etc., gluelam (plywood etc.).

Technical information:
Ball bearing guide ring on top, for templates or guide rail systems.

Fluting cutter, HW, Z 2, with guide ring
WO 551-1

D mm	GL mm	NL mm	S mm	R mm	DRI	ID	
19	53	16	8x30	6,4	RL	**072617**	□

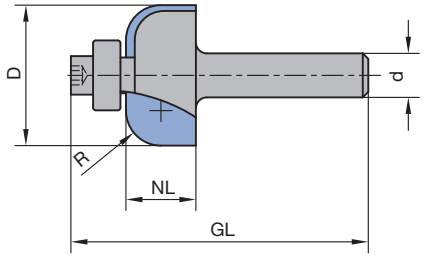
RPM: n = 18000 - 27000 min^{-1}

Spare parts:

BEZ	ABM mm	ID	
Ball bearing	19,05x12,7x4,97	**008105**	●
Safety washer	12x1 DIN 471	**008419**	●

● available ex stock
□ available at short notice
Instruction manual visit www.leitz.org

HW



Fluting cutter with guide ring

Fluting cutter with guide ring

Application:
Router for cutting flutes.

Machine:
Portable routers.

Workpiece material:
Softwood and hardwood, chipboard and fibre materials (MDF, HF, etc.) uncoated, plastic coated, veneered, etc. gluelam (plywood, etc.).

Technical information:
Edges with shear angle, ball bearing guide ring on bottom for templates or guide rail system.

HW, Z 2
WO 551-1, WO 551-1-02

D mm	GL mm	NL mm	S mm	R mm	DRI	ID	
25,5	54	12,7	8x30	6,35	RL	**072471**	□
28,8	56	14	8x30	8	RL	**072473**	□
31,7	56	14,3	8x30	9,5	RL	**072475**	□
38,1	57	16	8x30	12,7	RL	**072477**	□

RPM: n = 18000 - 27000 min^{-1}

Spare parts:

BEZ	ABM mm	ID	
Ball bearing	4,76x12,7x4,97	**008088**	●
Screw with ISK	M4x10	**005846**	●

HS

HW

Finger joint cutter

Application:
Routers for dovetail joints.

Machine:
Portable routers.

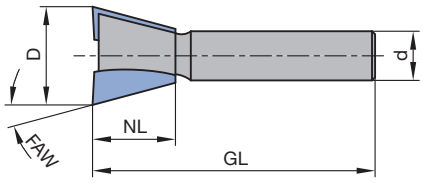
Workpiece material:
Softwood and hardwood, gluelam (plywood, etc.).

Technical information:
Shear angle edges. Design with spurs for increased cutting quality.

HS/HW, Z 2, shank 8 mm, without spurs
WO 610-1, WO 612-1

D mm	GL mm	NL mm	S mm	FAW	QAL	DRI	ID	
14,3	46	13,5	8x30	15°	HS	RL	**072610**	□
20	49	17	8x30	15°	HS	RL	**072411**	□
14,3	46	13,5	8x30	15°	HW	RL	**072611**	□
16	46	13,5	8x30	15°	HW	RL	**072045**	□
20	49	17	8x30	15°	HW	RL	**072417**	□
14,3	50	16	8x30	10°	HW	RL	**072585**	□
20	58	26	8x30	10°	HW	RL	**072583**	□

RPM: n = 18000 - 27000 min^{-1}

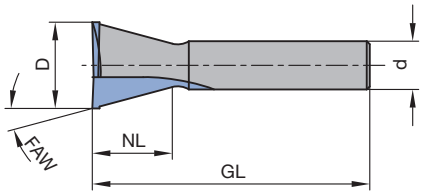


Dovetail cutter without spurs

HS/HW, Z 2, shank 12 mm, without spurs
WO 610-1, WO 612-1

D mm	GL mm	NL mm	S mm	FAW	QAL	DRI	ID	
20	57	14	12x40	15°	HS	RL	**072229**	□
24	58	15	12x40	15°	HS	RL	**072235**	□
16	55	12	12x40	15°	HW	RL	**072499**	□
30	60	18	12x40	15°	HW	RL	**072236**	□

RPM: n = 18000 - 27000 min^{-1}



Dovetail cutter with spurs

HS/HW, Z 2, shank 8 mm, with spurs
WO 612-1

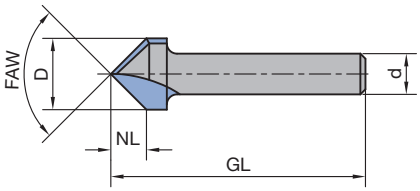
D mm	GL mm	NL mm	S mm	FAW	QAL	DRI	ID	
14,3	46	13,5	8x30	15°	HS	RL	**070363**	□
14,3	46	13,5	8x30	15°	HW	RL	**070361**	□

RPM: n = 18000 - 27000 min^{-1}

● available ex stock
□ available at short notice
Instruction manual visit www.leitz.org

HS

HW



V groove / engraving cutter

V groove / scribing cutter

Application:
Routers for cutting V grooves and engraving.

Machine:
Portable routers.

Workpiece material:
Soft and hardwood, chipboard and fibre materials (MDF, HF, etc.) uncoated, plastic coated, veneered, etc. gluelam (plywood, etc.).

Technical information:
Shear angle edges. Z1 suitable for fine engraving.

HS/HW, Z 1
WO 531-1

D mm	GL mm	NL mm	S mm	FAW	QAL	DRI	ID
11	50	9,5	8x30	60°	HS	RL	**070562** □
11	55	9,5	8x30	60°	HW	RL	**070262** □

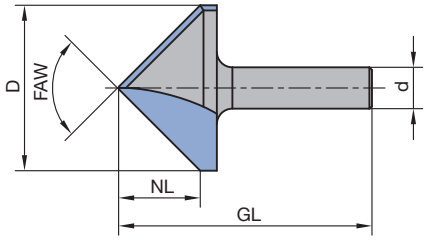
RPM: n = 18000 - 27000 min^{-1}

HS/HW, Z 2
WO 531-1

D mm	GL mm	NL mm	S mm	FAW	QAL	DRI	ID
11	50	9,5	8x30	60°	HS	RL	**072421** □
14	50	7	8x30	90°	HS	RL	**072423** □
14	50	7	8x30	90°	HW	RL	**072425** □

RPM: n = 180000 - 27000 min^{-1}

HW



V groove cutter for plasterboard

V groove cutter for plasterboard

Application:
Router for cutting V grooves in plasterboard for folding.

Machine:
Portable routers.

Workpiece material:
Plasterboard and gypsum fibre, soft and hardwood, chipboard and fibre materials (MDF, HF, etc.) uncoated, plastic coated, veneered, etc., gluelam (plywood, etc.).

Technical information:
Edges with shear angle, flat point designed for folding.

HW, Z 1 / Z 2
WO 531-1

D mm	GL mm	NL mm	S mm	FAW	QAL	Z	DRI	ID	
12,5	55	14	8x30	45°	HW	1	RL	**072618**	□
32	49	16	8x30	90°	HW	2	RL	**070673**	□

RPM: n = 18000 - 27000 min^{-1}

● available ex stock
□ available at short notice
Instruction manual visit www.leitz.org


HW

Profile cutter

Application:
Router for profiling.

Machine:
Portable router.

Workpiece material:
Softwood and hardwood, chipboard and fibre materials (MDF, HF, etc.) uncoated, plastic coated, veneered, etc., gluelam (plywood, etc.).

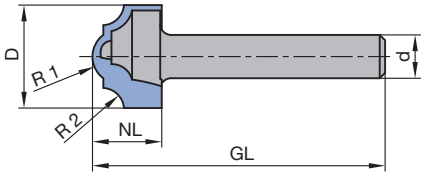
Technical information:
Shear angle edges. With guide ring for guiding along the workpiece edges. Finger pull cutter for cutting a covered grip rail on furniture fronts.

4

HW, Z 2, profile cutter, without guide ring
WO 531-1

D mm	GL mm	NL mm	S mm	R 1 mm	R 2 mm	DRI	ID	
19	54	12,5	8x30	5	4	RL	**072485**	□

RPM: n = 18000 - 27000 min^{-1}

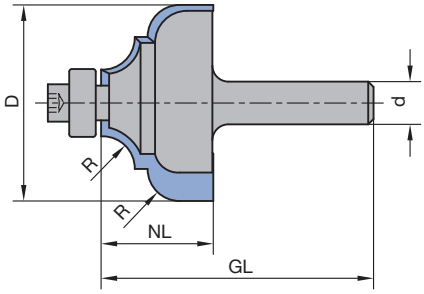


Profile cutter without guide ring WO 531-1

HW, Z 2, profile cutter, with guide ring
WO 551-1

D mm	GL mm	NL mm	S mm	R mm	DRI	ID	
36,7	61	21	8x30	6	RL	**072511**	□

RPM: n = 18000 - 27000 min^{-1}



Profile cutter with guide ring WO 551-1

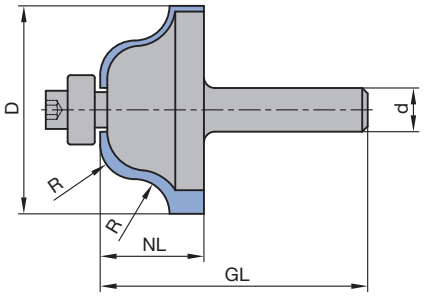
HW, Z 2, double radius cutter, with guide ring
WO 531-1

D mm	GL mm	NL mm	S mm	R mm	DRI	ID	
31,7	53	13	8x30	4	RL	**072481**	□
38,1	59	19	8x30	6,35	RL	**072483**	□

RPM: n = 18000 - 27000 min^{-1}

Spare parts:

BEZ	ABM mm	ID	
Ball bearing	4,76x12,7x4,97	**008088**	●
Screw with ISK	M4x10	**005846**	●

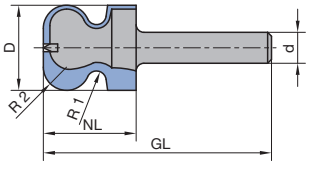


Double radius cutter with guide ring WO 531-1

HW, Z 2, finger pull cutter
WO 532-1

D mm	GL mm	NL mm	S mm	R 1 mm	R 2 mm	DRI	ID	
22	59	16	8x30	2,5	6	RL	**072624**	□

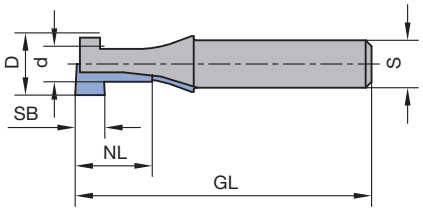
RPM: n = 18000 - 27000 min^{-1}



Finger pull cutter WO 532-1

● available ex stock
□ available at short notice
Instruction manual visit www.leitz.org

HW



T groove cutter

T groove cutter

Application:
Router for cutting T grooves, picture slots and suspension joints.

Machine:
Portable routers.

Workpiece material:
Softwood and hardwood, chipboard and fibre materials (MDF, HF, etc.) uncoated, plastic coated, veneered, etc., gluelam (plywood, etc.).

Technical information:
Straight cut.

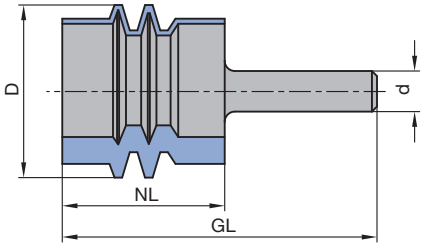
HW, Z 1
WO 120-1

D mm	d mm	SB mm	GL mm	NL mm	S mm	QAL	DRI	ID	
10,5	6,5	5	50	13	8x30	HW	RL	**072526**	□

RPM: n = 18000 - 27000 min^{-1}

● available ex stock
□ available at short notice
Instruction manual visit www.leitz.org

HW



Glue joint cutter

Glue joint cutter

Application:
Routers for cutting glue joint profiles.

Machine:
Portable routers.

Workpiece material:
Softwood and hardwood, gluelam (plywood etc.).

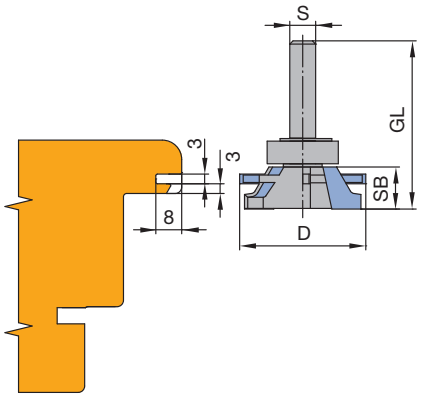
Technical information:
Straight cut.

HW, Z 2
WO 631-1

D mm	GL mm	NL mm	HD mm	S mm	QAL	DRI	ID
34	62	32	30	8x30	HW	RL	**072197** □

RPM: n = 18000 - 27000 min^{-1}

HW



Application plan

Profile shank cutter for window overlap seal

Application:
Router cutter for cutting overlap seal groove in sashes using portable routers.

Machine:
Portable routers and overhead routers without CNC - control.

Workpiece material:
Softwood and hardwood.

Technical information:
Ball bearing guide ring for precise guidance on the workpiece.

Profile shank cutter, HW, Z 2+2
WO 552-1

D mm	SB mm	GL mm	S mm	Z	$n_{max.}$ min^{-1}	ID	
39	13	52	8x30	2+2	27000	**072264**	●

RPM: n = 18000 to 24000 rpm

Spare parts:

BEZ	ABM mm	ID	
Ball bearing	8x22x7	**008095**	●
Washer	8x0,8	**008474**	●

● available ex stock
□ available at short notice
Instruction manual visit www.leitz.org


HW

Spiral grooving cutter

Application:
Router for sizing and grooving.

Machine:
Portable routers.

Workpiece material:
Mineral materials (Corian, Varicor, etc.).

Technical information:
HW solid design, spiral-shaped edges, pre ground plunging edge.

HW, Z 2, spiral roughing/finishing cutter
WO 160-2-04

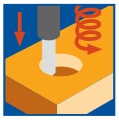
D mm	GL mm	NL mm	S mm	Twist	DRI	ID	
12	87	42	12x40	LD	RL	**072707**	□

RPM: n = 18000 - 27000 min^{-1}

HW, Z 2, spiral finishing cutter
WO 160-2-05

D mm	GL mm	NL mm	S mm	Twist	DRI	ID	
9,53	70	27	9,53x45	RD	RL	**072703**	□
10	70	25	10x40	RD	RL	**042458**	●
12	70	25	12x40	RD	RL	**042758**	●
12	87	42	12x40	RD	RL	**072705**	□

RPM: n = 18000 - 27000 min^{-1}


HW

Turnblade grooving cutter

Application:
Router for sizing and grooving.

Machine:
Portable routers.

Workpiece material:
Mineral materials (Corian, Varicor, etc.).

Technical information:
Straight cut. Design with plunging edge, conditionally suitable for axial plunging.

HW, Z 1, with plunging edge
WL 100-1

D mm	GL mm	NL mm	S mm	DRI	ID	
14	107	45	12x40	RL	**041722**	●

RPM: n = 16000 - 24000 min^{-1}

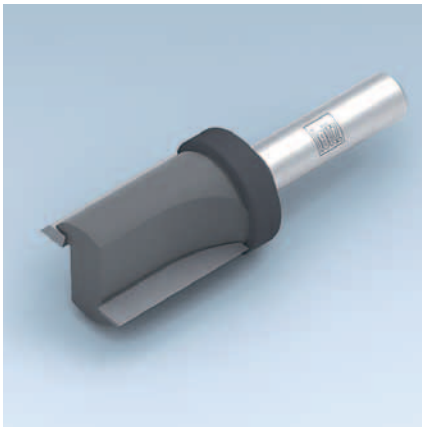
Spare knives:

BEZ	ABM mm	VE PCS	ID	
Turnblade knife	50x5,5x1,1	10	**005191**	●

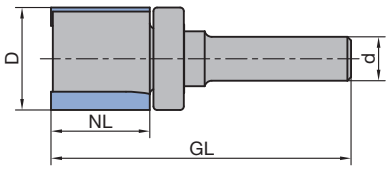
Spare parts:

BEZ	ABM mm	ID	
Clamping wedge with plunging tip	45x3,7x7,35	**009749**	●

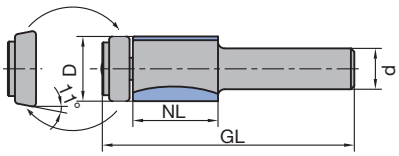
● available ex stock
□ available at short notice
Instruction manual visit www.leitz.org



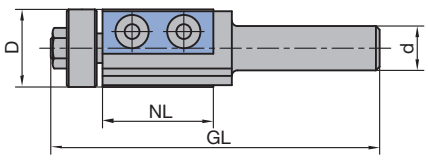

HW



Edge trimming cutter with guide ring on top



Edge trimming cutter with guide ring on bottom



Turnblade edge trimming cutter with guide ring on bottom

Edge trimming cutter with guide ring

Application:
Router for even cutting of glued mineral material construction parts.

Machine:
Portable routers.

Workpiece material:
Mineral materials (Corian, Varicor, etc.).

Technical information:
Straight cut. Plastic ball bearing guide ring for protection against marks on the workpiece.

HW, Z 2, with guide ring on top
WO 203-1

D mm	GL mm	NL mm	S mm	DRI	ID	
28	80	25	12x40	RL	**072697**	□

RPM: n = 18000 - 27000 min^{-1}

Spare parts:

BEZ	ABM mm	ID	
Ball bearing guide	28x8,3x15, 11°	**072712**	●

HW, Z 2, with guide on bottom
AO 640-1

D mm	GL mm	NL mm	S mm	DRI	ID	
19	74	25	12x40	RL	**072709**	□

RPM: n = 18000 - 27000 min^{-1}

Spare parts:

BEZ	ABM mm	ID	
Ball bearing guide	19x8x4,76	**072630**	●
Ball bearing guide	28x8,3x15, 11°	**072712**	●
Screw Torx® 15	M4x8	**007407**	●

HW-turnblade, Z 2, with guide ring on bottom
AO 640-1

D mm	GL mm	NL mm	S mm	DRI	ID	
21	89	30	12x40	RL	**072220**	□

RPM: n = 18000 - 27000 min^{-1}

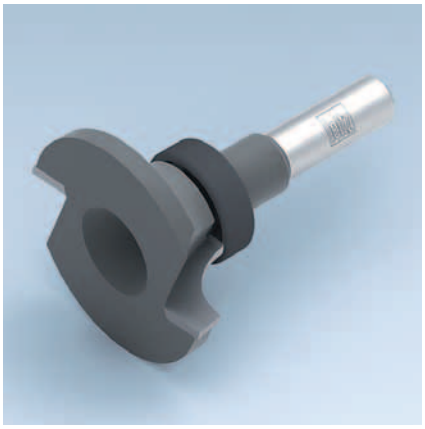
● available ex stock
□ available at short notice
Instruction manual visit www.leitz.org

Spare knives:

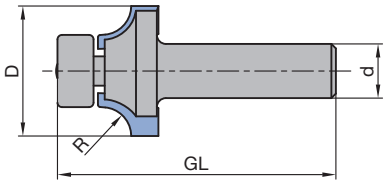
BEZ	ABM mm	VE PCS	ID
Turnblade knife	30x12x1,5	10	**005161** ●

Spare parts:

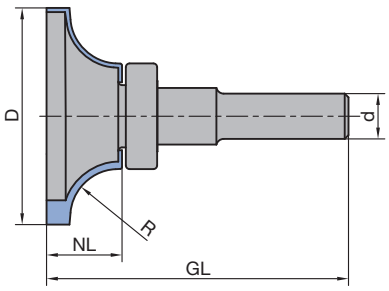
BEZ	ABM mm	ID
Ball bearing guide	15,88x21x8,1	**072255** ●
Nut	M6	**005651** ●
Oval head screw Torx® 15	M4x6	**006225** ●
Torx® key	Torx® 15	**005457** ●



HW



Radius cutter with guide ring on bottom



Radius cutter with guide ring on top

Radius cutter with guide ring

Application:
Router for rounding the workpiece edges.

Machine:
Portable routers.

Workpiece material:
Mineral materials (Corian, Varicor, etc.).

Technical information:
Plastic ball bearing guide ring for protection against marks on the workpiece.

HW, Z 2, with guide ring on bottom, shank 12 mm
WO 551-1

D mm	GL mm	NL mm	S mm	R mm	n max. min^{-1}	DRI	ID
22	59,3	10	12x40	3	27000	RL	**072673** □
26	61	12	12x40	5	27000	RL	**072674** □
28,8	62	13,4	12x40	6,35	27000	RL	**072675** □
32	63	15	12x40	8	27000	RL	**072676** □
41,4	69	19	12x40	12,7	27000	RL	**072677** □
54	75	25	12x40	19	27000	RL	**072678** □
66,8	81	31,4	12x40	25,4	22000	RL	**072679** □

Spare parts:

BEZ	ABM mm	ID
Ball bearing guide	16x8x4,76	**072629** ●
Oval head screw Torx® 15	M4x8	**007407** ●
Torx® key	Torx® 15	**005457** ●

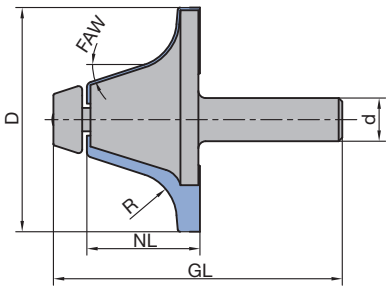
HW, Z 2, with guide ring on top, shank 12 mm
WO 551-1

D mm	GL mm	NL mm	S mm	R mm	n max. min^{-1}	DRI	ID
44,7	80	6,35	12x40	6,35	27000	RL	**072687** □
57,4	80	12,7	12x40	12,7	22000	RL	**072688** □
70	80	19	12x40	19	22000	RL	**072689** □

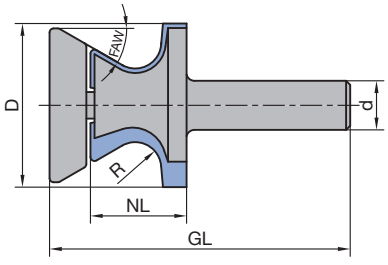
Spare parts:

BEZ	ABM mm	ID
Ball bearing guide	28x8,3x15	**072712** ●


HW



Radius / bevel cutter WO 551-1



Radius / bevel cutter WO 552-1

Radius / bevel cutter with guide ring

Application:
Router for rounding and bevelling workpiece edges. For machining the edges between worktop and wall of kitchen sink insets in mineral material.

Machine:
Portable routers

Workpiece material:
Mineral material (Corian, Varicor, etc.).

Technical information:
Plastic ball bearing guide ring to protect against marks on the workpiece.

HW, Z 2, shank 12 mm
WO 551-1

D mm	GL mm	NL mm	S mm	R mm	FAW	$n_{max.}$ min^{-1}	DRI	ID	
53	81,7	25	12x40	6,35	18°	22000	RL	**072661**	□
49	81,7	25	12x40	6,35	12°	27000	RL	**072662**	□
45	81,7	25	12x40	6,35	6°	27000	RL	**072663**	□
63	81,7	25	12x40	12,7	18°	22000	RL	**072664**	□
59	81,7	25	12x40	12,7	12°	22000	RL	**072665**	□
56	81,7	25	12x40	12,7	6°	22000	RL	**072666**	□

BEZ	ABM mm	ID	
Ball bearing guide	18,8x8x4,76/18°	**072716**	●
Ball bearing guide	20x8x4,76/12°	**072717**	●
Ball bearing guide	21,1x8x4,76/6°	**072718**	●
Oval head screw Torx® 15	M4x8	**007407**	●
Torx® key	Torx® 15	**005457**	●

HW, Z 2
WO 552-1

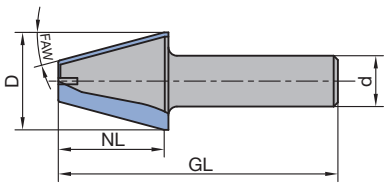
D mm	GL mm	NL mm	S mm	R mm	FAW	$n_{max.}$ min^{-1}	DRI	ID	
39,5	74	23,5	12x40	6,35	30°	27000	RL	**072701**	□

Spare parts:

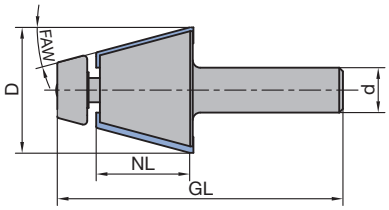
BEZ	ABM mm	ID	
Ball bearing guide	37,6x9x4,76/30°	**072722**	●
Oval head screw Torx® 15	M4x8	**007407**	●
Radius cutter	70x9x30	**074073**	●
Torx® key	Torx® 15	**005457**	●

● available ex stock
□ available at short notice
Instruction manual visit www.leitz.org


HW



Bevel cutter WO 321-1



Bevel cutter with guide ring WO 315-1

Bevel cutter with guide ring

Application:
Router for bevelling workpiece edges.

Machine:
Portable routers.

Workpiece material:
Mineral material (Corian, Varicor, etc.).

Technical information:
Tool design with plunging edge or ball bearing guide ring.
Plastic ball bearing guide ring to protect against marks on the workpiece.

HW, Z 2, with plunging edge
WO 321-1

D mm	GL mm	NL mm	S mm	FAW	$n_{max.}$ min^{-1}	DRI	ID	
23	66	25	12x40	15°	27000	RL	**072658**	□

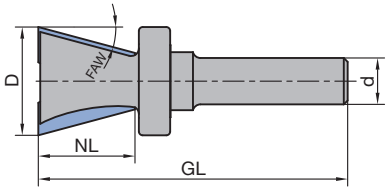
HW, Z 2, with guide ring on bottom
WO 315-1

D mm	GL mm	NL mm	S mm	FAW	$n_{max.}$ min^{-1}	DRI	ID	
33,5	66	25	12x40	15°	27000	RL	**072659**	□

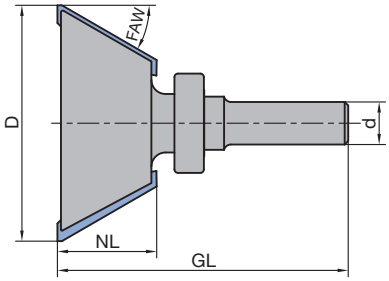
Spare parts:

BEZ	ABM mm	ID	
Ball bearing guide	18,5x8x4,76/15°	**072715**	●
Oval head screw Torx® 15	M4x8	**007407**	●
Torx® key	Torx® 15	**005457**	●

HW



Bevel cutter without undercut



Bevel cutter with undercut

Bevel cutter with guide ring

Application:
Router for bevelling workpiece edges.

Machine:
Portable router.

Workpiece material:
Mineral material (Corian, Varicor, etc.).

Technical information:
Plastic ball bearing guide ring to protect against marks on the workpiece.
Tools with undercut allow for the tolerance for bevelling/rounding of the workpiece edges.

HW, Z 2, without undercut
WO 315-1

D mm	GL mm	NL mm	S mm	FAW	$n_{max.}$ min^{-1}	DRI	ID	
28	80	25	12x40	15°	27000	RL	**072695**	□

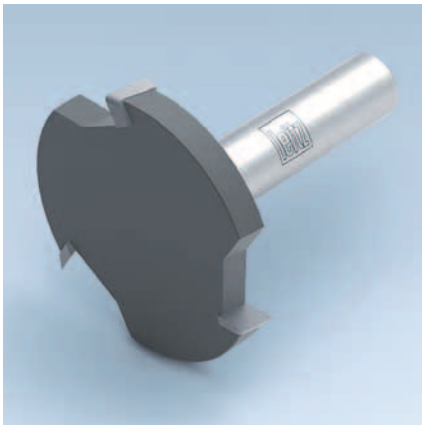
HW, Z 2, with undercut
WO 315-1

D mm	GL mm	NL mm	S mm	FAW	$n_{max.}$ min^{-1}	DRI	ID	
66,5	82	28	12x40	30°	16000	RL	**072699**	□

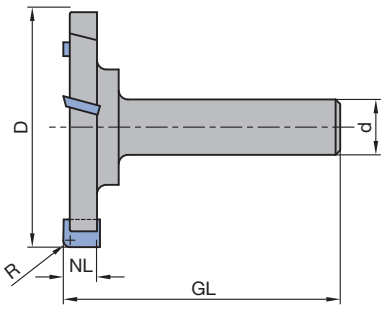
Spare parts:

BEZ	ABM mm	ID	
Ball bearing guide	28x8,3x15, 11°	**072712**	●

● available ex stock
□ available at short notice
Instruction manual visit www.leitz.org



HW



Planing cutter Z 3

Planing cutter

Application:
Router for cutting panel raising profiles

Machine:
Portable routers.

Workpiece material:
Mineral material (Corian, Varicor, etc.).

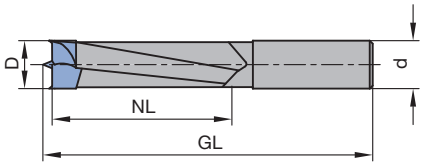
Technical information:
Optimised cutting geometry for clean planed surface. Also suitable for edge trimming of installed sinks of mineral material.

HW, Z 3
WO 110-1

D mm	GL mm	NL mm	S mm	$n_{max.}$ min^{-1}	DRI	ID
52	60	7,3	12x40	27000	RL	**072693** □

4

HW



Dowel drill Z 2 / V 2

Dowel drill, HW, Z 2 / V 2

Application:
For boring blind holes, especially dowel holes in furniture.

Machine:
Portable routers.

Workpiece material:
Softwood and hardwood, chipboard and fibre materials (MDF, HF, etc.), uncoated, plastic coated, veneered, etc., gluelam (plywood, etc.).

Technical information:
Spurs geometry with shear cut. Flute with reduced diameter for minimum friction and feed force.

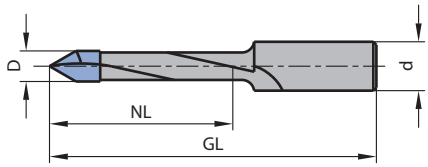
Dowel drill, HW, Z 2 / V 2
WB 120-0

D mm	GL mm	NL mm	S mm	DRI	ID
3	16	55	8x30	RL	**072597** □
5	30	53,5	8x20	RL	**033470** □
6	30	53,5	8x20	RL	**033471** □
8	30	53,5	8x20	RL	**033472** □
10	30	53,5	8x20	RL	**033473** □

RPM: n = 3000 - 9000 min-1

● available ex stock
□ available at short notice
Instruction manual visit www.leitz.org

HW



Through hole drill Z 2

Through hole drill, HW, Z 2

Application:
For boring through holes in furniture.

Machine:
Portable routers.

Workpiece material:
Softwood and hardwood, chipboard and fibre materials (MDF, HF, etc.), uncoated, plastic coated, veneered, etc., gluelam (plywood, etc.).

Technical information:
Spurs geometry with shear cut. Flute with reduced diameter for minimum friction and feed force.

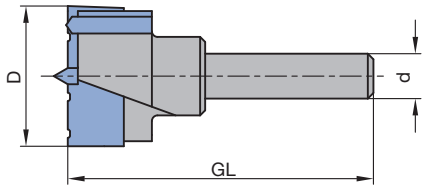
Through hole drill, HW, Z 2
WB 101-0

D mm	GL mm	NL mm	S mm	DRI	ID
5	30	53,5	8x20	RL	**033475** □

RPM: n = 3000 - 9000 min-1

4

HW



Hinge boring bit Z 2 / V 2

Hinge boring bit

Application:
For drilling hinge and furniture hinge holes.

Machine:
Portable routers.

Workpiece material:
Softwood and hardwood, chipboard and fibre material (MDF, HF, etc.), uncoated, plastic coated, veneered, etc., gluelam (plywood, etc.).

Technical information:
Good centering in solid wood by centre point. Minimised friction by relief ground spurs and raker knife chip breakers.

HW, Z 2 / V 2
WB 310-0

D mm	GL mm	S mm	DRI	ID
15	54,5	8x30	RL	**034660** □
18	54,5	8x30	RL	**072596** □
20	54,5	8x30	RL	**072012** □
22	54,5	8x30	RL	**072740** □
25	54,5	8x30	RL	**034656** □
26	54,5	8x30	RL	**034658** □
30	54,5	8x30	RL	**034657** □
34	54,5	8x30	RL	**072196** □
35	54,5	8x30	RL	**034659** □

RPM: n = 3000 - 9000 min-1

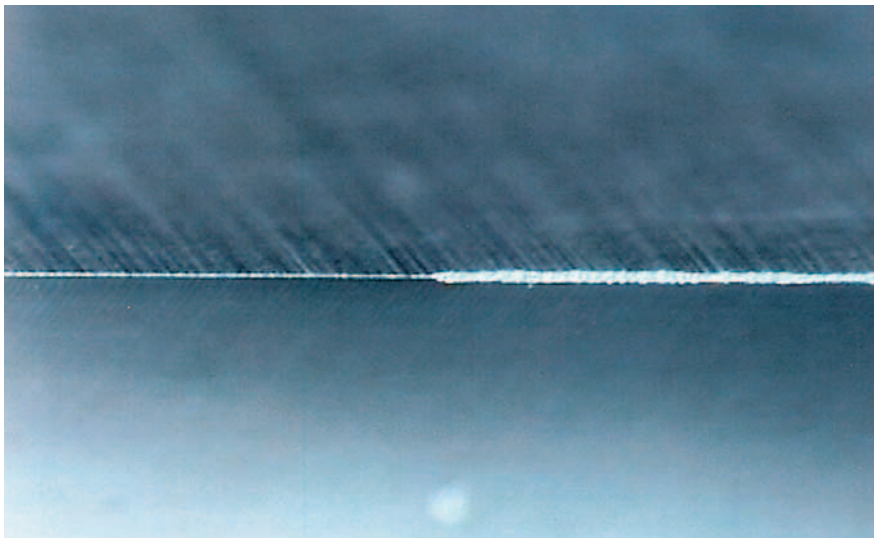
● available ex stock
□ available at short notice
Instruction manual visit www.leitz.org

Problem	Possible cause	Action
Surface errors Cut quality	– RPM too low	Increase RPM and cutting speed, increase tool diameter
	– Wrong cutting geometry (shear angle too small for solid wood)	Measure, change tool
	– Spindle and tool tolerances too big	Check motor bearings and tolerances
	– Unbalanced tool	Check and balance
	– Cutting speed too high (tool rubs), no. of teeth: feed speed ratio incorrect	Increase feed speed, reduce no. of teeth and RPM
	– Too few teeth, too high feed speed	Adjust no. of teeth and feed speed accordingly
Wavy, rough surface	– Irregular workpiece feed	Check feed or conveyor unit
	– Low feed roller pressure, worn feed rollers	Increase feed roller pressure and rema-chine grooves in rollers
	– Workpieces too narrow or too short	Pay attention to machine manufacturer's guidelines
	– Chip removal too high	Pre-relieve or machine in several passes
	– Resin built up, or blunt tool	Clean and sharpen tool regularly
Surface errors Burn marks	– Cutting speed too high	Reduce RPM
	– Feed speed: no. of teeth ratio wrong	Adjust no. of teeth and feed speed accordingly
	– Tool rotates on stationary workpiece	Ensure constant feed through the machine
Surface errors Tear outs	– Wood moisture content too low	Check drying process
	– Knotty wood	Optimise with crosscut saw and longitudinal joints
Surface errors Chip marks	– Incorrect cutting geometry for workpiece material	Check, adjust or use new tool
	– Gap between knife and wedges	Clean and carefully mount knife and wedge
	– Gullet too small	Check and enlarge
	– Extraction hood and chip removal unit insufficient	Contact machine manufacturer
	– Weak dust extraction	Guideline: 30 m s^{-1} air speed
Profile error in workpiece – angle error – uneven	– Tool profile sets not identical, e. g. with sets for cutting with/against feed	Check and adjust tool set
	– Spindle not exactly vertical in feed direction or table plane	Check spindle is vertical with dial gauge at two positions with moving spindle (top and bottom of spindle)
	– Worn table and fence	Rework or replace table and fence
	– Angle tolerance between table and fence too large or incorrect adjustment of fence and zero line	Check and adjust angles, adjust fence to tool zero diameter
Large force required to feed workpiece	– Resin built up on tool, blunt tool	Clean and sharpen tool regularily
	– Tool gullet too small	Check and correct
	– Shear angle too small	Correct or use new tool
	– Cutting section too large	Relieve profile or machine in several passes

Rounding of cutting edges
Mechanical abrasion causes continuous rounding to the cutting edge when machining uniform materials.

The machined surface quality determines the size of the cutting edge wear. As a standard the width of wear VB of 0.2 to max. 0.3 mm should not be exceeded.

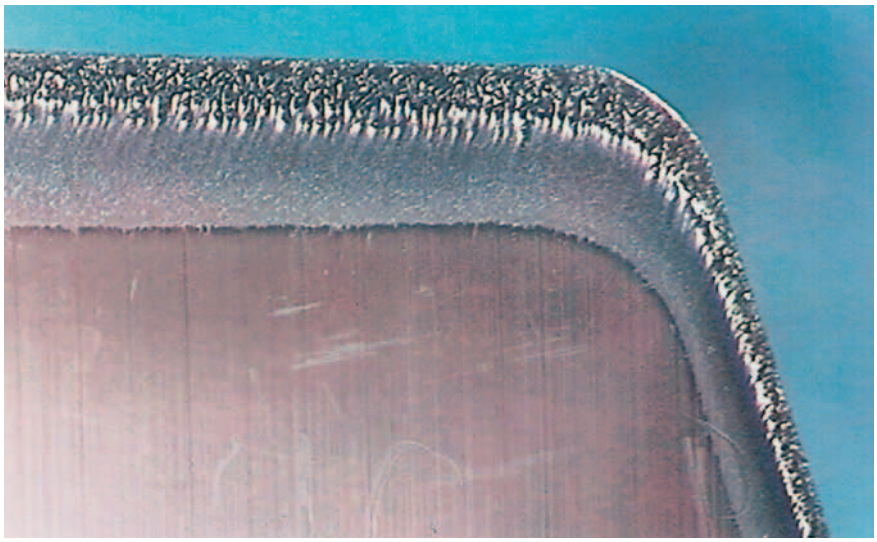
Tipped tools must be resharpened regularily to ensure the economic efficiency of the tool.



Typical cutting edge wear after machining spruce.

Chemical wear to cutting edges
When machining workpiece materials with a high tannic acid content (e. g. oak), the wear to the cutting edges is a combination of mechanical and chemical wear.

The cobalt binder material in the tungsten carbide is etched away by a chemical action prematurely damaging the cutting material.

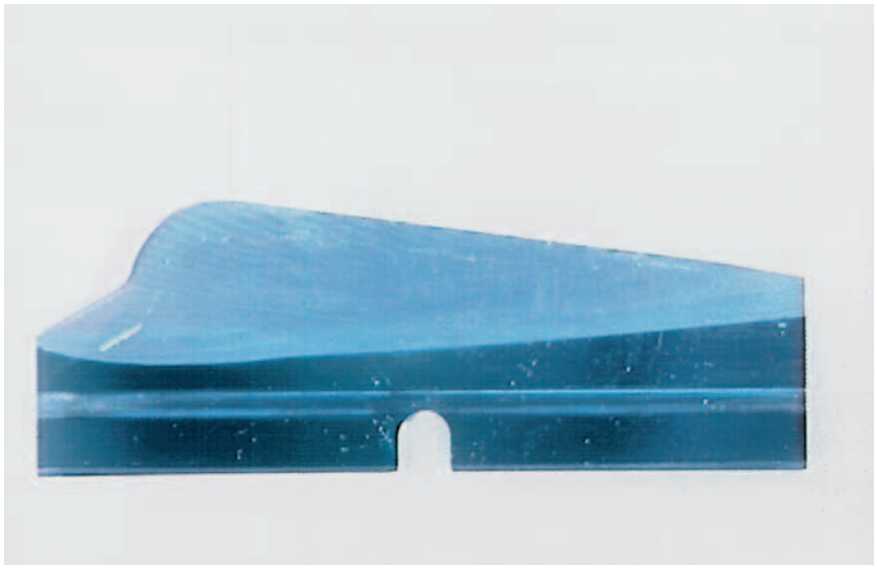


Chemical influence – cutting edge wear – after machining of oak.

Cutting edge damage through incorrect repair
With cutterhead/cutter set tools with HW cutting edges, the knives must be turned or replaced at the end of their performance time.

Resharpening on the face is not possible for safety reasons as it leads to a loss of clamping force and gaps between the knife and the clamping wedge, affect the surface quality.

Tools with turnblade/replaceable knives must be thoroughly cleaned and carefully mounted when changing knives.



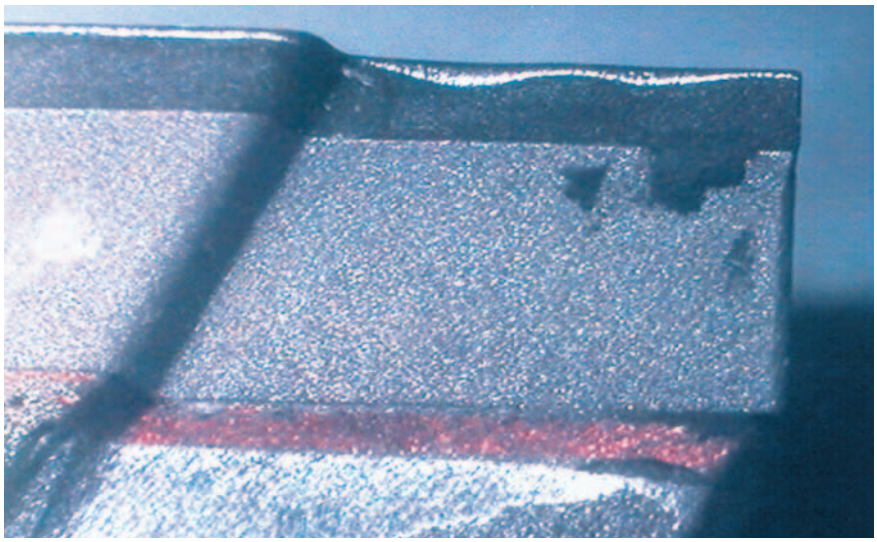
Damaged cutting edges due to incorrect repair.

Rounding of cutting edges
Mechanical abrasion causes continuous rounding to the cutting edge when machining uniform materials.

Resin build up can develop on the cutting edges because of the long performance time.

The machined surface quality determines the size of the cutting edge wear. As a standard the width of wear VB of 0.2 to max. 0.3 mm should not be exceeded.

Run time performance can be increased by removing the resin build-up.

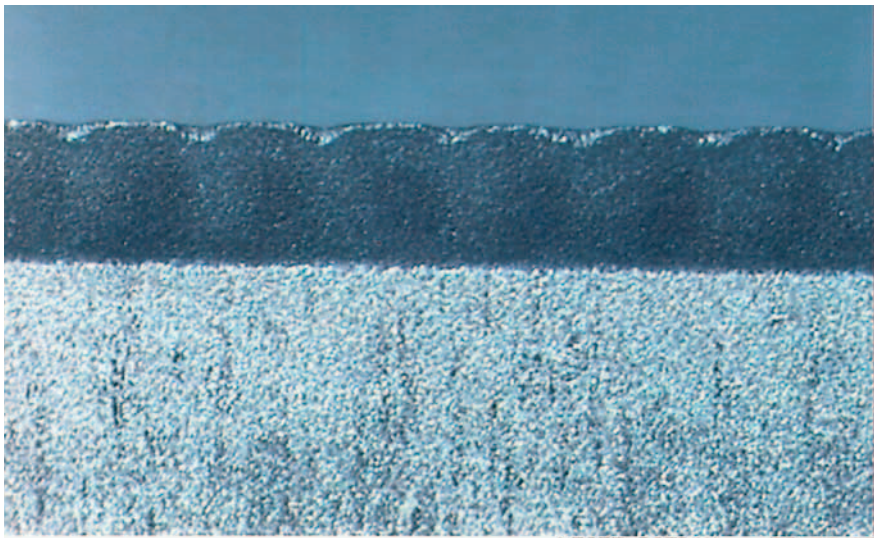


Cutting edge wear after machining GFK.

Rounding cutting edges and small chips
The cutting edge is damaged by small chips not caused by the usual wear when machining some wood-derived materials.

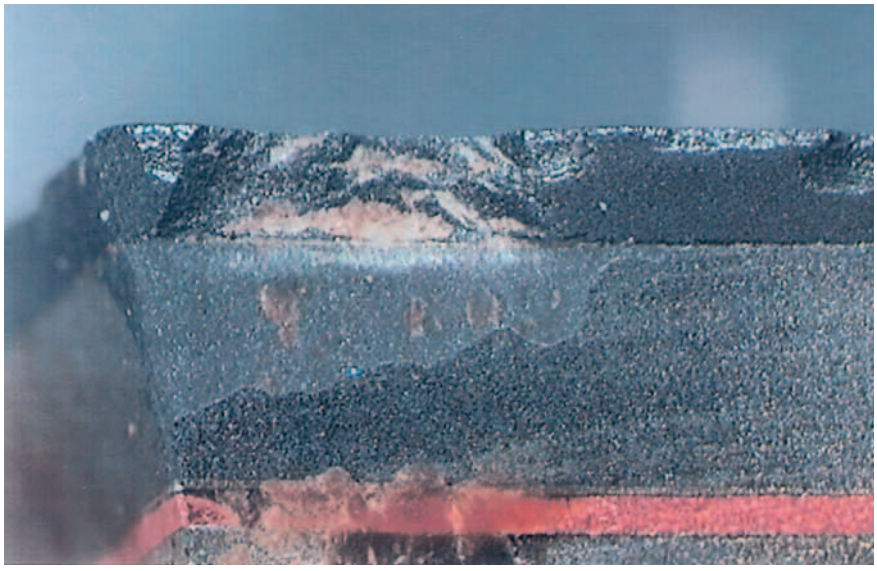
This is usely caused by foreign objects like mineral particles in the workpiece material.

The wear to the cutting edges and the size of the chips to the cutting edge are important factors for economically efficient repair, increasing cutting forces can totally destroy the cutting edges.



Cutting edge wear and cracks after machining HPL/CPL.

Cutting edge destruction
The cutting edge can be destroyed when machining non-uniform materials containing mineral or metallic particles. These particles cannot be detected prior to machining and limit the use of DP (DIA) tools for machining such materials.



Cutting edge destruction by metallic particles.

Inquiry/order form special tools – manual feed

Customer details: Customer number: (if known)

☐ Inquiry
☐ Order

Delivery dat: (not binding) CW

Company:

Street:

Post code/town:

Land:

Phone/fax:

Contakt person:

Signature:

Date:

Inquiry/order no.:

Tool ID: (if known)

No. of pieces:

Work piece material:

☐ Solid wood Type:
☐ Wood-derived mat. Type:
☐ Coating Type:
☐ Other Type:
☐ Finish hogging

Moisture content: %
Density: g/cm³
Additional information:

Machine:

(spindle moulder, moulder, double end tenoner edging machines, window machines etc.)

Manufacturer:
Year:
Type:

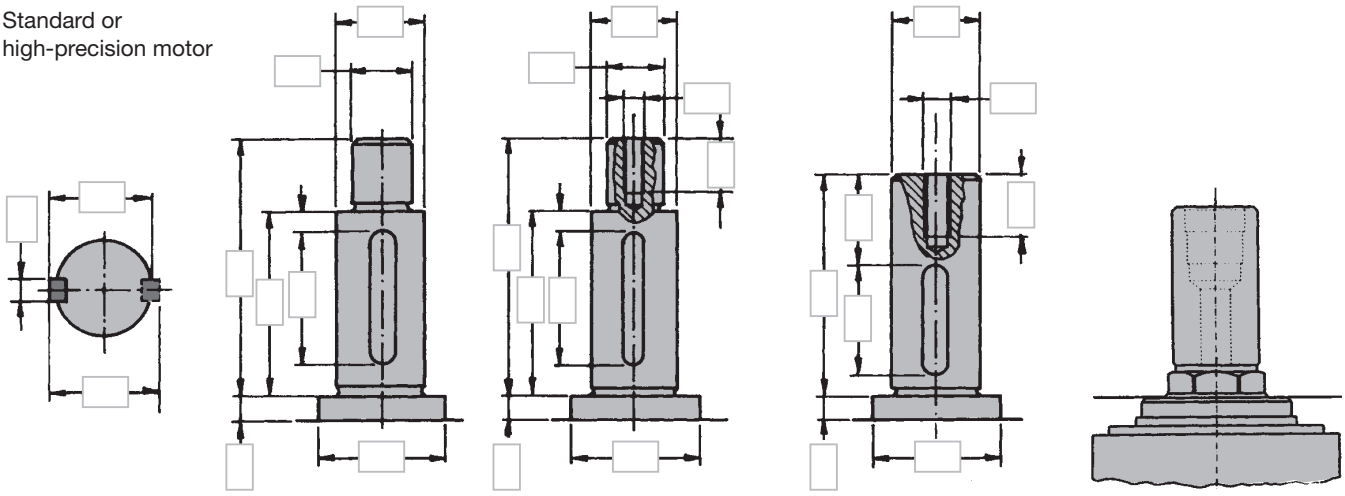
Spindle sequence in feed direction:

e.g.: 1 bottom, 2 right hand, 3 left hand, 4 top, 5 multi purpose
or: 1 scoring, 2 hogging, 3 cutting, 4 square cutting, 5 finish cutting
or: 1 sawing, 2 slotting/tenoning, 3 cutting with feed, 4 cutting against feed

Motor no.:	Power:	RPM:	Spindle dimension:	add. Information:
1	kW	min^{-1}	mm	
2	kW	min^{-1}	mm	
3	kW	min^{-1}	mm	
4	kW	min^{-1}	mm	
5	kW	min^{-1}	mm	

Please state direction of rotation (LL/RL) or cutting direction (GGL/GLL) for each spindle.

Standard or high-precision motor



Further inquiry/order forms for special tools see section 1 Sawing and section 5 Routing.

Tool

Tool type (see product information): (e.g. single part/tipped-/tool combination)

Dimension:

Diameter	mm
Cutting width:	mm
Bore:	mm
No. of teeth:	

Direction of rotation:
- ☐ Right hand rotation
- ☐ Left hand rotation

Cutting direction:
- ☐ Against feed
- ☐ Wiht feed

Type of feed:
- ☐ Manual feed (MAN)
- ☐ Mechanical feed (MEC)

Feed speed:	min^{-1}
Cutting width (SB):	mm
Cutting depth:	mm

Application:

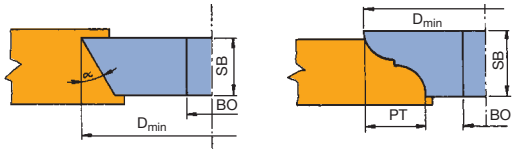
Solid wood	☐ along grain	☐ across grain	☐ end grain
Wood-derived	☐ top layer	☐ middle layer	☐ top layer and middle layer

Cutt. mat:
- ☐ HL
- ☐ HS
- ☐ ST
- ☐ HW
- ☐ DP

Adapter:
- ☐ No adaptor required
- ☐ Sleeve with anti-twist device
- ☐ Sleeve without anti-twist device
- ☐ Quick clamping element
- ☐ Hydro clamping element

Notes:

0-diameter:	mm
Max. diameter.:	mm
0-height:	mm
Clamping length:	mm

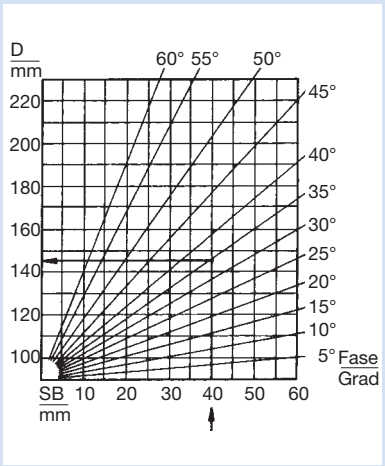


4

Technical information:

Tipped tool (bevel-/profile router):
Design: BG-Test, Z2, round design
mech. feed, Z3, Z4, round design,
tooth shape: with/without spurs

Chart to determine min. tool diameter:
Valid for bevel cutterblock BO – 30 mm:
For bore 40 mm:
D + 10 mm
For bore 50 mm:
D + 20 mm



Formula to determine tool diameter:
Valid for profile cutterblock BO – 30 mm:
For bore 40 mm: D + 10 mm
For bore 50 mm: D + 10 mm
Formula: D_{min} = 100 + 2 x PT (mm)

Note:
Angles exceeding 45° and large profile depths require large diameters. The maximum possible RPM for the cutterblock diameter must not be exceeded. Profile sketches or profile drawings must show clearly if the workpiece material (wood) or cutterblock is shown. Please state side to table, direction of rotation, dimensions and conditions of application on all workpiece samples or drawings.

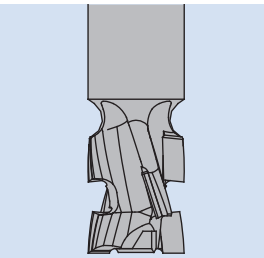
Tool combination with turnblade-/exchangeable knives:
Formula: D_{min} = 80 x 2 x PT (mm) – Valid for BO – 30 mm

Sketch for application plan, profile drawing, special motor spindle, etc.
Please specifiy workpiece support and fence side and/or workpiece face side top/bottom.

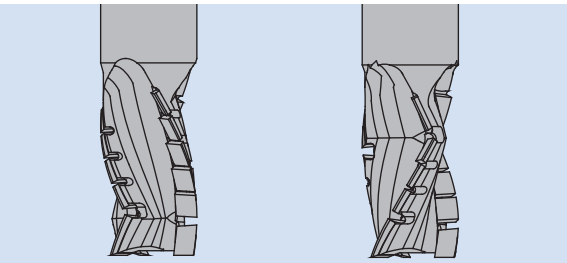
5. Routing

5.1 Sizing and grooving
5.1.1 Shank cutters

Working step/Application	Sizing and grooving.
Workpiece material (recommended cutting material)	Soft and hardwood (SP (softwood only), HS, HW, HW solid). Chipboard and fibre materials (MDF, HF, etc.), uncoated, with plastic coating, with veneer, etc. (HW, HW solid, DP). Plywood (HW, HW solid, DP). Duro-plastics (HW, HW solid, DP). Plastomers (HS, HW, HW solid, DP). Solid surface material – Corian, Varicor, etc. – (HW, HW solid, DP). Laminated materials – HPL, Trespa, etc. – (HW solid, DP). Non-ferrous metal – Aluminium, copper, etc. – (HS, HW, HW solid, DP).
Machine	Router machines with/without CNC. Special machines with mounting for shank tools. Portable routers.
Operation	Sizing with and against feed.
Cutting edge type	**Straight cutting edge**

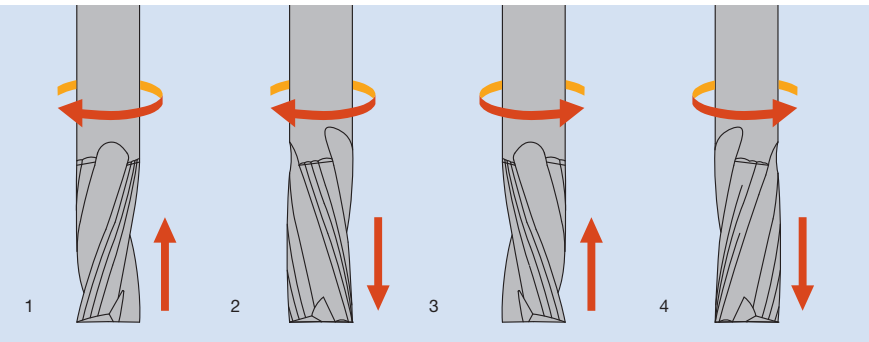


Straight shear angle cutter.



Straight shear angle cutter, spiral design.

Spiral cutting edges



Ill. 1 RL-RD
positive twist,
workpiece face side to bottom,
good chip flow.

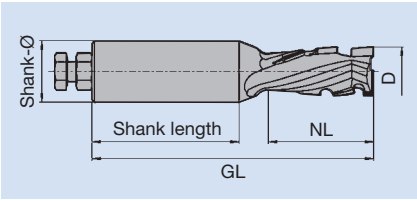
Ill. 2 RL-LD
negative twist,
workpiece face side to top,
supports workpiece clamping.

Ill. 3 LL-LD
positive twist,
workpiece face side to bottom,
good chip flow.

Ill. 4 LL-RD
negative twist,
workpiece face side to top,
supports workpiece clamping.

Technical features

The dimensions in the table below refer to the following tool parameters:



D	Diameter of the cutting edge.
NL	Usable cutting length with specified number of teeth.
AL	Possible working length, reached in separate steps.
GL	Total length.
d	Diameter of the shank, e. g. S25 x 60 -> Ø 25 mm.
l	Clampable length of the shank, e. g. S25 x 60 -> 60 mm.

Shank tolerances

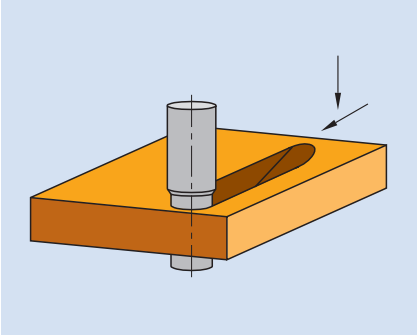
	Shank diameter	
Tools for	< 12 mm	≥ 12 mm
CNC routers	h6	g6
Portable routers	g7/h8	–

Application Data

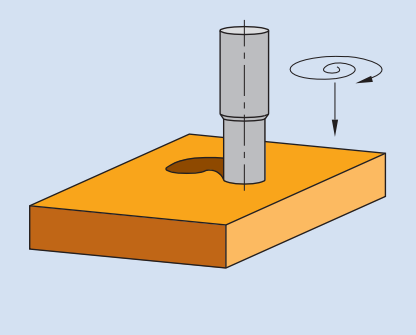
RPM/feed speed
The recommended RPM and feed speeds are detailed in the diagrams next the tool tables.

Use instructions

Recommended plunging methods:
The following plunging methods are recommended for sizing and grooving tools:

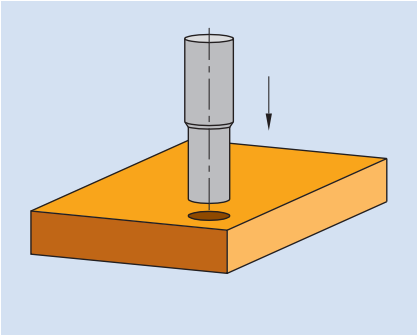


Ramp plunging.



Spiral plunging.

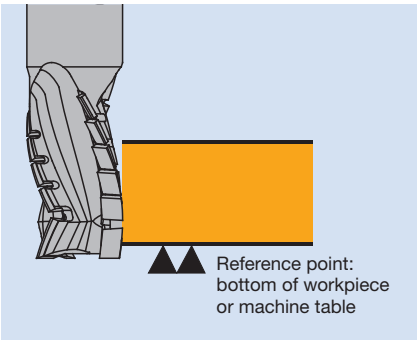
Router bits with mainly negative cutting shear angles and HW solid router bits with RL/LD and LL/RD and router bits without plunging cutter are not suitable for axial plunging!



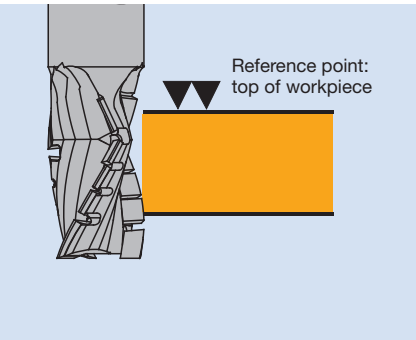
Axial plunging.

Positioning the tool relative to the workpiece

Tools with high negative shear angle.



Tools with high positive shear angle.



Clamping the workpiece

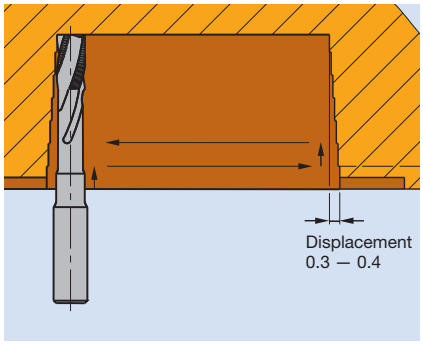
Sufficient workpiece clamping is very important with stationary machines. Insufficient clamping can reduce both the cut quality and tool life considerably. Panels can be held in place with vacuum clamping, but sometimes additional mechanical clamping is required.
Small and especially arched workpieces require special jigs or clamping devices which must be made by the customer or sourced from specialist suppliers.

Chip removal

For optimum chip removal, tools with predominantly or only positive shear cut should be used. Check there is sufficient workpiece clamping.

Machining deep slots

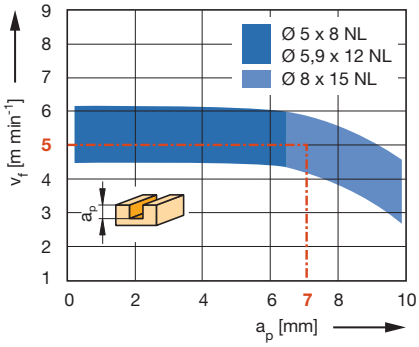
Cutting lock mortises in door production.



Reducing the slot cutting width by approx 0.1 mm per stroke reduces the risk of breakage as the tool does not touch the side of the slot with the full length of the tool.

HW

Feed speed v_f depending on cutting depth a_p



Workpiece material: Duromers, plastomers, compound materials
Working step: Grooving, sizing
Speed: n = 16000 - 18000 rpm

Grooving cutter, straight cut

Application:
Router cutter for grooving.

Machine:
Overhead routers with/without CNC control, machining centres, special routers with spindles for mounting shank tools, portable routers.

Workpiece material:
Softwood and hardwood, chipboard and fibre materials (MDF, HF etc.), uncoated, plastic coated, veneered etc., laminated wood (plywood etc.), duromers, plastomers, mineral materials (Corian, Varicor etc.), gluelam (HPL, Trespa etc), non-ferrous metals (aluminium, copper etc.).

Technical information:
Straight cut. Ground on edge for plunging. Large resharpening area. Good hogging performance in plastic and compound materials.

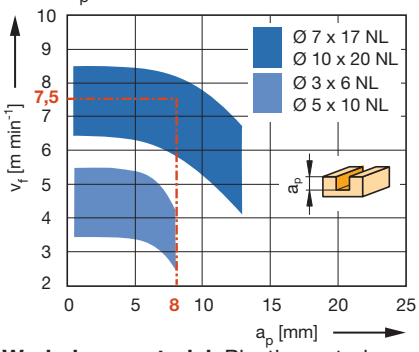
HW solid, Z 1
WO 120-2

D mm	GL mm	NL mm	S mm	QAL	DRI	ID	
5,9	65	12	6x30	HW solid	RL	**044466**	●
8	70	27	8x30	HW solid	RL	**044468**	●

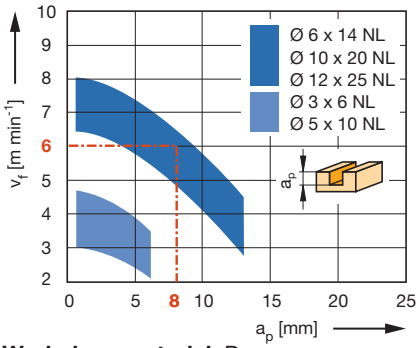
RPM: n max. = 24000 min^{-1}


HW

Feed speed v_f depending on cutting depth a_p



Workpiece material: Plastic coated chipboard
Working step: Grooving
Speed: n = 18000 rpm
Correction factor for v_f:
Solid wood = 0.8; Gluelam = 0.8;
Machining across grain = 0.7



Workpiece material: Duromers, plastomers, Corian
Working step: Grooving
Speed: n = 16000 - 18000 rpm

Grooving cutter, straight cut

Application:
Router cutter for sizing and grooving.

Machine:
Overhead routers with/without CNC control, machining centres, special routers with spindles for mounting shank tools, portable routers.

Workpiece material:
Softwood and hardwood, chipboard and fibre materials (MDF, HF etc.), uncoated, plastic coated, veneered etc., gluelam (plywood etc.), duromers, plastomers, mineral materials (Corian, Varicor etc.), laminated materials (HPL, Trespa etc.), non-ferrous metals (aluminium, copper etc.).

Technical information:
Straight cut. Ground on edge for plunging. Large resharpening area. Short design for increased stability and low vibration cutting. Long design for deep cutting (recommended in several steps).

HW solid, Z 2, short design
WO 120-1-16

D mm	GL mm	NL mm	S mm	DRI	ID	
3	50	6	6x30	RL	**041979**	●
4	50	7	6x30	RL	**041952**	●
4,5	50	8	6x30	RL	**041953**	●
5	50	10	6x30	RL	**041954**	●
5,5	50	12	6x30	RL	**041955**	●
6	50	14	6x30	RL	**041956**	●
7	55	17	8x30	RL	**041958**	●
8	55	20	8x30	RL	**041985**	●
8,5	65	16	8x30	RL	**041960**	●
9	70	18	10x40	RL	**041961**	●
10	70	20	10x40	RL	**041962**	●
12	70	25	12x40	RL	**041963**	●

HW solid, Z 2, short design, reinforced shank
WO 120-1-16

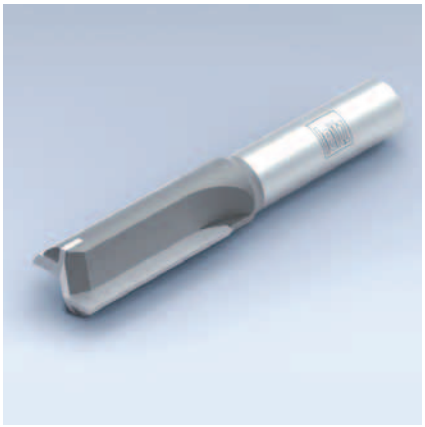
D mm	GL mm	NL mm	S mm	DRI	ID	
3	55	6	8x40	RL	**041981**	●
4	55	10	8x40	RL	**041982**	●
5	55	12	8x40	RL	**041983**	●
6	55	14	8x40	RL	**041984**	●

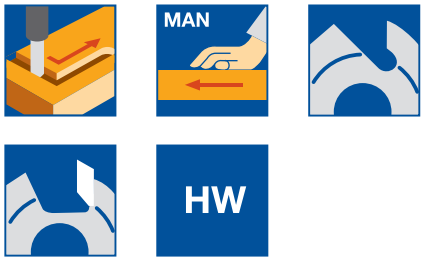
HW solid, Z 2, long design
WO 120-1-16

D mm	GL mm	NL mm	S mm	DRI	ID	
3	60	12	6x30	RL	**041964**	●
4	60	12	6x40	RL	**041965**	●
5	80	18	6x40	RL	**041966**	●

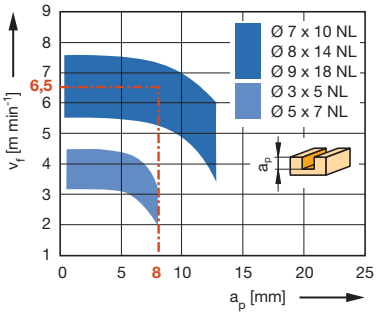
RPM: n max. = 24000 min^{-1}

● available ex stock
□ available at short notice
Instruction manual visit www.leitz.org

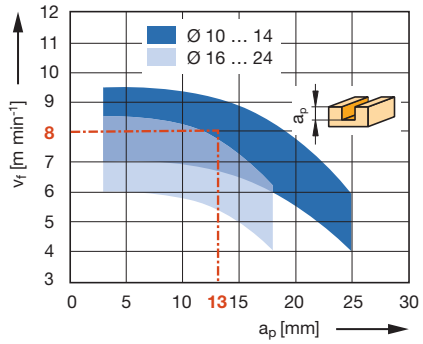




Feed speed v_f depending on cutting depth a_p



Workpiece material: Plastic coated chipboard
Working step: Grooving
Speed: n = 18000 rpm
Correction factor for v_f: Solid wood = 0.8; Gluelam = 0.8; Across grain = 0.7



Workpiece material: Plastic coated chipboard
Working step: Grooving
Speed: n = 18000 rpm
Correction factor for v_f: Solid wood = 0.8; Gluelam = 0.8; Machining across grain = 0.7

Grooving cutter, Z 2

Application:
Router cutter for sizing and grooving.

Machine:
Overhead routers with/without CNC control, machining centres, special routers with spindles for mounting shank tools, portable routers.

Workpiece material:
Softwood and hardwood, chipboard and fibre materials (MDF, HF etc.), uncoated, plastic coated, veneered etc., gluelam (plywood etc.).

Technical information:
Straight cut, tungsten carbide plunging tip.

HW, Z 2, shank 9.5 / 12 mm
WO 120-1-01

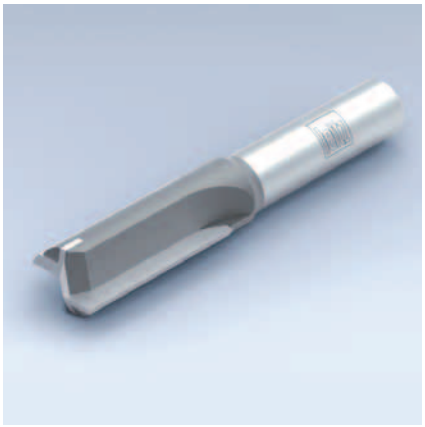
D mm	GL mm	NL mm	S mm	QAL	DRI	ID	
3	34	5	9,5x20	HW solid	RL	**038014**	●
4	37	6	9,5x20	HW solid	RL	**038016**	●
5	39	7	9,5x20	HW solid	RL	**038018**	●
8	48	14	9,5x20	HW solid	RL	**038024**	●
10	52	20	9,5x20	HW	RL	**038028**	●
11	52	25	9,5x20	HW	RL	**038030**	●
12	72	25	12x40	HW	RL	**038115**	●
13	72	25	12x40	HW	RL	**038116**	●
14	76	28	12x40	HW	RL	**038117**	●
15	80	30	12x40	HW	RL	**038118**	●
16	90	35	12x40	HW	RL	**038147**	●
18	90	35	12x40	HW	RL	**038148**	●
20	90	35	12x40	HW	RL	**038149**	●
25	92	41	12x40	HW	RL	**038125**	●
28	94	42	12x40	HW	RL	**038127**	●
30	94	42	12x40	HW	RL	**038128**	●

RPM: D = 3 - 25 mm
n = 16000 - 36000 min^{-1}
D = 26 - 30 mm
n = 16000 - 30000 min^{-1}

HW, Z 2, shank 10 mm
WO 120-1-01

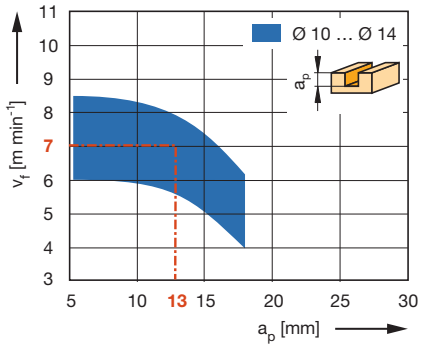
D mm	GL mm	NL mm	S mm	QAL	DRI	ID	
4	60	10	10x35	HW solid	RL	**038053**	●
5	60	12	10x35	HW solid	RL	**038054**	●
6	60	14	10x35	HW solid	RL	**038055**	●
7	60	17	10x35	HW solid	RL	**038056**	●
8	60	20	10x35	HW solid	RL	**038057**	●
10	70	23	10x35	HW	RL	**038058**	●
12	70	23	10x35	HW	RL	**038059**	●
14	70	23	10x35	HW	RL	**038060**	●
16	70	23	10x35	HW	RL	**038062**	●
20	70	23	10x35	HW	RL	**038064**	●

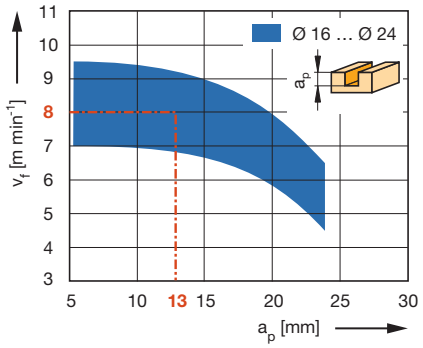
RPM: D = 3 - 25 mm
n = 16000 - 36000 min^{-1}




HW

Feed speed v_f depending on cutting depth a_p





Grooving cutter, Z 2

Application:
Router cutter for sizing and grooving.

Machine:
Overhead routers with/without CNC control, machining centres, special routers with spindles for mounting shank tools, portable routers.

Workpiece material:
Softwood and hardwood, chipboard and fibre materials (MDF, HF etc.), uncoated, plastic coated, veneered etc., gluelam (plywood etc.).

Technical information:
Straight cut, plunging tip in tungsten carbide (only WO 120-1-10). Ground on end (only WO 110-2), suitable for plunging. Long design for deep cutting (recommended in several steps).

HW, Z 2, shank 12 mm, long design
WO 120-1-01, WO 120-1-10

D mm	GL mm	NL mm	S mm	DRI	ID	
10	90	35	12x40	RL	**072495**	●
12	90	40	12x40	RL	**072496**	●
14	100	50	12x40	RL	**072233**	●
16	90	45	12x40	RL	**072105**	●
16	100	60	12x40	RL	**072234**	●
18	90	45	12x40	RL	**072106**	●
20	90	45	12x40	RL	**072107**	●
22	90	45	12x40	RL	**072108**	●
24	90	45	12x40	RL	**072109**	●
30	90	35	12x40	RL	**072498**	●

Workpiece material: Plastic coated chipboard
Working step: Grooving
Speed: n = 18000 rpm
Correction factor for v_f:
Solid wood = 0.8; Gluelam = 0.8;
Machining across grain = 0.7

RPM: D = 3 - 25 mm
n = 16000 - 36000 min^{-1}
D = 26 - 30 mm
n = 16000 - 30000 min^{-1}

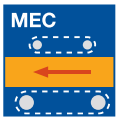
HW, Z 2, inch dimensions, long design
WO 110-2

D in	GL in	NL in	S in	QAL	DRI	ID	
1/8“	1 3/4“	3/8“	1/4“ x 1 1/4“	HW solid	RL	**038069**	●
1/4“	2 1/2“	1 1/4“	1/4“ x 1 1/4“	HW solid	RL	**038083**	●
1/4“	2 3/8“	3/4“	1/2“ x 1 5/8“	HW	RL	**038072**	●
5/16“	2 5/8“	1“	1/2“ x 1 3/8“	HW	RL	**038088**	●
3/8“	2 7/16“	3/4“	1/2“ x 1 5/8“	HW	RL	**038078**	●
3/8“	2 7/8“	1 1/4“	1/2“ x 1 3/8“	HW	RL	**038089**	●
1/2“	2 5/8“	1“	1/2“ x 1 5/8“	HW	RL	**038099**	●
1/2“	2 3/4“	1 1/4“	1/2“ x 1 5/8“	HW	RL	**038079**	●
1/2“	3 1/8“	1 1/2“	1/2“ x 1 3/8“	HW	RL	**038091**	●
1/2“	4 1/2“	2“	1/2“ x 2 1/2“	HW	RL	**038101**	●

Workpiece material:
Plastic coated chipboard
Working step: Grooving
Speed: n = 18000 rpm
Correction factor for v_f:
Solid wood = 0.8; Gluelam = 0.8;
Machining across grain = 0.7

RPM: D = 3 - 25 mm
n = 16000 - 36000 min^{-1}
D = 26 - 30 mm
n = 16000 - 30000 min^{-1}

● available ex stock
□ available at short notice
Instruction manual visit www.leitz.org



HW

Grooving cutterset, adjustable

Application:
For horizontal grooving in the edge of panels. For cutting panel joint grooves etc.

Machine:
Overhead routers with/without CNC control, machining centres, special routers with spindles for mounting shank tools.

Workpiece material:
Softwood and hardwood, chipboard and fibre materials (MDF, HF etc.), uncoated, plastic coated, veneered etc., gluelam (plywood etc.).

Technical information:
Grooving cutterset for mounting on cutter arbor, continuous cutting width adjustment without spacers. Grooving depth up to 12 mm.

Adjustable, mounted on cutter arbor
SO 100-2

Tool Type	D mm	Z	BO mm	ID	
Tool set mounted on arbor	100	4/4	20	**426061**	□

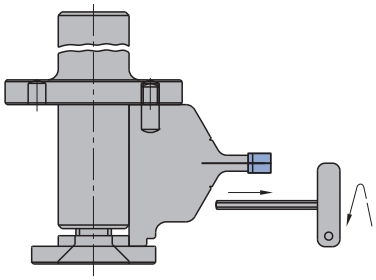
RPM: n max. = 18000 min^{-1}

Adjustable, without cutter arbor
SF 502-2-01

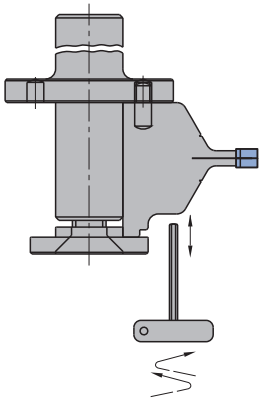
Tool Type	D mm	SB mm	BO mm	ID	
Grooving cutterset with flanged sleeve	100	3,5 - 6,2	20	**020646**	●

RPM: n max. = 18000 min^{-1}

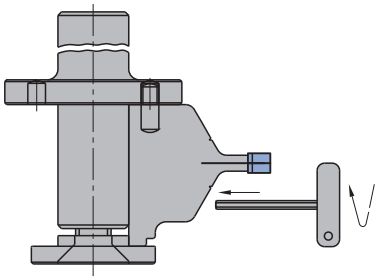
When ordering, select arbors with d-20 mm and clamping length 40 mm.
Cutter arbor see section 8 Clamping systems/Adaptors.



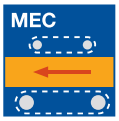
Open clamping system



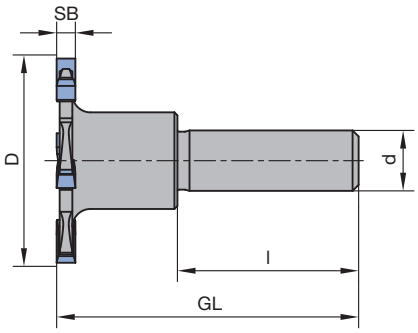
Adjustment SB larger “+”, SB smaller “-”



Close clamping system



HW



Grooving cutter, Z 6

Application:
Routers for cutting additional grooves, for example, wood/alu windows dry glazing systems.

Machine:
Overhead routers with/without CNC control, machining centres, special routers with spindles for mounting shank tools.

Workpiece material:
Softwood and hardwood, laminated wood in the window construction.

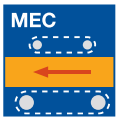
Technical information:
Straight cut. Reinforced body for higher stability.

HW, Z 6
WO 110-2

D mm	GL mm	SB mm	S mm	Z	DRI	ID	
35	50	3,1	10x30	6	RL	**038236**	●

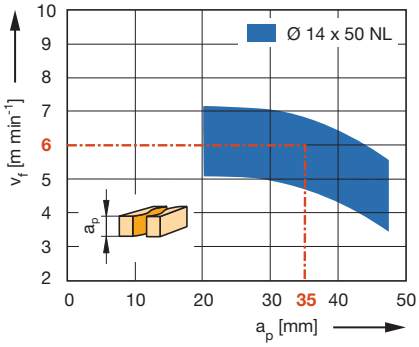
RPM: n = 16000 - 24000 min^{-1}

● available ex stock
□ available at short notice
Instruction manual visit www.leitz.org



HW

Feed speed v_f depending on grooving depth a_p



Workpiece material: Plastic coated and veneered chipboard
Working step: Sizing
Speed: n = 18000 rpm
Correction factor for v_f:
Machining across grain = 0.7

Grooving cutter with shear angle

Application:
Router cutter for sizing, grooving and cutting apertures.

Machine:
Overhead routers with/without CNC control, machining centres, special routers with spindles for mounting shank tools.

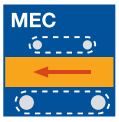
Workpiece material:
Softwood and hardwood, chipboard and fibre materials (MDF, HF etc.), uncoated, plastic coated, veneered etc., gluelam (plywood etc.).

Technical information:
Finishing type Z 1+1 particularly for apertures in furniture and doors. Cutting edges with shear angles against feed for tear free edges on both sides.

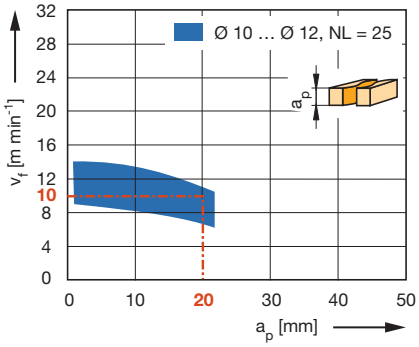
HW, Z 1+1, finishing cut processing
WO 140-2

D mm	GL mm	NL mm	S mm	DRI	ID	
14	100	50	12x50	RL	**038204**	●
14	100	50	14x50	RL	**038205**	●
14	120	50	25x60	RL	**038206**	●

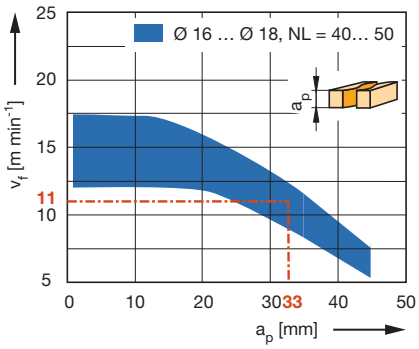
RPM: n max. = 24000 min^{-1}



Feed speed v_f depending on grooving depth a_p



Workpiece material: Softwood
Working step: Sizing
Speed: n = 18000 rpm
Correction factor for v_f:
Hardwood = 0.8; Chipboard = 1.3;
Gluelam = 0.9



Workpiece material: Softwood
Working step: Sizing
Speed: n = 18000 rpm
Correction factor for v_f:
Hardwood = 0.8; Chipboard = 1.2;
gluelam = 0.9

Spiral roughing/finishing router cutter Marathon

Application:
Router cutter for sizing and grooving in roughing/finishing quality.

Machine:
Overhead routers with/without CNC control, machining centres, special routers with spindles for mounting shank tools.

Workpiece material:
Softwood and hardwood, chipboard and fibre materials (MDF, HF, etc.) uncoated, gluelam (plywood, etc.) gluelam (HPL, Trespa, etc.), duromers, plastomers, mineral working material (Corian, Varicor, etc.).

Technical information:
Solid tungsten carbide, tungsten carbide quality and Marathon coating for increased performance time, particularly in abrasive materials. Recommended for abrasive materials such as HPL/CPL.

HW, Z 2, short design
WO 160-2-15

D mm	D in	GL mm	GL in	NL mm	NL in	S mm	S in	Z	Twist	DRI	ID	
12,7	1/2“	76,2	3“	28,6	1 1/8“	12,7x40	1/2“x1 1/2“	2	RD	RL	**240514**	●
12,7	1/2“	88,9	3 1/2“	38,1	1 1/2“	12,7x40	1/2“x1 1/2“	2	LD	RL	**240515**	●

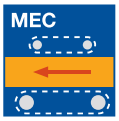
RPM: n max. = 24000 min^{-1}

HW, Z 2, short design, for abrasive materials
WO 160-2-15

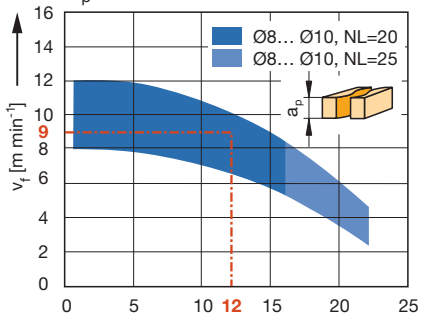
D mm	GL mm	NL mm	S mm	Z	Twist	DRI	ID	
10	70	25	10x40	2	RD	RL	**240200**	●
12	70	25	12x40	2	RD	RL	**240201**	●
16	100	40	16x50	2	RD	RL	**240202**	●
18	100	50	18x50	2	RD	RL	**240203**	●

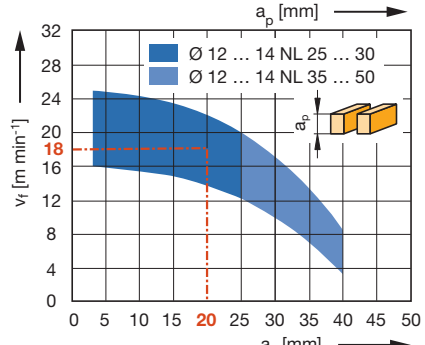
RPM: n max. = 24000 min^{-1}

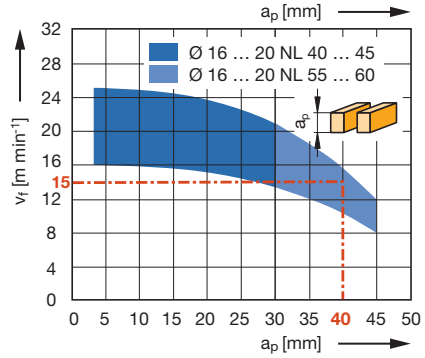
● available ex stock
□ available at short notice
Instruction manual visit www.leitz.org



Feed speed v_f depending on grooving depth a_p







Spiral roughing/finishing router cutter Marathon

Application:
Router cutter for sizing and grooving in roughing/finishing quality.

Machine:
Overhead routers with/without CNC control, machining centres, special routers with spindles for mounting shank tools.

Workpiece material:
Softwood and hardwood, laminated wood in window construction, chipboard and fibre working materials (MDF, HF, etc.), uncoated, gluelam (plywood, etc.), plastomers, mineral working materials (Corian, Varicor, etc.).

Technical information:
Solid tungsten carbide, Marathon coating for increased performance time. Short design for increased stability. Long design for deep cutting (recommended in several steps). Higher feed speeds than conventional roughing cutters, quiet running.

Z 2 / Z 3, short design
WO 160-2-12

D mm	GL mm	NL mm	S mm	Z	Twist	ID LL	ID RL	
8	65	20	8x40	2	RD		**042277**	●
10	70	25	10x40	2	RD		**042278**	●
10	70	25	10x40	2	LD		**042279**	●
12	70	25	12x40	3	RD		**042280**	●
12	70	25	12x40	3	LD		**042281**	●
14	80	30	14x45	3	RD		**042282**	●
16	100	40	16x55	3	RD		**042273**	●
16	100	40	16x55	3	LD	**042283**	**042284**	● ●
18	90	35	18x50	3	RD		**042285**	●
20	100	45	20x50	3	RD		**042286**	●
25	120	60	25x55	3	RD		**042287**	●

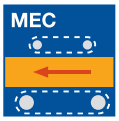
Z 2 / Z 3, long design
WO 160-2-12

D mm	GL mm	NL mm	S mm	Z	Twist	ID LL	ID RL	
8	80	25	8x55	2	RD		**042288**	●
12	80	35	12x40	3	RD		**042270**	●
12	80	35	12x40	3	LD	**042289**	**042290**	● ●
12	90	42	12x40	3	RD		**042271**	●
14	110	50	14x55	3	RD		**042272**	●
14	110	50	14x55	3	LD		**042291**	●
16	110	55	16x55	3	RD		**042274**	●
16	110	55	16x55	3	LD	**042292**	**042293**	● ●
18	120	60	18x55	3	RD		**042294**	●
20	120	60	20x55	3	RD		**042275**	●
20	120	60	20x55	3	LD	**042295**	**042296**	● ●
20	130	75	20x50	3	RD		**042276**	●
20	130	75	20x55	3	LD	**042297**		●

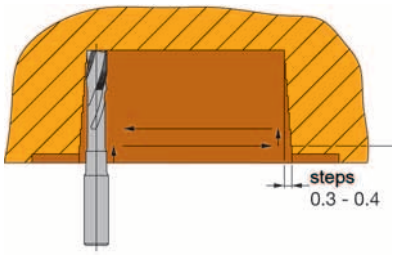
RPM: n max. = 24000 min^{-1}

Workpiece material: Softwood
Working step: Sizing
Speed: n = 18000 rpm
Correction factor for v_f: Hardwood = 0.8; Chipboard = 1.3; Laminated wood = 0.9

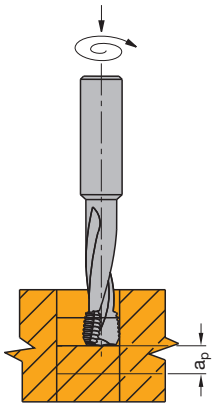
● available ex stock
□ available at short notice
Instruction manual visit www.leitz.org



Application example for mortise slot production



Application data:
Infeed at:
a_p 4 - 8 mm per stroke in solid wood;
v_f 10 - 16 m min^{-1};
n = 12000 - 18000 rpm
a_p 8 - 15 mm per stroke in chipboard;
v_f 12 - 18 m min^{-1};
n = 12000 - 18000 rpm



Production of keyholes and spy holes by circular cutting

Spiral roughing/finishing router cutter Marathon

Application:
Router cutter for sizing, grooving and for slot mortising in roughing/finishing quality.

Machine:
Overhead routers with/without CNC control, machining centres, special routers with spindles for mounting shank tools.

Workpiece material:
Softwood and hardwood, laminated wood in window construction, chipboard and fibre working materials (MDF, HF, etc.) uncoated, gluelam (plywood, etc.).

Technical information:
Solid tungsten carbide, Marathon coating for increased performance time. Extra long design for very deep cutting (in several steps). Higher feed speeds than conventional spiral roughing cutters, quiet running.

Z 3, extra long design, for mortise slots
WO 160-2-13

D mm	GL mm	NL mm	AL mm	S mm		Z	Twist	DRI	ID		ID Set HSK-F 63	
8	80	25	51	8x25		3	LD	RL	**240010**	●	**240500**	□
10	90	30	51	10x35		3	LD	RL	**240011**	●	**240501**	□
12	120	35	80	12x35		3	LD	RL	**240012**	●	**240502**	□
12	120	35	80	12x35		3	right hand twist	RL	**240000**	●		
14	170	30	95	16x50		3	right hand twist	RL	**240001**	●		
14	190	30	120	16x50		3	right hand twist	RL	**240002**	●		
16	170	50	105	16x50		3	right hand twist	RL	**240003**	●		
16	179	30	120	16x58	*	3	right hand twist	RL	**240004**	●		
16	179	30	120	20x58	*	3	right hand twist	RL	**240005**	●		
16	205	30	135	20x50		3	right hand twist	RL	**240006**	●		
17	170	30	105	20x50		3	right hand twist	RL	**240007**	●		
17	190	30	120	20x50		3	right hand twist	RL	**240008**	●		
18	170	50	115	20x50		3	right hand twist	RL	**240009**	●		

RPM: D 10-12 mm: n = 18000 - 24000 min^{-1}
D 14-18 mm: n = 12000 - 20000 min^{-1}

* with clamping flat for HOMAG/WEEKE latch hole unit

Note:
HSK-F 63 = tool is supplied shrink-fitted in shrink-fit chuck HSK-F 63.

Application:
Router cutter for sizing and cutting spy holes and keyholes in roughing/finishing quality.

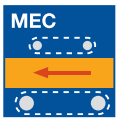
Z 3, extra long design for cutting spyholes and keyholes
WO 160-2-14

D mm	GL mm	NL mm	AL mm	S mm	Z	DRI	ID		ID Set HSK-F 63	
10	95	45		10x40	3	RL	**240100**	●		
11,3	105	15	55	12x45	2	RL	**240101**	●		
12	120	15	75	12x40	2	RL	**240102**	●		
12	140	20	95	12x40	2	RL	**240103**	●		
14	130	50	75	14x50	3	RL	**240104**	●		
14	170	30	95	16x60	3	RL	**240108**	●	**240601**	□
16	130	75		16x50	3	RL	**240105**	●		

● available ex stock
□ available at short notice
Instruction manual visit www.leitz.org

D mm	GL mm	NL mm	AL mm	S mm	Z	DRI	ID		ID Set HSK-F 63	
16	170	50	105	16x55	3	RL	**240107**	●	**240600**	□
16	170	30	95	16x60	3	RL	**240106**	●		
25	200	120		25x65	3	RL	**240300**	●	**240800**	□

RPM: D 10-12 mm: n = 18000 - 24000 min^{-1}
D 14-18 mm: n = 12000 - 20000 min^{-1}



Spiral roughing/finishing router cutter Marathon alternate twist

Application:
Routers for sizing and grooving in roughing/finishing quality and tear free cut edges on both sides.

Machine:
Overhead routers with/without CNC control, machining centres, special router machines with cutting spindles for mounting shank tools.

Workpiece material:
Softwood and hardwood, chipboard and fibre working material (MDF, HF, etc.) uncoated, gluelam (plywood, etc.), plastomers, mineral working materials (Corian, Varicar, etc.).

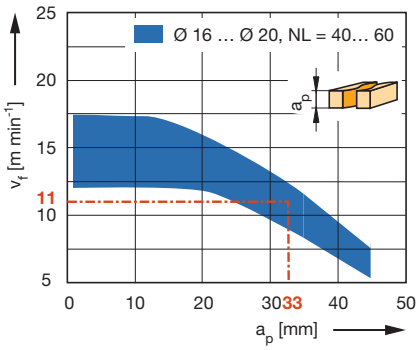
Technical information:
HW solid, Marathon coating for increased performance time. Alternate twist for tear free cut edges on both sides. Higher feed speeds possible than with conventional roughing cutters. Quiet running.

Z 2 + 2
WO 160-2-16

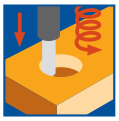
D mm	GL mm	NL mm	S mm	DRI	ID	
16	100	40	16x50	RL	**240402**	●
20	120	45	20x50	RL	**240400**	●
20	130	60	20x50	RL	**240401**	●
20	140	75	20x50	RL	**240403**	●

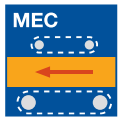
RPM: n max. = 24000 min^{-1}

Feed speed v_f depending on grooving depth a_p

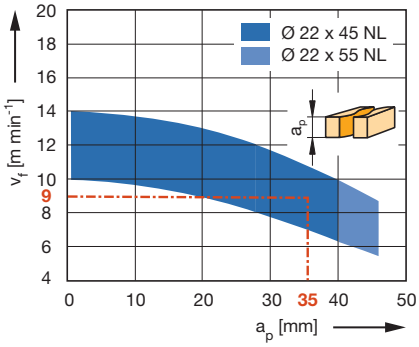


Workpiece material: Softwood
Working step: Sizing
Speed: n = 18000 rpm
Correction factor for v_f:
Hardwood = 0.8; Chipboard = 1.2;
Gluelam = 0.9





Feed speed v_f depending on grooving depth a_p



Workpiece material: Plastic coated chipboard
Working step: Sizing
Speed: n = 18000 rpm
Correction factor for v_f: MDF = 0.8

Roughing router cutter in turnblade design

Application:
Router cutter for sizing and grooving in roughing quality.

Machine:
Overhead routers with/without CNC control, machining centres, special routers with spindles for mounting shank tools.

Workpiece material:
Softwood and hardwood, chipboard and fibre materials (MDF, HF etc.), uncoated, gluelam (plywood etc.).

Technical information:
Tungsten carbide turnblade knives arranged in irregular pitch for quiet cutting.
With turnblade knife plunging tip.

HW, Z 1+1
WL 101-2

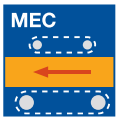
D mm	GL mm	NL mm	S mm	DRI	ID	
22	105	45	20x50	RL	**041923**	●
22	115	45	25x60	RL	**041921**	●
22	125	55	25x60	RL	**041922**	●

RPM: n = 16000 - 24000 min^{-1}

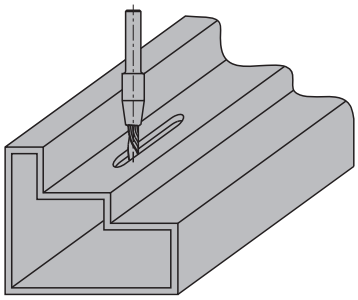
Spare parts:

BEZ	ABM mm	QAL	VE PCS	ID	
Turnblade knife	9x12x1,5	HW-05	10	**005158**	●
Turnblade knife	12x12x1,5	HW-05	10	**005081**	●
Oval head screw Torx® 15	M4x6			**006225**	●
Torx®	Torx® 15			**005457**	●

● available ex stock
□ available at short notice
Instruction manual visit www.leitz.org



HW



Slotting in hollow sections

Spiral finishing router cutter

Application:
Router cutter for grooving plastic and aluminium profiles. Ideal for cutting drainage grooves in plastic window profiles.

Machine:
Overhead routers with/without CNC control, machining centres, special routers with spindles for mounting shank tools.

Workpiece material:
Softwood and hardwood, duromers, plastomers, compound materials (PU with aluminium coating etc.), non-ferrous metals (aluminium, copper etc.).

Technical information:
When cutting aluminium, suitable lubrication (spray or minimum volume lubrication) is necessary.

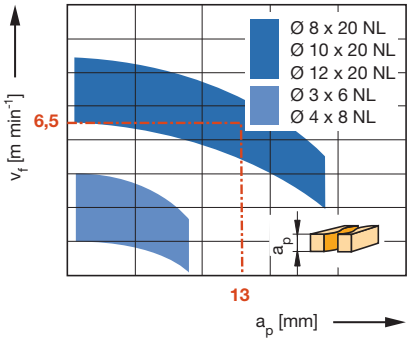
HW solid, Z 1, long design
WO 160-2-07

D mm	GL mm	NL mm	AL mm	S mm	Z	Twist	DRI	ID	
5	78	20	30	8x40	1	RD	RL	**042539**	●
5	95	20	30	8x40	1	RD	RL	**042540**	●
5	110	25	45	8x40	1	RD	RL	**042541**	●

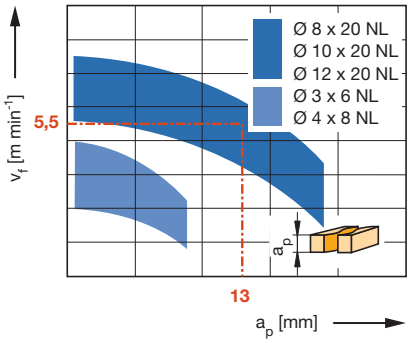
RPM: n = 18000 - 24000 min^{-1}


HW

Feed speed v_f depending on cutting depth a_p



Workpiece material: Softwood
Working step: Sizing
Speed: n = 18000 - 24000 rpm
Correction factor for v_f:
Hardwood = 0.9; Machining across grain = 0.8; Chipboard = 1.1



Workpiece material: Duromers, plastomers, gluelam (HPL), compound materials
Working step: Sizing
Speed: n = 16000 - 24000 rpm

Spiral finishing router cutter

Application:
Router cutter for sizing, grooving and finish cutting to high cutting quality.

Machine:
Overhead routers with/without CNC control, machining centres, special routers with spindles for mounting shank tools.

Workpiece material:
Softwood and hardwood, chipboard and fibre materials (MDF, HF etc.), uncoated, plastic coated, veneered etc., gluelam (plywood etc.), duromers, plastomers, mineral materials (Corian, Varicor etc.), gluelam (HPL, Trespa etc.), non-ferrous metals (aluminium, copper etc.).

Technical information:
Large twist angle for high shear cut. Check twist direction for good top layer quality. Max. cutting depth 1.0 - 1.5 x diameter. Short design for increased stability and low vibration. Long design for deep cutting (recommended in several steps).

HW solid, Z 1, short design
WO 160-2-03

D mm	D in	GL mm	GL in	NL mm	NL in	S mm	S in	Z	Twist	DRI	ID	
3		50		6		6x30		1	RD	RL	**042723**	●
3		50		6		6x30		1	LD	RL	**042724**	●
4		50		8		6x30		1	RD	RL	**042725**	●
4		50		8		6x30		1	LD	RL	**042726**	●
5		50		10		6x30		1	RD	RL	**042727**	●
5		50		10		6x30		1	LD	RL	**042728**	●
6		50		14		6x30		1	RD	RL	**042729**	●
6		50		14		6x30		1	LD	RL	**042730**	●
6,35	1/4“	50,8	2“	15,88	5/8“	6,35x30	1/4“x1 1/8“	1	RD	RL	**240512**	●
8		65		20		8x40		1	RD	RL	**042731**	●
8		65		20		8x40		1	LD	RL	**042732**	●
10		70		20		10x40		1	RD	RL	**042733**	●
10		70		20		10x40		1	LD	RL	**042734**	●
12		70		20		12x40		1	RD	RL	**042735**	●
12		70		20		12x40		1	LD	RL	**042736**	●

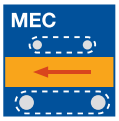
RPM: n = 16000 - 24000 min^{-1}

HW solid, Z 1, long design
WO 160-2-03

D mm	GL mm	NL mm	S mm	Z	Twist	DRI	ID	
4	60	12	6x40	1	RD	RL	**042739**	●
4	60	12	6x40	1	LD	RL	**042740**	●
5	80	18	6x40	1	RD	RL	**042741**	●
5	80	18	6x40	1	LD	RL	**042742**	●
6	80	22	6x40	1	RD	RL	**042743**	●
6	80	22	6x40	1	LD	RL	**042744**	●
8	80	25	8x40	1	RD	RL	**042745**	●
8	80	25	8x40	1	LD	RL	**042746**	●
10	90	32	10x40	1	RD	RL	**042747**	●
10	90	32	10x40	1	LD	RL	**042748**	●
12	90	32	12x40	1	RD	RL	**042749**	●
12	90	32	12x40	1	LD	RL	**042750**	●

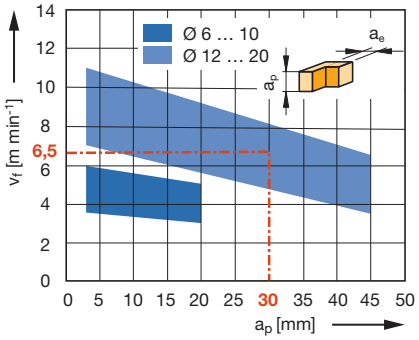
RPM: n = 16000 - 24000 min^{-1}

● available ex stock
□ available at short notice
Instruction manual visit www.leitz.org

HW

Feed speed v_f depending on grooving depth a_p



Workpiece material: Softwood
Working step: Jointing
Speed: n = 18000 rpm
Correction factor for v_f:
Hardwood = 0.9;
Machining across grain = 0.7

Spiral finishing router cutter

Application:
Router cutter for sizing, grooving and finish cutting to high cutting quality.

Machine:
Overhead routers with/without CNC control, machining centres, special routers with spindles for mounting shank tools.

Workpiece material:
Softwood and hardwood, chipboard and fibre materials (MDF, HF etc.), uncoated, plastic coated, veneered etc., gluelam (plywood etc.), duromers, plastomers, mineral materials (Corian, Varicor etc.), gluelam (HPL, Trespa etc.).

Technical information:
Ideally used after roughing cutters, finish cut allowance approx. 1-2 mm. Check twist direction for good top layer quality. Short design for increased stability and low vibration. Long design for larger material thickness at reduced feed speeds.

HW solid, Z 2, short design
WO 160-2-05

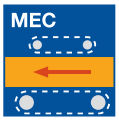
D mm	GL mm	NL mm	S mm	Z	Twist	DRI	ID	
6	60	12	6x30	2	LD	RL	**042457**	●
8	65	20	8x30	2	RD	RL	**042472**	●
10	70	25	10x40	2	RD	RL	**042458**	●
10	70	25	10x40	2	LD	RL	**042459**	●
12	70	25	12x40	2	RD	RL	**042758**	●
12	70	25	12x40	2	LD	RL	**042760**	●
16	100	40	16x50	2	RD	RL	**042761**	●
16	100	40	16x50	2	LD	RL	**042763**	●
20	100	45	20x50	2	RD	RL	**042764**	●

RPM: n = 16000 - 24000 min^{-1}

HW solid, Z 2, long design
WO 160-2-05

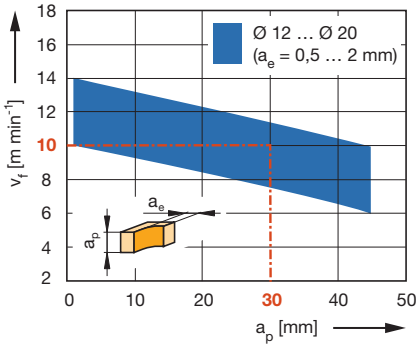
D mm	D in	GL mm	GL in	NL mm	NL in	S mm	S in	Z	Twist	DRI	ID	
12		80		35		12x40		2	RD	RL	**042765**	●
12,7	1/2“	76,2	3“	31,8	1 1/4“	12,7x40	1/2“x1 1/2“	2	LD	RL	**240510**	●
12,7	1/2“	88,9	3 1/2“	31,8	1 1/4“	12,7x40	1/2“x1 1/2“	2	LD	RL	**240511**	●
16		110		55		16x55		2	RD	RL	**042766**	●

RPM: n = 16000 - 24000 min^{-1}

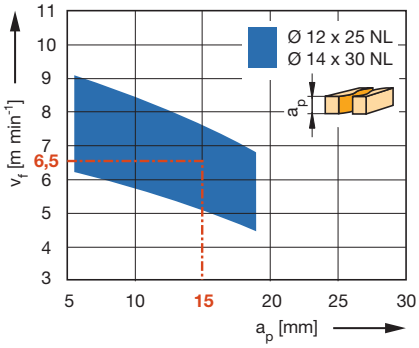


HW

Feed speed v_f depending on grooving depth a_p



Workpiece material: Softwood
Working step: Jointing
Speed: n = 18000 rpm
Correction factor for v_f:
Hardwood = 0.9;
Machining across grain = 0.7



Spiral finishing router cutter

Application:
Router cutter for sizing, grooving and finish cutting to high cutting quality. Z 3 design for high feed speeds.

Machine:
Overhead routers with/without CNC control, machining centres, special routers with spindles for mounting shank tools.

Workpiece material:
Softwood and hardwood, chipboard and fibre materials (MDF, HF etc.), uncoated, plastic coated, veneered etc., gluelam (plywood etc.), duromers, plastomers, mineral materials (Corian, Varicor etc.), gluelam (HPL, Trespa etc.).

Technical information:
Ideally used after roughing cutters, finish cut allowance approx. 1-2 mm. Check twist direction for good top layer quality. Short design for increased stability and low vibration. Long design for larger material thickness at reduced feed speeds.

HW solid, Z 3, short design
WO 160-2-05

D mm	GL mm	NL mm	S mm	Z	Twist	ID LL		ID RL	
12	70	25	12x40	3	LD			**042486**	●
12	70	25	12x40	3	RD	**042534**	●	**042487**	●
14	80	30	14x40	3	RD			**042461**	●
16	100	40	16x50	3	RD			**042488**	●
16	100	40	16x50	3	LD			**042489**	●
18	90	35	18x50	3	RD			**042474**	●

RPM: n = 16000 - 24000 min^{-1}

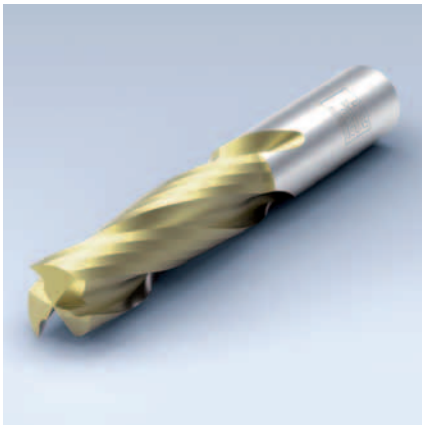
HW solid, Z 3, long design
WO 160-2-05

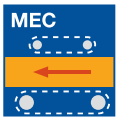
D mm	D in	GL mm	GL in	NL mm	NL in	S mm	S in	Z	Twist	ID LL		ID RL	
8		65		25		8x30		3	LD			**042490**	●
12		80		35		12x40		3	RD			**042460**	●
12,7	1/2“	88,9	3 1/2“	28,6	1 1/8“	12,7x 40	1/2“x 1 1/2“	3	RD			**240509**	●
14		110		50		14x55		3	RD			**042462**	●
16		110		55		16x55		3	RD			**042464**	●
16		110		55		16x55		3	LD	**042473**	●	**042465**	●
18		120		60		18x55		3	RD			**042475**	●
20		120		60		20x55		3	RD			**042466**	●
20		120		60		20x55		3	LD	**042468**	●	**042467**	●
20		130		75		20x50		3	RD			**042549**	●

RPM: n = 16000 - 24000 min^{-1}

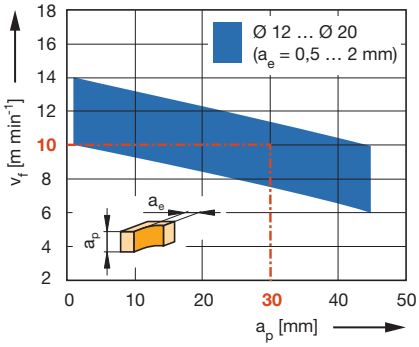
Workpiece material: Duromers, laminated materials (HPL, CPL)
Working step: Sizing
Speed: n = 14000 - 18000 rpm

● available ex stock
□ available at short notice
Instruction manual visit www.leitz.org





Feed speed v_f depending on grooving depth a_p



Workpiece material: Softwood
Working step: Jointing
Speed: n = 18000 rpm
Correction factor for v_f:
Hardwood = 0.9;
Machining across grain = 0.7

Spiral finishing router cutter Marathon

Application:
Router cutter for sizing, grooving and finish cutting to high cutting quality. Z 3 design for high feed speeds.

Machine:
Overhead routers with/without CNC control, machining centres, special routers with spindles for mounting shank tools.

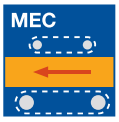
Workpiece material:
Softwood and hardwood, chipboard and fibre materials (MDF, HF etc.), uncoated, plastic coated, veneered etc., gluelam (plywood etc.), duromers, plastomers, mineral materials (Corian, Varicor etc.), gluelam (HPL, Trespa etc.).

Technical information:
Marathon coating for increased performance time and reduced resin build up. Ideally used after roughing cutters, finish cut allowance approx. 1-2 mm. Mirror finished cutting area ideal for machining thermoplastics.

HW solid, Z 3
WO 160-2-10

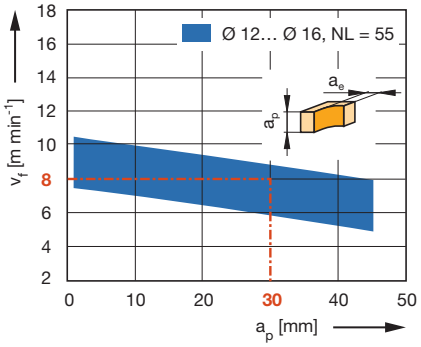
D mm	GL mm	NL mm	S mm	Z	Twist	DRI	ID	
12	80	35	12x40	3	RD	RL	**042790**	●
14	110	50	14x55	3	RD	RL	**042791**	●
16	110	55	16x55	3	RD	RL	**042792**	●
20	120	60	20x55	3	RD	RL	**042793**	●
20	130	75	20x50	3	RD	RL	**042794**	●

RPM: n = 16000 - 24000 min^{-1}



HW

Feed speed v_f depending on grooving depth a_p



Workpiece material: Softwood
Working step: Jointing
Speed: n = 18000 rpm
Correction factor for v_f:
Hardwood = 0.9;
Machining across grain = 0.7

Spiral finishing router cutter alternate twist angle

Application:
Router cutter for sizing, grooving and finish cutting to high cutting quality. For tear free cut edges on both sides.

Machine:
Overhead routers with/without CNC control, machining centres, special routers with spindles for mounting shank tools.

Workpiece material:
Softwood and hardwood, chipboard and fibre materials (MDF, HF etc.), uncoated, plastic coated, veneered etc., gluelam (plywood etc.), duromers, plastomers, mineral materials (Corian, Varicor etc.), gluelam (HPL, Trespa etc.).

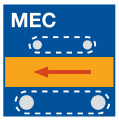
Technical information:
Ideally used after roughing cutters, finish cut allowance approx. 1-2 mm. Alternate twist for tear free cut edges on both sides. Z 1+1 design, suited for solid wood up to 50 mm thickness with roughing cut or 30 mm thickness without roughing cut.

HW solid, Z 1+1
WO 160-2-06

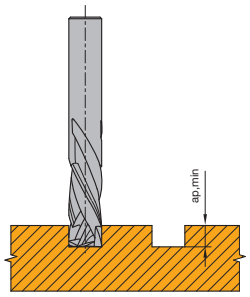
D mm	D in	GL mm	GL in	NL mm	NL in	S mm	S in	ID LL	ID RL
6,35	1/4“	76,2	3“	25,4	1“	6,35x40	1/4“x1 1/2“		**240513** ●
10		70		25		10x40		**042512** ●	**042511** ●
12		80		35		12x40			**042509** ●
16		110		55		16x50			**042543** ●

RPM: n = 16000 - 20000 min^{-1}

● available ex stock
□ available at short notice
Instruction manual visit www.leitz.org

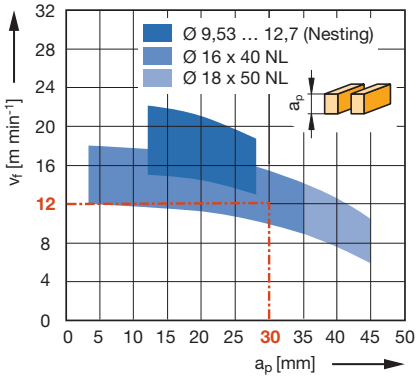


HW



Minimum grooving depth ap min for tear free cut.

Feed speed v_f depending on grooving depth a_p



Workpiece material: Plastic coated and veneered chipboard
Working step: Sizing
Speed: n = 18000 rpm
Correction factor v_f: MDF = 0.8; Machining across grain = 0.7

Spiral finishing router cutter alternate twist angle

Application:
Router cutter for sizing, grooving and finish cutting to high cutting quality. For tear free cut edges on both sides.

Machine:
Overhead routers with/without CNC control, machining centres, special routers with spindles for mounting shank tools.

Workpiece material:
Softwood and hardwood, chipboard and fibre materials (MDF, HF etc.), uncoated, plastic coated, veneered etc., gluelam (plywood etc.), duromers, plastomers, mineral materials (Corian, Varicor etc.), gluelam (HPL, Trespa etc.).

Technical information:
Ideally used after roughing cutters, finish cut allowance approx. 1-2 mm. Alternate twist for tear free cut edges on both sides. Z 2+2 design for coated chipboard material and fibre material, gluelam, abrasive materials and compound materials with aluminium coating.

HW solid, Z 2+2, for abrasive materials
WO 160-2-06

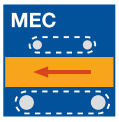
D mm	D in	GL mm	GL in	NL mm	NL in	S mm	S in	DRI	ID	
12		70		25		12x40		RL	**042536**	●
16		100		40		16x50		RL	**042537**	●
18		100		50		18x50		RL	**042538**	●
9,53	3/8“	76,2	3“	28,6	1 1/8“	9,53x40	3/8“x1 1/2“	RL	**240516**	●
12,7	1/2“	70	2 3/4“	25,4	1“	12,7x40	1/2“x1 1/2“	RL	**042795**	●
12,7	1/2“	76,2	3“	31,75	1 1/4“	12,7x40	1/2“x1 1/2“	RL	**042796**	●
12,7	1/2“	88,7	3 1/2“	38,1	1 1/2“	12,7x40	1/2“x1 1/2“	RL	**240517**	●

RPM: n = 16000 - 24000 min^{-1}

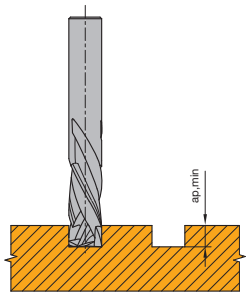
HW solid, Z 2+2, Nesting
WO 160-2-06

D mm	D in	GL mm	GL in	NL mm	NL in	S mm	S in	ap min mm	DRI	ID	
9,53	3/8“	76,2	3“	23	7/8“	9,53x40	3/8“x1 1/2“	5,5	RL	**240518**	●
9,53	3/8“	76,2	3“	28,6	1 1/8“	9,53x40	3/8“x1 1/2“	7	RL	**240503**	●
12,7	1/2“	76,2	3“	32	1 1/4“	12,7x40	1/2“x1 1/2“	5	RL	**240504**	●
12,7	1/2“	76,2	3“	32	1 1/4“	12,7x40	1/2“x1 1/2“	6	RL	**240505**	●
12,7	1/2“	88,9	3 1/2“	34,9	1 3/8“	12,7x40	1/2“x1 1/2“	6	RL	**240506**	●
12,7	1/2“	101,6	4“	43	1 5/8“	12,7x40	3/8“x1 5/8“	20	RL	**240507**	●

RPM: n = 16000 - 24000 min^{-1}

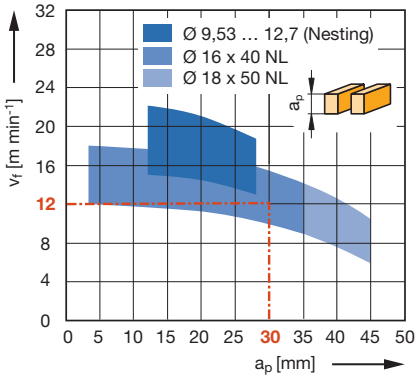


HW



Minimum grooving depth ap min for tear free cut.

Feed speed v_f depending on grooving depth a_p



Workpiece material: Plastic coated and veneered chipboard
Working step: Sizing
Speed: n = 18000 rpm
Correction factor v_f: MDF = 0.8; Machining across grain = 0.7

Spiral finishing router cutter alternate twist angle

Application:
Router cutter for sizing, grooving and finish cutting to high cutting quality. For tear free cut edges on both sides.

Machine:
Overhead routers with/without CNC control, machining centres, special routers with spindles for mounting shank tools.

Workpiece material:
Softwood and hardwood, chipboard and fibre materials (MDF, HF etc.), uncoated, plastic coated, veneered etc., gluelam (plywood etc.), duromers, plastomers, mineral materials (Corian, Varicor etc.), gluelam (HPL, Trespa etc.).

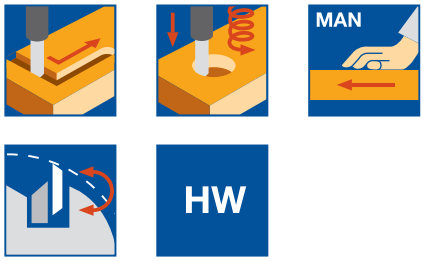
Technical information:
Ideally used after roughing cutters, finish cut allowance approx. 1-2 mm. Alternate twist for tear free cut edges on both sides. Z 2+2 design for coated chipboard material and fibre material, gluelam, abrasive materials and compound materials with aluminium coating.

HW solid, Z 3+3, Nesting
WO 160-2-06

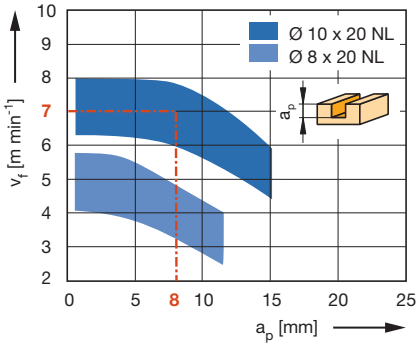
D mm	D in	GL mm	GL in	NL mm	NL in	S mm	S in	ap min mm	DRI	ID	
10		70		24		10x40		8	RL	**042797**	●
9,53	3/8“	76,2	3“	23	7/8“	9,53x40	3/8“x1 1/2“	6	RL	**240508**	●
9,53	3/8“	70	2 3/4“	23	7/8“	9,53x40	3/8“x1 1/2“	8	RL	**042798**	●

RPM: n = 16000 - 24000 min^{-1}

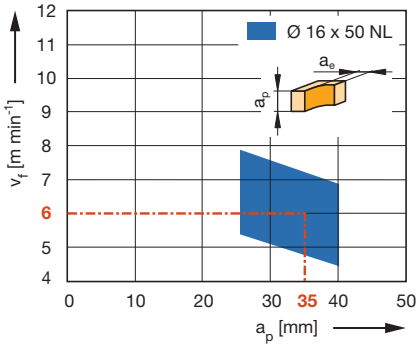
● available ex stock
□ available at short notice
Instruction manual visit www.leitz.org



Feed speed v_f depending on grooving depth a_p



Workpiece material: Plastic coated chipboard
Working step: Grooving, sizing
Speed: n = 18000 rpm
Correction factor for v_f: MDF = 0.8



Workpiece material: Plastic coated chipboard
Working step: Jointing (max. a_e = 3 mm)
Speed: n = 18000 rpm
Correction factor for v_f: MDF = 0.8

Router cutter - turnblade design

Application:
Router cutter for sizing and grooving to finish quality.

Machine:
Portable routers, overhead routers with/whithout CNC control, machining centres.

Workpiece material:
Softwood, chipboard and fibre materials (MDF, HF etc.), uncoated, plastic coated, veneered etc.

Technical information:
Tungsten carbide turnblade knife clamped by wedge. Design without plunging tip only suitable for ramp plunging. Design with plunging tip suitable for axial plunging.

HW, Z 1, without plunging tip
WL 100-1

D mm	GL mm	NL mm	S mm	DRI	ID
8	65	20	10x40	RL	**041624** ●
9	65	20	10x40	RL	**041631** ●
10	65	20	10x40	RL	**041638** ●
10	70	25	10x40	RL	**041643** ●
11	75	30	10x40	RL	**041655** ●
12	76	30	10x40	RL	**041667** ●
14	86	40	12x40	RL	**041679** ●
16	94	50	12x40	RL	**041685** ●
16	109	50	16x50	RL	**041714** ●
20	99	50	12x40	RL	**041697** ●

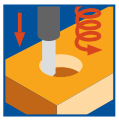
RPM: D 8 - 12 mm: n = 18000 - 24000 min^{-1}
D 14 - 24 mm: n = 16000 - 24000 min^{-1}

Spare knives:

BEZ	QAL	ABM mm	for D mm	NL mm	VE PCS	ID
Turnblade knife	HW-05	20x4,1x1,1	8 - 9	20	10	**005186** ●
Turnblade knife	HW-05	20x5,5x1,1	10 - 12	20	10	**005187** ●
Turnblade knife	HW-05	25x5,5x1,1	10	25	10	**005188** ●
Turnblade knife	HW-05	30x5,5x1,1	11 - 24	30	10	**005189** ●
Turnblade knife	HW-05	40x5,5x1,1	14	40	10	**005190** ●
Turnblade knife	HW-05	50x5,5x1,1	14 - 24	50	10	**005191** ●

Spare parts:

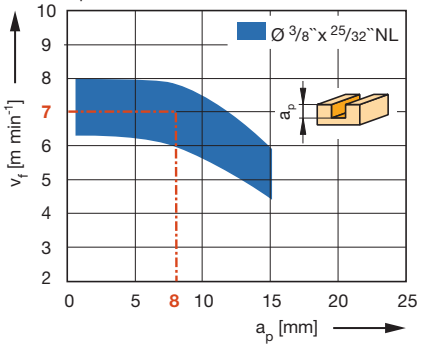
BEZ	ABM mm	for D mm	NL mm	ID
Clamping wedge	17,5x5,15x2,8	8 - 9	20	**009258** ●
Clamping wedge	17,5x6,45x4	10 - 11	20	**009259** ●
Clamping wedge	22,5x6,54x4	10	25	**009260** ●
Clamping wedge	27,5x6,45x4	11	30	**009261** ●
Clamping wedge	27,5x7,35x3,7	12 - 14	30	**009263** ●
Clamping wedge	37,5x7,35x3,7	14	40	**009264** ●
Clamping wedge	47,5x10,28x4,2	16 - 24	50	**009266** ●
Countersink screw, Torx® 8	M2,5x5,7	8 - 11		**006231** ●
Countersink screw, Torx® 8	M3x7.6	12 - 14		**006233** ●
Countersink screw, Torx® 15	M4x9.5	16		**007847** ●
Countersink screw, Torx® 15	M4x11.5	16 - 20		**006234** ●

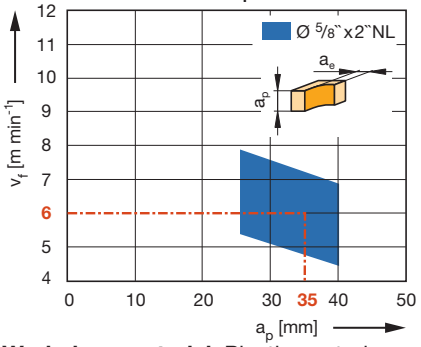


HW

Feed speed v_f depending on grooving depth a_p



Workpiece material: Plastic coated chipboard
Working step: Grooving, sizing
Speed: n = 18000 rpm
Correction factor for v_f: MDF = 0.8



Workpiece material: Plastic coated chipboard
Working step: Jointing (max. chip removal a_e = 3 mm)
Speed: n = 18000 rpm
Correction factor for v_f: MDF = 0.8

Router cutter - turnblade design

Application:
Router cutter for sizing and grooving to finish quality.

Machine:
Portable routers, overhead routers with/whithout CNC control, machining centres.

Workpiece material:
Softwood, chipboard and fibre materials (MDF, HF etc.), uncoated, plastic coated, veneered etc.

Technical information:
Tungsten carbide turnblade knife clamped by wedge. Design without plunging tip only suitable for ramp plunging. Design with plunging tip suitable for axial plunging.

HW, Z 1, with plunging tip
WL 100-1

D mm	GL mm	NL mm	S mm	DRI	ID
14	107	45	12x40	RL	**041722** ●

RPM: n = 16000 - 24000 min^{-1}

Spare knives:

BEZ	QAL	ABM mm	for D mm	NL mm	VE PCS	ID
Turnblade knife	HW-05	50x5,5x1,1	14 - 24	50	10	**005191** ●

Spare parts:

BEZ	ABM mm	for D mm	NL mm	ID
Countersink screw, Torx® 8	M3x7.6	12 - 14		**006233** ●
Clamping wedge with plunging tip	45x3,7x7,35	14	45	**009749** ●

HW, Z 1, without plunging tip, inch dimensions
WL 100-1

D in	NL in	GL in	S in	DRI	ID
3/8“	25/32“	2 3/8“	1/2“ x 1 3/8“	RL	**041074** ●
1/2“	1 3/16“	2 3/4“	1/2“ x 1 3/8“	RL	**041060** ●
5/8“	2“	3 11/16“	1/2“ x 1 3/8“	RL	**041065** ●
3/4“	2“	3 7/8“	3/4“ x 1“	RL	**041067** ●

RPM: D 3/8“ - 1/2“: n = 18000 - 24000 min^{-1}
D 5/8“ - 3/4“: n = 16000 - 24000 min^{-1}

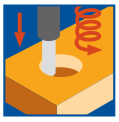
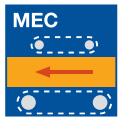
Spare knives:

BEZ	QAL	ABM mm	for D in	NL in	VE PCS	ID
Turnblade knife	HW-05	20x4,1x1,1	5/16“ - 3/8“	25/32“	10	**005186** ●
Turnblade knife	HW-05	30x5,5x1,1	1/2“	1 3/16“	10	**005189** ●
Turnblade knife	HW-05	50x5,5x1,1	5/8“ - 3/4“	2“	10	**005191** ●

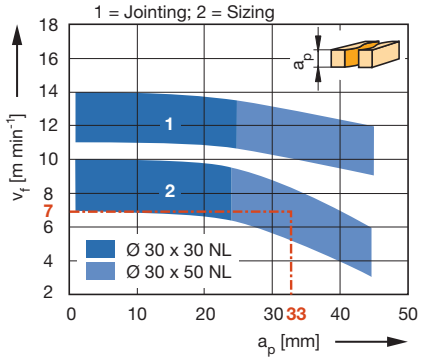
Spare parts:

BEZ	ABM mm	for D in	NL in	ID
Clamping wedge	17,5x5,15x2,8	5/16“ - 3/8“	25/32“	**009258** ●
Clamping wedge	27,5x7,35x3,7	1/2“ - 35/64“	1 3/16“	**009263** ●
Clamping wedge	47,5x10,28x4,2	5/8“ - 3/4“	2“	**009266** ●
Countersink screw, Torx® 8	M2,5x5,7	5/16“ - 3/8“		**006231** ●
Countersink screw, Torx® 8	M3x7.6	1/2“		**006233** ●
Countersink screw, Torx® 15	M4x11.5	5/8“ - 3/4“		**006234** ●

● available ex stock
□ available at short notice
Instruction manual visit www.leitz.org


Feed speed v_f depending on grooving depth a_p
1 = Jointing cut a_e = 0.5 - 2 mm
2 = Sizing cut



Workpiece material: Plastic coated chipboard
Working step: Jointing, sizing
Speed: n =18,000 rpm
Correction factor for v_f: Machining across grain = 0.7; MDF = 0.8

Turnblade router cutter

Application:
Router cutter for sizing, grooving and finish cutting to finish quality. Z 2 for increased feed rates.

Machine:
Overhead routers with/without CNC control, machining centres, special routers with spindles for mounting shank tools.

Workpiece material:
Softwood and hardwood, chipboard and fibre materials (MDF, HF etc.), uncoated, plastic coated, veneered etc., gluelam (plywood etc.).

Technical information:
Straight cut. Knife tip designed for stepless cut. Design with plunging tip for axial plunging. Suitable for machining the narrow edge of painted or foil coated MDF.

HW, Z 2
WL 101-2

D mm	GL mm	NL mm	S mm	ID LL		ID RL	
25	125	50	25x60	**040857**	●	**040858**	●
30	105	30	25x60			**040854**	●
30	125	50	25x60			**040853**	●

RPM: n = 14000 - 20000 min^{-1}

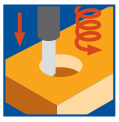
Spare knives:

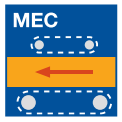
BEZ	Knife	ABM mm	QAL	for D mm	VE PCS	ID	
Turnblade knife	Plunging tip	7,5x12x1,5	HW-05	25	10	**005080**	●
Turnblade knife	Plunging tip	12x12x1,5	HW-05	30	10	**005081**	●
Turnblade knife	Peripheral tip	30x12x1,5	HW-05	30	10	**005161**	●
Turnblade knife	Peripheral tip	50x12x1,5	HW-05	25/30	10	**006506**	●

Spare parts:

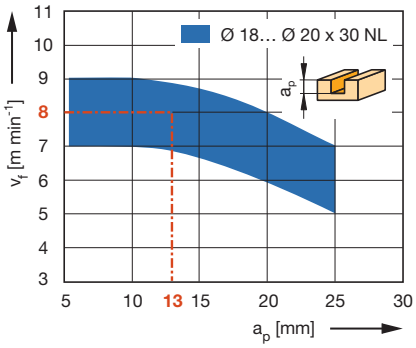
BEZ	Knife	ABM mm	for D mm	ID	
Screw	Plunging tip Peripheral tip	M4x5 (head D7)	25/30 25	**007037**	●
Screw	Peripheral tip	M4x5 (head D9)	30	**007038**	●
Torx® key		Torx® 15		**005457**	●

5

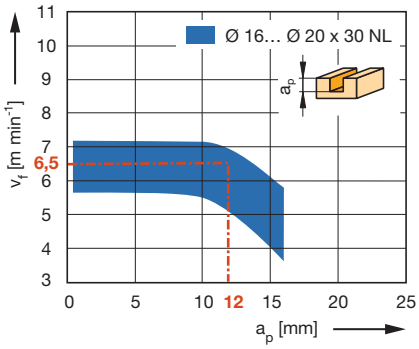




Feed speed v_f depending on grooving depth a_p



Workpiece material: Plastic coated chipboard
Working step: Grooving, sizing
Speed: n = 18000 rpm
Correction factor for v_f: MDF = 0.8



Workpiece material: Hardwood, along grain
Working step: Grooving, sizing
Speed: n = 18000 rpm
Correction factor for v_f: Machining across grain = 0.8

Turnblade router cutter

Application:
Router cutter for sizing and grooving to finish quality. For grooving with constant tool diameter.

Machine:
Overhead routers with/without CNC control, machining centres, special routers with spindles for mounting shank tools.

Workpiece material:
Softwood and hardwood, chipboard and fibre materials (MDF, HF etc.), uncoated, plastic coated, veneered etc., gluelam (plywood etc.), duromers, plastomers, mineral materials (Corian, Varicor etc.), gluelam (HPL, Trespa etc.).

Technical information:
Straight cut. Knife tip designed for stepless cut. Teflon coated tool body for reduced resin and glue build up. With tungsten carbide plunging tip. Suitable for machining the narrow edge of painted or foil coated MDF.

HW, Z 1, NL 30 mm
WL 101-1

D mm	GL mm	NL mm	S mm	ID LL		ID RL	
16	80	30	10x35			**040861**	●
16	85	30	12x40			**040867**	●
16	95	30	16x50	**040877**	●	**040878**	●
16	95	30	20x50			**040879**	●
16	105	30	25x60			**040872**	●
18	85	30	12x40			**040869**	●
20	85	30	12x40			**040871**	●
20	95	30	20x50			**040882**	●

RPM: n = 16000 - 20000 min^{-1}

Spare knives:

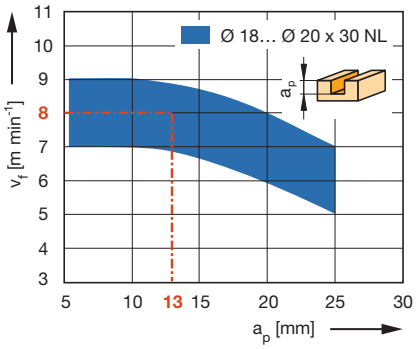
BEZ	Knife	ABM mm	QAL	for D mm	VE PCS	ID	
Turnblade knife	Plunging tip	7,5x12x1,5	HW-05	16 - 18	10	**005080**	●
Turnblade knife	Plunging tip	9x12x1,5	HW-05	20 - 24	10	**005158**	●
Turnblade knife	Peripheral tip	30x12x1,5	HW-05		10	**005161**	●

Spare parts:

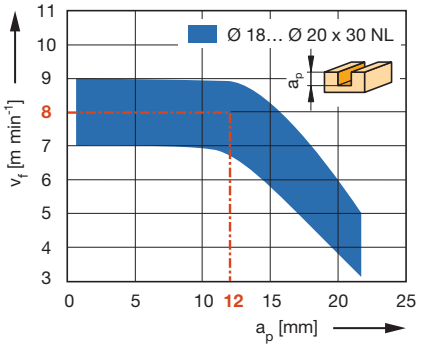
BEZ	Knife	ABM mm	for D mm	ID	
Screw	Plunging tip	M3,5x4 (head D7)	16 - 20	**006068**	●
Screw	Plunging tip	M4x5 (head D7)	22 - 24	**007037**	●
Screw	Peripheral tip	M3,5x4 (head D9)	16 - 20	**006226**	●
Screw	Peripheral tip	M4x5 (head D9)	22 - 24	**007038**	●
Torx® key		Torx® 15		**005457**	●

● available ex stock
□ available at short notice
Instruction manual visit www.leitz.org

Feed speed v_f depending on grooving depth a_p



Workpiece material: Plastic coated chipboard
Working step: Grooving, sizing
Speed: n = 18000 rpm
Correction factor for v_f: MDF = 0.8



Workpiece material: Softwood, along grain
Working step: Grooving, sizing
Speed: n = 18000 rpm
Correction factor for v_f: Machining across grain = 0.8

Machine:
Overhead routers with/without CNC control, machining centres, special routers with spindles for mounting shank tools or portable routers.

Technical information:
Straight cut. Knife tip designed for stepless cut. Teflon coated tool body for reduced resin and glue build up. With tungsten carbide turnblade knife plunging edge.

HW, Z 1, inch dimensions
WL 101-1

D in	NL in	GL in	S in	DRI	ID	
5/8“	1 11/64“	3 5/8“	1/2“ x 1 3/8“	RL	**041084**	●
3/4“	1 11/64“	3 5/8“	1/2“ x 1 3/8“	RL	**041085**	●

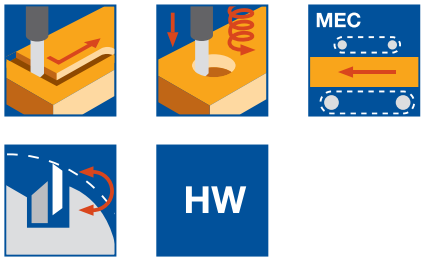
RPM: n = 16000 - 20000 min^{-1}

Spare knives:

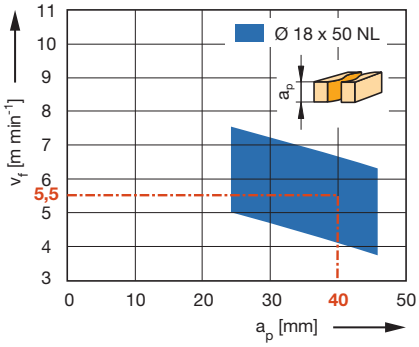
BEZ	Knife	ABM mm	QAL	for D mm	VE PCS	ID	
Turnblade knife	Plunging tip	7,5x12x1,5	HW-05	16 - 18	10	**005080**	●
Turnblade knife	Plunging tip	9x12x1,5	HW-05	20 - 24	10	**005158**	●
Turnblade knife		30x12x1,5	HW-05		10	**005161**	●

Spare parts:

BEZ	Knife	ABM mm	for D mm	for D in	ID	
Screw	Plunging tip	M3,5x4 (head D7)	16 - 20	5/8“ - 3/4“	**006068**	●
Screw	Plunging tip	M4x5 (head D7)	22 - 24		**007037**	●
Screw	Peripheral tip	M3,5x4 (head D9)	16 - 20	5/8“ - 3/4“	**006226**	●
Screw	Peripheral tip	M4x5 (head D9)	22 - 24		**007038**	●
Torx® key		Torx® 15			**005457**	●



Feed speed v_f depending on grooving depth a_p



Workpiece material: Plastic coated chipboard
Working step: Sizing
Speed: n = 18000 rpm
Correction factor for v_f: MDF = 0.8

Turnblade router cutter

Application:
Router cutter for sizing and grooving. For grooving with constant tool diameter.

Machine:
Overhead routers with/without CNC control, machining centres, special routers with spindles for mounting shank tools.

Workpiece material:
Softwood and hardwood, chipboard and fibre materials (MDF, HF etc.), uncoated, plastic coated, veneered etc.

Technical information:
Straight cut. Teflon coated tool body for reduced resin and glue build up. Limitedly suitable for finish cut. Cutting edge overlap visible on workpiece. With tungsten carbide turnblade knife plunging tip.

HW, Z 1+1, with staggered cutting edges
WL 101-2

D mm	GL mm	NL mm	S mm	DRI	ID	
18	125	50	25x60	RL	**040925**	●
20	133	58	25x60	RL	**040928**	●

RPM: n = 16000 - 20000 min^{-1}

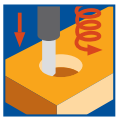
Spare knives:

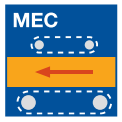
BEZ	Knife	ABM mm	QAL	for D mm	VE PCS	ID	
Turnblade knife	Plunging tip	7,5x12x1,5	HW-05	16 - 18	10	**005080**	●
Turnblade knife	Plunging tip	9x12x1,5	HW-05	20 - 24	10	**005158**	●
Turnblade knife	Peripheral tip	30x12x1,5	HW-05		10	**005161**	●

Spare parts:

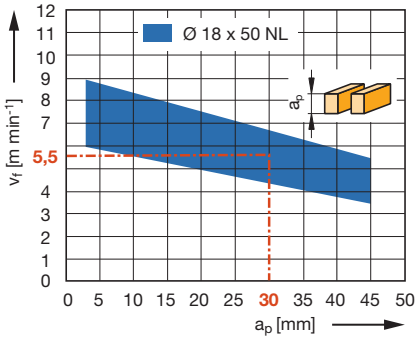
BEZ	Knife	ABM mm	for D mm	ID	
Screw	Plunging tip	M4x5 (head D7)	18 - 24	**007037**	●
Screw	Peripheral tip	M4x5 (head D9)	18 - 24	**007038**	●
Torx® key		Torx® 15		**005457**	●

● available ex stock
□ available at short notice
Instruction manual visit www.leitz.org





Feed speed v_f depending on grooving depth a_p



Workpiece material: Plastic coated chipboard
Working step: Sizing
Speed: n = 18000 rpm
Correction factor for v_f: MDF = 0.8

Turnblade router cutter

Application:
Router cutter for sizing and grooving to finish quality. For grooving with constant tool diameter.

Machine:
Overhead routers with/without CNC control, machining centres, special routers with spindles for mounting shank tools.

Workpiece material:
Softwood and hardwood, chipboard and fibre materials (MDF, HF etc.), uncoated, plastic coated, veneered etc.

Technical information:
Straight cut. Teflon coated tool body for reduced resin and glue build up. Limitedly suitable for finish cut. Cutting edge overlap visible on workpiece. With tungsten carbide turnblade knife plunging tip.

HW, Z 1+1, with 50 mm/30 mm turnblade knives
WL 101-1

D mm	GL mm	NL mm	S mm	ID LL		ID RL	
18	115	50	16x50	**040846**	●	**040847**	●
18	115	50	20x50			**040848**	●
18	125	50	25x60	**040849**	●	**040850**	●

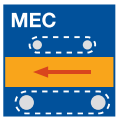
RPM: n = 16000 - 20000 min^{-1}

Spare knives:

BEZ	Knife	ABM mm	QAL	VE PCS	ID	
Turnblade knife	Plunging tip	7,5x12x1,5	HW-05	10	**005080**	●
Turnblade knife	Peripheral tip	30x12x1,5	HW-05	10	**005161**	●
Turnblade knife	Peripheral tip	50x12x1,7	HW-05	10	**007668**	●

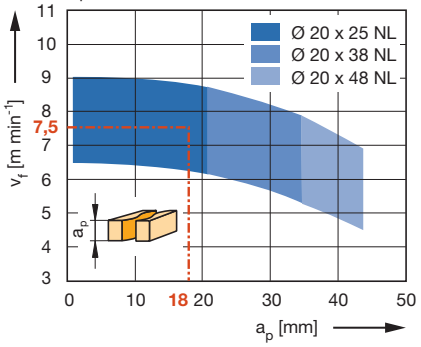
Spare parts:

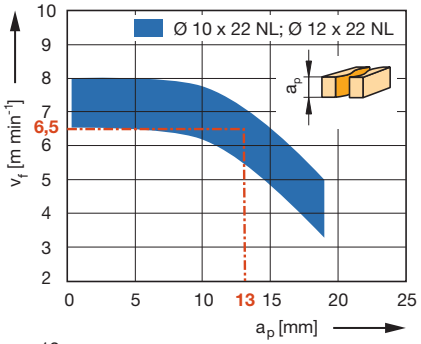
BEZ	Knife	ABM mm	ID	
Screw	Plunging tip	M4x5 (head D7)	**007037**	●
Screw	Peripheral tip	M4x5 (head D9)	**007038**	●
Torx® key		Torx® 15	**005457**	●

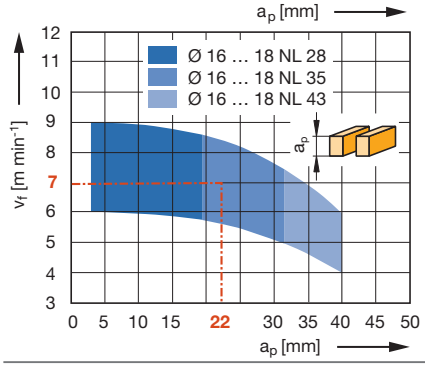



DP

Feed speed v_f depending on grooving depth a_p







Router cutter Diamaster PRO

Application:
Router cutter for sizing and grooving with increased performance time in particle boards. For tear free cut edges on both sides. Suitable for small and medium batch quantities.

Machine:
Overhead routers with/without CNC control, machining centres, special routers with spindles for mounting shank tools.

Workpiece material:
Chipboard and fibre materials (MDF, HF etc.), uncoated, plastic coated, veneered etc.

Technical information:
Spiral cutting edge arrangement with alternate shear angles and tungsten carbide plunging tip. Resharpenable 3 to 5 times with normal wear. Cuts to be painted in MDF require finishing with tools with continuous edges.

DP, Z 1+1
WO 140-2-50

D mm	GL mm	NL mm	S mm	ID LL	ID RL	
10	70	22	12x40		**091264**	●
12	70	22	12x40		**091265**	●
12	100	28	25x60		**091266**	●
14	90	28	16x50		**091267**	●
16	80	22	16x50		**091268**	●
16	95	22	25x60		**091269**	●
16	90	28	16x50	**091271**	**091270**	●
16	100	28	25x60		**091272**	●
16	95	35	20x50		**091273**	●
16	105	35	25x60		**091274**	●
16	115	43	25x60	**091276**	**091275**	●
18	90	28	20x50		**091277**	●
18	95	35	20x50		**091278**	●
18	105	43	20x50	**091281**	**091280**	●
18	115	43	25x60		**091282**	●
20	90	28	16x50		**091283**	●
20	100	28	25x60	**091285**	**091284**	●
20	95	35	20x50		**091286**	●
20	105	35	25x60		**091287**	●
20	105	43	20x50	**091289**	**091288**	●
20	115	43	25x60		**091290**	●
20	110	48	20x50	**091292**	**091291**	●
20	120	48	25x60	**091294**	**091293**	●
20	125	53	25x60		**091295**	●
20	130	58	25x60		**191041**	●

RPM: n = 18000 - 24000 min^{-1}

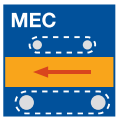
DP, Z 1+1, inch dimensions
WO 140-2-50

D mm	D in	GL mm	GL in	NL mm	NL in	S mm	S in	DRI	ID	
12,7	1/2“	70	2 3/4“	22,23	7/8“	12,7x38	1/2“ x 1 1/2“	RL	**091296**	●
19,05	3/4“	110	4 3/8“	48	1 7/8“	19,05x50	3/4“ x 2“	RL	**091297**	●

RPM: n = 18000 - 24000 min^{-1}

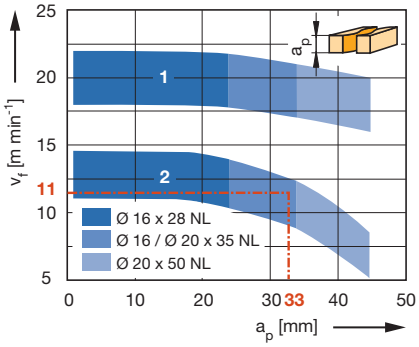
Workpiece material: Plastic coated chipboard
Working step: Sizing
Speed: n = 18000 rpm
Correction factor for v_f: MDF = 0.8; Uncoated chipboard = 1.1; Veneer across grain = 0.7

● available ex stock
□ available at short notice
Instruction manual visit www.leitz.org



DP

Feed speed v_f depending on grooving depth a_p
1 = Jointing cut a_e 0.5 - 2.0 mm
2 = Sizing cut



Workpiece material: Plastic coated chipboard
Working step: Jointing, sizing
Speed: n = 18000 rpm
Correction factor for v_f: MDF = 0.6; Veneer across grain = 0.7

Router cutter Diamaster PRO

Application:
Router cutter for sizing and grooving with increased performance time in particle boards. For tear free cut edges on both sides. Suitable for medium batch quantities. Z 2+2 for increased feed speeds.

Machine:
Overhead routers with/without CNC control, machining centres, special routers with spindles for mounting shank tools.

Workpiece material:
Chipboard and fibre materials (MDF, HF etc.), uncoated, plastic coated, veneered etc.

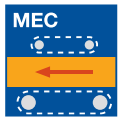
Technical information:
Spiral cutting edge arrangement with alternate shear angles and DP plunging tip. Resharpenable 3 to 5 times with normal wear. Cuts to be painted in MDF require finishing with tools with continuous edges.

DP, Z 2+2
WO 140-2-50

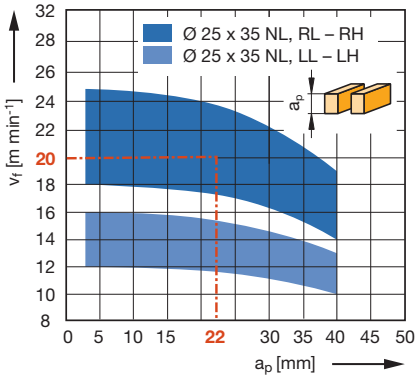
D mm	GL mm	NL mm	S mm	DRI	ID	
16	90	28	20x50	RL	**191042**	●
16	95	35	20x50	RL	**191043**	●
20	95	35	20x50	RL	**191044**	●
20	105	35	25x60	RL	**191045**	●
20	110	50	20x50	RL	**191046**	●
20	120	50	25x60	RL	**191047**	●

RPM: n = 16000 - 24000 min^{-1}






Feed speed v_f depending on grooving depth a_p



Router cutter Diamaster PRO, Z3+3 / Z2+2
Workpiece material: Plastic coated chipboard
Working step: Sizing
Speed: n = 18000 rpm
Correction factor for v_f: MDF = 0.8; Uncoated chipboard = 1.1; Veneer across grain = 0.7

Router cutter Diamaster PRO

Application:
Router cutter for sizing and grooving with increased performance time in particle boards. For tear free cut edges on both sides of the workpiece. Suitable for right hand and left hand cutting (e.g. protective cutting) without tool change.

Machine:
Overhead routers with/without CNC control, machining centres, special routers with spindles for mounting shank tools.

Workpiece material:
Chipboard and fibre materials (MDF, HF etc.), uncoated, plastic coated, veneered etc., for tear free edges on both sides of coated workpieces.

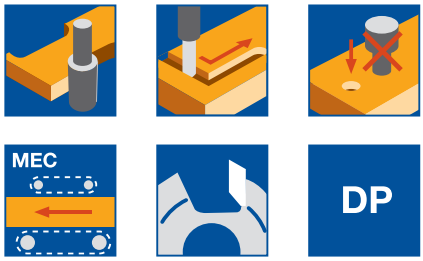
Technical information:
Spiral cutting edge arrangement with tungsten carbide plunging tip. Right hand rotation: Z 3+3, left hand rotation: Z 2+2. Resharpenable 3 to 5 times with normal wear. Right and left hand rotation in one tool (by adjusting the Z-axis and changing the direction of rotation).

DP, RH + LH combination tool
WO 140-2-50

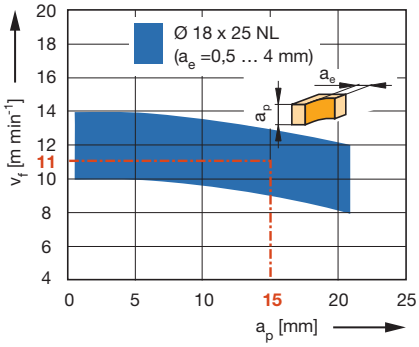
D mm	GL mm	NL mm	S mm	DRI	ID	
25	120	24 + 24	25x50	LL / RL	**191034**	●
25	145	35 + 35	25x55	LL / RL	**191020**	●

RPM: n max. = 24000 min^{-1}

● available ex stock
□ available at short notice
Instruction manual visit www.leitz.org



Feed speed v_f depending on grooving depth a_p



Workpiece material: Plastic coated chipboard
Working step: Sizing
Speed: n = 18000 rpm
Correction factor for v_f: MDF = 0.9; Veneer across grain = 0.7

Router cutter Diamaster PRO

Application:
Router cutter for sizing and grooving with continuous cutting edge. Suitable for machining edges of painted or foil coated MDF.

Machine:
Overhead routers with/without CNC control, machining centres, special routers with spindles for mounting shank tools.

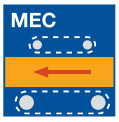
Workpiece material:
Hardwood, chipboard and fibre materials (MDF, HF etc.), uncoated, plastic coated, veneered etc., duromers, plastomers, gluelam (HPL, Trespa etc.)

Technical information:
Negative cutting edge shear angles (only for ID **91158**) for tear free edges during grooving and to support the workpiece clamping of smaller parts. Resharpenable 3 to 5 times with normal wear. Maximum chip removal 4 mm; roughing cut required for higher chip removal.

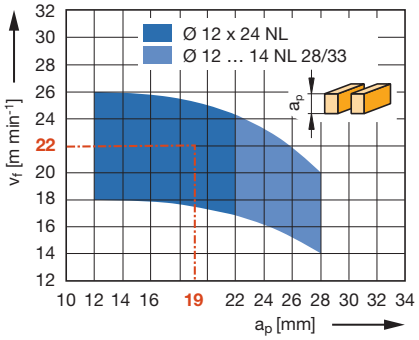
DP, Z 1 / Z 2
WO 140-2-50

D mm	GL mm	NL mm	S mm	Z	DRI	ID	
8	60	12	12x40	1	RL	**090154**	●
10	70	12	12x40	2	RL	**091158**	●
18	90	25	16x50	2	RL	**091190**	●

RPM: n = 16000 - 24000 min^{-1}


Feed speed v_f depending on grooving depth a_p



Workpiece material: Plastic coated chipboard
Working step: Sizing / Nesting
Speed: n = 24000 rpm
Correction factor for v_f: MDF = 0.8;
Uncoated chipboard = 1.1;
Veneer across grain = 0.7;
Pre-trimming MDF = 1.2

Table of optimal workpiece thickness

Id.	NL	workpiece thickness
191030	19	9 – 16 mm
191031	24	13 – 20 (22) mm
191032	28	19 – 25 mm
191033	33	20 – 28 mm

Router cutter Diamaster PRO^3

Application:
Router cutter for sizing and grooving (Nesting) at high feed speeds. For tear free cut edges on both sides of the workpiece.

Machine:
Overhead routers with/without CNC control, machining centres, special routers with spindles for mounting shank tools.

Workpiece material:
Chipboard and fibre materials (MDF, HF etc.), uncoated, plastic coated, veneered etc.

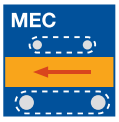
Technical information:
Spiral cutting edge arrangement with alternate shear angles and real - Z 3 over the complete cutting length, with DP plunging tip. Resharpenable up to 3 times for normal wear. Tool body designed in stable material. Important to follow the application data parameters.

DP, Z 3+3, Nesting
WO 140-2-50

D mm	GL mm	NL mm	S mm	DRI	ID	
12	65	19	12x42	RL	**191030**	●
12	70	24	12x42	RL	**191031**	●
12	75	28	12x40	RL	**191032**	●
14	90	33	16x50	RL	**191033**	●

RPM: n max. = 24000 min^{-1}

● available ex stock
□ available at short notice
Instruction manual visit www.leitz.org



DP

Router cutter Diamaster PLUS

Application:
Router cutter for sizing and grooving with increased performance time in particle boards. For tear free cut edges on both sides.

Machine:
Overhead routers with/without CNC control, machining centres, special routers with spindles for mounting shank tools.

Workpiece material:
Chipboard and fibre materials (MDF, HF etc.), uncoated, plastic coated, veneered etc., duromers, plastomers, gluelam (HPL, Trespa etc.).

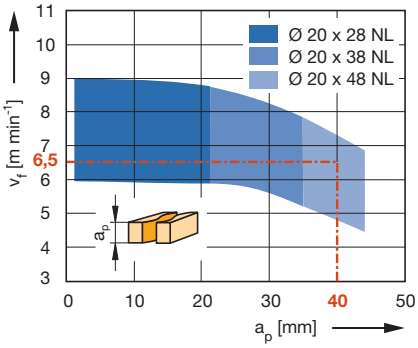
Technical information:
Cutting edges with alternate shear angle and tungsten carbide plunging tip. Resharpenable 5 to 8 times with normal wear. Cuts for painting in MDF require finishing with tools with continuous edges. Stable tipping suitable for machining abrasive and hard to machine materials (HPL, Trespa, GfK, CfK etc.).

DP, Z 1+1
WO 140-2

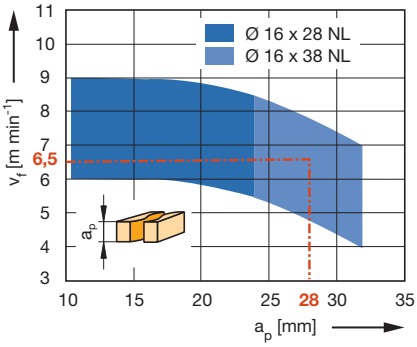
D mm	GL mm	NL mm	S mm	DRI	ID
12	90	24	16x50	RL	**090174** ●
16	90	28	20x60	RL	**090188** ●
18	110	48	20x60	RL	**091101** ●
20	130	58	25x60	RL	**090167** ●

RPM: n = 16000 - 24000 min^{-1}

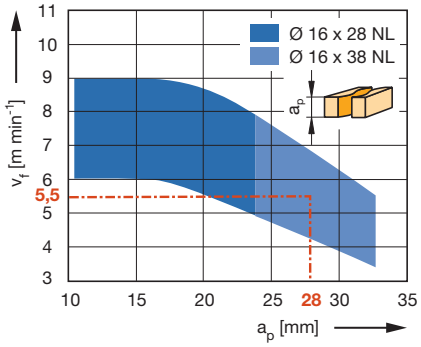
Feed speed v_f depending on grooving depth a_p



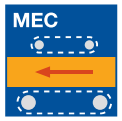
Workpiece material: Plastic coated chipboard
Working step: Sizing
Speed: n = 18000 rpm
Correction factor for v_f: MDF = 0.8; Veneer across grain = 0.7



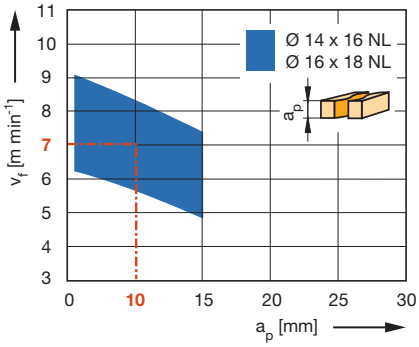
Workpiece material: Plastic coated chipboard
Working step: Sizing
Speed: n = 18000 rpm
Correction factor for v_f: MDF = 0.8; Chipboard = 1.3; Veneer across grain = 0.7



Workpiece material: Glulam
Working step: Sizing
Speed: n = 18000 rpm



Feed speed v_f depending on grooving depth a_p



Workpiece material: Duromers, gluelam (HPL, CPL), fibre reinforced plastics
Working step: Sizing
Speed: n = 12000 - 18000 rpm

Router cutter Diamaster PLUS

Application:
Router cutter for sizing and grooving with stepless cut. Suitable for machining the edges of painted or foil coated MDF.

Machine:
Overhead routers with/without CNC control, machining centres, special routers with spindles for mounting shank tools.

Workpiece material:
Hardwood, chipboard and fibre materials (MDF, HF etc.), uncoated, plastic coated, veneered etc., duromers, plastomers, gluelam (HPL, Trespa etc.).

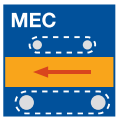
Technical information:
Negative cutting edge shear angles during grooving for tear free edges and to support the clamping of smaller parts. Resharpenable 5 to 8 times with normal wear. The short stable cutting edge ideal for grooving and sizing abrasive and hard to machine materials (HPL, Trespa, GfK, CfK etc.).

DP, Z 2
WO 120-2-60

D mm	GL mm	NL mm	S mm	Z	DRI	ID	
14	80	16	20x50	2	RL	**091157**	●
16	80	18	20x50	2	RL	**091156**	●

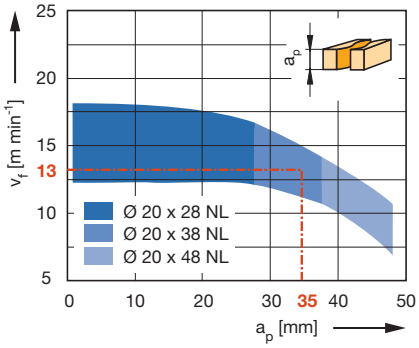
RPM: for wood materials: n = 16000 - 36000 min^{-1}
for plastics: n = 12000 - 18000 min^{-1}

● available ex stock
□ available at short notice
Instruction manual visit www.leitz.org

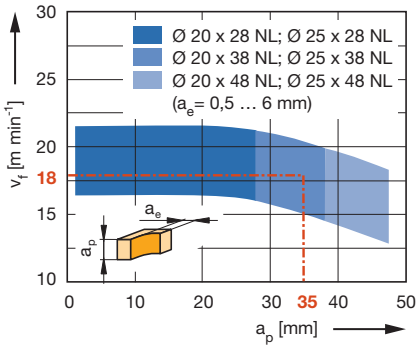


DP

Feed speed v_f depending on grooving depth a_p



Workpiece material: Plastic coated chipboard
Working step: Sizing
Speed: n = 18000 rpm
Correction factor for v_f: MDF = 0.6; Paper coated = 0.8



Workpiece material: Plastic coated chipboard
Working step: Jointing
Speed: n = 18000 rpm
Correction factor for v_f: MDF = 0.9; Paper coated = 0.8; Veneer across grain = 0.8

Router cutter Diamaster QUATTRO

Application:
Router cutter for sizing and grooving with increased performance time in particle boards. For tear free cut edges on both sides. Suitable for medium and large batch quantities. Z 2+2 for increased feed speeds.

Machine:
Overhead routers with/without CNC control, machining centres, special routers with spindles for mounting shank tools.

Workpiece material:
Chipboard and fibre materials (MDF, HF etc.), uncoated, plastic coated, veneered etc.

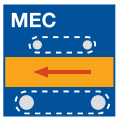
Technical information:
Spiral cutting edge arrangement with alternate shear angles and tungsten carbide plunging tip. Resharpenable 5 to 8 times with normal wear. Cuts for painting in MDF require finishing with tools with continuous edges.

DP, Z 2+2
WO 140-2

D mm	GL mm	NL mm	S mm	ID LL		ID RL	
20	90	28	20x50			**091235**	●
20	110	48	20x50			**091238**	●
20	110	38	25x60			**091241**	●
20	120	48	25x60	**091246**	●	**091247**	●
25	110	38	25x60			**091251**	●
25	120	48	25x60	**091252**	●	**091253**	●

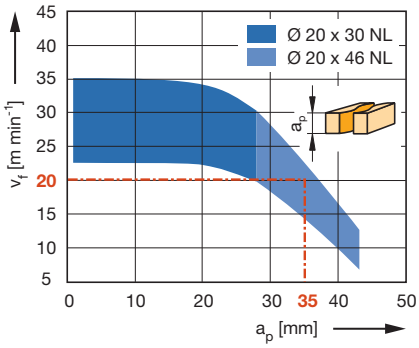
RPM: n = 16000 - 24000 min^{-1}

5

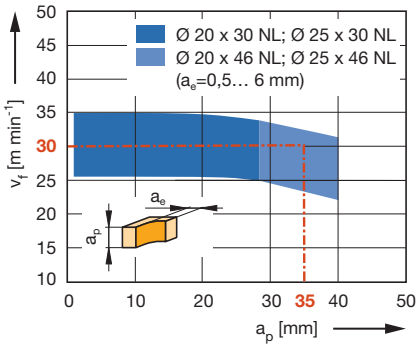


DP

Feed speed v_f depending on grooving depth a_p



Workpiece material: Plastic coated chipboard
Working step: Sizing
Speed: n = 24000 rpm
Correction factor for v_f: MDF = 0.8; Paper coated = 0.8



Router cutter Diamaster PLUS, Z 3+3

Application:
Router cutter for sizing and grooving with increased performance time in particle boards. For tear free cut edges on both sides. Suitable for large batch quantities. Z 3+3 at high feed speeds.

Machine:
Overhead routers with/without CNC control, machining centres, special routers with spindles for mounting shank tools.

Workpiece material:
Chipboard and fibre materials (MDF, HF etc.), uncoated, plastic coated, veneered etc.

Technical information:
Spiral cutting edge arrangement with alternate shear angles and DP plunging tip. Resharpenable 8 to 12 times with normal wear. Cuts for painting in MDF require finishing with tools with continuous edges. Tools with negative twist to support the workpiece clamping, particularly small parts.

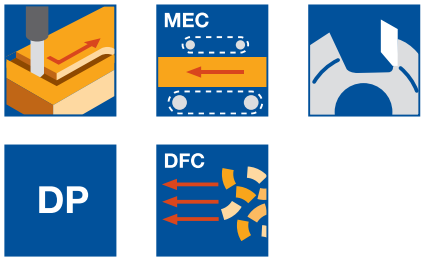
DP, Z 3+3, with negative twist
WO 140-2

D mm	GL mm	NL mm	S mm	ID LL		ID RL	
18	100	24	25x60			**091204**	●
20	90	24	20x50			**091207**	●
20	100	24	25x60			**091209**	●
20	105	30	25x60	**091170**	●	**091171**	●
20	110	38	25x60			**091211**	●
20	120	46	25x60			**091174**	●
25	100	24	25x60			**091213**	●
25	105	30	25x60	**091176**	●	**091177**	●
25	110	38	25x60	**091214**	●	**091215**	●
25	120	46	25x60	**091179**	●	**091180**	●

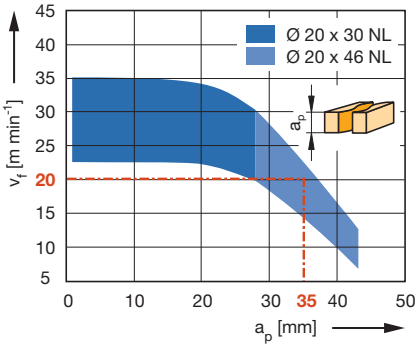
RPM: n = 16000 - 24000 min^{-1}

Workpiece material: Plastic coated chipboard
Working step: Jointing
Speed: n = 24000 rpm
Correction factor for v_f: MDF = 0.9; Paper coated = 0.8; Veneer across grain = 0.8

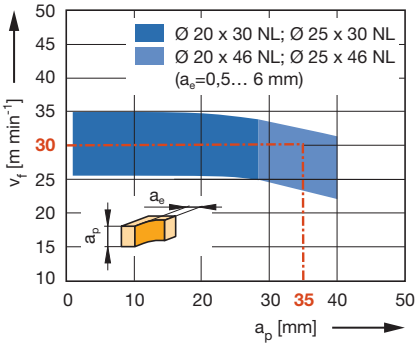
● available ex stock
□ available at short notice
Instruction manual visit www.leitz.org



Feed speed v_f depending on grooving depth a_p



Workpiece material: Plastic coated chipboard
Working step: Sizing
Speed: n = 24000 rpm
Correction factor for v_f: MDF = 0.8; Paper coated = 0.8



Router cutter Diamaster PLUS, Z 3+3

Application:
Router cutter for sizing and grooving with increased performance time in particle boards. For tear free cut edges on both sides. Suitable for large batch quantities. Z 3+3 at high feed speeds.

Machine:
Overhead routers with/without CNC control, machining centres, special routers with spindles for mounting shank tools.

Workpiece material:
Chipboard and fibre materials (MDF, HF etc.), uncoated, plastic coated, veneered etc.

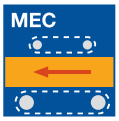
Technical information:
Spiral cutting edge arrangement with alternate shear angles and DP plunging tip. Resharpenable 8 to 12 times with normal wear. Cuts to be painted in MDF require finishing with tools with continuous edges. Tools with positive twist for good chip removal into the extraction system - LEITZ DFC®.

DP, Z 3+3, with positive twist, DFC-design
WO 140-2

D mm	GL mm	NL mm	S mm	ID LL	ID RL	
16	100	24	20x50		**091254**	●
20	105	30	25x60		**191026**	●
25	105	30	25x60		**191027**	●
25	110	38	25x60		**091217**	●
25	120	46	25x60	**091218**	**091219**	●

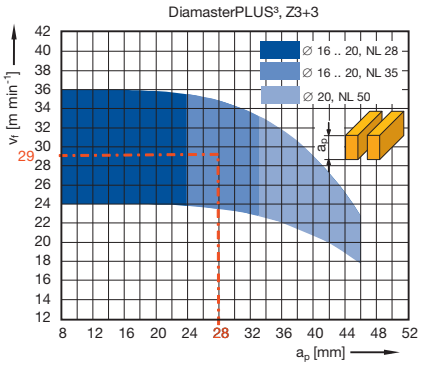
RPM: n = 16000 - 24000 min^{-1}

Workpiece material: Plastic coated chipboard
Working step: Jointing
Speed: n = 24000 rpm
Correction factor for v_f: MDF = 0.9; Paper coated = 0.8; Veneer across grain = 0.8



DP

Feed speed v_f depending on grooving depth a_p



Workpiece material: Plastic coated chipboard
Working step: Sizing
Speed: n = 24000 rpm
Correction factor for v_f: MDF = 0.8; chipboard, uncoated = 1.1; Veneer across grain = 0.7; pre cutting MDF = 1.2

Router cutter Diamaster PLUS³, Z 3+3

Application:
Router cutter for sizing and grooving with increased performance time in particle boards. For tear free cut edges on both sides. Suitable for large batch quantities. Z 3+3 for high feed speeds.

Machine:
Overhead routers with/without CNC control, machining centres, special router machines with spindles to mount shank tools.

Workpiece material:
Chipboard and fibre working materials (MDF, HF, etc.), uncoated, plastic coated, veneered, etc.

Technical information:
Spiral cutting edge arrangement with alternate shear angles and real-Z3 over the complete cutting length. DP plunging tip. Resharpenable 8 to 12 times with normal wear. Cuts to be painted in MDF require finishing with tools with continuous edges. Tools with negative twist support the tool clamping especially for small parts.

DP, Z 3+3, with negative shear angle
WO 140-2

D mm	GL mm	NL mm	S mm	ID LL		ID RL	
16	85	28	20x50			**191048**	●
16	95	35	20x50	**191050**	●	**191049**	●
20	85	28	20x50			**191051**	●
20	105	35	25x60	**191053**	●	**191052**	●
20	120	50	25x60	**191055**	●	**191054**	●

RPM: n = 18000 - 24000 min^{-1}

● available ex stock
□ available at short notice
Instruction manual visit www.leitz.org

Reciprocating slotting cutter

Application:
Router cutter for cutting tear free longitudinal slots with step wise infeed.

Machine:
Special routers with reciprocating spindles.

Workpiece material:
Softwood and hardwood, gluelam.

Technical information:
HS design: for softwood and hardwood. Tungsten carbide design: for softwood and hardwood and glued boards. Suitable for right hand and left hand rotation, tools resharpenable on the narrow side. Diameter constant after sharpening.

HS, Z 2
WB 510-0

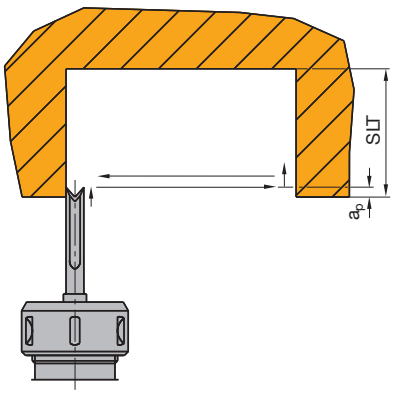
D mm	GL mm	S mm	SLT mm	QAL	ID	
6	90	13x40	38	HS	**037020**	●
8	95	13x40	42	HS	**037022**	●
9	100	13x40	45	HS	**037023**	●
10	105	13x40	50	HS	**037024**	●
12	115	13x40	60	HS	**037026**	●
13	120	13x40	65	HS	**037027**	●

RPM: n = 4500 - 9000 min^{-1}

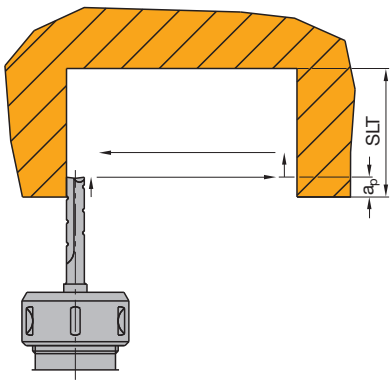
HW tipped, Z 2
WB 510-0

D mm	GL mm	S mm	SLT mm	QAL	ID	
8	95	13x40	42	HW	**037028**	●
10	105	13x40	50	HW	**037029**	●

RPM: n = 6000 - 15000 min^{-1}



Example of slot production
a_p = 0.8 mm (reciprocating movement)



Example of slot production
a_p = 5 - 15 mm per stroke

Slot mortise bits

Application:
Router cutter for cutting tear free longitudinal slots with step wise infeed.

Machine:
Slot mortiser.

Workpiece material:
Softwood and hardwood.

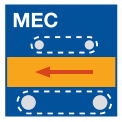
Technical information:
Straight cut with chip breaker for reduced cutting forces. High tool rigidity from special heat treatment.

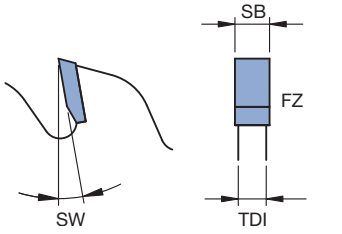
SP, Z 2
WB 401-0, WB 401-1

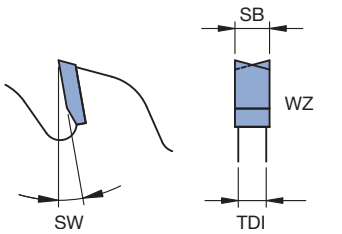
D mm	GL mm	S mm	SLT mm	ID LL		ID RL	
6	120	13x50	60	**037140**	●	**037163**	●
8	130	13x50	70	**037142**	●	**037165**	●
8	130	16x50	70			**037182**	●
10	140	13x50	80	**037144**	●	**037167**	●
10	140	16x50	80			**037183**	●
12	150	13x50	90	**037146**	●	**037169**	●
12	150	16x50	90			**037184**	●
13	155	13x50	95			**037170**	●
14	160	13x50	100	**037148**	●	**037171**	●
14	160	16x50	100			**037185**	●
15	165	13x50	105			**037172**	●
16	170	16x50	110	**037150**	●	**037173**	●
18	180	16x50	120			**037174**	●
20	185	16x50	125			**037175**	●
22	190	16x50	130			**037176**	●
24	195	16x50	135			**037177**	●

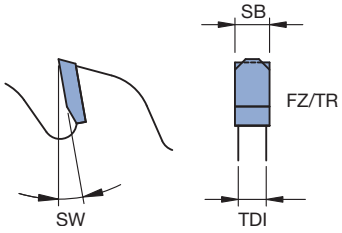
RPM: n = 6000 - 12000 min^{-1}

● available ex stock
□ available at short notice
Instruction manual visit www.leitz.org









Circular sawblades for processing units

Application:
For sizing, dividing and grooving.

Machine:
Overhead routers with/without CNC control, aggregates on CNC machining centres.

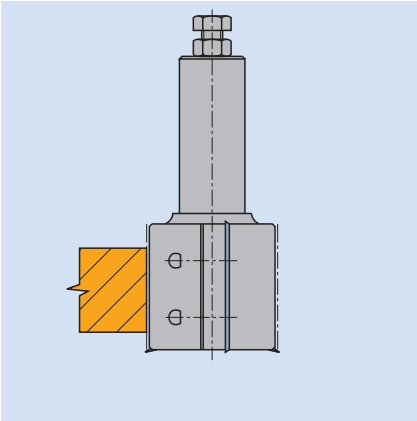
Workpiece material:
Softwood and hardwood, chipboard and fibre materials (MDF, HF etc.), uncoated, plastic coated, veneered etc., gluelam (plywood etc.).

Technical information:
Mounting on sawblade flange or machine aggregate, in some cases additional pinholes must be drilled before mounting. When sizing coated wood derived materials, first score with feed on little infeed (1 -2 mm) and then split against feed.

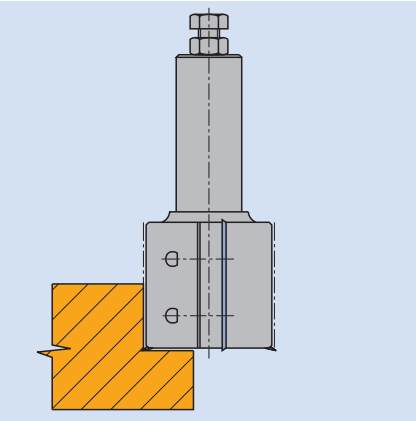
Multi purpose cuts and grooving
WK 250-2, WK 800-2, WK 850-2, WK 850-2-01, WK 850-2-03, WK 850-2-10, WK 850-2-MA

Machine	D mm	SB mm	TDI mm	BO mm	NLA mm	Z	ZF	SW Degree	ID	
Biesse	180	3,2	2,2	30	4/5,5/45	58	WZ	10	**058322**	□
Biesse	180	3,2	2,2	30	2/6/42	58	WZ	10	**058323**	□
Biesse	215	4,0	2,8	35	6/5,5/54 2/6/50	50	WZ	10	**058321**	●
Biesse	250	3,2	2,2	35	2/6/50	60	WZ	10	**069546**	□
Biesse	250	3,2	2,2	48	4/5,5/61	60	WZ	10	**069547**	□
Biesse	270	3,2	2,2	35	2/6/50 6/5,5/54	60	WZ	10	**058233**	●
Holz Her	180	3,5	2,5	30	4/5,5/52	36	WZ	10	**058076**	□
Holz Her	180	3,2	2,2	30	2/6/42	58	WZ	10	**058323**	□
Holz Her	220	3,2	2,2	30	2/7/42	64	WZ	10	**060662**	□
Holz Her	220	3,2	2,2	30	4/5,5/45	64	WZ	10	**060663**	□
Holz Her	250	3,2	2,2	30	KNL	60	WZ	10	**058382**	●
Homag	125	2,4	1,6	30	8/6,5/48	36	WZ	10	**058234**	●
Homag	180	3,5	2,5	30	4/5,5/52	36	WZ	10	**058076**	□
Homag	220	3,2	2,2	40	8/5,5/52	64	FZ/TR	10	**061363**	□
Homag	240	3,0	1,8	30	4/5,5/52	48	WZ	10	**058077**	□
Homag	240	3,0	1,8	40	8/5,5/52	48	WZ	10	**070125**	□
Homag	240	3,2	2,2	40	8/5,5/52	54	FZ/TR	10	**059703**	□
Homag	280	3,2	2,2	30	KNL	48	WZ	10	**060672**	●
Universal	120	4,0	3,0	20	1/6/46	30	WZ	10	**058226**	●
Universal	150	4,0	3,0	20		30	WZ	10	**058227**	●
Universal	160	4,0	3,0	20	1/6/46	36	WZ	10	**058228**	●
Universal	180	4,0	3,0	20	1/6/46	42	WZ	10	**058229**	●
Universal	200	4,0	3,0	20	1/6/46	42	WZ	10	**058230**	●
Universal	250	3,2	2,2	30	KNL	48	WZ	10	**058202**	●
Weeke	125	2,4	1,6	30	8/6,5/48	36	WZ	10	**058234**	●
Weeke	125	3,2	2,5	30	8/5,5/48	36	FZ	10	**060641**	●
Weeke	125	4,0	2,8	30	8/5,5/48	36	FZ	10	**061300**	●
Weeke	220	3,2	2,2	40	8/5,5/52	64	FZ/TR	10	**061363**	□
Weeke	240	3,0	1,8	30	4/5,5/52	48	WZ	10	**058077**	□
Weeke	240	3,0	1,8	40	8/5,5/52	48	WZ	10	**070125**	□
Weeke	240	3,2	2,2	40	8/5,5/52	54	FZ/TR	10	**059703**	□

Working step/Application	Jointing, rebating and bevelling.
Workpiece material (recommended cutting material)	Soft and hardwood (HW). Chipboard and fibre materials (MDF, HF, etc.), uncoated, with plastic coating, with veneer, etc. (HW, DP). Plywood (HW, DP). Duro-plastics (HW, DP). Plastomers (HW, DP). Solid surface material – Corian, Varicor, etc. – (HW, DP).
Machine	Routers with/without CNC. Special machines with spindles for shank tools.
Operation	Cutting with and against feed, limited chip removal.

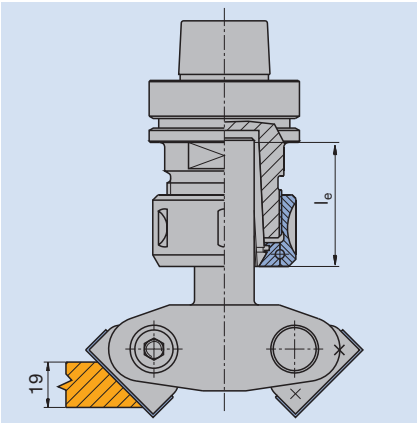


Jointing

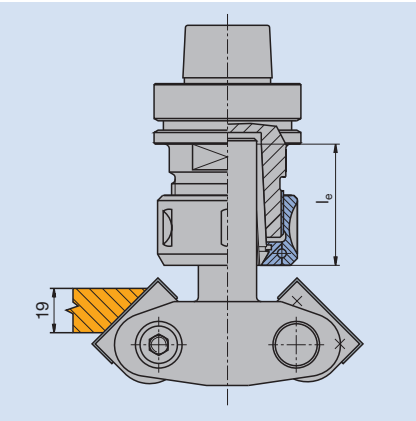


Rebating

Bevelling with adjustable bevel cutterhead



Bevelling top edge



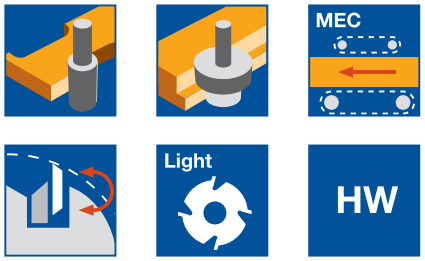
Bevelling bottom edge

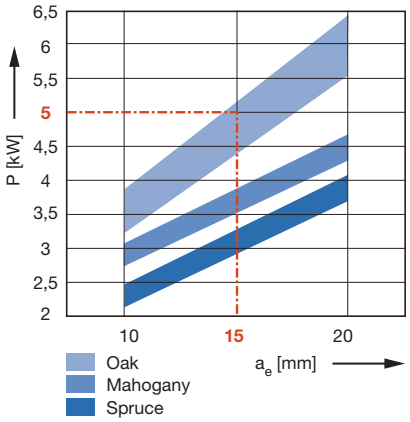
Note:
When bevelling from below, the minimum shank clamping length l_e must be observed. Under no circumstances must the tool be clamped at a shorther length.

Shank d x e	l_e min [mm]
20 x 50	40
25 x 60	45

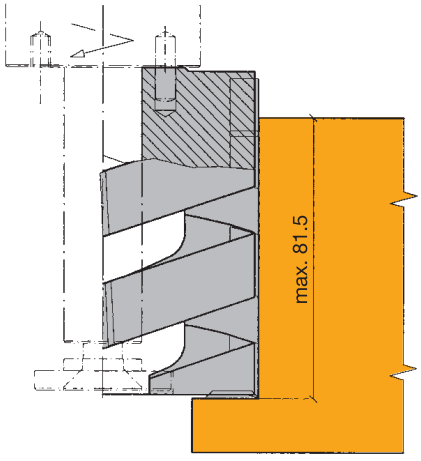
d = Shank diameter
e = Shank length

Application Data	**RPM/feed speed** The recommended RPM and feed speeds are detailed in the diagrams next the tool tables.
Information	Unmarked machined surfaces can only be achieved with one piece cutting edge tools. Spurs are required when rebating solid wood.
Clamping the workpiece	With stationary machines, sufficient workpiece clamping is very important. Insufficient clamping reduces both the cut quality and tool life considerably. Panels can be held in place with vacuum clamping, but sometimes additional mechanical clamping is required. Small and special curved workpieces require special clamping fixtures or clamping devices which must be made by the customer or sourced from specialist supplier.





Motor power P depends on workpiece material and cutting depth a_e. For tool diameter D-80mm, Z 2, workpiece thickness a_p = 60 mm, n = 12000 rpm and vf 4 m/min^{-1}



Rebating

Copy shaping cutterhead

Application:
For pre cutting, jointing, copy shaping and rebating. Particularly suitable for deep cutting depths. Roughing cut quality for subsequent profiling and jointing.

Machine:
Overhead routers with/without CNC control, machining centres, special routers with spindles for mounting shank tools.

Workpiece material:
Softwood and hardwood, chipboard and fibre materials (MDF, HF etc.), uncoated, plastic coated, veneered etc., gluelam (plywood etc.).

Technical information:
Tungsten carbide turnblade knives Z 2 with shear angle in spiral arrangement for high cut performance and optimised chip removal. Staggered cut for reduced cutting forces. With spurs for tear free rebating in softwood and hardwood.

HW, Z 2+2 / V2 / V4
SL 499-2, WW 220-1, WW 499-2

Tool Type	ABM mm	QAL	AM PCS	Z	V	ID	
Cutterhead	80x80,7/83x20	HW	12	2	2	**407193**	●
Cutterhead mounted on arbor	1 part	HW	12	2	2	**426047**	□
Cutterhead	125x80,9x30;	HW	12	2	4	**407196**	●
Cutterhead mounted on arbor	1 part	HW	12	2	4	**426050**	□
Cutterhead	125x94,8x30	HW	14	2	4	**410696**	●
Cutterhead mounted on arbor	1 part	HW	14	2	4	**426084**	□
Cutterhead	125x120,8x30	HW	18	2	4	**411197**	□
Cutterhead mounted on arbor	1 part	HW	18	2	4	**426091**	□

RPM: D 80 mm: n max. = 18000 min^{-1}
D 125 mm: n max. = 12200 min^{-1}

Tool with HW turnblade knives for solid wood.
Cutter arbor see section 8 Clamping systems.

Please note:
When ordering - only use the following cutter arbors:

D	clamping length	d
80 mm	70 mm	20 mm
125 mm	80 mm	30 mm

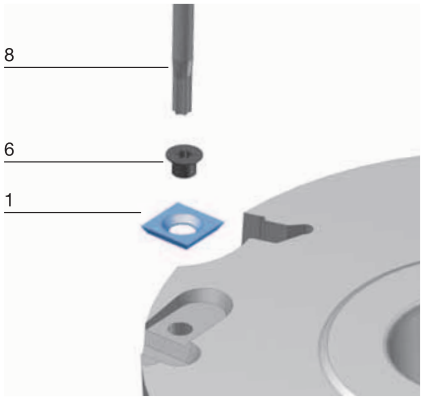
● available ex stock
□ available at short notice
Instruction manual visit www.leitz.org

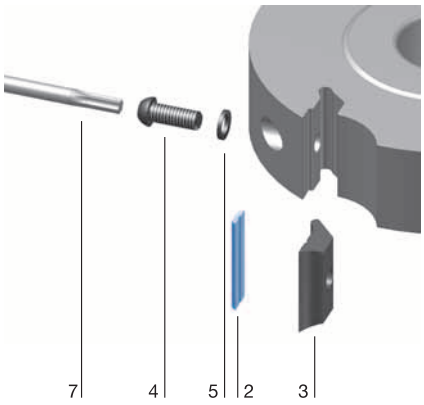
Spare knives:

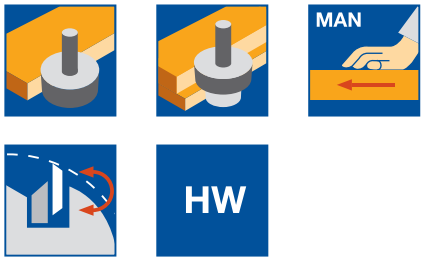
Part-no.	BEZ	ABM mm	QAL	VE PCS	ID	
1	Turnblade spur VS1	14x14x2	HW-F	10	**005099**	●
2	Turnblade knife	14,7x8x1,5	HW-30F	10	**005070**	●

Spare parts:

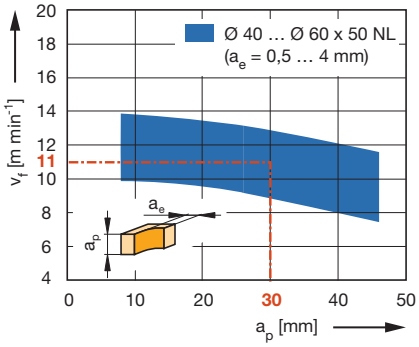
Part-no.	BEZ	ABM mm	ID	
3	Clamping wedge	13x18,75x8,27	**009670**	●
4	Clamping screw, Torx®	M6x18,5	**007818**	●
5	Washer	D9x1,2	**006747**	●
6	Countersink screw, Torx®	M5x8,5	**007808**	●
7	Torx® key	Torx® 25	**117504**	●
8	Torx® key	Torx® 20	**117503**	●
	Setting gauge	0,3/0,8	**005374**	●







Feed speed v_f depending on grooving depth a_p



Workpiece material: Plastic coated chipboard
Working step: Jointing
Speed: n = 16000 rpm
Correction factor for v_f: MDF = 0.9;
Paper coated = 0.8;
Machining across grain = 0.7

Jointing rebating cutterhead in turnblade design

Application:
For jointing and rebating with constant tool diameter.

Machine:
Overhead routers with/without CNC control, machining centres.

Workpiece material:
Softwood and hardwood, chipboard and fibre materials (MDF, HF etc.), uncoated, plastic coated, veneered etc., gluelam (plywood etc.).

Technical information:
Tungsten carbide turnblade knife Z 2 with straight cut for stepless finish on pre cut workpieces or workpieces sized by roughing cutters. With spurs for tear free rebates in softwood and hardwood. Quiet running from closed, round tool body.

HW, Z 2 / V2
WL 402-1

D mm	GL mm	SB mm	S mm	ID	
40	120	50	25x60	**039235**	●
50	120	50	25x60	**039239**	●
60	113	50	25x60	**039243**	●

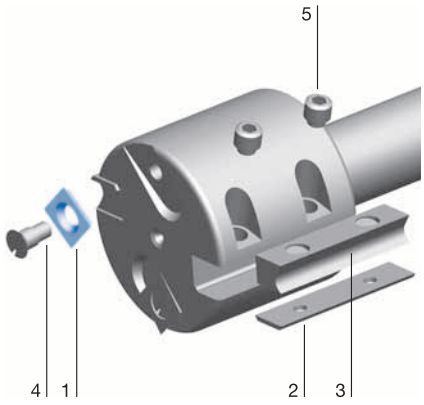
RPM: n max. = 18000 min^{-1}

Spare knives:

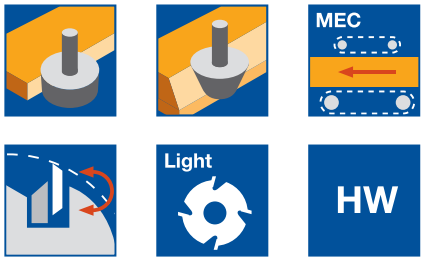
Part-no.	BEZ	ABM mm	QAL	VE PCS	ID	
1	Turnblade spur VS1	14x14x2	HW-F	10	**005099**	●
2	Turnblade knife	50x12x1,5	HW-05	10	**005086**	●

Spare parts:

Part-no.	BEZ	ABM mm	for D mm	ID	
3	Clamping wedge	48x11,6x9		**009871**	●
4	Screw with slot	M5x12		**005744**	●
5	Allen screw	M8x14	60	**006073**	●
5	Allen screw	M8x8	40 / 50	**006245**	●
	Allen Key	SW 4		**005445**	●



● available ex stock
□ available at short notice
Instruction manual visit www.leitz.org



Jointing cutterhead set with edging knives

Application:
For jointing and rounding or bevelling narrow edges with a constant tool diameter.

Machine:
Overhead routers with/without CNC control, machining centres.

Workpiece material:
Softwood and hardwood, compound materials of solid wood and wood derived materials, uncoated, plastic coated, veneered etc., gluelam (plywood etc.).

Technical information:
Tungsten carbide turnblade knives Z 2 with shear angles. Narrow edge profiling with edging knives mounted on both sides of tool. Quiet running due to closed, round tool body.

HW, Z 2, with seatings for edging knives
SL 299-2

Tool Type	ABM mm	QAL	Z	ID	
Tool set without arbor, with spacer	85x50x20,1 part	HW	2	**125038**	●
Tool set mounted on arbor	1 part,HD40	HW	2	**426000**	□
Tool set without arbor, with spacer	110x100x28x30	HW	2	**411179**	●
Tool set mounted on arbor	1 part	HW	2	**426085**	□

RPM: D 85 mm: n max. = 17900 min^{-1}
D 110 mm: n max. = 15600 min^{-1}

Unless stated otherwise, tools are right hand rotation.
Cutter arbor see section 8 Clamping systems.

Spare knives:

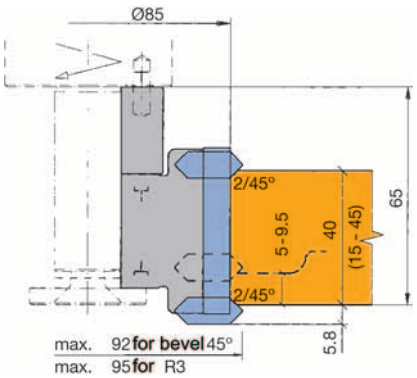
BEZ	ABM mm	QAL	R mm	FAW	VE PCS	ID	
Turnblade knife	50x8x1,5	HW-05			10	**005402**	●
Turnblade knife	100x8x1,5	HW-05				**005405**	●
Edging knife	KM 12/4	HW-F	1,5			**008272**	●
Edging knife	KM 12/3	HW-F	2			**008307**	●
Edging knife	KM 12/0	HW-F	3			**008270**	●
Edging knife	KM 15/0	HW-F	3			**008275**	●
Edging knife	KM 12/1	HW-F	3			**008271**	●
Edging knife	KM 11/0	HW-F		45°		**008268**	●

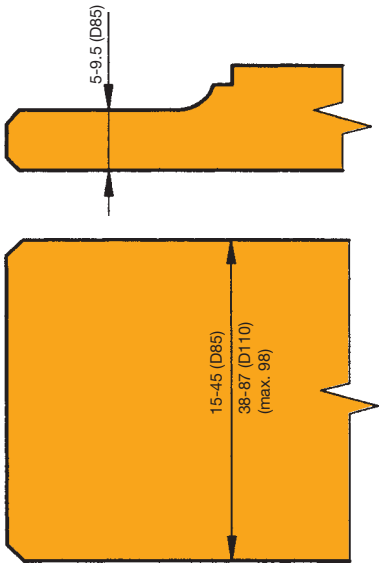
Spare parts:

BEZ	ABM mm	ID	
Clamping wedge	48x18,75x8,27	**009677**	●
Clamping wedge	98x18,75x8,27	**009681**	●
Clamping screw, Torx®	M6x18,5	**007818**	●
Countersink screw, Torx®	M6x35	**007098**	●
Washer	D9x1,2	**006747**	●
Torx®	Torx® 20	**117503**	●
Torx®	Torx® 25	**117504**	●
Magnetic setting gauge	0,3/0,8	**005376**	●

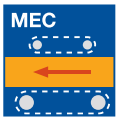
Order example:
Tool set ID **426000** mounted on arbor ID **041125**, shank 25x60 mm.
When ordering, choose arbors with d-20 mm and clamping length 55 mm.

Examples

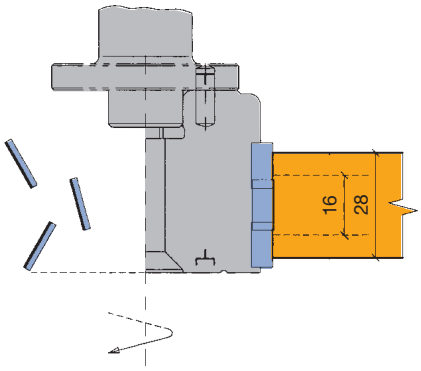




● available ex stock
□ available at short notice
Instruction manual visit www.leitz.org



DP



Example

Jointing cutterset Diamaster

Application:
For jointing and copy shaping. For tear free workpiece edges on both sides.

Machine:
Overhead routers with/without CNC control, machining centres.

Workpiece material:
Softwood and hardwood, chipboard and fibre materials (MDF, HF etc.), uncoated, plastic coated, veneered etc., gluelam (plywood etc.).

Technical information:
Knives with alternate shear angles. Resharpenable and replaceable DP knives Z 2+2. Resharpening area 3.5 mm. Diameter constant after resharpening by adjustable DP knives. Quiet running through closed, round tool body. Adjustable knives for closed glue joints of glued edges.

DP, Z 2+2
WM 230-2

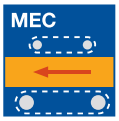
Tool Type	ABM mm	QAL	Z	ID	
Cutterhead	70x33/50x20	DP	2/2/2	**090926**	●
Cutterhead mounted on arbor	1 part/HD28	DP	2/2/2	**426051**	□

RPM: n max. = 18000 min^{-1}

Unless stated otherwise, tools are right hand rotation.
Cutter arbor see section 8 Clamping systems.

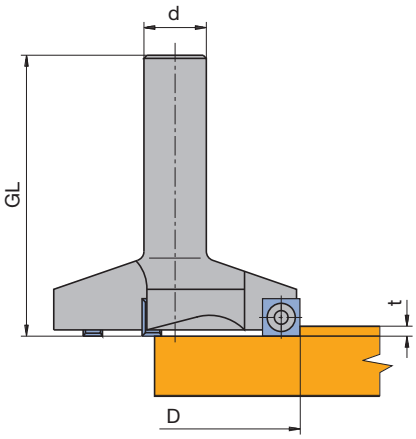
Order example:
Tool set ID **426051** mounted on arbor ID **041126**, shank 25x60 mm.
When ordering, choose arbors with d-20 mm and maximum clamping length for the tool.

● available ex stock
□ available at short notice
Instruction manual visit www.leitz.org



HW

Example



t = 0.5 - 10 mm

Surface planing during nesting:
t = 0.5 - 1.5 mm
ID **041552** n = 8400 rpm
v_f = 25 - 40 m/min

Planing cutter - turnblade design

Application:
For surface planing of large workpieces and for cutting deep rebates in one working step.

Machine:
Overhead routers with/without CNC control, machining centres.

Workpiece material:
Softwood and hardwood, chipboard and fibre materials (MDF, HF etc.), uncoated, plastic coated, veneered etc., gluelam (plywood etc.), duromers, plastomers, mineral materials (Corian, Varicor etc.).

Technical information:
Cutting edge with shear angle; reversible and replaceable cutting edges. D 135 and D 180 particularly suitable for planing MDF slave panels during nesting. Knives with radii for mark free cut quality in solid wood or MDF on request.

HW, Z 3, Z 4, Z 5
WL 400-2

D mm	GL mm	NL mm	S mm	Z	$n_{max.}$	DRI	ID
80	90	12	20x50	3	14000	RL	**041550** ●
80	100	12	25x60	3	14000	RL	**041551** ●
135	90	12	25x60	4	10000	RL	**041553** ●
180	90	12	25x60	5	8400	RL	**041552** ●

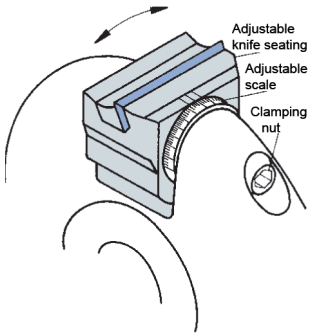
Spare knives:

BEZ	ABM mm	QAL	VE PCS	ID
Turnblade knife	12x12x1,5	HW-05	10	**005081** ●

Spare parts:

BEZ	ABM mm	ID
Oval head screw Torx® 15	M4x6	**006225** ●
Torx® key	Torx® 15	**005457** ●


HW



Bevel cutterhead with swivelling knife holder

Bevelling cutterhead, adjustable

Application:
For jointing, bevelling and raised panels with steplessly adjustable bevel angles from 0 to 85°.

Machine:
Overhead routers with/without CNC control, machining centres.

Workpiece material:
Softwood and hardwood, chipboard and fibre materials (MDF, HF etc.), uncoated, plastic coated, veneered etc., gluelam (plywood etc.).

Technical information:
Tungsten carbide turnblade knives Z 2. Accurate and clearly readable angle scale for precise and quick adjustment to the required bevel angle. Bevelling of workpiece both at top and bottom.

Z 2
WP 341-1-01

D mm	GL mm	SB mm	S mm	DRI	ID
100	100	40	20x50	RL	**042852** ●
100	110	40	25x60	RL	**042850** ●

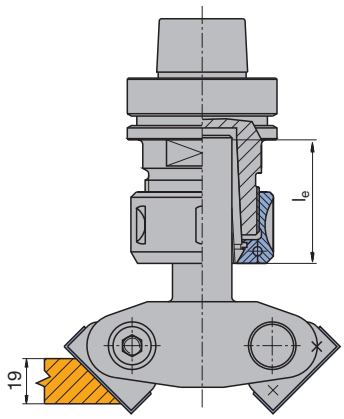
RPM: n max. = 12000 min^{-1}

Spare knives:

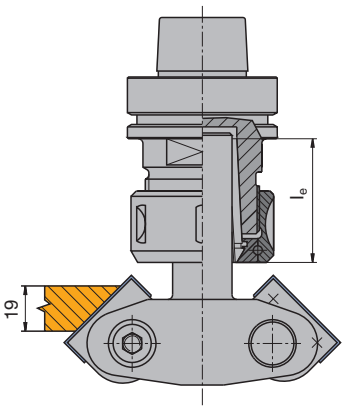
Part-no.	BEZ	ABM mm	QAL	VE PCS	ID
1	Turnblade knife	40x12x1,5	HW-05	10	**005085** ●

Spare parts:

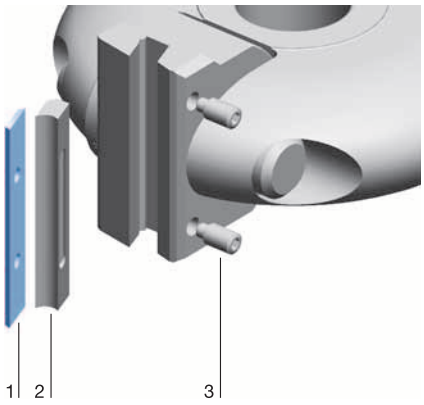
Part-no.	BEZ	ABM mm	BEM	ID
2	Clamping wedge with pin	38x10,88x6		**005348** ●
3	Allen screw	M6x12	ISK 3	**006035** ●
	Allen Key	SW 8, L 100		**005437** ●
	Allen Key	SW 3		**005433** ●



Bevelling from above



Bevelling from below



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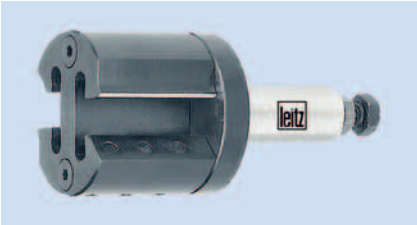
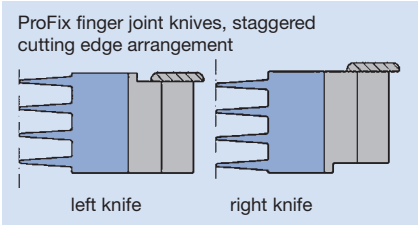
□ available at short notice
Instruction manual visit www.leitz.org

ProFix cutterhead PF 20-15°





Application

ProFix steel tool body with shank for mounting in shank tool clamping systems. ProFix finger joint knives with axial parallel cutting edges, straight relief ground, staggered arrangement.

Cutting material

HS, HW (quality to suit the machined material).

Machine

Routers with/without CNC, special machines with spindles for shank tools.

Tool design

ProFix steel tool body with shank for mounting in shank tool clamping systems. ProFix finger joint knives with axial parallel cutting edges, straight relief ground, staggered arrangement.

RPM
D_o = tool body diameter

D_o = 56 mm, n_{max} 15000 min^{-1}
D_o = 80 mm, n_{max} 11000 min^{-1}
D_o = 100 mm, n_{max} 9000 min^{-1}

Resharpening area

PF 20: 3.5 mm

Number of teeth/Cutting with

Z = 1+1, SB = 30.4 mm at ZL 10/10 mm.

Feed speed

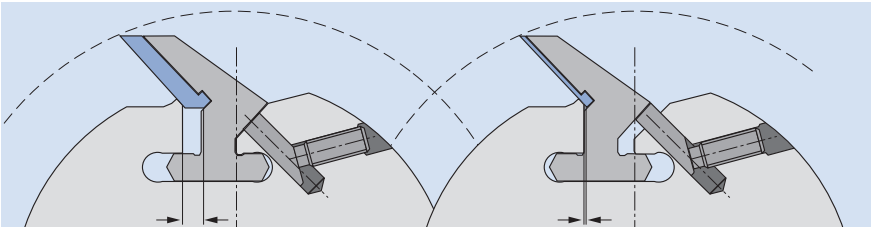
	f_z [mm]
Softwood	0.30 – 0.40
Hardwood	0.40 – 0.50

Technical features

Constant profile/diameter even after resharpening. New and resharpened knives are always positioned and clamped with constant diameter by the ProFix clamping system.
- Form and force knife clamping
- Knife clamping screws positioned behind the cutting edge, and in the dust protected area.
- One tool body can be used for different finger and glue joint profiles.
- PF 20 with profile depth 20 mm.

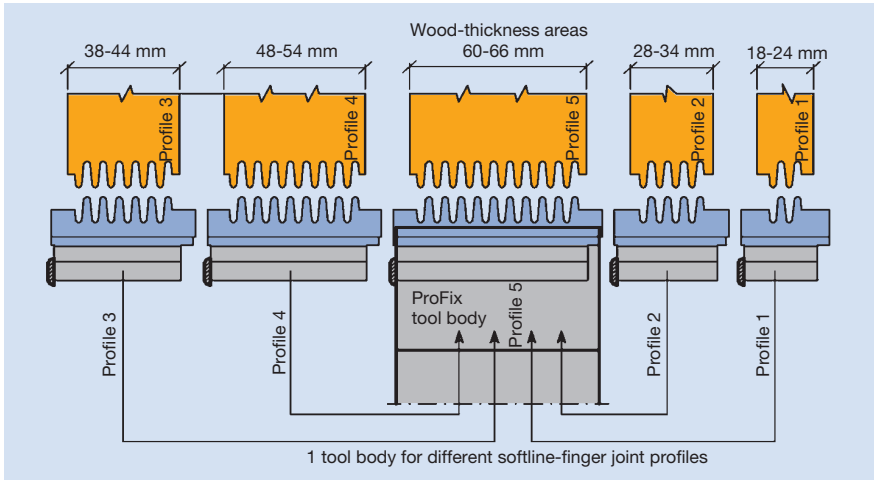
General information

- Simple and precise knife replacement.
- No setting gauges required.
- Constant profile/diameter (no correction to machine settings required).
- Ready for use immediately after knife replacement, even on the machine.
- Basic clearance 0.4 mm without side clearance after connecting the pieces.
- Exact fit to the workpiece by adjusting the position of the profile to the middle of the wood (profile symmetry = HD/2).



ProFix knife clamping system.

ProFix F cutterhead PF 25-15°

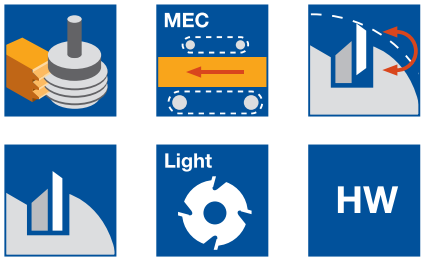


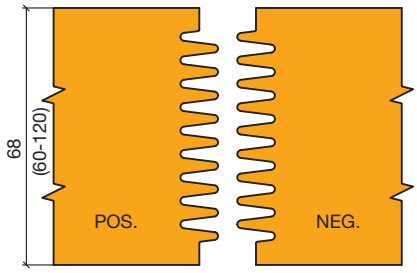
Working step/Application	For machining self locking longitudinal joints for exactly measured workpieces, e. g. constructional finger joints, window and door profiles, mitred frames, arched joints, stair, furniture and shelf parts.
Cutting material	HS, HW (quality according to machined material).
Machine	Routers with/without CNC, special machines with spindles for tools with bore.
Tool design	ProFix steel tool body with bore for mounting on arbors. For ProFix finger joint knives without shear angle and with straight clearance.
RPM D_o = diameter of the tool body	D_o = 80 mm, n_{max} 11000 min^{-1} D_o = 100 mm, n_{max} 9000 min^{-1}
Resharpening area	PF 25: 4.5 mm.
Number of teeth/Cutting with	Z = 2, SB max = 80 mm.
Feed speed	Depends on the RPM, maximum 18 m/min^{-1}.

	f_z [mm]
Softwood	0.30 – 0.40
Hardwood	0.40 – 0.50

$v_f = f_z \cdot n \cdot Z/1000$

Technical features	Constant profile/diameter after resharpening. New and resharpened knives are always positioned and clamped at constant diameter by the ProFix clamping system. – Form and force knife clamping. – Knife clamping screws positioned behind the cutting edge, and in the dust protected area. – One tool body can be used for different finger and glue joint profiles of different cutting widths. – PF 25 with profile depth 25 mm.
General information	– Simple and exact knife replacement. – No setting gauges required. – Constant profile/diameter (no correction to the machine settings required). – Ready for use immediately after knife replacement, even on the machine. – Basic clearance 0.5 mm without side clearance. – Exact fitting to the workpiece by height adjusting the position of the profile to the middle of the wood (profile symmetry = HD/2).





Glue joint profile positive (POS.) and counter profile negative (NEG.)

Note:
For special machine applications (e.g. on Weinig Conturex), the profile and counter profile must be ordered in RL.

Profile cutterhead set - glue joint profile

Application:
For cutting longitudinal joints for dimensionally stable construction parts, windows and doors e.g. round arched joints, stairs and frame construction parts.

Machine:
Overhead routers with/without CNC control, machining centres, special routers with spindles to mount shank tools.

Workpiece material:
Softwood and hardwood, modified wood in window construction, compound materials of solid wood and wood derived material, uncoated, plastic coated, veneered, etc. gluelam (plywood, etc.).

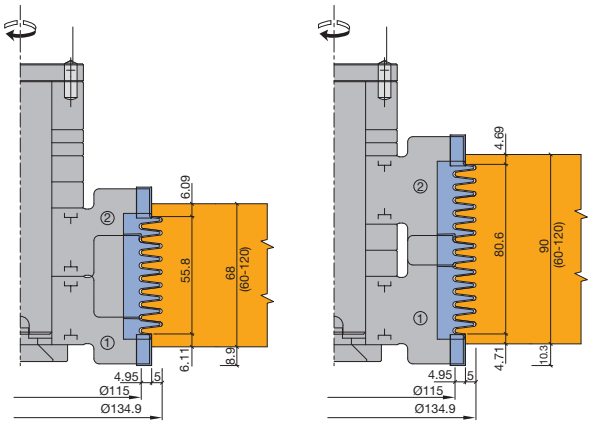
Technical information:
Adjustable finger fit by mounting the shoulder cutters in different knife seatings. Variable wood thickness through different set construction or cutting process in several passes (profile splitting).

ZL 10 mm, TG 6.2 mm, HD 60 - 120 mm
SE 699-2-50

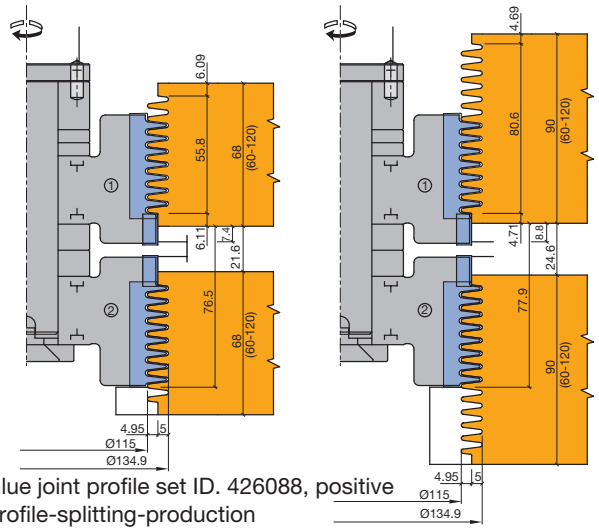
Tool Type	DRI	Tool no.	Z	ID	
Tool set glue joint profile (pos.) mounted on arbor	RL	1, 2	2/2	**426086**	□
Tool set glue joint counter profile (neg.) mounted on arbor	LL	1, 2	2/2	**426087**	□
Tool set glue joint - profile splitting profile pos. mounted on arbor	RL	1, 2	2/2	**426088**	□
Tool set glue joint - profile splitting profile neg. mounted on arbor	LL	1, 2	2/2	**426089**	□
Tool set glue joint - profile splitting profile neg. mounted on arbor	RL	3, 4	2/2	**426090**	□
Glue joint cutter set, pos. (RL) or neg. (LL)	RL	1, 2	2/2	**126046**	●
Glue joint cutter set, neg.	RL	3, 4	2/2	**126047**	●

RPM: n max. = 12700 min^{-1}

Note:
When ordering always state wood thickness (HD). Example: HD 68 mm tool without any special information is mounted positive rh, negative lh. Always 1 tool set profile (pos.) and counter profile (neg.) glue joints required to produce the workpieces without reclamping. Cutter arbor see section 8 Clamping systems.



Glue joint profile set ID. 426086, positive
Conventional production



Glue joint profile set ID. 426088, positive
Profile-splitting-production

● available ex stock
□ available at short notice
Instruction manual visit www.leitz.org

Single tools
WE 600-1-50

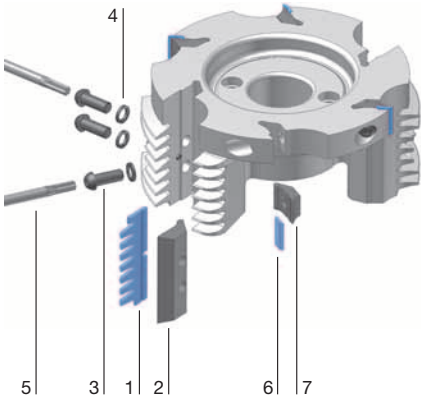
Tool Type	Tool no.	ABM mm	Z	ID	
Profile cutterhead	1	134.9x62.6x30	2/2	**411180**	●
Profile cutterhead	2	134.9x62.6x30	2/2	**411182**	●
Profile cutterhead	3	134.9x62.6x30	2/2	**411184**	●
Profile cutterhead	4	134.9x62.6x30	2/2	**411185**	●

Spare knives:

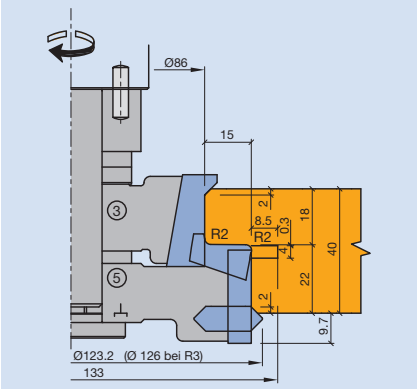
Part-no.	BEZ	Tool no.	ABM mm	QAL	VE PCS	ID	
1	ProfilCut knife	1	50.1x20.5x2	HW		**619230**	●
1	ProfilCut knife	2	50.1x20.5x2	HW		**619231**	●
1	ProfilCut knife	3	50.1x20.5x2	HW		**619232**	●
1	ProfilCut knife	4	50.1x20.5x2	HW		**619233**	●
6	Turnblade knife	1, 2, 3, 4	14,7x8x1,5	HW-30F	10	**005070**	●

Spare parts:

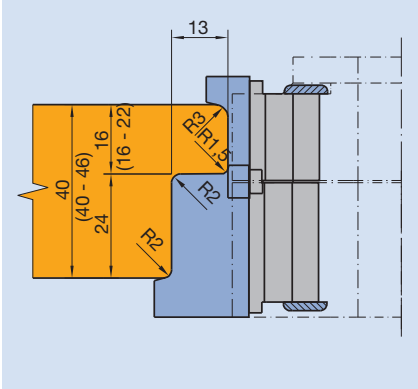
Part-no.	BEZ	Tool no.	ABM mm	ID	
2	Clamping wedge profiled	1, 2, 3, 4	48x18x8,27	**629107**	●
3	Clamping screw, Torx® 25		M6x18,5	**007818**	●
4	Washer		D9x1,2	**006747**	●
5	Torx® key		Torx® 25	**117504**	●
7	Clamping wedge	1, 2, 3, 4	13x18,75x8,27	**009670**	●
	Magnetic setting gauge		0,3/0,8	**005376**	●



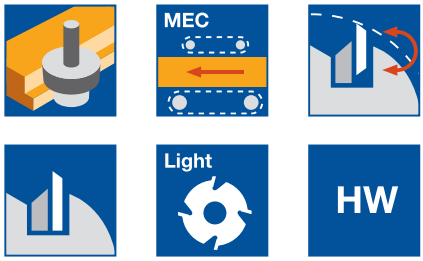
Working step/Application	Profiling and rebating of internal doors.
Workpiece material	Softwoods, hardwoods, glulam, HF-coated or veneered.
Machine	Routing machines and machining centres.
Profile cutterset for profiling and rebating internal doors Z2	
Important ordering data	With adjustable cuttersets the depth of the rebate is set by the profile –> see profiles below. The same tool can machine doors of different thickness, but the rebate depth is constant.
Profile examples	

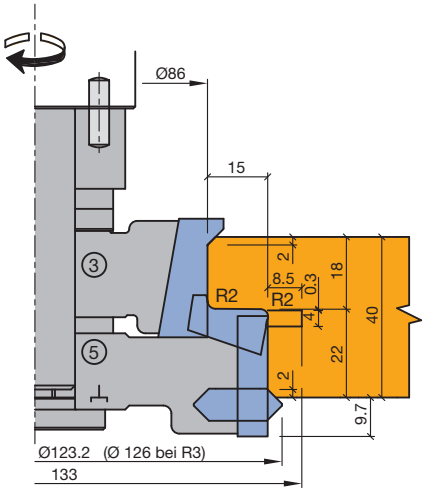


ID **426072**
Rebate depth 15 mm
Rebate width 22 mm
Turnblade knife tool set



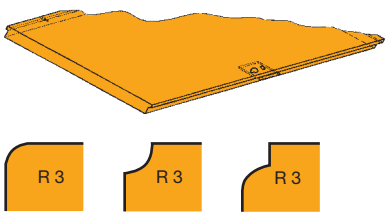
ID **023538** – P 1
Rebate depth 13 mm
Rebate width 24 mm
ProFix tool set





Adjustment scheme:
Max. D = 133 mm for groove
Max. D = 123.2 mm for bevel 45°
Max. D = 126 mm for radius R3

Examples



Profile cutterhead set - door processing

Application:
For profiling and rebating internal single rebate doors, rebate depth 15 mm.

Machine:
Overhead routers with/without CNC control, machining centres, special routers with spindles to mount shank tools.

Workpiece material:
Softwood and hardwood, compound materials of solid wood and wood derived materials, uncoated, plastic coated, veneered, etc., gluelam (plywood, etc.).

Technical information:
Variable profile overlap by exchange profile edging knives.
Adjustable rebate dimensions: rebate width 22 mm, rebate depth 15 mm.
Seal groove profile by mounting grooving knives SB 4 mm. Constant tool diameter.

Single rebate 15 mm
WE 500-2-50, SE 540-2-50, SG 599-2-50

Tool Type	Tool no.	ABM mm	Z	ID	
Profile cutterhead	3	94x30x20	2	**407741**	●
Profile cutterhead	5	116.2x35x20	2	**407742**	●
Tooling set with spacers, without arbor	3 + 5	116.2,d20,2 part	2	**126032**	●
Tooling set mounted on arbor	3 + 5	D0=86;D=116,2; 2 part	2	**426072**	□

RPM: n max. = 13000 min^{-1}

Unless stated otherwise, tools are right hand rotation.
Cutter arbor see section 8 Clamping systems.

Spare knives:

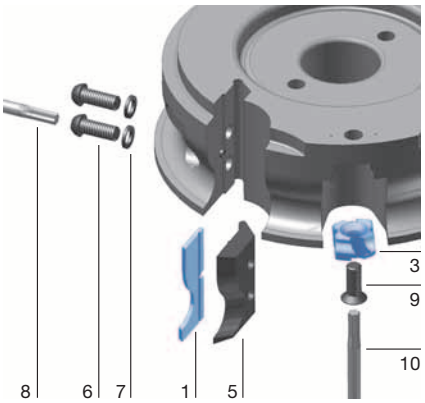
Part-no.	Tool no.	BEZ	ABM mm	QAL	R mm	FAW	VE PCS	ID	
1	3	ProfilCut knife	30.2x14.1x2	HW		45°		**407759**	●
1	3	ProfilCut knife	30.2x14.2x2	HW	1,5			**407760**	●
1	3	ProfilCut knife	30.2x14.21x2	HW	2			**407761**	●
1	3	ProfilCut knife	30.2x14.22x2	HW	3			**407762**	●
1	3	ProfilCut knife	30.2x15.3x2	HW	4			**407763**	●
1	3	ProfilCut knife	30.2x15.31x2	HW	5			**407764**	●
1	3	ProfilCut knife, flute	30.2x14.1x2	HW	3			**407765**	●
1	5	ProfilCut knife	20.1x12.61x2	HW	2			**407793**	●
2	5	Turnblade knife	30x8x1,5	HW-05			10	**005059**	●
3	5	Edging knife	KM 11/0	HW-F		45°		**008268**	●
4	5	Turnblade grooving knife NA4	35,2x15x4	HW-F				**008317**	●

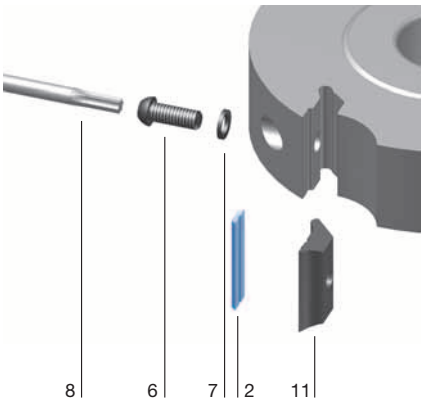
Spare parts:

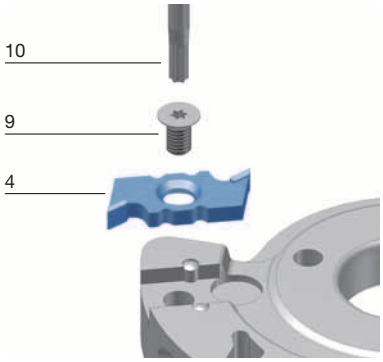
Part-no.	Tool no.	BEZ	ABM mm	ID	
5	3	Clamping wedge profiled	28x22.05x8.27	**629074**	●
5	5	Clamping wedge profiled	17x21.22x7.25	**629075**	●
6		Clamping screw, Torx® 25	M6x18,5	**007818**	●
7		Washer	D9x1,2	**006747**	●
8		Torx® key	Torx® 25	**117504**	●
9		Countersink screw, Torx®	M6x0,5x4,9	**006243**	●

5.3 Profiling
5.3.2 Tools for internal doors

Part-no.	Tool no.	BEZ	ABM mm	ID	
10		Torx® key	Torx® 20	**117503**	●
11	5	Clamping wedge	28x18,75x8,27	**009673**	●
		Magnetic setting gauge	0,3/0,8	**005376**	●







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Working step/Application	Panel raising profiles.
Workpiece material	Softwood, hardwood and composite materials (HF coated or veneered).
Machine	Routers and machining centres.

Panel raising profile cutterset Z2/2

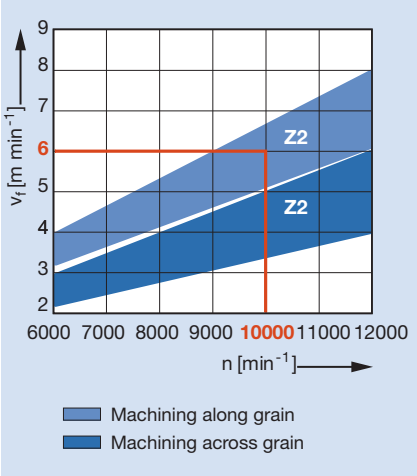
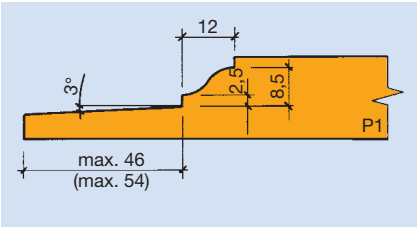
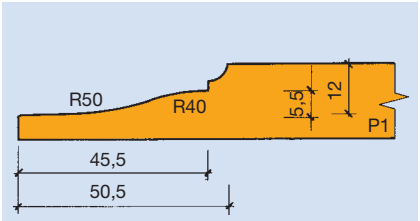


Diagram to determine feed speed v_f depending on RPM and direction of cut when machining solid wood panels (panel raising).

Sample profiles





Profile cutterhead set ProfilCut
Panel raising and edge rounding

Application:
For panel raising profiles for framed doors, ceilings, wall coverings etc. and for edge profiling solid wood.

Machine:
Overhead routers with/without CNC control, special routers with spindles to mount shank tools.

Workpiece material:
Softwood and hardwood.

Technical information:
Panel raising and edge profile with one tool. Cutterhead with throwaway knives and shear angle.

Panel raising depth max. 34 mm
WE 550 2 50, SG 599 2 50

Tool Type	P	ABM mm	Z	$n_{max.}$	ID	
Cutterhead	1	125x60/48x20	2	12200	**023238**	●
Cutterhead mounted on arbor		1 part			**426045**	□

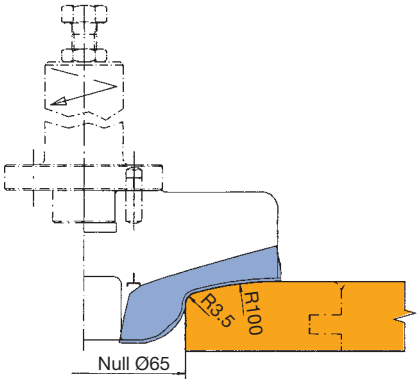
Unless stated otherwise, tools are right hand rotation.
Cutter arbor see section 8 Clamping systems.

Spare knives:

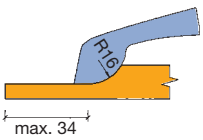
Part-no.	BEZ	P	ABM mm	QAL	ID	
1	ProfilCut knife	1	60x19,88x2	HW	**619002**	●
1	ProfilCut knife	2	60x20,34x2	HW	**619003**	●

Spare parts:

Part-no.	BEZ	ABM mm	ID	
2	Clamping wedge profiled	57x28,38x7,25	**629000**	●
3	Clamping screw, Torx® 25	M6x18,5	**007818**	●
4	Washer	D9x1,2	**006747**	●
5	Torx® key	Torx® 25	**117504**	●



Edge profile



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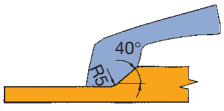

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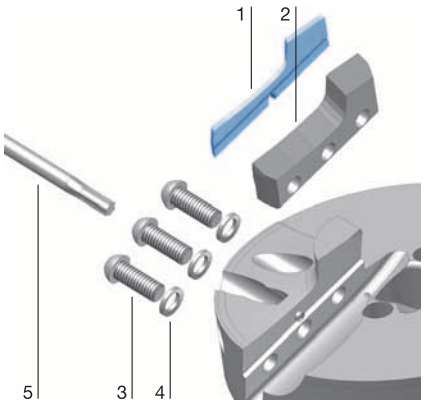

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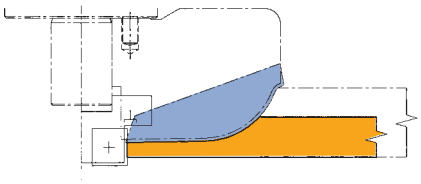
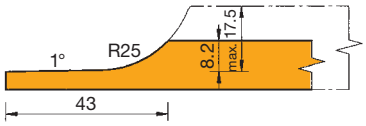
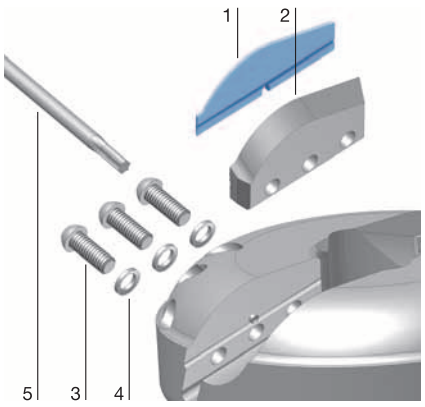


Examples





Profile cutterhead set ProfilCut
Panel raising

Application:
For panel raising profiles for framed doors, ceilings, wall coverings etc.

Machine:
Overhead routers with/without CNC control, special routers with spindles to mount shank tools.

Workpiece material:
Softwood and hardwood.

Technical information:
Panel edge jointing by mounting an additional jointing cutterhead ID **041221**. Cutterhead with throwaway knives and shear angle.

Panel raising depth max. 49 mm
WE 550-2-50, SG 599-2-50

Tool Type	ABM mm	Z	$n_{max.}$	ID	
Cutterhead	132x43x20	2	11600	**125034**	●
Cover plate	46x9.5x20			**007925**	●
Cutterhead mounted on arbor	1 part			**426022**	□

Unless stated otherwise, tools are right hand rotation.
Cutter arbor see section 8 Clamping systems.

Spare knives:

Part-no.	BEZ	ABM mm	QAL	VE PCS	ID	
	Turnblade knife	12x12x1,5	HW-05	10	**005081**	●
1	ProfilCut knife	60x20,47x2	HW		**619100**	●

Spare parts:

Part-no.	BEZ	ABM mm	ID	
2	Clamping wedge profiled	57x28,97x7,25	**629030**	●
3	Clamping screw, Torx®	M6x18,5	**007818**	●
4	Washer	D9x1,2	**006747**	●
5	Torx® key	Torx® 25	**117504**	●
	Oval head screw Torx® 15	M4x6	**006225**	●
	Torx® key	Torx® 15	**117507**	●

Jointing
WW 200-2-NN

Tool Type	ABM mm	QAL	Z	ID	
Jointing cutterhead	30/46x12/22.5x20	HW	2	**041221**	●

Profile cutterhead set ProfilCut Panel raising

Application:
For panel raising profiles for framed doors, ceilings, wall coverings etc.

Machine:
Overhead routers with/without CNC control, special routers with spindles to mount shank tools.

Workpiece material:
Softwood and hardwood.

Technical information:
Panel edge jointing by mounting an additional jointing cutterhead ID **041221**. Cutterhead with throwaway knives and shear angle. Profile can be changed by replacing the knives.

Panel raising depth max. 40 / 50 mm with/without jointing
WE 550-2-50, SG 599-2-50

Tool Type	P	ABM mm	QAL	Z	$n_{max.}$	ID	
Cutterhead	1	110x40/40x20	HW	2	13800	**023237**	●
Cover plate		46x9.5x20	HW			**007925**	●
Cutterhead mounted on arbor		1 part	HW			**426043**	□

Unless stated otherwise, tools are right hand rotation.
Cutter arbor see section 8 Clamping systems.

Spare knives:

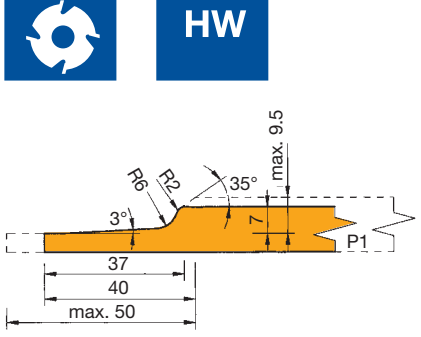
Part-no.	BEZ	P	ABM mm	QAL	VE PCS	ID	
	Turnblade knife		12x12x1,5	HW-05	10	**005081**	●
1	ProfilCut knife	1	50x14,5x2	HW		**009492**	●
1	ProfilCut knife	2	50x14,56x2	HW		**009493**	●

Spare parts:

Part-no.	BEZ	ABM mm	ID	
2	Clamping wedge profiled	47x23x7,25	**009741**	●
3	Clamping screw, Torx® 25	M6x18,5	**007818**	●
4	Washer	D9x1,2	**006747**	●
5	Torx® key	Torx® 25	**117504**	●
	Oval head screw Torx® 15	M4x6	**006225**	●
	Torx® key	Torx® 15	**117507**	●

Jointing
WW 200-2-NN

Tool Type	ABM mm	QAL	Z	ID	
Jointing cutterhead	30/46x12/22.5x20	HW	2	**041221**	●



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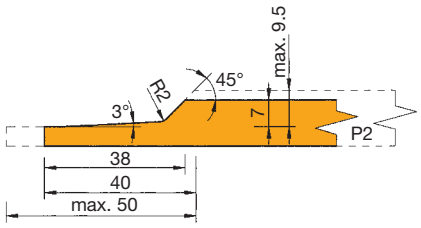

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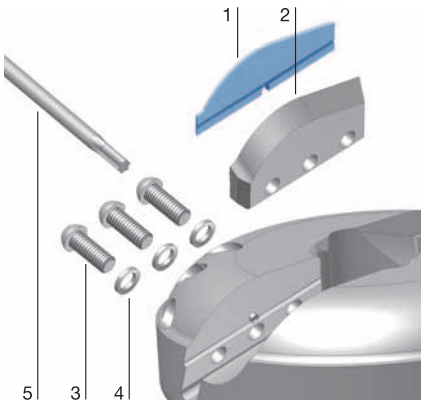

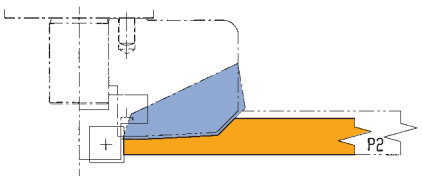

Example

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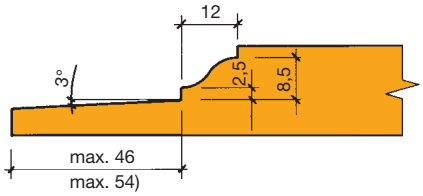

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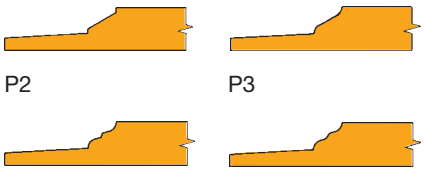
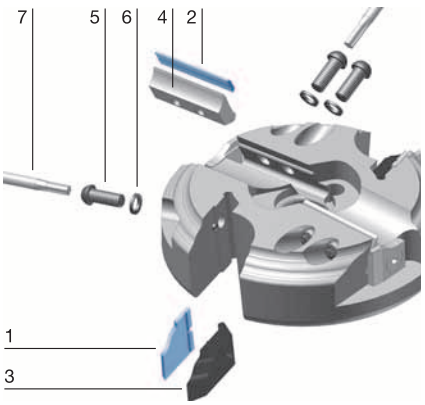


P2 P3

P4 P5

Profiles



Profile cutterhead set ProfilCut Panel raising

Application:
For panel raising profiles for framed doors, ceilings, wall coverings etc.

Machine:
Overhead routers with/without CNC control, special routers with spindles to mount shank tools.

Workpiece material:
Softwood and hardwood.

Technical information:
Panel edge jointing by mounting an additional jointing cutterhead ID **041221**. Cutterhead with throwaway knives and shear angle. Profile can be changed by replacing the knives.

Panel raising depth max. 54 mm
WE 550-2-50, SG 599-2-50

Tool Type	P	ABM mm	QAL	Z	$n_{max.}$	ID	
Cutterhead	1	124x20/36x20	HW	2/2	12300	**041223**	●
Cover plate		46x9.5x20	HW			**007925**	●
Cutterhead mounted on arbor	1	1 part	HW	2/2	12300	**426030**	□

Unless stated otherwise, tools are right hand rotation with profile P1.
Cutter arbor see section 8 Clamping systems.

Spare knives:

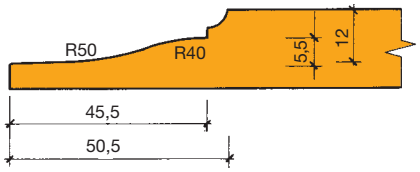
Part-no.	BEZ	P	ABM mm	QAL	VE PCS	ID	
	Turnblade knife		12x12x1,5	HW-05	10	**005081**	●
1	Profile knife profile 1	1	20x27x2	HW		**007560**	●
1	Profile knife profile 2	2	20x27x2	HW		**007561**	●
1	Profile knife profile 3	3	20x27x2	HW		**007562**	●
1	Profile knife profile 4	4	20x27x2	HW		**007563**	●
1	Profile knife profile 5	5	20x27x2	HW		**007564**	●
2	Turnblade knife		40x8x1,5	HW-30F	10	**005074**	●

Spare parts:

Part-no.	BEZ	P	ABM mm	ID	
3	Clamping wedge profiled	1-5	18x37,46x8,27	**009722**	●
4	Clamping wedge	Panel raising	37x16,8x7,25	**009577**	●
5	Clamping screw, Torx® 25		M6x18,5	**007818**	●
6	Washer		D9x1,2	**006747**	●
7	Torx® key		Torx® 25	**117504**	●
	Oval head screw Torx® 15		M4x6	**006225**	●
	Torx® key		Torx® 15	**117507**	●
	Cover plate		46x9.5x20	**007925**	●

Jointing
WW 200-2WW 200-2-NN

Tool Type	ABM mm	QAL	Z	ID	
Jointing cutterhead	30/46x12/22.5x20	HW	2	**041221**	●

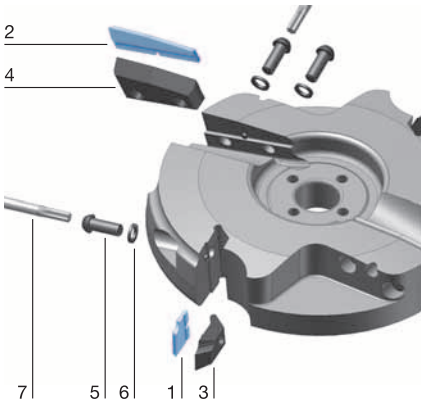


P1

P2 P3

P4 P5

Profiles



Profile cutterhead set ProfilCut Panel raising

Application:
For panel raising profiles for framed doors, ceilings, wall coverings etc.

Machine:
Overhead routers with/without CNC control, special routers with spindles to mount shank tools.

Workpiece material:
Softwood and hardwood.

Technical information:
Panel edge jointing by mounting an additional jointing cutterhead ID **041221**. Cutterhead with throwaway knives and shear angle. Profile can be changed by replacing the knives.

Panel raising depth max. 50 mm
WE 550-2-50, SG 599-2-50

Tool Type	P	ABM mm	QAL	Z	$n_{max.}$	ID	
Cutterhead	1	131x20/36x20	HW	2/2	11600	**023220**	●
Cover plate		46x9.5x20	HW			**007925**	●
Cutterhead mounted on arbor	1	1 part	HW	2/2	11600	**426031**	□

Unless stated otherwise, tools are right hand rotation with profile P1.
Cutter arbor see section 8 Clamping systems.

Spare knives:

Part-no.	BEZ	P	ABM mm	QAL	VE PCS	ID	
	Turnblade knife		12x12x1,5	HW-05	10	**005081**	●
1	ProfilCut knife	1	20x16x2	HW		**007655**	●
1	ProfilCut knife	2	20x16x2	HW		**007656**	●
1	ProfilCut knife	3	20x16x2	HW		**007657**	●
1	ProfilCut knife	4	20x16x2			**007658**	●
1	ProfilCut knife	5	20x16x2	HW		**007659**	●
2	ProfilCut knife (pan.rais.)		50x11,68x2	HW		**007600**	●

Spare parts:

Part-no.	BEZ	P	ABM mm	ID	
3	Clamping wedge profiled	1-5	18x26,46x8,27 (P1-5)	**009725**	●
4	Clamping wedge profiled	panel raising	47x20.18x7.25 (raised panel)	**009982**	●
5	Clamping screw, Torx® 25		M6x18,5	**007818**	●
6	Washer		D9x1,2	**006747**	●
7	Torx® key		Torx® 25	**117504**	●
	Oval head screw Torx® 15		M4x6	**006225**	●
	Cover plate		46x9.5x20	**007925**	●

Jointing
WW 200-2-NN

Tool Type	ABM mm	QAL	Z	ID	
Jointing cutterhead	30/46x12/22.5x20	HW	2	**041221**	●

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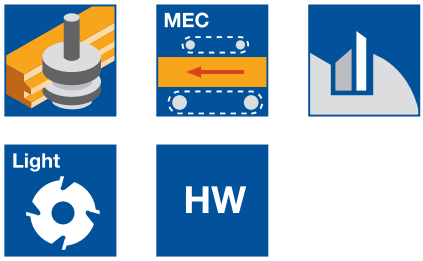

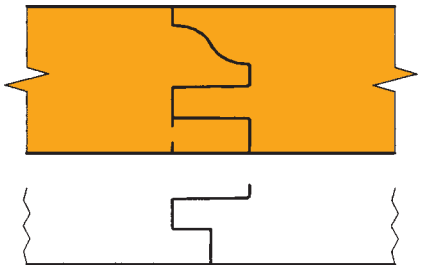

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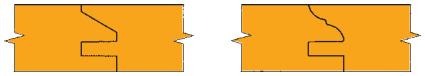
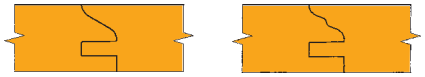


P2 P3



P4 P5

Profile examples

Profile cutterhead set ProfilCut Door frame

Application:
For profiles and counter profiles in solid wood frame furniture doors.

Machine:
Overhead routers with/without CNC control, special routers with spindles to mount shank tools.

Workpiece material:
Softwood and hardwood.

Technical information:
3 tool sets with 5 profiles for single side profiled frames and inserted or beaded panels. Additional profiles by remounting the single tools.

Frame profile one side, 12 mm tongue
SE 640-2-50, AG 341-2-50

Tool Type	Tool no.	Z	$n_{max.}$	ID	
Profile set	1	2	14500	**126006**	●
Counter profile set	2,3	2/2	14500	**126007**	●
Tool set profile and counter profile mounted on arbor				**043098**	□

Frame profile one side, 12 mm rebate
SE 640-2-50, AG 341-2-50

Tool Type	Tool no.	Z	$n_{max.}$	ID	
Profile set	1,3	2/2	14500	**126008**	●
Counter profile set	2,4	2/2	14500	**126009**	●
Tool set profile and counter profile mounted on arbor				**043099**	□

Frame profile one side, 6 mm tongue
SE 640-2-50, AG 341-2-50

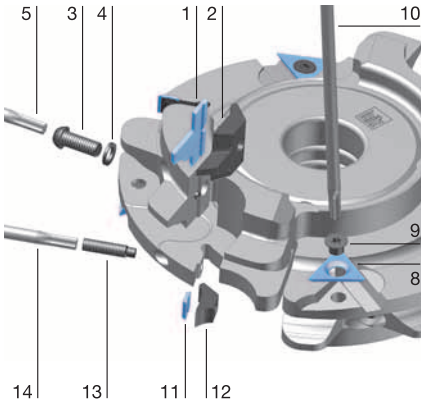
Tool Type	Tool no.	Z	$n_{max.}$	ID	
Profile set	1,5	2/2	14500	**126010**	●
Counter profile set	2,5	2/2	14500	**126011**	●
Tool set profile and counter profile mounted on arbor				**043100**	□

Single tools
WE 500-2-50, WW 410-2-NN

Tool Type	Tool no.	ABM mm	Z	ID	
Profile cutterhead	1	109,1x30x20	2	**023968**	●
Profile cutterhead	2	109,0x20x20	2	**023969**	●
Rebating cutterhead	3	109,0x15x20	Z2/V2	**023970**	●
Profile cutterhead	4	85x15x20	2	**023971**	●
Rebating cutterhead	5	97x15x20	Z2/V2	**023972**	●

Cutter arbor see section 8 Clamping systems.

Tools supplied with profile 1 unless ordered otherwise.

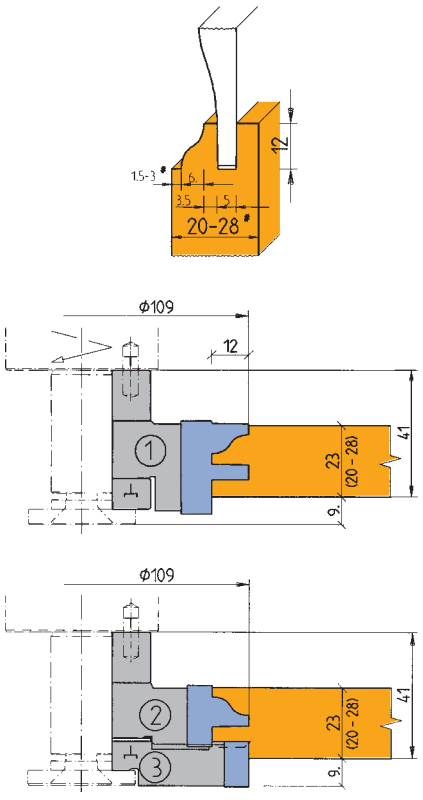


Spare knives:

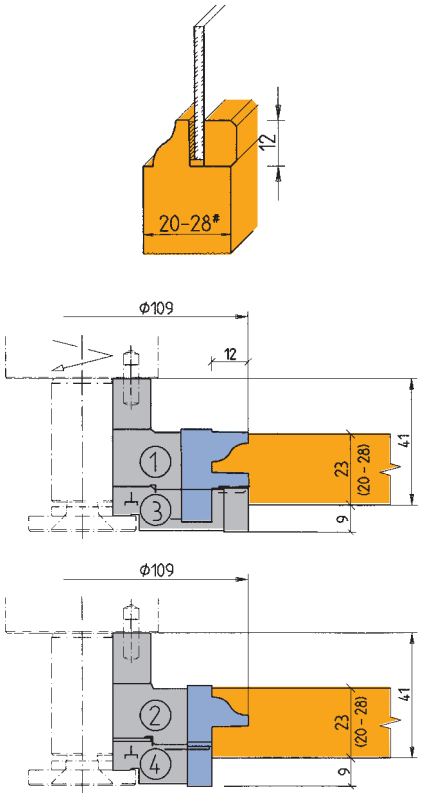
Part-no.	BEZ	P	Tool no.	ABM mm	QAL	VE PCS	ID
1	ProfilCut knife	1	1	30x23,2x2	HW		**009215** ●
1	ProfilCut knife	2	1	30x23,2x2	HW		**009216** ●
1	ProfilCut knife	3	1	30x23,2x2	HW		**009217** ●
1	ProfilCut knife	4	1	30x23,2x2	HW		**009218** ●
1	ProfilCut knife	5	1	30x23,2x2	HW		**009219** ●
1	ProfilCut knife	1	2	20x23x2	HW		**009225** ●
1	ProfilCut knife	2	2	20x23x2	HW		**009226** ●
1	ProfilCut knife	3	2	20x23x2	HW		**009227** ●
1	ProfilCut knife	4	2	20x23x2	HW		**009228** ●
1	ProfilCut knife	5	2	20x23x2	HW		**009229** ●
8	Turnblade spur VS2		3, 5	19x19x2	HW-F	10	**005115** ●
11	Turnblade knife		3, 4, 5	14,7x8x1,5	HW-30F	10	**005070** ●

Spare parts:

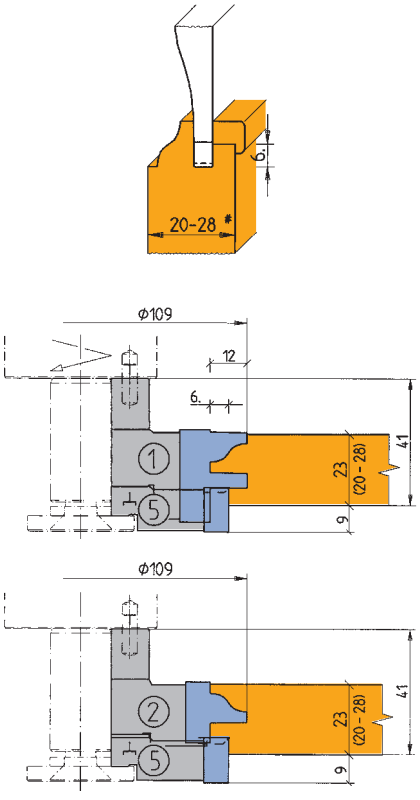
Part-no.	BEZ	Tool no.	ABM mm	P	ID
2	Clamping wedge profiled	1	28x29x8,27	1-5	**009726** ●
2	Clamping wedge profiled	2	18x29x8,27	1-5	**009728** ●
3	Clamping screw, Torx® 25		M6x18,5		**007818** ●
4	Washer		D9x1,2		**006747** ●
5	Torx® key		Torx® 25		**117504** ●
9	Countersink screw, Torx® 20		M5x8,5		**007808** ●
10	Torx® key		Torx® 20		**117503** ●
12	Clamping wedge	3, 4, 5	13x18,75x8,27		**009670** ●
	Magnetic setting gauge		0,3/0,8		**005376** ●



Tongue 12 mm, inserted panel

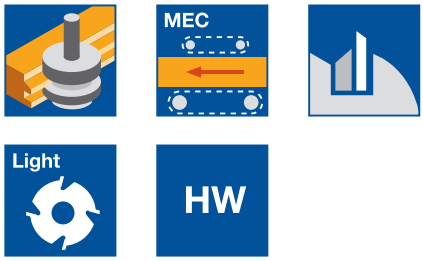


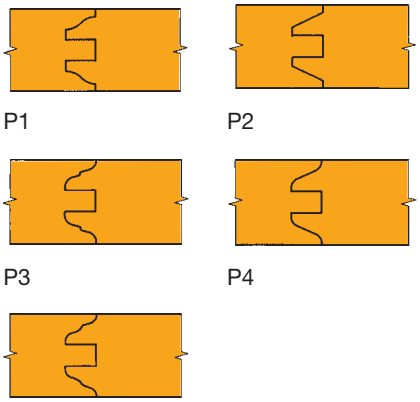
Rebate 12 mm, beaded panels



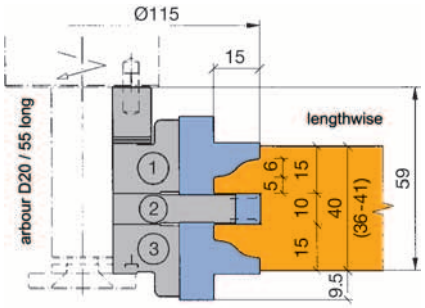
Tongue 6 mm,
inserted and beaded panels

● available ex stock
□ available at short notice
Instruction manual visit www.leitz.org





Profiles



Frame profiled on two sides - profile

Profile cutterhead set ProfilCut Door frame

Application:
For profiles and counter profiles in solid wood frame furniture doors.

Machine:
Overhead routers with/without CNC control, special routers with spindles to mount shank tools.

Workpiece material:
Softwood and hardwood.

Technical information:
Tool sets with 5 profile choices for frames with profiles on two sides and inserted or beaded panels. Additional tools available for changing from frames with profiles on both sides to frames with profiles on one side.

Frame profile two sides, 15 mm tongue
SE 640-2-50, AG 341-2-50

Tool Type	Tool no.	Z	$n_{max.}$	ID	
Profile set	1,2,3	Z2/V2	13200	**126012**	●
Counter profile set	1,3	Z2	13200	**126013**	●
Tool set profile and counter profile mounted on arbor				**126513**	□

Frame profile one side, 15 mm rebate
SE 640-2-50, AG 341-2-50

Tool Type	Tool no.	Z	$n_{max.}$	ID	
Profile set	3,5	Z2/V2	13200	**126014**	●
Counter profile set	1,4	Z2	13200	**126015**	●
Tool set profile and counter profile mounted on arbor				**126514**	□

Frame profile two sides, 15 mm tongue, profile and counter profile
SE 640-2-50, SG 699-2-50

Tool Type	Tool no.	Z	$n_{max.}$	ID	
Profile and counter profile set	3,1,2,3	Z2/V2	13200	**126016**	●
Tool set profile and counter profile mounted on arbor			13200	**126515**	□

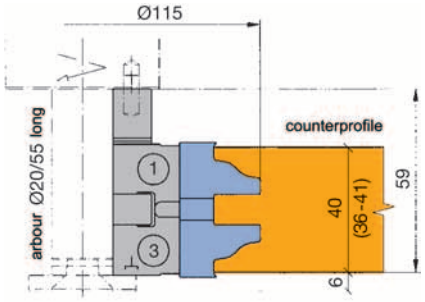
Additional tool (conversion from tongue 15 mm to rebate 15 mm)
WW 410-2-NN, WW 211-2

Tool Type	Tool no.	Z	$n_{max.}$	ID	
Profile set	5	Z2/V2	13200	**125032**	●
Counter profile set	4	2	13200	**023085**	●

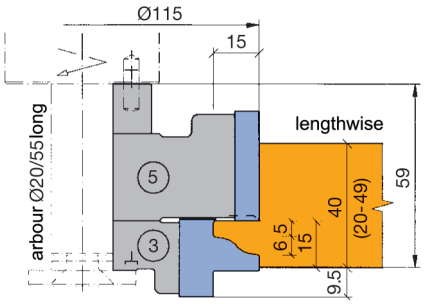
Cutter arbor see section 8 Clamping systems.

Wood thickness:
frame profile two sides HD 36 - 41 mm
frame profile one side HD 20 - 49 mm

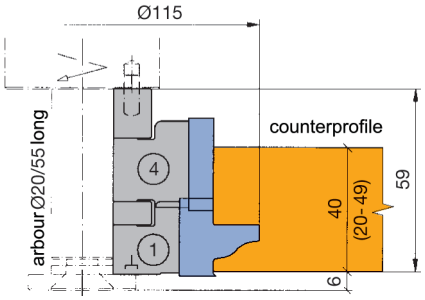
5



Frame profiled on two sides - counter profile



Frame profiled on one side - profile



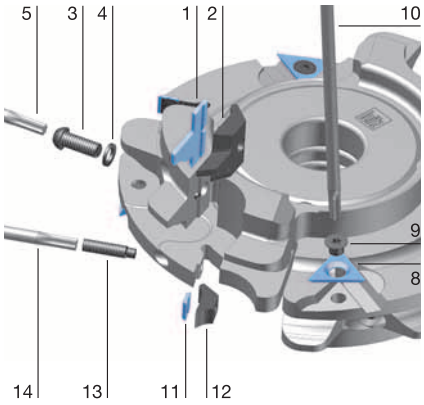
Frame profiled on one side - counter profile

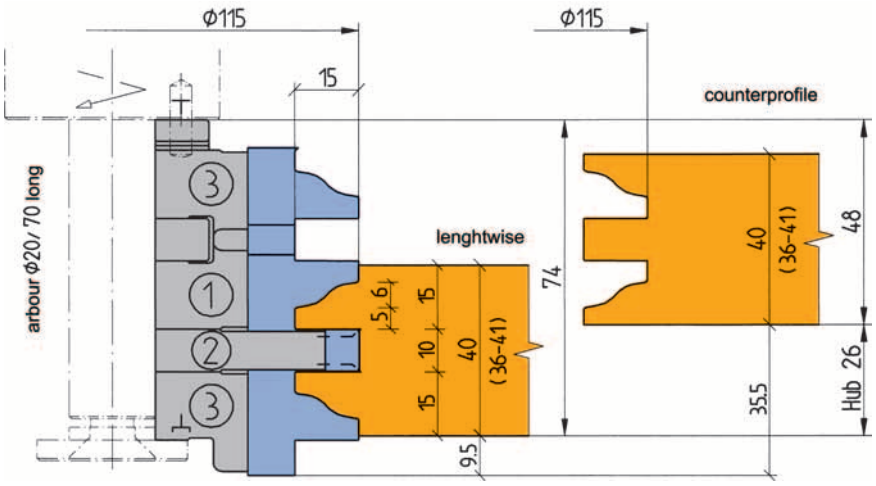
Spare knives:

Part-no.	BEZ	P	Tool no.	ABM mm	QAL	VE PCS	ID
1	ProfilCut knife	1	3	25x27x2	HW		**619054** ●
1	ProfilCut knife	2	3	25x27x2	HW		**619055** ●
1	ProfilCut knife	3	3	25x27x2	HW		**619056** ●
1	ProfilCut knife	4	3	25x27x2	HW		**619057** ●
1	ProfilCut knife	5	3	25x27x2	HW		**619058** ●
1	ProfilCut knife	1	1	25x27x2	HW		**619059** ●
1	ProfilCut knife	2	1	25x27x2	HW		**619060** ●
1	ProfilCut knife	3	1	25x27x2	HW		**619061** ●
1	ProfilCut knife	4	1	25x27x2	HW		**619062** ●
1	ProfilCut knife	5	1	25x27x2	HW		**619063** ●
11	Turnblade knife		2	9,7x8x1,5	HW-30F	10	**005197** ●
11	Turnblade knife		5	35x8x1,5	HW-30F	10	**005073** ●
11	Turnblade knife		4	30x8x1,5	HW-30F	10	**005072** ●
15	Turnblade spur VS2		2, 5	19x19x2	HW-F	10	**005115** ●

Spare parts:

Part-no.	BEZ	Tool no.	ABM mm	ID
2	Clamping wedge profiled	3	23x34x8,27	**629013** ●
2	Clamping wedge profiled	1	23x34x8,27	**629012** ●
3	Clamping screw, Torx® 25		M6x18,5	**007818** ●
4	Washer		D9x1,2	**006747** ●
5	Torx® key		Torx® 25	**117504** ●
9	Countersink screw, Torx® 20		M6x0,5x4,9	**006243** ●
10	Torx® key		Torx® 20	**117503** ●
12	Clamping wedge	2	9x18,75x8,27	**009764** ●
12	Clamping wedge	4	28x18,75x8,27	**009673** ●
12	Clamping wedge	5	33x18,75x8,27	**009674** ●
13	Allen screw with shank, Torx® 15		M5x20	**007380** ●
14	Torx® key		Torx® 15	**117507** ●
	Magnetic setting gauge		0,3/0,8	**005376** ●

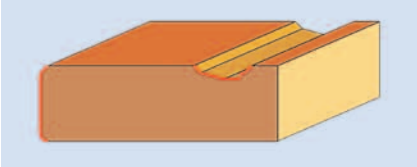




Frame profiled on two sides
Tool sets for profile and counter profile mounted on arbor

● available ex stock
□ available at short notice
Instruction manual visit www.leitz.org

Working step/Application	Profiling (jointing, bevelling, rounding, panel raising and decorative grooves).
Workpiece material (recommended cutting material)	Soft and hardwood (HS, HW). Chipboard and fibre materials (MDF, HF, etc.), uncoated, plastic coated, veneered, etc. (HW). Plywood (HW). Duroplastics (HW). Thermoplastics (HS, HW). Polymeric plastics (Corian, Varicor, etc.) (HW). Laminated materials (HPL, Trespa, etc.) (HW). Non-ferrous metal (Aluminium, copper, etc.) (HS, HW).
Machine	Router machines with/ without CNC, CNC machining centres. Special machines with mounting for shank tools.
Usage	Conventional and climb cut.
Recommendation	Solid wood: cutting along grain. Solid wood: cutting across grain.
Technical features	Cutterhead with replaceable knives ProfilCut-system cutterheads for machining panels and decorative grooves.



Example

Application Data

RPM/feeds

Recommended cutting speeds v_C and feed speeds f_z for multi purpose cutterheads.

	Cutterhead HS v_c [m/s]	Cutterhead HW v_c [m/s]
Softwood	50 – 80	60 – 90
Hardwood	40 – 60	50 – 80
Chipboard/MDF	–	60 – 80
Plywood	–	60 – 80
Plastic coated board	–	40 – 60

	Cutterhead HS/HW f_z [mm]
Solid wood along grain	0.3 – 0.5
Solid wood across grain	0.25 – 0.35
Chipboard/MDF	0.3 – 0.5
Plywood	0.25 – 0.35

Calculation formula: $v_f = f_z \cdot n \cdot Z/1000$

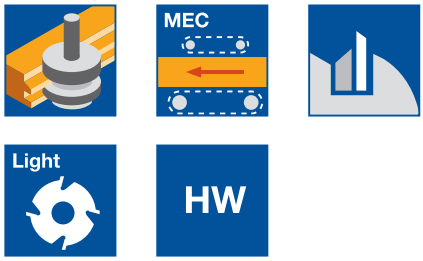
Workpiece clamping

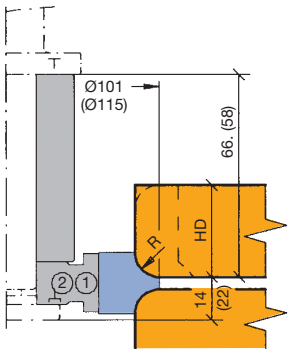
With stationary machining, sufficient workpiece clamping is very important.

Insufficient clamping can reduce the quality of both the cut and the tool life considerably.

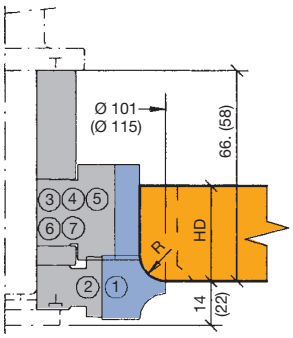
Panels can be held in place by vacuum clamping, but sometimes additional mechanical clamping is required.

Small and especially curved workpieces require special clamping fixtures or clamping devices made by the customer or obtained from specialist suppliers.





Combination ID **022907**



Combination ID **022908**

wood thickness	or	or	or	or	or	
tool combination	3 3 / 1 2	4 4 / 1 2	5 5 / 1 2	6 6 / 1 2	7 7 / 1 2	or
max. HD	19 + R	29 + R	39 + R	14 + R	49 + R	
min. HD	–	–	–	–	–	

Profile cutterhead set ProfilCut

Application:
Multi purpose tool set for bevelling and rounding, optional jointing of the workpiece edge.

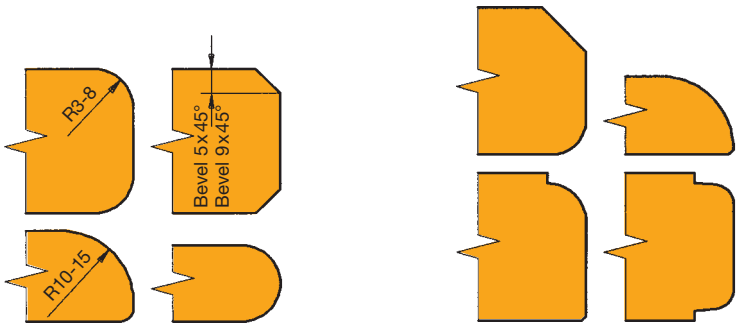
Machine:
Overhead routers with/without CNC control, special routers with spindles to mount shank tools.

Workpiece material:
Softwood and hardwood.

Technical information:
By combining jointing and bevelling or rounding cutterheads several different profiles and wood thicknesses can be covered. Different radii or bevel profile knives can be mounted in one cutterhead.

Jointing, rounding or bevelling tool
SG 599-2-50

Tool Type	R mm	BEM	$n_{max.}$ min^{-1}	ID	
Rounding		No. of tools 1	12000	**022907**	□
Jointing rounding		No. of tools 2	12000	**022908**	□
Rounding jointing rounding	3 - 8	No. of tools 3	12000	**022909**	□
Rounding jointing rounding	3 - 8 10 - 15	No. of tools 3	12000	**022910**	□
Rounding rounding	3 - 8 10 - 15	No. of tools 2	12000	**022911**	□

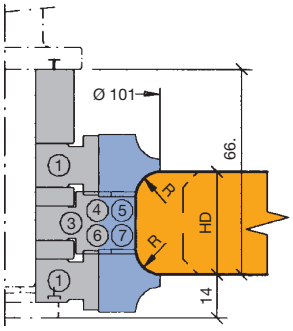


Profiles

Single tools
WE 500-2-50, WW 211-2

Tool Type	Tool no.	ABM mm	QAL	Z	R mm	FAW	ID	
Profile cutterhead	1	101x20x20	HW	2	3		**023069**	□
Profile cutterhead	1	101x20x20	HW	2	4		**023070**	□
Profile cutterhead	1	101x20x20	HW	2	5		**023071**	●
Profile cutterhead	1	101x20x20	HW	2	6		**023072**	□
Profile cutterhead	1	101x20x20	HW	2	7		**023073**	□
Profile cutterhead	1	101x20x20	HW	2	8		**023074**	□
Profile cutterhead	1	101x20x20	HW	2		5/45°	**023075**	□
Profile cutterhead	2	115x35x20	HW	2	10		**023978**	●
Profile cutterhead	2	115x35x20	HW	2	11		**023979**	□
Profile cutterhead	2	115x35x20	HW	2	12		**023980**	□
Profile cutterhead	2	115x35x20	HW	2	13		**023981**	□
Profile cutterhead	2	115x35x20	HW	2	14		**023982**	□

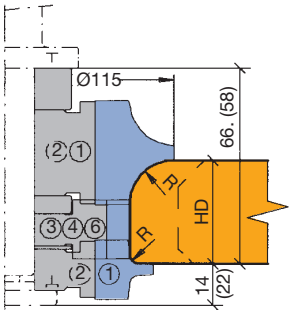
● available ex stock
□ available at short notice
Instruction manual visit www.leitz.org



Combination ID **022909** Combination with tool 2 not possible

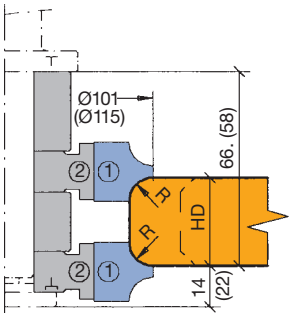
wood thickness					
tool combination	①③①	①④①	①⑤①	①⑥①	①⑦①
max. HD	17+R+R	27+R+R	37+R+R	13+R+R	47+R+R
min. HD	21	31	41	16	51

no combination possible with tool 2



Combination ID **022910** Combination 1 and 1 see ID **022909** (Combinations of tool 2 and 2, or tool 5 and 7 not possible)

wood thickness				
tool combination	①①	②②	②①	or
max. HD	57	41	49	
min. HD	R + R	R + R	R + R	
	but min. 10		but min. 17	
	but min. 24			



Combination ID **022911**
Chart data of bevelling knives:
R = bevel 5 (9)x45°, min. wood thickness is calculated with bevel 5 (9)x54°

wood thickness				
tool combination	②③①	②④①	②⑥①	or
max. HD	17+R+R	27+R+R	13+R+R	
min. HD	28	38	23	

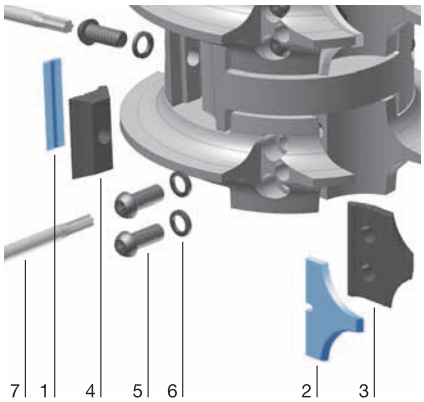
Tool Type	Tool no.	ABM mm	QAL	Z	R mm	FAW	ID	
Profile cutterhead	2	115x35x20	HW	2	15		**023983**	□
Profile cutterhead	2	115x35x20	HW	2		9/45°	**023984**	□
Jointing cutterhead	3	85x20x20	HW	2			**023084**	●
Counter profile set	4	85x30x20	HW	2			**023085**	●
Jointing cutterhead	5	85x40x20	HW	2			**023086**	●
Jointing cutterhead	6	85x15x20	HW	2			**023976**	●
Jointing cutterhead	7	85x50x20	HW	2			**023977**	●

Spare knives:

Part-no.	BEZ	Tool no.	ABM mm	QAL	R mm	FAW	VE PCS	ID	
1	Turnblade knife	6	14,7x8x1,5	HW-30F			10	**005070**	●
1	Turnblade knife	3	19,7x8x1,5	HW-30F			10	**005071**	●
1	Turnblade knife	4	30x8x1,5	HW-30F			10	**005072**	●
1	Turnblade knife	5	40x8x1,5	HW-30F			10	**005074**	●
1	Turnblade knife	7	50x8x1,5	HW-30F			10	**005075**	●
2	ProfilCut knife	1	20x18x2	HW	3			**008583**	●
2	ProfilCut knife	1	20x18x2	HW	4			**008584**	●
2	ProfilCut knife	1	20x18x2	HW	5			**008585**	●
2	ProfilCut knife	1	20x18x2	HW	6			**008586**	●
2	ProfilCut knife	1	20x18x2	HW	7			**008587**	●
2	ProfilCut knife	1	20x18x2	HW	8			**008588**	●
2	ProfilCut knife	1	20x18x2	HW	5	45°		**008589**	●
2	ProfilCut knife	2	35x25,2x2	HW	10			**009120**	●
2	ProfilCut knife	2	35x25,2x2	HW	11			**009121**	●
2	ProfilCut knife	2	35x25,2x2	HW	12			**009122**	●
2	ProfilCut knife	2	35x25,2x2	HW	13			**009123**	●
2	ProfilCut knife	2	35x25,2x2	HW	14			**009124**	●
2	ProfilCut knife	2	35x25,2x2	HW	15			**009125**	●
2	ProfilCut knife	2	35x25,2x2	HW	9	45°		**009126**	●

Spare parts:

Part-no.	BEZ	Tool no.	ABM mm	ID	
3	Clamping wedge	1	18x22x8,27	**009649**	●
3	Clamping wedge	2	33x29x8,27	**009752**	●
4	Clamping wedge	3	18x18,75x8,27	**009671**	●
4	Clamping wedge	4	28x18,75x8,27	**009673**	●
4	Clamping wedge	5	38x18,75x8,27	**009675**	●
4	Clamping wedge	6	13x18,75x8,27	**009670**	●
4	Clamping wedge	7	48x18,75x8,27	**009677**	●
5	Clamping screw, Torx® 25		M6x18,5	**007818**	●
6	Washer		D9x1,2	**006747**	●
7	Torx® key		Torx® 25	**117504**	●
	Allen Key		SW 4	**005445**	●



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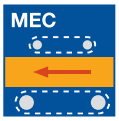
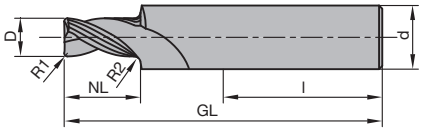


HW



Profile router

Application:
Router for changing the profile rebate in windows, for mullion and transom.

Machine:
Overhead routers with/without CNC control, machining centres, special routers with spindles to mount shank tools.

Workpiece material:
Softwood and hardwood, laminated wood in the window construction.

Technical information:
HW solid. Large spiral angle for optimum chip removal. Pre cutting with spiral roughing/finishing cutter Marathon recommended.

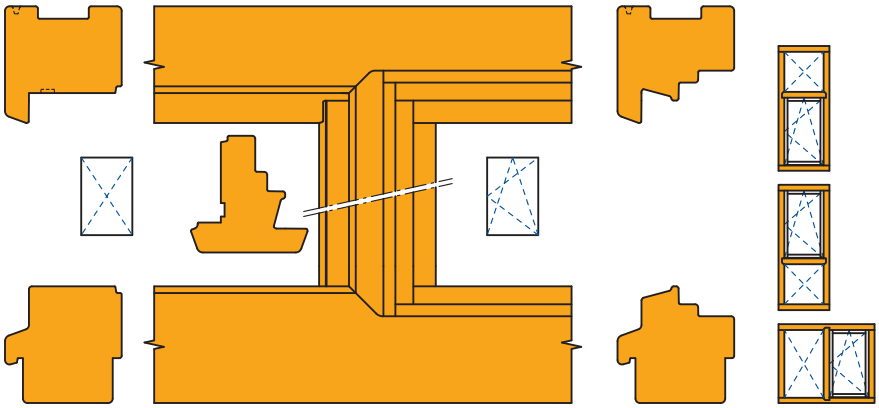
Profile router for rebate changing cuts
WO 531-2

D mm	GL mm	NL mm	S mm	Z	DRI	Twist	ID	ID Set HSK-F 63
12	100	24	20x50	2	RL	RD	**245001** ●	**245101** □
12	100	30	20x50	2	RL	RD	**245000** ●	**245100** □

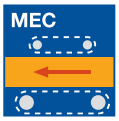
RPM: n = 18000 - 24000 min^{-1}

Note:
HSK-F 63 = tool is supplied mounted in shrink-fit chuck HSK-F 63

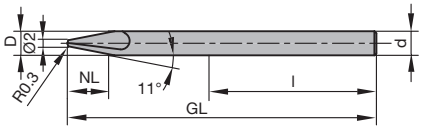
Example:
Rebate change to window profiles



● available ex stock
□ available at short notice
Instruction manual visit www.leitz.org



HW



Profile router Kolibri

Application:
Routers to pre cut the cross grain profile as protection against break outs on slot/tenon or counter profiles.

Machine:
Overhead routers with/without CNC control, machining centres, special routers with spindles to mount shank tools.

Workpiece material:
Softwood and hardwood, laminated wood in window construction.

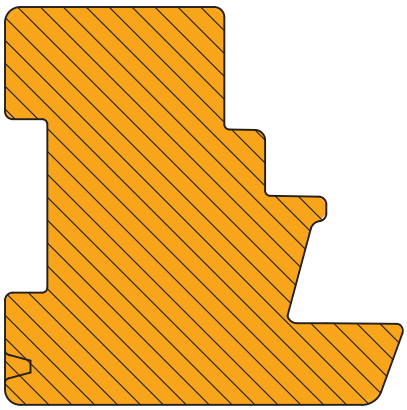
Technical information:
HW solid. Pre cutting working step follows the contour of the subsequent profile.

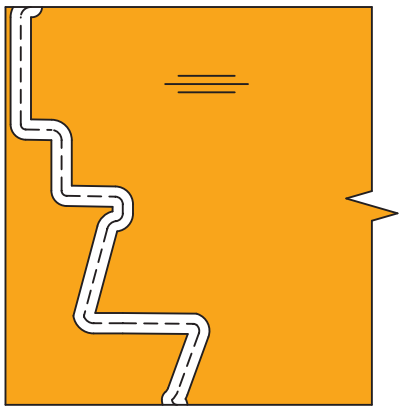
HW solid, Z 2
WO 531-2

D mm	GL mm	NL mm	S mm	Z	DRI	ID
6	77	5	6x40	2	RL	**039160** ●

RPM: n = 18000 - 24000 min^{-1}

Example:
Pre cutting on the longitudinal wood with the Kolibri profile cutter before counter profiling.





5

HW

Profile cutterhead - radii/bevel profile

Application:
For rounding workpieces with different radii or 45° bevelling.

Machine:
Overhead routers with/without CNC control, special routers with spindles to mount shank tools.

Workpiece material:
Softwood and hardwood, chipboard and fibre materials (MDF, HF etc.), uncoated, plastic coated, veneered etc., gluelam (plywood etc.), duromers, plastomers, mineral materials (Corian, Varicor etc.).

Technical information:
Multi purpose use on top or bottom of workpiece up to HD approx. 35 mm. Suitable for cutting narrow internal radii on workpieces. One tool body can be used for radii from 2 to 5 mm and 45° bevels.

Cutterhead with cutterset/radii profiles
AG 740-2

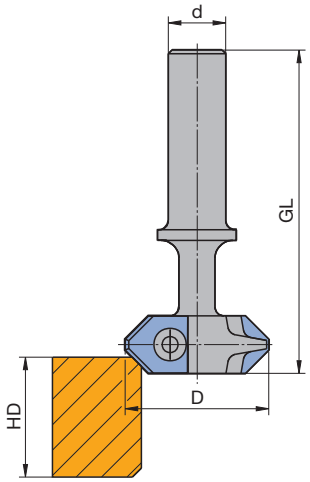
Tool Type	D mm	S mm	Z	ID
1 tool body + 2 pcs. R2, R3, R4, R5 knives each in wooden box	40	16x60	2	**043105** ●

Spare knives:

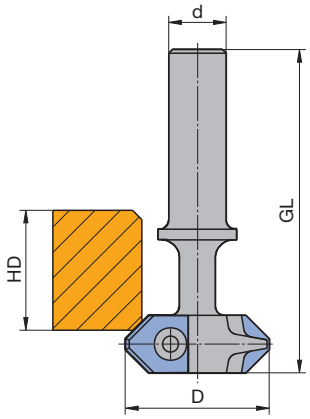
BEZ	ABM mm	QAL	R mm	FAW	ID
Profile knife	16x17,5x2	HW	2,0		**005132** ●
Profile knife	16x17,5x2	HW	3,0		**005133** ●
Profile knife	16x17,5x2	HW	4,0		**005134** ●
Profile knife	16x17,5x2	HW	5,0		**005135** ●
Profile knife	16x17,5x2	HW		45°	**009525** ●

Spare parts:

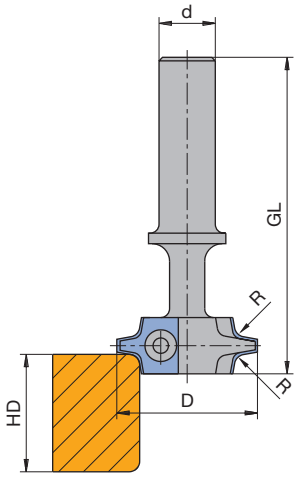
BEZ	ABM mm	ID
Oval head screw Torx® 15	M4x6	**006225** ●
Torx® key	Torx® 15	**005457** ●



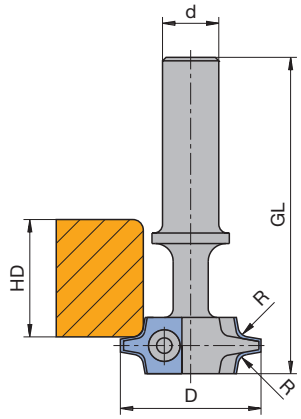
Bevel on the top side of the workpiece



Bevel on the bottom side of the workpiece

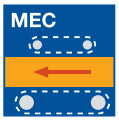


Radius on the top side of the workpiece

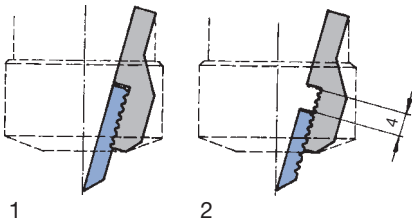


Radius on the bottom side of the workpiece

● available ex stock
□ available at short notice
Instruction manual visit www.leitz.org

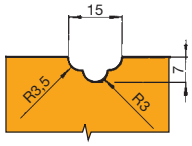


HW

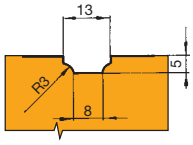


1 2

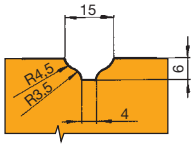
1 = Knife as new
2 = Maximum adjustment of resharpened knife



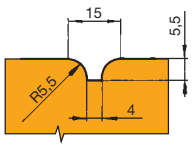
P1



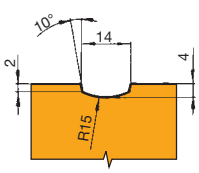
P2



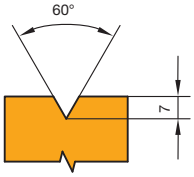
P3



P4



P5



P6

Profiles

Multi purpose profile cutterhead, Z 1

Application:
For cutting decorative grooves and internal profiles.

Machine:
Overhead routers with/without CNC control, special routers with spindles to mount shank tools.

Workpiece material:
Softwood and hardwood, chipboard and fibre materials (MDF, HF etc.), uncoated, plastic coated, veneered etc., gluelam (plywood etc.).

Technical information:
Cutterhead with resharpenable profile knife. Form fit, play free knife mounting by precise serration. Different profiles in one tool body. Special profiles can be ground into the blank knife on request and available with DP tipping for long performance time in wood derived materials.

For profiles, Z 1, cutting in end grain
WP 500-1

D mm	GL mm	S mm	Z	ID
15	88,5	16x50	1	**042930** ●
15	98,5	25x60	1	**042931** ●

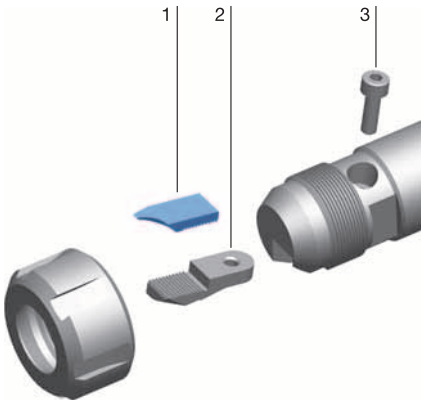
Sales unit consisting of cutterhead with clamping wedge and nut but without HW knife blank.

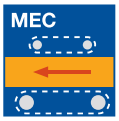
Spare knives:

Part-no.	BEZ	P	ABM mm	QAL	ID
1	Profile knife	1	20,7x9x3	HW	**006945** ●
1	Profile knife	2	20,7x9x3	HW	**006946** ●
1	Profile knife	3	20,7x9x3	HW	**006947** ●
1	Profile knife	4	20,7x9x3	HW	**006948** ●
1	Profile knife	5	20,7x9x3	HW	**006949** ●
1	Profile knife	6 (V-Nut 60°)	20,7x9x3	HW	**006950** ●
1	Serrated blank		9x21,7x3	HW	**007490** ●

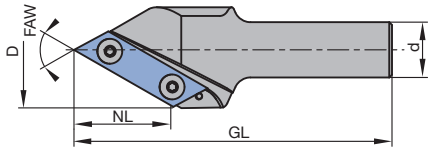
Spare parts:

Part-no.	BEZ	ABM mm	ID
2	Clamping wedge with serration	9x27,4x7	**009584** ●
3	Cylindrical screw with ISK	M4x16	**005847** ●
	Sickle spanner	34/36	**005498** ●
	Allen Key	SW 3	**005433** ●

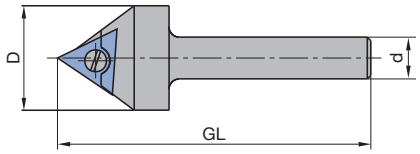




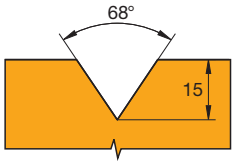
HW



V groove cutter



V groove cutter 68° (ID **042932**)



V groove cutter in turnblade design with point 68° (ID **042932**)

Multi purpose profile cutterhead, Z 1

Application:
Suitable for V grooving profiles and for multi purpose finish cutting (decorative groove, 90° corner etc.).

Machine:
Overhead routers with/without CNC control, special routers with spindles to mount shank tools.

Workpiece material:
Softwood and hardwood, chipboard and fibre materials (MDF, HF etc.), uncoated, plastic coated, veneered etc., gluelam (plywood etc.).

Technical information:
Cutterhead with exchangeable turnblades. 2 or 3 (ID **042932**) performance times through turning the knife.

Cutting in end grain, Z 1
WL 300-2

D mm	GL mm	NL mm	S mm	FAW	Z	P	DRI	ID	
30	90	15	12x40	68°	1	1	RL	**042932**	●
35	125	42	20x50	45°	1	2	RL	**042933**	●
42	115	35	20x50	60°	1	3	RL	**042934**	●
54	100	27	20x50	90°	1	4	RL	**042935**	●
54	100	27	20x50	91°	1	5	RL	**042936**	●

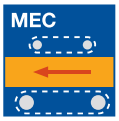
Spare knives:

BEZ	ABM mm	P	QAL	ID	
Turnblade knife triangular	19x19x2	1	HW	**009528**	●
Turnblade knife	59x12x1,5	2	HW	**602503**	●
Turnblade knife	49x12x1,5	3	HW	**602502**	●
Turnblade knife	39x12x1,5	4, 5	HW	**602501**	●

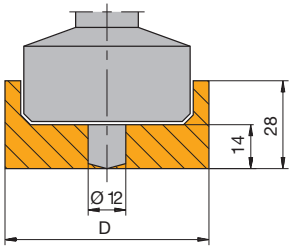
Spare parts:

BEZ	ABM mm	P	ID	
Countersink screw	M5x5	1	**007381**	●
Screw	M4x5	2 - 5	**007038**	●
Torx® key	Torx® 15	2 - 5	**005457**	●

● available ex stock
□ available at short notice
Instruction manual visit www.leitz.org



HW



Profile area

Multi purpose profile cutterhead, Z 2

Application:
For cutting decorative grooves, internal profiles and combined external and internal profiles.

Machine:
Overhead routers with/without CNC control, special routers with spindles to mount shank tools.

Workpiece material:
Softwood and hardwood, chipboard and fibre materials (MDF, HF etc.), uncoated, plastic coated, veneered etc., gluelam (plywood etc.).

Technical information:
Cutterhead with profiled throwaway knives. One knife with centre cutting design. Knives with shear angle. Different profiles possible in one tool body. Special profiles ground into blank knives and backing plates on request. Use cutterhead WP 500-1 for smaller decorative groove profiles (d < 15 mm).

For profiles, Z 2, cutting in end grain
WG 502-2-01

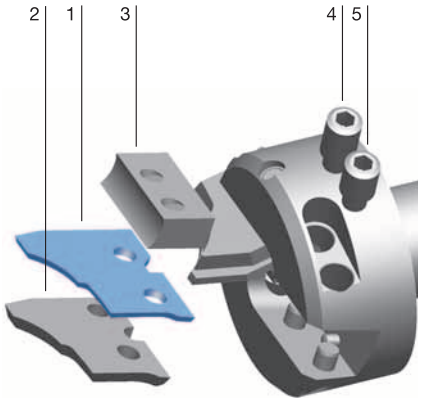
D mm	GL mm	SB mm	S mm	Z	DRI	ID	
65	95	14 - 28	16x50	2	RL	**042872**	●
65	95	14 - 28	20x50	2	RL	**042873**	●
65	105	14 - 28	25x60	2	RL	**042870**	●

Sales unit consisting of cutterhead with clamping wedge but without profiled HW knives and backing plates. Tip with 1 replaceable profile knife and backing plate each, version A and 1 replaceable profile knife and backing plate each, version B.

Minimum order quantity:
Replaceable profile knife: 6 pcs. each A and B
Backing plates: 1 pc. each A and B
Profile examples see below.

Spare parts:

Part-no.	BEZ	ABM mm	QAL	ID	
1	Blank knife	35,5x30,5x2	HW	**007488**	●
1	Blank knife	35,5x30,5x2	HW	**007489**	●
2	Backing plate A	34x28x4		**007923**	●
2	Backing plate B	34x28x4		**007924**	●
3	Clamping wedge	25x15x8		**009969**	●
4	Allen screw	M8x16		**006042**	●
5	Allen screw	M8x14		**006073**	●
	Allen Key	SW 4		**005445**	●

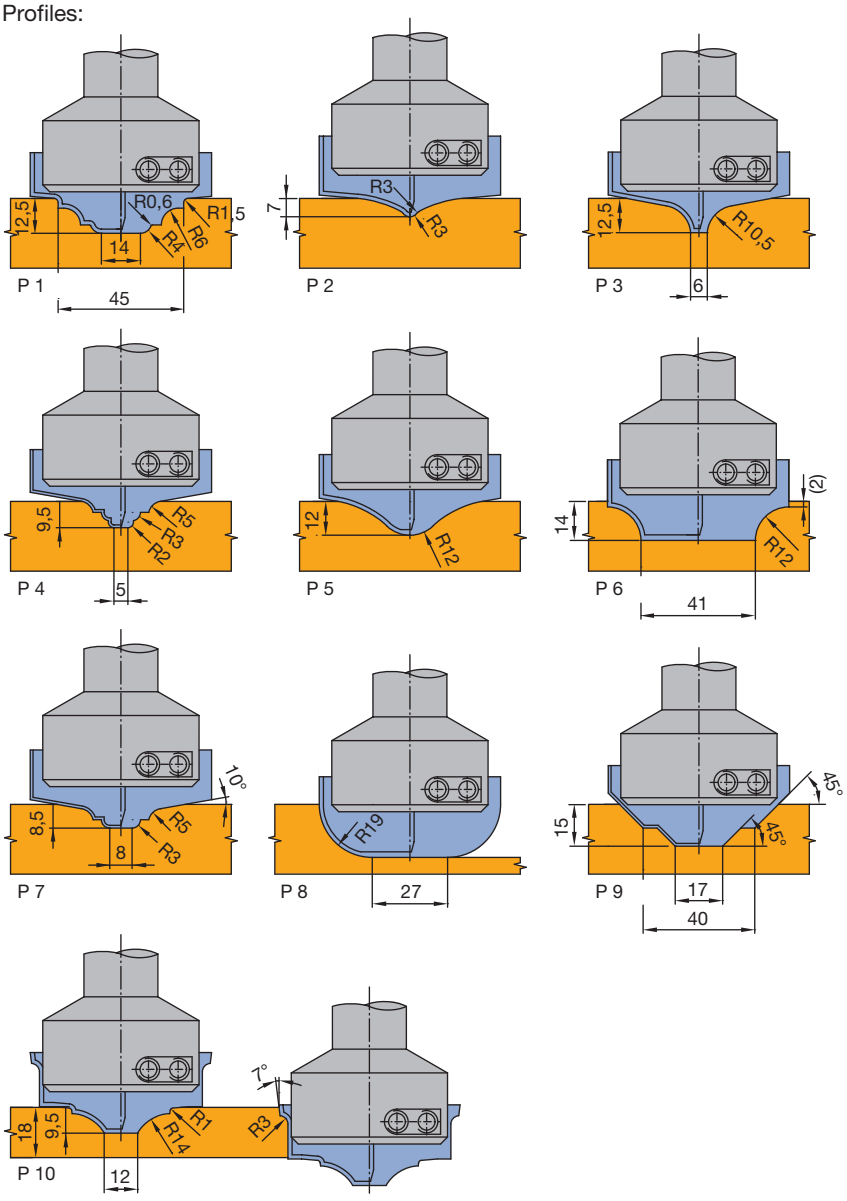


Sets of profile knives and backing plates
AT 103-0

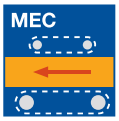
P	ID Profile cutter-set	ID Set of backing plates
1	**692000** □	**692200** □
2	**692001** □	**692201** □
3	**692002** □	**692202** □
4	**692003** □	**692203** □
5	**692004** □	**692204** □
6	**692005** □	**692205** □
7	**692006** □	**692206** □
8	**692007** □	**692207** □
9	**692008** □	**692208** □
10	**692009** □	**692209** □

Set of profile knives consisting of 1 profile knife design A and B each.
Set of backing plates consisting of 1 backing plate design A and B each.
Minimum order quantity: set of profile knives: 6 pcs., set of backing plates: 1 pc.

Profiles:



● available ex stock
□ available at short notice
Instruction manual visit www.leitz.org



HS

Carving bit

Application:
Router cutter for carving copy shaping with large chip removal.

Machine:
Carving machines, portable routers.

Workpiece material:
Softwood and hardwood.

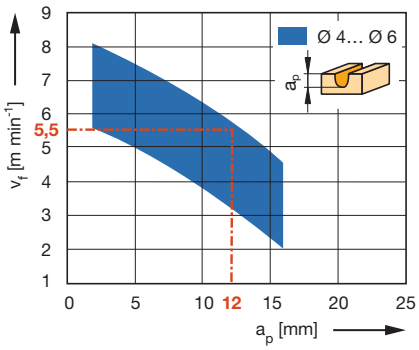
Technical information:
Cutting on end and on periphery, large resharpening area. Low feed forces from spiral cutting edges.

HS solid, Z 1, Z 2
WO 590-2-01, WO 590-2-02

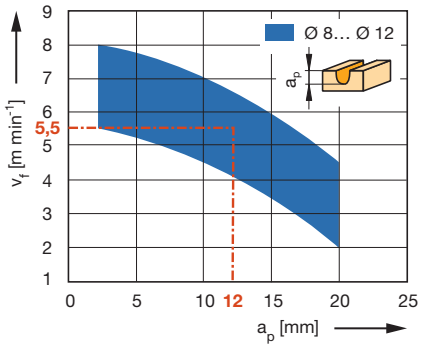
D mm	GL mm	S mm	Z	ID LL		ID RL	
2	82	9x50	1	**039130**	●	**039131**	●
3	82	9x50	1	**039132**	●	**039133**	●
4	82	9x50	2	**039040**	●	**039041**	●
5	86	9x50	2	**039042**	●	**039043**	●
6	86	9x50	2	**039044**	●	**039045**	●
8	90	9x50	2	**039046**	●	**039047**	●
10	90	9x50	2	**039048**	●	**039049**	●
12	90	9x50	2	**039050**	●	**039051**	●
15	95	9x50	2	**039052**	●	**039053**	●
18	95	9x50	2	**039054**	●	**039055**	●
22	95	9x50	2	**039056**	●	**039057**	●
24	95	9x50	2	**039058**	●	**039059**	●

RPM: n = 12000 - 24000 min^{-1}

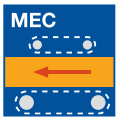
Feed speed v_f depending on grooving depth a_p



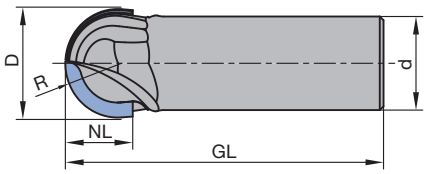
Workpiece material: Softwood
Working step: Copy shaping
Speed: n = 18000 rpm
Correction factor for v_f: Hardwood 0.8



Workpiece material: Softwood
Working step: Copy shaping
Speed: n = 18000 rpm
Correction factor for v_f: Hardwood 0.8



DP



Router cutter - Profile Diamaster PDM

Application:
Routers to cut radius profiles in panels for furniture and interior construction.

Machine:
Overhead routers with/without CNC control, machining centres, special routers with spindles to mount shank tools.

Workpiece material:
Chipboard and fibre materials (MDF, HF, etc.), uncoated, plastic coated, veneered, etc.

Technical information:
DP profile edges with shear angles. 3 to 5 times resharpenable for normal wear.

DP, Z 2
WO 531-2-51

D mm	GL mm	NL mm	S mm	R mm	DRI	ID
20	75	12	20x55	10	RL	**191035**
20	80	12	25x60	10	RL	**191036**
30	80	18	20x55	15	RL	**191037**
30	85	18	25x60	15	RL	**191038**
40	95	24	20x55	20	RL	**191039**
40	95	24	25x60	20	RL	**191040**

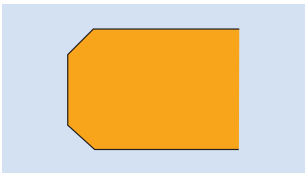
RPM: n = 18000 - 24000 min^{-1}

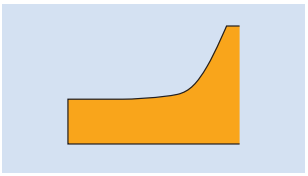
More profiles on request.

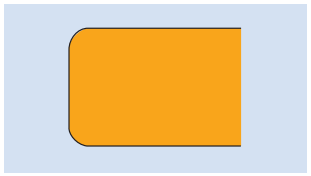
Example:
MDF wall covering

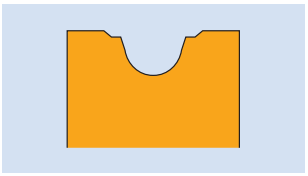
● available ex stock
□ available at short notice
Instruction manual visit www.leitz.org

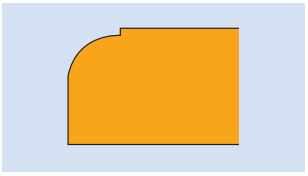
Working step/Application	Profiling.
Workpiece material (recommended cutting material)	Soft and hardwood (HS, HW). Chipboard and fibre materials (MDF, HF, etc.), uncoated, with plastic coating, with veneer, etc. (HW, DP). Plywood (HW, DP). Duro-plastics (HW, DP). Plastomers (HW, HS, DP). Polymer plastics – Corian, Varicor, etc. – (HW, DP). Laminated materials – HPL, Trespa, etc. – (HW, DP). Non-ferrous metal – Aluminium, copper, etc. – (HS, HW, DP).
Machine	Routers with/without CNC. Special machines with spindles for shank tools.
Operation	With and against feed, limited chip removal.
Technical features	Profile shank cutters can be produced for the following profiles:

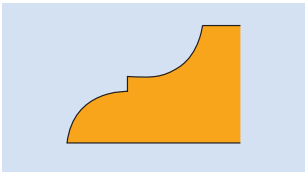

Bevelling

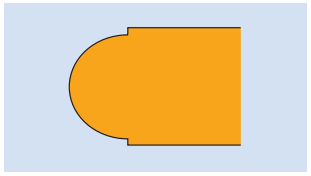

Panel raising


Edges with radii

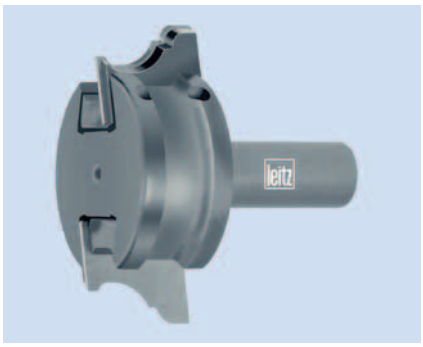

Decorative grooves


Quarter round


Other special profiles

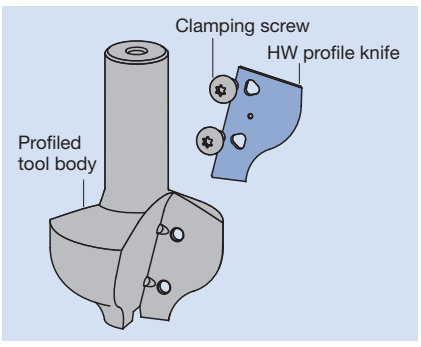

Half round

VariForm
Profile cutterhead with shank for blank knives on profiled tool body or blank knives with backing plates

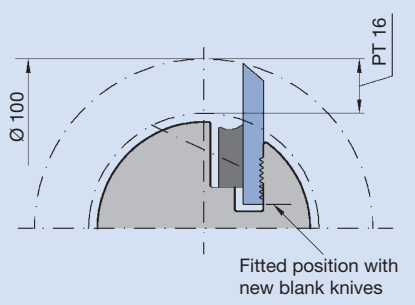


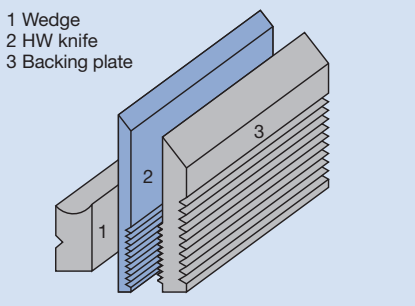
VariForm profile cutterhead with blank knives and backing plates.
Profiling of the knives, backing plates and tool body by Leitz service.

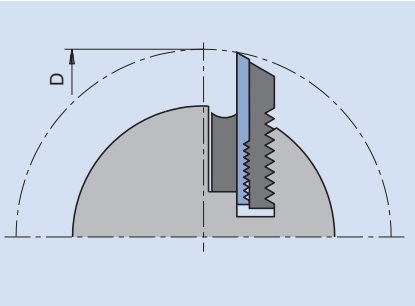
VariForm profile cutterhead with profiled tool body.



Profile cutterhead with shank for serrated back blank knives



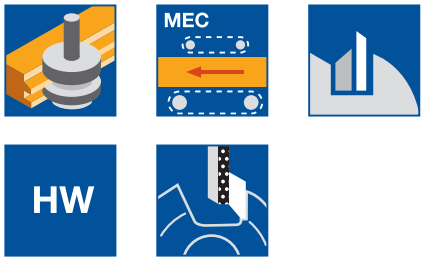


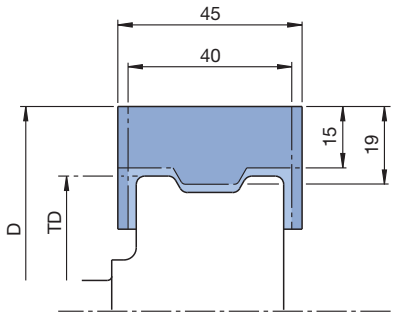


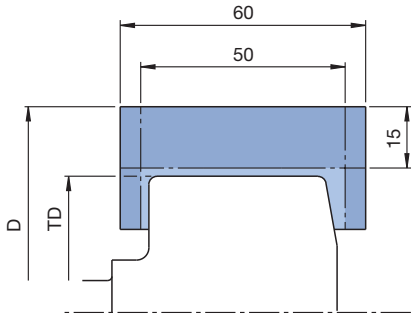
Existing profile cutterheads can use the Micro-system set.

Tipped profile shank cutter

Tipped profile shank cutters can be supplied in various designs.
Available with HS, HW and DP cutting materials and produced to customer requirements.
Designs with Z1 – Z5, with or without shear angle, Z1/1 – Z3/3 with alternate shear angles and with or without plunging tip.
Further information available from your nearest Leitz subsidiary or agency.







Profile area

Profile cutterhead VariForm with backing plates

Application:
For cutting different profiles. Profile can be changed by replacing profile knives and backing plates.

Machine:
Overhead routers with/without CNC control, special routers with spindles to mount shank tools.

Workpiece material:
Softwood and hardwood (HW-30F), chipboard and fibre materials (MDF, HF etc.), uncoated, plastic coated, veneered etc., gluelam (plywood etc.) (HW-10F).

Technical information:
Three point knife clamping for high precision and safety. Economic, resharpenable 3 to 4 times. Modular system: use the same profile knives in different tool bodies on different machines.

Tool body, mech. feed, Z 2
TU 531-2

D mm	TD mm	SB mm	S mm	$PT_{max.}$ mm	DRI	ID
110	76	40/45	25x60	15	RL	**135400** ●
110	76	50/60	25x60	15	RL	**135401** ●

RPM: n max. = 12000 min^{-1}

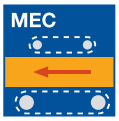
With clamping wedges, but without backing plates and knives.

Spare knives:

BEZ	H mm	SB mm	$PT_{max.}$ mm	ID HW-10F	ID HW-30F
Blank knife VariForm	40	40	15	**636227** ●	**636240** ●
Blank knife VariForm	40	45	15	**636231** ●	**636244** ●
Blank knife VariForm	40	50	15	**636284** ●	**636272** ●
Blank knife VariForm	40	60	15	**636288** ●	**636276** ●

Spare parts:

Tool Type	ABM mm	H mm	for SB mm	$PT_{max.}$ mm	ID
Backing plate	for knives 40x40x2.1	40	40	15	**645000** ●
Backing plate	for knives 45x40x2.1	40	45	15	**645001** ●
Backing plate	for knives 50x40x2.1	40	50	15	**645002** ●
Backing plate	for knives 60x40x2.1	40	60	15	**645003** ●
Clamping wedge	36x13,5x26		40/45		**009761** ●
Clamping wedge	44x13,5x26		50/60		**009762** ●
Allen screw	M10x12				**006044** ●
Key	SW 5, L100				**117506** ●



HS ST HW

Recommendation of cutting material:

	HS	ST	HW	HW
				M-Syst.
Softwood	♦	♦		
Hardwood		◇	♦	♦
Gluelam			◇	♦
Chipboard				♦
MDF				◇
Mineral materials				◇
HPL				◇

♦ suitable
◇ conditionally suitable

Profile cutterhead for serrated back blank knives

Application:
For cutting different profiles.

Machine:
Overhead routers with/without CNC control, special routers with spindles to mount shank tools.

Workpiece material:
Softwood and hardwood, chipboard and fibre materials (MDF, HF etc.), uncoated, plastic coated, veneered etc., gluelam (plywood etc.).

Technical information:
High precision knife clamping through serrated back knives. Wide range of different cutting materials to suit the workpiece material.

Z 2
WP 510-2-01

D mm	TD mm	SB mm	GL mm	S mm	Z	DRI	$n_{max.}$ min^{-1}	ID	
100	63	40	100	25x60	2	RL	12000	**042890**	●

Sales unit consisting of cutterhead and clamping system, but without knives.

Blank knives with thickness 6 mm
TC 110-0

SB mm	H mm	DIK mm	ID HS		ID HW		ID ST	
40	41,5	6	**007327**	●	**007486**	●	**007763**	●

Spare parts:

BEZ	BEM	ABM mm	ID	
Clamping wedge	for standard blanks	39x18,5x7,2	**009970**	●
Allen screw		M8x14	**006073**	●
Allen Key		SW 4, L 71	**005468**	●

Blank knives with micro serration
TC 110-0-15

BEZ	SB mm	DIK mm	QAL	ID	
Backing plate	40	6		**008181**	●
Blank knife	40	2,5	HW	**009423**	●

Micro serrated knives and backing plates can only be used in WP 510-2-01 cutterheads if the MS clamping wedge is used.

Spare parts:

BEZ	BEM	ABM mm	ID	
Clamping wedge MS	for micro serrated knives	39x18x6	**009771**	●
Allen screw		M8x14	**006073**	●
Allen Key		SW 4, L 71	**005468**	●

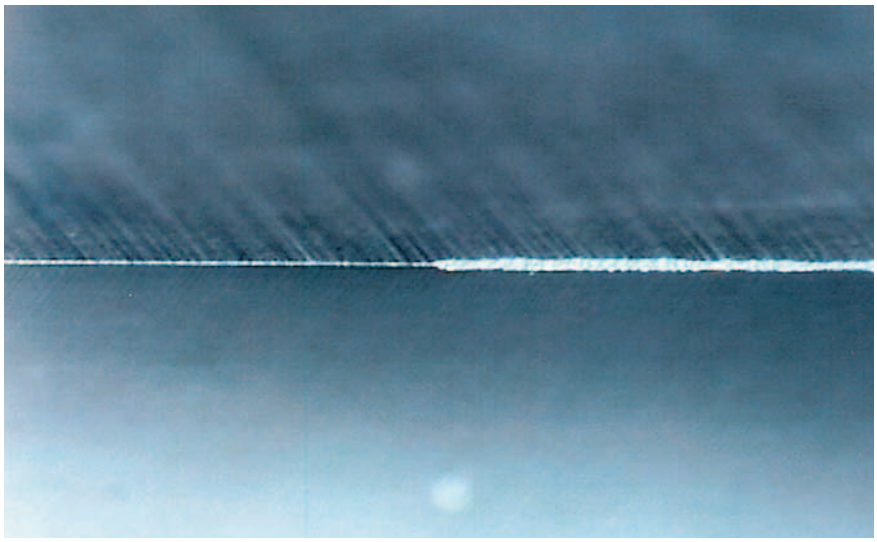
● available ex stock
□ available at short notice
Instruction manual visit www.leitz.org

Problem	Possible cause	Action
Chatter marks **Loud cutting noise**	– Cutting volume too high	Adjust feed speed and RPM for cutting depth to the chart on the product page. If necessary, machine the cutting depth in 2 steps or precut with roughing router cutter.
	– Incorrectly adjusted tool dimensions	Use a more solid tool with largest possible shank and tool diameters and short working length. Select tool with staggered or spiral cutting edges.
	– Vibrations of the tool spindle system	Note minimum shank clamping length. $l_{e\ min}$ = 2 x shank diameter 0. Do not machine with long or secondary chucks. Use short chunks (PM 320-0-53) or shrink clamping devices. Check and, if necessary, repair machine guides and motor bearings.
	– Insufficient clamping of workpiece	Increase vacuum clamping. Clamp waste. Improve workpiece clamping by mechanical clamping, friction or fastening with screws.
Marks on the workpiece from tools with staggered cutting edges **Note:** Tools with staggered cutting edges cannot produce surfaces free of marks due to minor tolerances in concentricity. In MDF and solid wood, concentricity inaccuracies of 0.03 mm are visible.	– Errors in concentric running of clamping chuck, motor spindle or tool	To identify cause, turn tool 90° in the chuck and cut again: A change in the marks on the workpiece point to chuck error. Most accurate concentricity is achieved using hydro chucks or shrink chucks. Constant cutter marks point to a defective tool which should be repaired or exchanged.
	– Unstable spindle bearing	Select short chucks. Do not use extension pieces.
Tool breakage of shank cutters	– Cutting depth or feed speed too high	Adjust application data to chart on the product page.
	– Wrong tool clamping	Note minimum shank clamping length. $l_{e\ min}$ = 2 x shank diameter. Do not machine with long or extension chunks. Use short chucks (PM 320-0-53) or shrink-clamping chucks.
	– Incorrectly adjusted tool dimensions	Use a more solid tool with the largest possible shank and tool diameters and shortest working length. Select tool with staggered or spiral cutting edges.
	– Inadequate tool clamping (critical with solid HW tools)	Check chuck clamping area for burrs or dirt.
	– Damage from loose waste pieces	Clamp waste pieces. Hog small pieces when shaping.
	– Machine vibrations	Check machine guide and motor bearings. Check balance of clamping chuck.
Cutting edge breakages on DP (DIA) router bits	– Vibrations of tool spindle	Check balance of clamping chuck and concentric running.
	– Vibrations at the workpiece due to insufficient support	Clamp tool as close as possible to the profile. Make vacuum clamping areas as large as possible. Clamp waste pieces.

Continuous wear of cutting edges
Mechanical abrasion causes continuous wear of the cutting edge when machining largely uniform materials.

The degree of permissible wear is determined by the required machined quality. As a standard the width of wear VB of 0.2 up to max. 0.3 mm should not be exceeded.

Tipped tools must be resharpened in good time to ensure the economic efficiency of the tool.

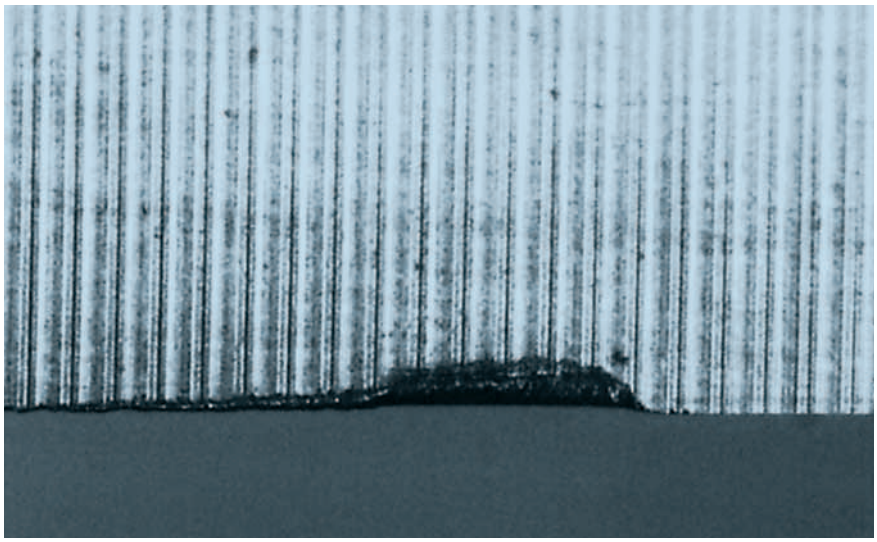


Normal cutting edge wear after machining of spruce.

Local cutting edge wear
Irregular cutting edge wear is caused when machining non uniform panel materials (e. g. coated chipboard or laminate floors).

The highest abrasion occurs in the area of more densely pressed surface layers with higher sand content. This local abrasion defines the quality of the machined edge and determines the end of the tool life.

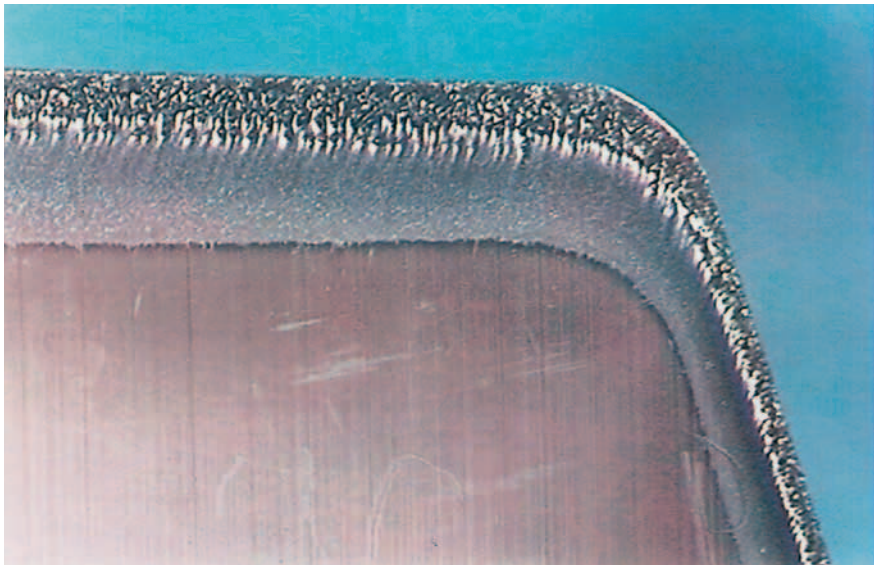
If the machining situation allows axial adjustment tool, a sharp section of cutting edge can be used to machine the edge, increasing the tool performance time.



Cutting edge wear after machining chipboard.

Chemical abrasion
When machining materials with a high tannic acid content (e. g. oak) the cutting edge is subject to chemical abrasion in addition to mechanical abrasion.

The cobalt binder material in the tungsten carbide is etched away, through chemical abrasion damaging the cutting material.



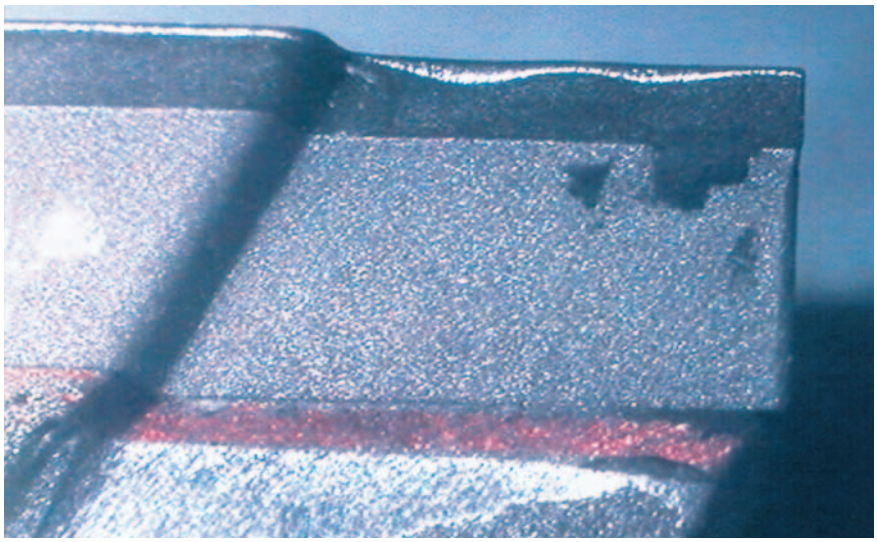
Chemical influence – cutting edge wear – after machining of oak.

Cutting edge wear
Mechanical abrasion causes continuous wear of the cutting edge when machining largely uniform materials.

The degree of the permissible wear is determined by the required machined quality. As a standard the width of wear VB of 0.2 up to max. 0.3 mm should not be exceeded.

Because of the long performance time, resin can build up on cutting edges.

Performance time can be increased by regular cleaning.

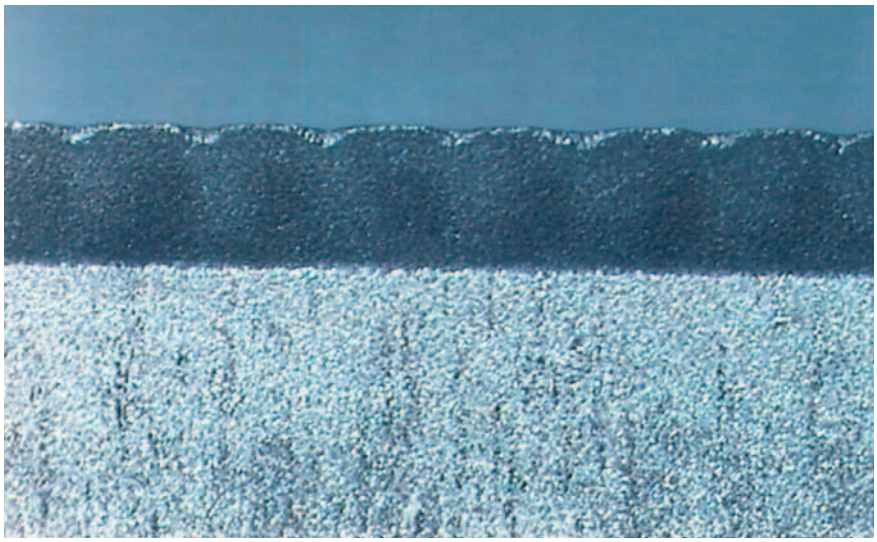


Cutting edge wear after machining GFK.

Cutting edge wear and small fractures
When machining some wood derived and composite materials the cutting edge is damaged by small fractures as well as the usual wear.

This is usually caused by hard mineral particles in the workpiece material.

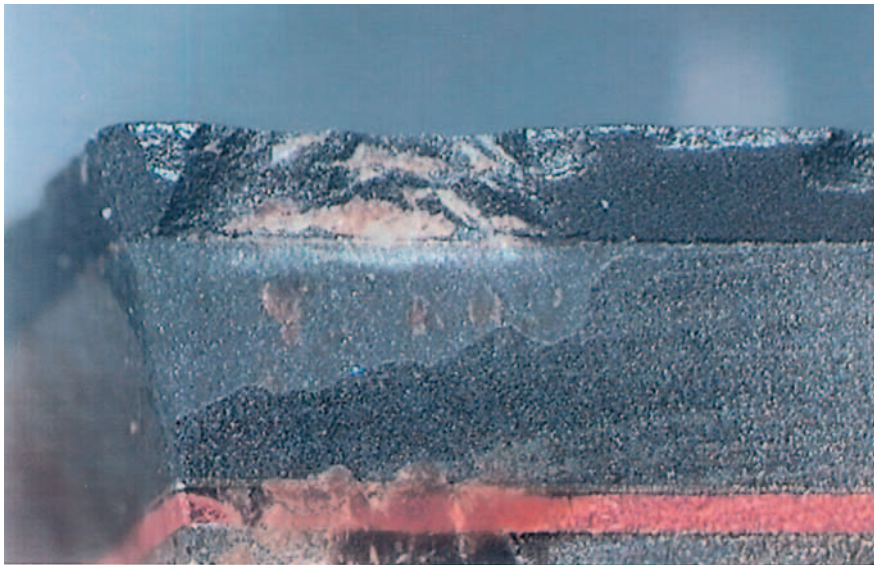
Fractures at the cutting edge can also be caused by high frequency machine vibrations. Imbalanced tools and chucks, worn spindles or machining close to a resonant RPM may cause such vibrations.



Cutting edge wear and fractures after machining HPL/CPL.

Cutting edge destruction
The cutting edge can be destroyed when machining non uniform materials containing mineral or metallic particles.

These particles cannot be detected prior to machining and limit the use of DP tools for machining such materials.



Cutting edge destruction by metallic particles embedded in the workpiece.

Inquiry/order form special tools – routing

Customer details: Customer number: (if known) ☐☐☐☐☐☐☐☐

☐ Inquiry ☐ Order

Delivery date: (not binding) ☐☐ CW

Company:

Street:

Post code/place:

Country:

Phone/fax:

Contact person:

Signature:

Date:

Inquiry/order no.:

Tool ID: (if known)

Quantity:

Workpiece material:

Solid wood Type:

Wood-derived material Type:

Other Type:

Direction of machining for solid wood or veneered workpieces:

☐ along grain

☐ across grain

Type of coating:

Additional information:

Machine:

Manufacturer:

Range of RPM: min^{-1}

Adaptor
(e. g. SK 30, HSK-F 63 etc.):

Tool:

Tool type (see selection pages):

Dimensions:

Diameter: mm

Cutting width: mm

Shank diameter: mm

No. of teeth:

Cutting material:

☐ HS

☐ HW

☐ ST

☐ DP Type of feed:

☐ Mech. feed

☐ Manual feed

Direction of rotation:

☐ left hand

☐ right hand

State profile with sketch or drawing:

☐ Cutting on periphery only

☐ Cutting in end grain (ramp plunging possible)

☐ for plunging in z-axis

Arrangement of cutting edges:

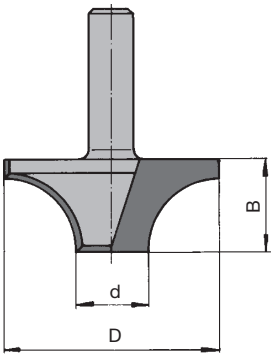
☐ with shear angle on one side

☐ with alternate shear angle

☐ Please tick the appropriate box

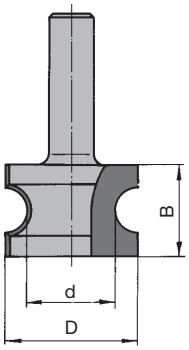
Examples for profile groups 1 and 2:

WO 521-1
open profile



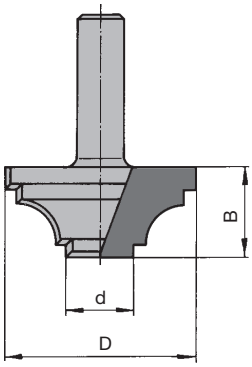
Profile group 1:
cutting on periphery
with bottom knife for
cutting in end grain

WO 522-1
closed profile



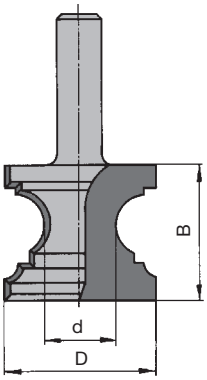
Profile group 1:
cutting on periphery

WO 521-2
open profile



Profile group 2:
cutting on periphery
with bottom knife for
cutting in end grain

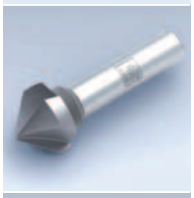
WO 522-2
closed profile



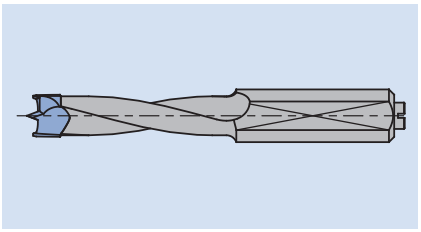
Profile group 2:
cutting on periphery
with bottom knife for
cutting in end grain

Sketch for application plan, profile drawing, special motor spindle etc.
Enter on sketch which side of workpiece to table i. e. face side on top/bottom

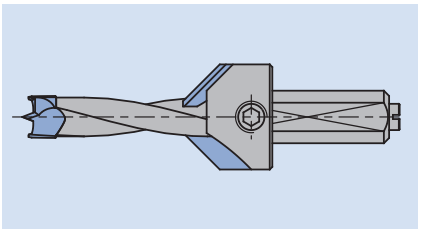
6. Drilling

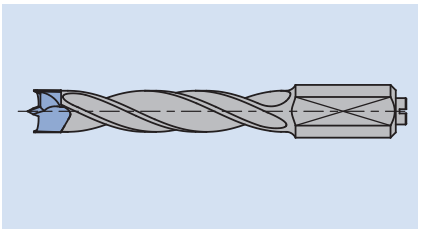


Application	To drill tear free dowel holes and blind holes.
Workpiece material	Soft and hardwood. Chipboard and fibre materials (chipboard, MDF, HF, etc.), without coating, with plastic coating, with veneer etc. Glulam (plywood, etc.). Thermoplastics.
Machine	Through feed boring machines, Point-to-point boring machines, Machining centres, Hinge boring machines, Special boring machines.
Design	Two dowel drill designs available:

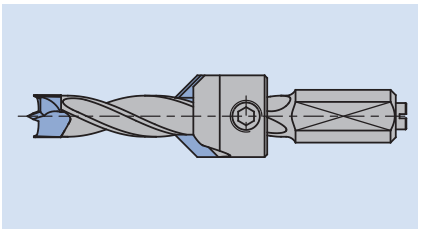


1. Design without heel
Optimised dowel drill for machining panels in the furniture industry. Minimum friction and feed forces as the flute has a smaller diameter. A loose countersink can be clamped on the shank.





2. Design with heel
Dowel drills with heel are used to bore holes in solid wood and for machines with insufficient guidance during the boring and return stroke. The drill has better guidance during the exit stroke to prevent tearouts at the edge of the hole as the drill leaves the workpiece. A loose countersink can be clamped on the flute allowing adjustment of the drilling and countersink depth.

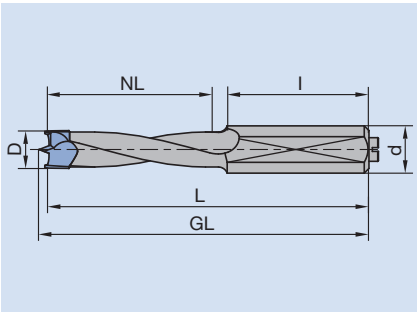


Shank	Dowel drills usually have a shank diameter d = 10 mm. Boring machines with only a small pitch between the boring spindles may use dowel drills with a shank diameter d = 8 mm. Additionally, it is possible to mount the dowel drills directly into the boring spindles with a threaded adaptor. Adaptors are available with different combinations of threads and either cylindrical or tapered seatings. Special shank dimensions available on request.

Technical features

The dimensions listed in the tool tables refer to the following tool parameters:

D	Hole diameter.
d	Shank diameter.
l	Shank length.
NL	Working length = possible boring depth.
GL	Total length of the boring bit including the projection of the centre-point.
L	Total length of the boring bit excluding the projection of the centre-point.

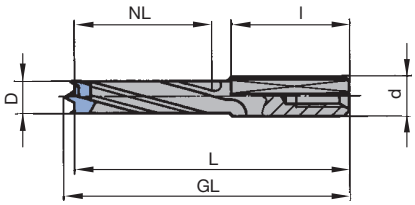


Application Data

RPM/feed speeds

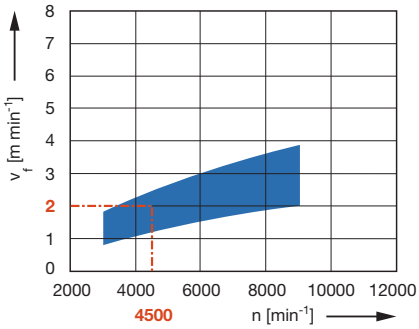
The optimum RPM and feed speeds are detailed in the diagrams attached to the tool tables. Identification of the rotation: RL – black; LL – red.


HW



Design with heel

Feed speed v_f depending on the spindle RPM n



Workpiece material:
Chipboard plastic coated
Working step:
Boring
Correction factor for v_f:
Veneered = 0.8
Paper coated = 0.8
MDF, solid wood = 0.7
Chipboard, untreated = 1.3

Shank 8 mm

Application:
For drilling blind holes, especially dowel holes in furniture. Suitable for machines with insufficient drill guidance.

Machine:
Point-to-point drilling machines, through feed drilling machines, CNC machining centres, hinge boring machines, multi spindle units.

Workpiece material:
Softwood and hardwood, chipboard and fibre materials (MDF, HF etc.), untreated, plastic coated, veneered etc., gluelam (plywood etc.).

Technical information:
Spur geometry with shear cut. Can be combined with loose countersink WB 701-0-03. Countersink fixed on flute. Continuously adjustable boring and countersink depth. Good guidance during return stroke for tear free hole edges.

GL 55.5 mm, with heel, Z 2 / V 2
WB 120-0-23

D mm	GL mm	L mm	NL mm	S mm	ID LL		ID RL	
4	55,5	54	30	8x19	**042550**	●	**042551**	●
5	55,5	54	30	8x19	**042552**	●	**042553**	●
6	55,5	54	30	8x19	**042554**	●	**042555**	●
8	55,5	53,5	30	8x19	**042558**	●	**042559**	●
10	55,5	53,5	30	8x21	**042562**	●	**042563**	●

RPM: n = 3000 - 9000 min^{-1}

GL 67 mm, with heel, Z 2 / V 2
WB 120-0-24

D mm	GL mm	L mm	NL mm	S mm	ID LL		ID RL	
5	67	65,5	40	8x19	**042568**	●	**042569**	●
6	67	65,5	40	8x19	**042570**	●	**042571**	●
7	67	65,5	40	8x19	**042572**	●	**042573**	●
8	67	65	40	8x19	**042574**	●	**042575**	●
10	67	65	40	8x21	**042578**	●	**042579**	●

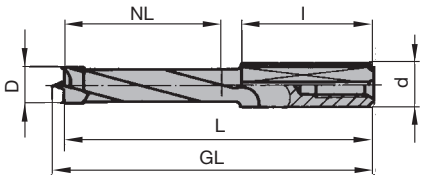
RPM: n = 3000 - 9000 min^{-1}

Spare parts:

BEZ	ABM mm	BEM	ID	
Allen screw	M5x10	Length adjustment	**005802**	●
Anti twist allen screw	M5x10	Length adjustment	**007438**	●

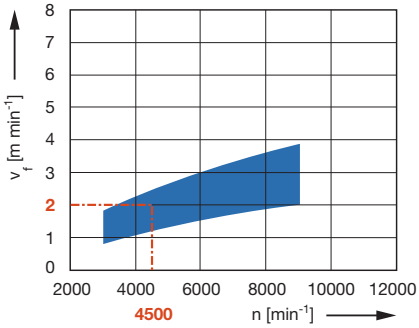
● available ex stock
□ available at short notice
Instruction manual visit www.leitz.org


HW



Design without heel

Feed speed v_f depending on the spindle RPM n



Workpiece material:
Chipboard plastic coated
Working step:
Boring
Correction factor for v_f:
Veneered = 0.8
Paper coated = 0.8
MDF, solid wood = 0.7
Chipboard, untreated = 1.3

Shank 10 mm

Application:
For drilling blind holes, especially dowel holes in furniture.

Machine:
Point-to-point drilling machines, through feed drilling machines, CNC machining centres, hinge boring machines, multi spindle units.

Workpiece material:
Softwood and hardwood, chipboard and fibre materials (MDF, HF etc.), untreated, plastic coated, veneered etc., gluelam (plywood etc.).

Technical information:
Spur geometry with shear cut. Flute with reduced diameter for minimum friction and feed force. Can be used with loose countersink WB 701-0-02. Countersinks are fixed on the shank.

GL 57.5 mm, without heel, Z 2 / V 2
WB 120-0-11, WB 120-0-12

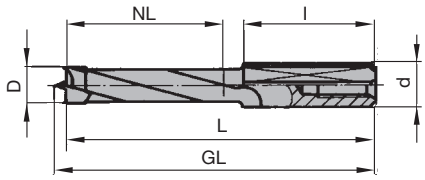
D mm	GL mm	L mm	NL mm	S mm	ID LL		ID RL	
3	57,5	56	16	10x34	**033610**	●	**033611**	●
3,18	57,5	56	25	10x27	**033700**	●	**033701**	●
4	57,5	56	25	10x27	**033670**	●	**033671**	●
4,5	57,5	56	25	10x27	**033710**	●	**033711**	●
5	57,5	56	25	10x27	**033672**	●	**033673**	●
5,1	57,5	56	25	10x27	**033674**	●	**033675**	●
5,2	57,5	56	25	10x27	**033676**	●	**033677**	●
6	57,5	56	25	10x27	**033678**	●	**033679**	●
7	57,5	56	25	10x27	**033680**	●	**033681**	●
8	57,5	55,5	25	10x27	**033682**	●	**033683**	●
8,2	57,5	55,5	25	10x27	**033686**	●	**033687**	●
9	57,5	55,5	25	10x27	**033688**	●	**033689**	●
10	57,5	55,5	25	10x27	**033690**	●	**033691**	●
12	57,5	55,5	30	10x22	**033692**	●	**033693**	●
14	57,5	55,5	30	10x22	**033694**	●	**033695**	●
15	57,5	55,5	30	10x22	**033696**	●	**033697**	●
16	57,5	55,5	30	10x22	**033698**	●	**033699**	●

RPM: n = 3000 - 9000 min^{-1}

Spare parts:

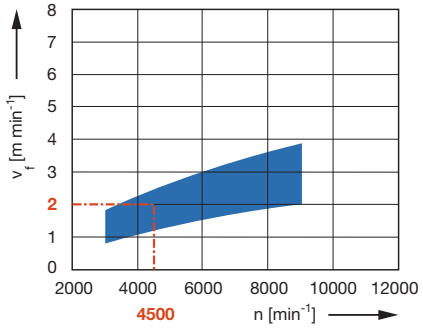
BEZ	ABM mm	BEM	ID	
Allen screw	M5x10	Length adjustment	**005802**	●
Anti twist allen screw	M5x10	Length adjustment	**007438**	●


HW



Design without heel

Feed speed v_f depending on the spindle RPM n



Workpiece material:
Chipboard plastic coated
Working step:
Boring
Correction factor for v_f:
Veneered = 0.8
Paper coated = 0.8
MDF, solid wood = 0.7
Chipboard, untreated = 1.3

Shank 10 mm

Application:
For drilling blind holes, especially dowel holes in furniture.

Machine:
Point-to-point drilling machines, through feed drilling machines, CNC machining centres, hinge boring machines, multi spindle units.

Workpiece material:
Softwood and hardwood, chipboard and fibre materials (MDF, HF etc.), untreated, plastic coated, veneered etc., gluelam (plywood etc.).

Technical information:
Spur geometry with shear cut. Flute with reduced diameter for minimum friction and feed force. Can be used with loose countersink WB 701-0-02. Countersinks are fixed on the shank.

GL 70 mm, without heel, Z 2 / V 2
WB 120-0-10

D mm	GL mm	L mm	NL mm	S mm	ID LL	ID RL
3	70	68,5	16	10x45	**042596** ●	**042597** ●
4	70	68,5	35	10x30	**033476** ●	**033477** ●
5	70	68,5	35	10x30	**033440** ●	**033441** ●
6	70	68,5	35	10x30	**033442** ●	**033443** ●
7	70	68,5	35	10x30	**033444** ●	**033445** ●
8	70	68	35	10x30	**033446** ●	**033447** ●
9	70	68	35	10x30	**033478** ●	**033479** ●
10	70	68	35	10x30	**033448** ●	**033449** ●
11	70	68	35	10x30	**033480** ●	**033481** ●
12	70	68	35	10x30	**033450** ●	**033451** ●
13	70	68	35	10x30	**033452** ●	**033453** ●
14	70	68	35	10x30	**033454** ●	**033455** ●
16	70	67,5	35	10x30	**033456** ●	**033457** ●

RPM: n = 3000 - 9000 min^{-1}

GL 77 mm, without heel, Z 2 / V 2
WB 120-0-07

D mm	GL mm	L mm	NL mm	S mm	ID LL	ID RL
5	78,5	77	45	10x30	**033370** ●	**033371** ●
6	78,5	77	45	10x30	**033372** ●	**033373** ●
7	78,5	77	45	10x30	**033374** ●	**033375** ●
8	78,5	77	45	10x30	**033376** ●	**033377** ●
10	79	77	45	10x30	**033378** ●	**033379** ●
12	79	77	45	10x30	**033380** ●	**033381** ●

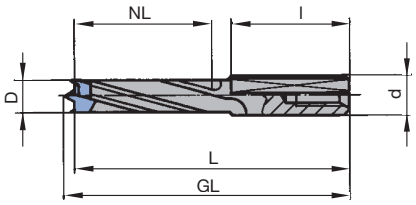
RPM: n = 3000 - 9000 min^{-1}

Spare parts:

BEZ	ABM mm	BEM	ID
Allen screw	M5x10	Length adjustment	**005802** ●
Anti twist allen screw	M5x10	Length adjustment	**007438** ●

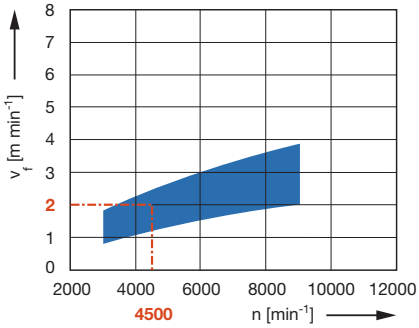
● available ex stock
□ available at short notice
Instruction manual visit www.leitz.org

HW



Design with heel

Feed speed v_f depending on the spindle RPM n



Workpiece material:
Chipboard plastic coated
Working step:
Boring
Correction factor for v_f:
Veneered = 0.8
Paper coated = 0.8
MDF, solid wood = 0.7
Chipboard, untreated = 1.3

Shank 10 mm

Application:
For drilling blind holes, especially dowel holes in furniture. Suitable for machines with insufficient drill guidance.

Machine:
Point-to-point drilling machines, through feed drilling machines, CNC machining centres, hinge boring machines, multi spindle units.

Workpiece material:
Softwood and hardwood, chipboard and fibre materials (MDF, HF etc.), untreated, plastic coated, veneered etc., gluelam (plywood etc.).

Technical information:
Spur geometry with shear cut. Can be combined with loose countersink WB 701-0-03. Countersink fixed on flute. Continuously adjustable boring and countersink depth. Good return stroke guidance for tear free hole edges.

GL 70 mm, with heel, Z 2 / V 2
WB 120-0-26

D mm	GL mm	L mm	NL mm	S mm	ID LL	ID RL
5	70	68,5	43	10x19	**042586** ●	**042587** ●
6	70	68,5	43	10x19	**042588** ●	**042589** ●
8	70	68	43	10x19	**042590** ●	**042591** ●
10	70	68	43	10x19	**042592** ●	**042593** ●
12	70	68	43	10x19	**042594** ●	**042595** ●
25	70	68	40	10x25		**042610** ●

RPM: n = 3000 - 9000 min^{-1}

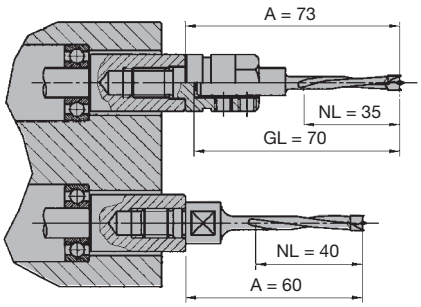
Note:
ID **042610** for holes in window manufacture.

Spare parts:

BEZ	ABM mm	BEM	ID
Allen screw	M5x10	Length adjustment	**005802** ●
Anti twist allen screw	M5x10	Length adjustment	**007438** ●

HW

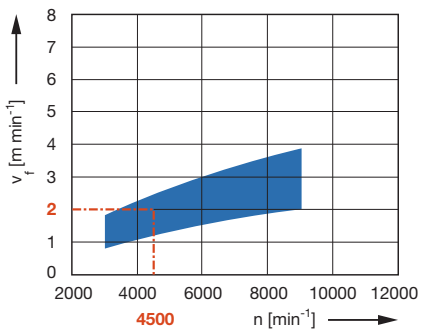
Boring bit mounted in reducing chucks



Boring bit with threaded shank mounted directly in the boring spindle

Length comparison: Dowel drills with threaded shank have a deeper boring depth than a comparable boring bit with cylindrical shank mounted in reducing chucks while having a lower overhang A with regard to the boring spindle.

Feed speed v_f depending on the spindle RPM n



Threaded shank

Application:
For drilling blind holes, especially dowel holes in furniture.

Machine:
Point-to-point drilling machines, through feed drilling machines, CNC machining centres, hinge boring machines, multi spindle units.

Workpiece material:
Softwood and hardwood, chipboard and fibre materials (MDF, HF etc.), untreated, plastic coated, veneered etc., gluelam (plywood etc.).

Technical information:
Spur geometry with shear cut. Flute with reduced diameter for minimum friction and feed force. Threaded shank for direct mounting in the drilling spindle.

M10, tapered seating 11 mm, without heel, Z 2 / V 2
WB 120-0-17

D mm	GL mm	NL mm	b mm	S mm	ID LL		ID RL	
5	75	40	60	M10, tapered seating 11 mm	**035200**	●	**035201**	●
8	75	40	60	M10, tapered seating 11 mm	**035204**	●	**035205**	●
12	75	40	60	M10, tapered seating 11 mm	**035208**	●	**035209**	●

RPM: n = 3000 - 9000 min^{-1}

M10, without tapered seating, without heel, Z 2 / V 2
WB 120-0-18

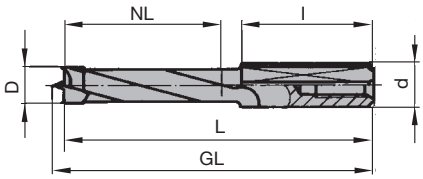
D mm	GL mm	NL mm	b mm	S mm	ID LL		ID RL	
5	78	43	63	M10, without tapered seating	**035260**	●	**035261**	●
8	78	43	63	M10, without tapered seating	**035264**	●	**035265**	●

RPM: n = 3000 - 9000 min^{-1}

Workpiece material:
Chipboard plastic coated
Working step:
Boring
Correction factor for v_f:
Veneered = 0.8
Paper coated = 0.8
MDF, solid wood = 0.7
Chipboard, untreated = 1.3

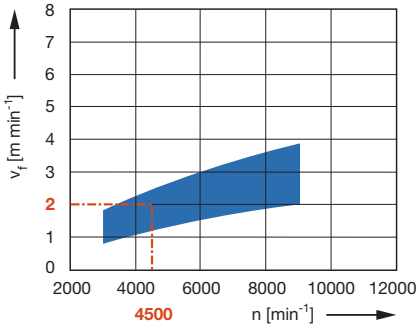
● available ex stock
□ available at short notice
Instruction manual visit www.leitz.org

HW



Design without heel

Feed speed v_f depending on the spindle RPM n



Workpiece material:
Chipboard plastic coated
Working step:
Boring
Correction factor for v_f:
Veneered = 0.8
Paper coated = 0.8
MDF, solid wood = 0.7

Shank 10 mm, HW tipped

Application:
For drilling blind holes, especially dowel holes in furniture. Suitable for drilling tear free blind holes in visible areas and for machining panel materials which are covered with difficult to machine coatings (e.g. thin decorative paper).

Machine:
Point-to-point drilling machines, through feed drilling machines, CNC machining centres, hinge boring machines, multi spindle units.

Workpiece material:
Softwood and hardwood, chipboard and fibre materials (MDF, HF etc.), untreated, plastic coated, veneered etc., gluelam (plywood etc.).

Technical information:
Spur geometry with high shear cut. High wear resistant tungsten carbide quality for maximum life time. Can be combined with loose countersink WB 701-0-02. Countersink fixed on flute. Flute with reduced diameter for minimum friction and feed forces.

GL 57.5 mm, Z 2 / V 2
WB 120-0-29

D mm	GL mm	L mm	NL mm	S mm	ID LL	ID RL
4	57,5	56	25	10x27	**033714** ●	**033715** ●
5	57,5	56	25	10x27	**033716** ●	**033717** ●
6	57,5	56	25	10x27	**033718** ●	**033719** ●
8	57,5	55,5	25	10x27	**033720** ●	**033721** ●
10	57,5	55,5	25	10x27	**033722** ●	**033723** ●

RPM: n = 3000 - 9000 min^{-1}

GL 70 mm, Z 2 / V 2
WB 120-0-30

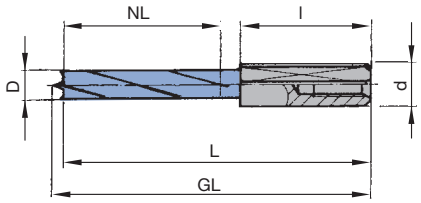
D mm	GL mm	L mm	NL mm	S mm	ID LL	ID RL
4	70	68,5	35	10x30	**033482** ●	**033483** ●
5	70	68,5	35	10x30	**033484** ●	**033485** ●
5,1	70	68,5	35	10x30	**033492** ●	**033493** ●
6	70	68,5	35	10x30	**033486** ●	**033487** ●
8	70	68,5	35	10x30	**033488** ●	**033489** ●
8,2	70	68,5	35	10x30	**033494** ●	**033495** ●
10	70	68,5	35	10x30	**033490** ●	**033491** ●

RPM: n = 3000 - 9000 min^{-1}

Spare parts:

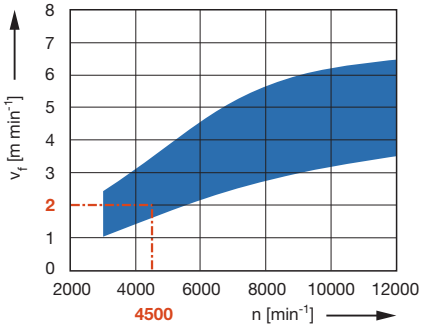
BEZ	ABM mm	BEM	ID
Allen screw	M5x10	Length adjustment	**005802** ●
Allen screw	M3x2,5	Locking device	**007889** ●
Anti twist allen screw	M5x10	Length adjustment	**007438** ●


HW



Design without heel

Feed speed v_f depending on the spindle RPM n



Workpiece material:
Chipboard plastic coated
Working step:
Boring
Correction factor for v_f:
Veneered = 0.8
Paper coated = 0.8
MDF, solid wood = 0.7
Chipboard, untreated = 1.3

Shank 10 mm, HW solid

Application:
For drilling blind holes, especially dowel holes in furniture. Suitable for drilling tear free blind holes in visible areas and for machining panel materials which are covered with difficult to machine coatings (e.g. thin decorative paper).

Machine:
Point-to-point drilling machines, through feed drilling machines, CNC machining centres, hinge boring machines, multi spindle units.

Workpiece material:
Softwood and hardwood, chipboard and fibre materials (MDF, HF etc.), untreated, plastic coated, veneered etc., gluelam (plywood etc.).

Technical information:
Spur geometry with high shear cut. Solid tungsten carbide design with high wear resistant tungsten carbide quality. High stability and long performance time. Polished gullet for minimum friction and feed forces.

GL 57.5 mm, Z 2 / V 2
WB 120-0-11, WB 120-0-32

D mm	GL mm	L mm	NL mm	S mm	ID LL		ID RL	
3	57,5	56	16	10x34	**033610**	●	**033611**	●
4	57,5	56	25	10x27	**033784**	●	**033785**	●
5	57,5	56	25	10x27	**033728**	●	**033729**	●
6	57,5	56	25	10x27	**033730**	●	**033731**	●
8	57,5	56	25	10x27	**033732**	●	**033733**	●
10	57,5	55,5	25	10x27	**033786**	●	**033787**	●

RPM: n = 3000 - 12000 min^{-1}

GL 70 mm, Z 2 / V 2
WB 120-0-10, WB 120-0-11, WB 120-0-33

D mm	GL mm	L mm	NL mm	S mm	ID LL		ID RL	
3	70	68,5	16	10x45	**042596**	●	**042597**	●
4	70	68,5	35	10x27	**033542**	●	**033543**	●
5	70	68,5	35	10x27	**033496**	●	**033497**	●
6	70	68,5	35	10x27	**033498**	●	**033499**	●
8	70	68,5	35	10x27	**033500**	●	**033501**	●
10	70	68	35	10x27	**033540**	●	**033541**	●

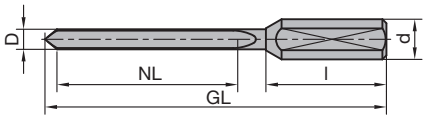
RPM: n = 3000 - 12000 min^{-1}

Spare parts:

BEZ	ABM mm	BEM	ID	
Allen screw	M5x10	Length adjustment	**005802**	●
Allen screw for S10x27	M5x8	Length adjustment	**006378**	●
Anti twist allen screw	M5x10	Length adjustment	**007438**	●

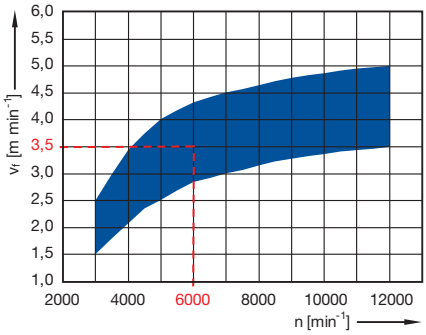
● available ex stock
□ available at short notice
Instruction manual visit www.leitz.org

HW



Boring pin WB 100-0-01

Feed speed v_f depending on the spindle RPM n



Workpiece material:
Chipboard
Working step:
Horizontal edge boring

Shank 10 mm

Application:
For drilling blind holes, especially dowel holes on the narrow edges of panel furniture parts.

Machine:
Point-to-point drilling machines, through feed drilling machines, CNC machining centres, hinge boring machines, multi spindle units.

Workpiece material:
Softwood and hardwood, chipboard and fibre materials (MDF, HF etc.), untreated, plastic coated, veneered etc., gluelam (plywood etc.).

Technical information:
HW solid design for high performance time. Large resharpening area. Tool suitable for RH and LH rotation.

GL 57.5 / GL 70 mm, Z1/1
WB 100-0-01

D mm	GL mm	NL mm	S mm	DRI	ID	
3	57,5	25	10x27	LL / RL	**230200**	●
3	70	35	10x27	LL / RL	**230201**	●

RPM: n = 3000 - 9000 min^{-1}

GL 85 mm, Z1/1
WB 100-0-01

D mm	GL mm	NL mm	S mm	DRI	ID	
5	85	45	10x30	LL / RL	**230202**	●
6	85	45	10x30	LL / RL	**230203**	●
8	85	45	10x30	LL / RL	**230204**	●

RPM: n = 3000 - 9000 min^{-1}

GL 105 mm, Z1/1
WB 100-0-01

D mm	GL mm	NL mm	S mm	DRI	ID	
5	105	65	10x30	LL / RL	**230205**	●
6	105	65	10x30	LL / RL	**230206**	●
8	105	65	10x30	LL / RL	**230207**	●

RPM: n = 3000 - 9000 min^{-1}

Note:
Boring pins require more power compared to dowel drills.
The number of the boring pins, used in one drilling unit, depends on the power of the machine.

Spare parts:

BEZ	ABM mm	BEM	ID	
Allen screw	M5x10	Length adjustment	**005802**	●
Allen screw for S10x27	M5x8	Length adjustment	**006378**	●
Anti twist allen screw	M5x10	Length adjustment	**007438**	●

Application

To drill tear free through holes in panels.

Workpiece material

Softwood and hardwood.
Chipboard and fibre materials (chipboard, MDF, HF, etc.), without coating, with plastic coating, veneer etc.
Glulam (plywood, etc.).
Plastomers.

Machine

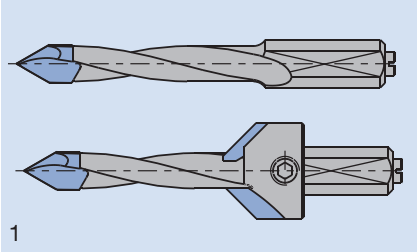
Through feed boring machines,
Point-to-point boring machines,
Machining centres,
Hinge boring machines,
Special boring machines.

Design

Two available through hole drill designs:

1. Design without heel
Optimised through hole drill for machining panels in the furniture industry. Minimum friction and feed forces as the flute has a smaller diameter. A loose countersink can be clamped on the shank.

2. Design with heel
Through hole drills with heel are used to bore holes in solid wood and for machines with insufficient guidance during the boring and return stroke. The drill has better guidance during the exit stroke to prevent tear-outs at the edge of the hole as the drill leaves the workpiece. A loose countersink can be clamped on the flute allowing adjustment of the drilling and countersink depth.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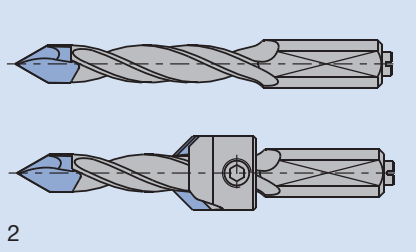
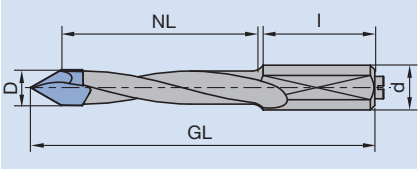

2

Shank

Through hole drills usually have a shank diameter d = 10 mm. Boring machines with a small pitch between the boring spindles may use drills with a shank diameter d = 8 mm.

Technical features



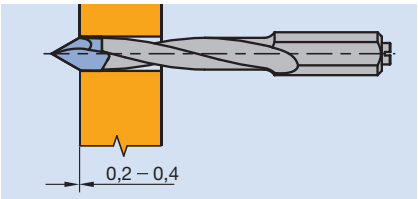
The dimensions listed in the tool tables refer to the following tool parameters:

D	Hole diameter.
d	Shank diameter.
l	Shank length.
NL	Working length = possible boring depth.
GL	Total length of the drill.

Application Data

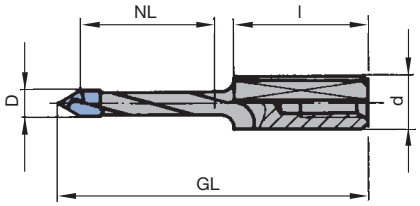
RPM/feed rates
The optimum RPM and feed speeds are detailed in the diagrams attached to the tool tables.
Identification of rotation: RL – black; LL – red.

Application recommendation



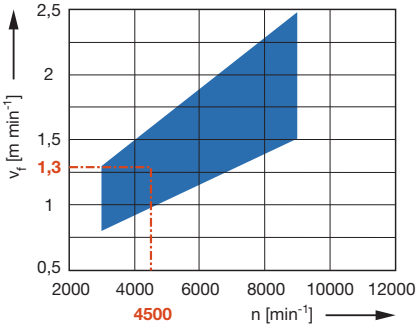
The boring quality in brittle or lowadhesive surfaces can be improved if the feed speed is reduced as the drill breaks through the workpiece.


HW



Design without heel

Feed speed v_f depending on the spindle RPM n



Workpiece material:
Chipboard plastic coated
Working step:
Boring
Correction factor for v_f:
Veneered = 0.8
MDF = 0.7
Chipboard, untreated = 1.3

Shank 10 mm

Application:
For drilling through holes, especially in furniture.

Machine:
Point-to-point drilling machines, through feed drilling machines, CNC machining centres, hinge boring machines, multi spindle units.

Workpiece material:
Softwood and hardwood, chipboard and fibre materials (MDF, HF etc.), untreated, plastic coated, veneered etc., gluelam (plywood etc.), elastomeres.

Technical information:
Can be combined with loose countersink WB 701-0-02. Countersinks fixed on flute. Flute with reduced diameter for minimum friction and feed forces.

GL 57.5 mm, without heel, Z 2
WB 101-0-02

D mm	GL mm	NL mm	S mm	ID LL	ID RL
5	57,5	25	10x24	**034000** ●	**034001** ●
6	57,5	25	10x24	**034008** ●	**034009** ●
8	57,5	25	10x24	**034002** ●	**034003** ●

RPM: n = 3000 - 9000 min^{-1}

GL 70 mm, without heel, Z 2
WB 101-0-07

D mm	GL mm	NL mm	S mm	ID LL	ID RL
5	70	35	10x24	**034074** ●	**034075** ●
7	70	35	10x24	**034106** ●	**034107** ●
8	70	35	10x24	**034076** ●	**034077** ●
9	70	35	10x24	**034108** ●	**034109** ●
10	70	35	10x24	**034110** ●	**034111** ●

RPM: n = 3000 - 9000 min^{-1}

For diameters below 5 mm use type WB 101-0-04.

GL 77 mm, without heel, Z 2
WB 101-0-03

D mm	GL mm	NL mm	S mm	ID LL	ID RL
5	77	44	10x24	**034060** ●	**034061** ●
6	77	44	10x24	**034068** ●	**034069** ●
8	77	44	10x24	**034062** ●	**034063** ●
10	77	44	10x24	**034070** ●	**034071** ●
12	77	44	10x24	**034072** ●	**034073** ●

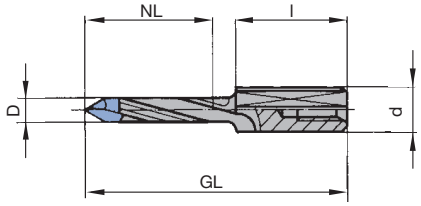
RPM: n = 3000 - 9000 min^{-1}

For diameters below 5 mm use type WB 101-0-04.

Spare parts:

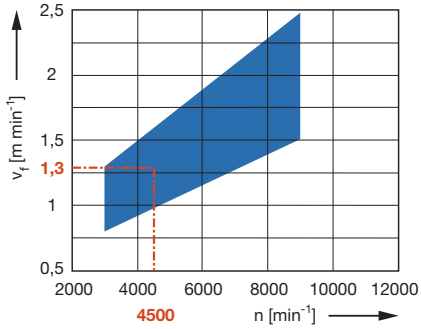
BEZ	ABM mm	BEM	ID
Allen screw	M5x10	Length adjustment	**005802** ●
Anti twist allen screw	M5x10	Length adjustment	**007438** ●


HW



Design with heel

Feed speed v_f depending on the spindle RPM n



Workpiece material:
Chipboard plastic coated
Working step:
Boring
Correction factor for v_f:
Veneered = 0.8
MDF = 0.7
Chipboard, untreated = 1.3

Shank 10 mm

Application:
For drilling through holes, especially in furniture. Suitable for machines with insufficient drill guidance.

Machine:
Point-to-point drilling machines, through feed drilling machines, CNC machining centres, hinge boring machines, multi spindle units.

Workpiece material:
Softwood and hardwood, chipboard and fibre materials (MDF, HF etc.), untreated, plastic coated, veneered etc., gluelam (plywood etc.), elastomeres.

Technical information:
Can be combined with loose countersink WB 701-0-02. Countersinks fixed on flute. Continuously adjustable boring and countersink depth. Good return stroke guidance for tear free hole edges.

GL 57.5 mm, with heel, Z 2
WB 101-0-05

D mm	GL mm	NL mm	S mm	ID LL	ID RL
5	57,5	25	10x24	**042630** ●	**042631** ●
6	57,5	25	10x24	**042636** ●	**042637** ●
8	57,5	25	10x24	**042638** ●	**042639** ●

RPM: n = 3000 - 9000 min^{-1}

GL 77 mm, with heel, Z 2
WB 101-0-06

D mm	GL mm	NL mm	S mm	ID LL	ID RL
5	77	44	10x24	**042640** ●	**042641** ●
5,2	77	44	10x24	**042644** ●	**042645** ●
6	77	44	10x24	**042646** ●	**042647** ●
8	77	44	10x24	**042648** ●	**042649** ●
10	77	44	10x24	**042650** ●	**042651** ●
12	77	44	10x24	**042652** ●	**042653** ●

RPM: n = 3000 - 9000 min^{-1}

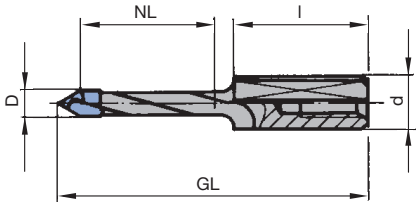
For diameters below 5 mm use type WB 101-0-04.

Spare parts:

BEZ	ABM mm	BEM	ID
Allen screw	M5x10	Length adjustment	**005802** ●
Anti twist allen screw	M5x10	Length adjustment	**007438** ●

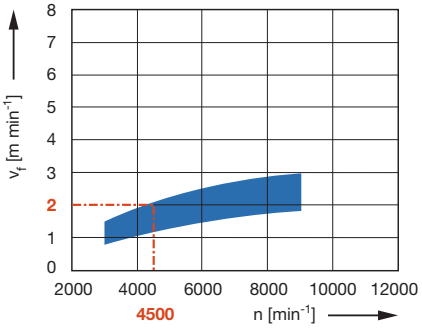
● available ex stock
□ available at short notice
Instruction manual visit www.leitz.org


HW



Design without heel

Feed speed v_f depending on the spindle RPM n



Workpiece material:
Chipboard plastic coated
Working step:
Boring
Correction factor for v_f:
Veneered = 0.8
MDF, solid wood = 0.7
Chipboard, untreated = 1.3

Shank 10 mm, HW tipped

Application:
For drilling tear free through holes, especially in furniture, with maximum quality on the hole exit side.

Machine:
Point-to-point drilling machines, through feed drilling machines, CNC machining centres, hinge boring machines, multi spindle units.

Workpiece material:
Softwood and hardwood, chipboard and fibre materials (MDF, HF etc.), untreated, plastic coated, veneered etc., gluelam (plywood etc.).

Technical information:
V point ground with 2 bevels for maximum quality on the hole exit side. High wear resistant tungsten carbide quality for maximum lifetime. Can be combined with loose countersink WB 701-0-02. Countersink fixed on flute. Flute with reduced diameter for minimum friction and feed forces.

GL 57.5 mm, Z 2
WB 101-0-10

D mm	GL mm	NL mm	S mm	ID LL		ID RL	
5	57,5	25	10x25	**033960**	●	**033961**	●
8	57,5	25	10x25	**033962**	●	**033963**	●

RPM: n = 3000 - 9000 min^{-1}
(recommended n = 4500 - 9000 min^{-1})

GL 70 mm, Z 2
WB 101-0-10

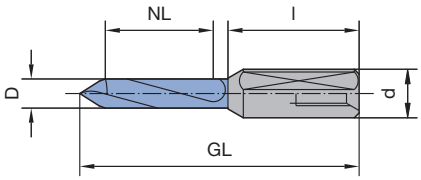
D mm	GL mm	NL mm	S mm	ID LL		ID RL	
5	70	35	10x25	**033964**	●	**033965**	●
8	70	35	10x25	**033966**	●	**033967**	●

RPM: n = 3000 - 9000 min^{-1}
(recommended n = 4500 - 9000 min^{-1})

Spare parts:

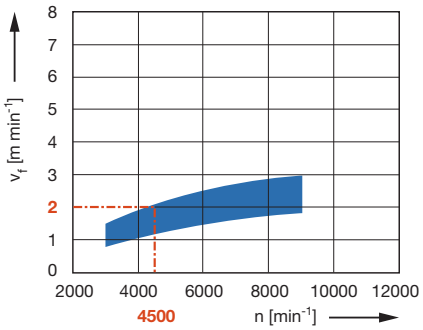
BEZ	ABM mm	BEM	ID	
Allen screw	M5x10	Length adjustment	**005802**	●
Allen screw	M3x2,5	Locking device	**007889**	●
Anti twist allen screw	M5x10	Length adjustment	**007438**	●


HW



Design without heel

Feed speed v_f depending on the spindle RPM n



Workpiece material:
Chipboard plastic coated
Working step:
Boring
Correction factor for v_f:
Veneered = 0.8
MDF, solid wood = 0.7
Chipboard, untreated = 1.3

Shank 10 mm, HW solid

Application:
For drilling tear free through holes, especially in furniture, with maximum quality on the hole exit side.

Machine:
Point-to-point drilling machines, through feed drilling machines, CNC machining centres, hinge boring machines, multi spindle units.

Workpiece material:
Softwood and hardwood, chipboard and fibre materials (MDF, HF etc.), untreated, plastic coated, veneered etc., gluelam (plywood etc.).

Technical information:
V point ground with 2 bevels for good quality on the exit side of the hole. Solid tungsten carbide design with high wear resistant tungsten carbide quality. High stability and long lifetime. Polished gullet for minimum friction and feed forces.

GL 57.5 mm, without heel, Z 2
WB 101-0-02

D mm	GL mm	NL mm	S mm	ID LL	ID RL
5	57,5	25	10x27	**034018** ●	**034019** ●
6	57,5	25	10x27	**034020** ●	**034021** ●
8	57,5	25	10x27	**034022** ●	**034023** ●

RPM: n = 3000 - 12000 min^{-1}

GL 70 mm, wihout heel, Z 2
WB 101-0-07

D mm	GL mm	NL mm	S mm	ID LL	ID RL
5	70	35	10x27	**034100** ●	**034101** ●
6	70	35	10x27	**034102** ●	**034103** ●
8	70	35	10x25	**034104** ●	**034105** ●
10	70	35	10x22	**034114** ●	**034115** ●

RPM: n = 3000 - 12000 min^{-1}

For diameters below 5 mm use type WB 101-0-04.

GL 100 mm, without heel, Z 2
WB 101-0-07

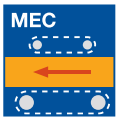
D mm	GL mm	NL mm	S mm	DRI	ID
6	100	35	10x57	RL	**034116** ●

RPM: n = 3000 - 12000 min^{-1}

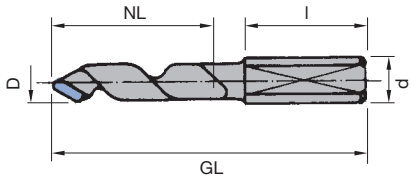
Spare parts:

BEZ	ABM mm	BEM	ID
Allen screw for S10x22/25/27	M5x8	Length adjustment	**006378** ●
Allen screw for S10x57	M5x10	Length adjustment	**005802** ●
Anti twist allen screw	M5x10	Length adjustment	**007438** ●

● available ex stock
□ available at short notice
Instruction manual visit www.leitz.org

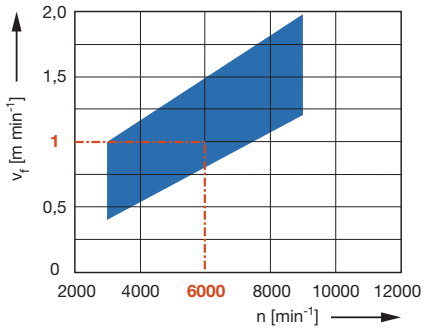


DP



WB 100-0-50

Feed speed v_f depending on the spindle RPM n



Workpiece material:
Chipboard plastic coated
Working step:
Boring
Correction factor for v_f:
MDF = 0.7
Chipboard, untreated = 1.2

Shank 10 mm

Application:
For drilling tear free through holes. Especially suitable for drilling panel materials coated with abrasive additional material (fire proof material etc.).

Machine:
Point-to-point drilling machines, through feed drilling machines, CNC machining centres, hinge boring machines, multi spindle units.

Workpiece material:
Gypsum bonded particle and fibre materials, cement bonded particle and fibre materials, flame resistant particle and fibre materials, solid resin gluelam, fibre reinforced plastics.

Technical information:
DP tipped through hole boring bit for maximum lifetime, especially in abrasive materials. Large gullet for optimum chip removal from the hole.

GL 70 mm, Z 1
WB 100-0-50

D mm	GL mm	NL mm	S mm	Z	ID LL		ID RL	
5	70	30	10x27	1	**091186**	●	**091185**	●
6	70	30	10x27	1	**091188**	●	**091187**	●
8	70	30	10x27	1	**091192**	●	**091191**	●
10	70	30	10x27	1	**091194**	●	**091193**	●

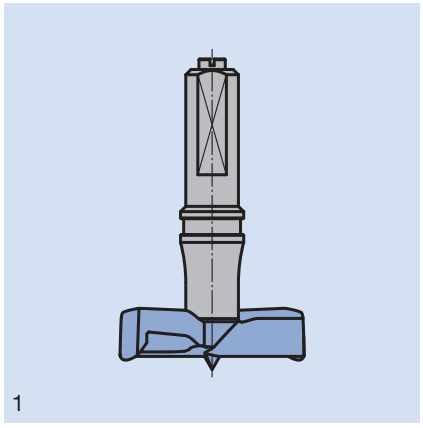
RPM: n = 4000 - 9000 min^{-1}

Spare parts:

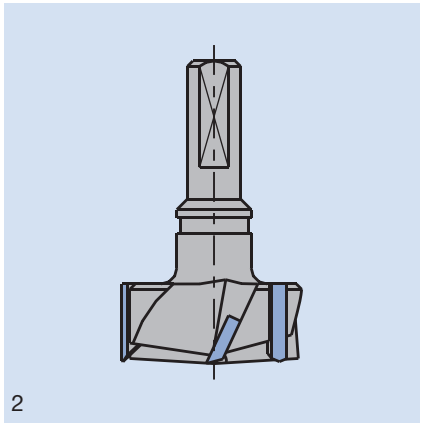
BEZ	ABM mm	BEM	ID	
Allen screw	M5x10	Length adjustment	**005802**	●
Anti twist allen screw	M5x10	Length adjustment	**007438**	●

6

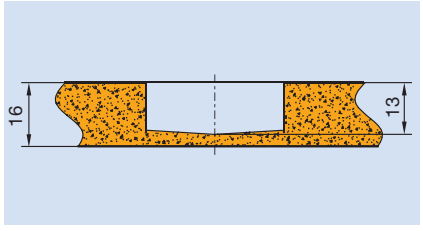
Application	To drill tear free hinge holes.
Workpiece material	Soft and hardwood. Chipboard and fibre materials (chipboard, MDF, HF, etc.), without coating, with plastic coating, veneer etc. Glulam (plywood, etc.).
Machine	Through feed boring machines, Point-to-point boring machines, Machining centres, Hinge boring machines, Special boring machines.
Design	Two available hinge-boring designs:


1

1. Design with centre point,
2 spurs and 2 spiral cutting edges (Z2/V2). These boring bits are optimised for machining standard panels in the furniture industry.
Design with short tip for deep holes in thin panels.


2

2. Design without centre point,
3 spurs and 3 spiral cutting edges ground to a V point (Z3/V3). Recommended when there is the risk of the centre point marking or breaking through the back of the panel, e. g. when boring a 13 mm deep hole in a 16 mm thick workpiece.

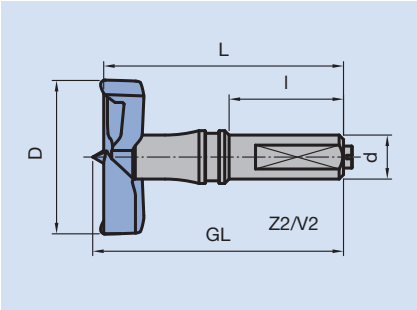


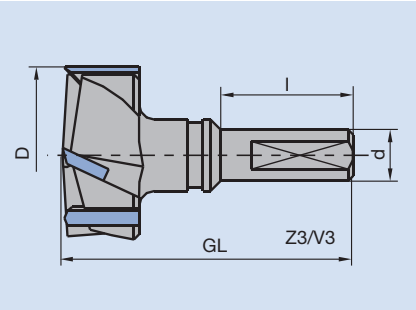
Shank	Hinge boring bits usually have a shank diameter d = 10 mm. Internally threaded shanks are used with portable routers with the appropriate spindle adaptors.

Technical features

The dimensions listed in the tool tables refer to the following tool parameters:

D	Hole diameter.
d	Shank diameter.
l	Shank length.
L	Total length of the hinge boring bit excluding the projection of the centre point.
GL	Total length of the hinge boring bit including the projection of the centre point.



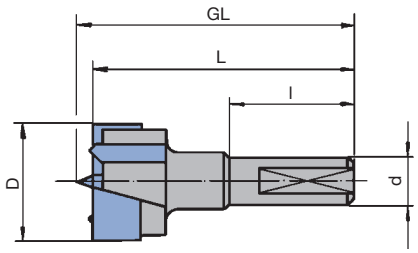


Application Data

RPM feed speeds

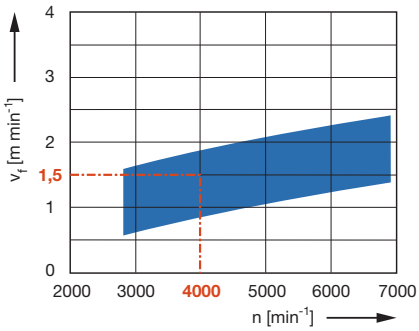
The optimum RPM and feed speeds are detailed in the diagrams attached to the tool tables.

HW



Z 2 / V 2 with centre point

Feed speed v_f depending on the spindle RPM n



Workpiece material:
Chipboard plastic coated
Working step:
Boring
Correction factor for v_f:
Veneered = 0.8
Paper coated = 0.8
MDF, solid wood = 0.7

Shank 10 mm

Application:
For drilling hinge and furniture hinge holes.

Machine:
Point-to-point drilling machines, through feed drilling machines, CNC machining centres, hinge boring machines, multi spindle units.

Workpiece material:
Softwood and hardwood, chipboard and fibre materials (MDF, HF etc.), untreated, plastic coated, veneered etc., gluelam (plywood etc.).

Technical information:
Good centering in solid wood by centre point.

GL 57 mm, Z 2 / V 2
WB 310-0-04

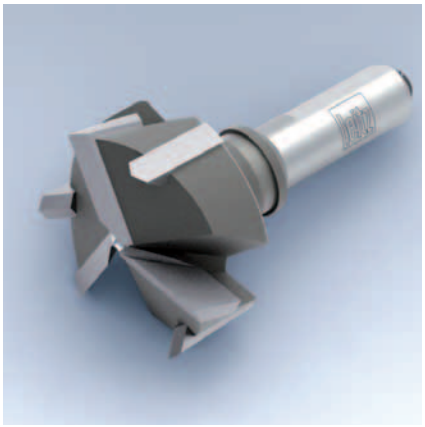
D mm	GL mm	L mm	S mm	ID RL	
40	57	54,5	10x26	**034677**	●

RPM: n = 2800 - 7000 min^{-1}

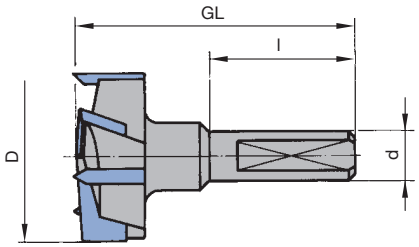
Spare parts:

BEZ	ABM mm	BEM	ID	
Allen screw	M5x10	Length adjustment	**005802**	●
Anti twist allen screw	M5x10	Length adjustment	**007438**	●

● available ex stock
□ available at short notice
Instruction manual visit www.leitz.org

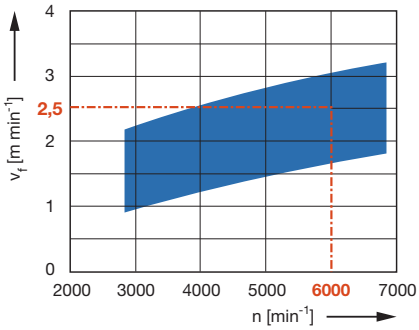



HW



Z 3/V 3 with V ground of the peripheral cutting edge. No centre point

Feed speed v_f depending on the spindle RPM n



Workpiece material:
Chipboard plastic coated
Working step:
Boring
Correction factor for v_f:
Veneered = 0.8
Paper coated = 0.8
MDF = 0.7

Shank 10 mm

Application:
For drilling hinge and furniture hinge holes. Higher feed speed compared to bits with Z 2 / V 2.

Machine:
Point-to-point drilling machines, through feed drilling machines, CNC machining centres, hinge boring machines, multi spindle units.

Workpiece material:
Softwood and hardwood, chipboard and fibre materials (MDF, HF etc.), untreated, plastic coated, veneered etc., gluelam (plywood etc.).

Technical information:
No centre point for boring holes in thin workpieces close to the bottom cover layer, without marks to the surface. Clamp the workpiece as tight as possible. Good centering for part open holes near the edge of the panel.

GL 57 mm, Z 3 / V 3
WB 322-0

D mm	GL mm	S mm	ID LL		ID RL	
20	57	10x26	**034773**	●	**034774**	●
25	57	10x26	**034750**	●	**034751**	●
26	57	10x26	**034752**	●	**034753**	●
30	57	10x26	**034754**	●	**034755**	●
34	57	10x26			**034757**	●
35	57	10x26	**034758**	●	**034759**	●
40	57	10x26			**034763**	●

RPM: n = 2800 - 7000 min^{-1}

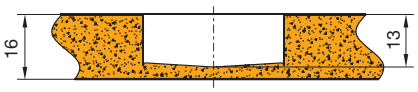
GL 70 mm, Z 3 / V 3
WB 322-0

D mm	GL mm	S mm	ID LL		ID RL	
20	70	10x26	**034777**	●	**034778**	●
25	70	10x26	**034779**	●	**034780**	●
26	70	10x26	**034781**	●	**034782**	●
30	70	10x26	**034783**	●	**034784**	●
35	70	10x26	**034785**	●	**034786**	●

RPM: n = 2800 - 7000 min^{-1}

Spare parts:

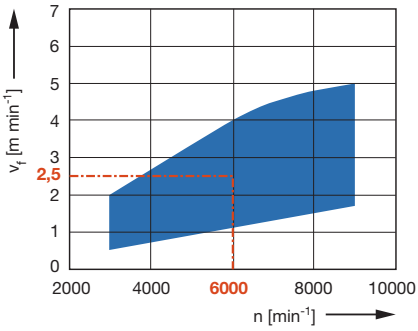
BEZ	ABM mm	BEM	ID	
Allen screw	M5x10	Length adjustment	**005802**	●
Anti twist allen screw	M5x10	Length adjustment	**007438**	●



Application example for Z 3/V 3 design: Boring depth up to 13 mm depth in 16 mm thick workpieces. No marks to the bottom surface layer from the centre point.


HW

Feed speed v_f depending on the spindle RPM n



Workpiece material:
Chipboard plastic coated
Working step:
Boring
Correction factor for v_f:
Chipboard paper coated = 0.7
Chipboard veneered = 0.7
MDF plastic coated = 1.0
Glulam = 0.6
Solid wood = 1.0

Shank 10 mm

Application:
For drilling hinge and furniture hinge holes, with increased run time and high hole edge quality.

Machine:
Point-to-point drilling machines, through feed drilling machines, CNC machining centres, hinge boring machines, multi spindle units.

Workpiece material:
Softwood and hardwood, chipboard and fibre materials (MDF, HF etc.), untreated, plastic coated, veneered etc., gluelam (plywood etc.).

Technical information:
Round spur geometry for increased hole edge quality. Solid tungsten carbide design. High wear resistant tungsten carbide quality. Tear free edges in panels with glued plastic edges. Robust.

GL 57 mm, Z 2 / V 2
WB 310-0-13

D mm	GL mm	L mm	S mm	ID LL		ID RL	
15	57	54,5	10x26	**034800**	●	**034801**	●
16	57	54,5	10x26	**034824**	●	**034825**	●
18	57	54,5	10x26	**034826**	●	**034827**	●
20	57	54,5	10x26	**034802**	●	**034803**	●
22	57	54,5	10x26	**034828**	●	**034829**	●
24	57	54,5	10x26	**034830**	●	**034831**	●
25	57	54,5	10x26	**034804**	●	**034805**	●
26	57	54,5	10x26	**034806**	●	**034807**	●
28	57	54,5	10x26	**034832**	●	**034833**	●
30	57	54,5	10x26	**034808**	●	**034809**	●
35	57	54,5	10x26	**034810**	●	**034811**	●

RPM: n = 3000 - 9000 min^{-1}

GL 70 mm, Z 2 / V 2
WB 310-0-13

D mm	GL mm	L mm	S mm	ID LL		ID RL	
15	70	68	10x26	**034812**	●	**034813**	●
18	70	68	10x26	**034834**	●	**034835**	●
20	70	68	10x26	**034814**	●	**034815**	●
24	70	68	10x26	**034836**	●	**034837**	●
25	70	68	10x26	**034816**	●	**034817**	●
26	70	68	10x26	**034818**	●	**034819**	●
30	70	68	10x26	**034820**	●	**034821**	●
35	70	68	10x26	**034822**	●	**034823**	●

RPM: n = 3000 - 9000 min^{-1}

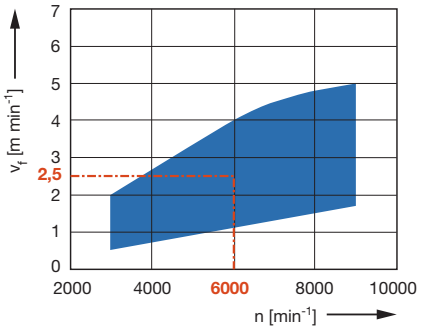
Spare parts:

BEZ	ABM mm	BEM	ID	
Allen screw	M5x10	Length adjustment	**005802**	●
Anti twist allen screw	M5x10	Length adjustment	**007438**	●

● available ex stock
□ available at short notice
Instruction manual visit www.leitz.org


HW

Feed speed v_f depending on the spindle RPM n



Workpiece material:
Chipboard plastic coated
Working step:
Boring
Correction factor for v_f:
Chipboard paper coated = 0.7
Chipboard veneered = 0.7
MDF plastic coated = 1.0
Glulam = 0.6
Solid wood = 1.0

Shank 10 mm, short centre point

Application:
For drilling hinge and furniture hinge holes, with increased run time and high hole edge quality.

Machine:
Point-to-point drilling machines, through feed drilling machines, CNC machining centres, hinge boring machines, multi spindle units.

Workpiece material:
Softwood and hardwood, chipboard and fibre materials (MDF, HF etc.), untreated, plastic coated, veneered etc., gluelam (plywood etc.).

Technical information:
Round spur geometry for increased hole edge quality. Solid tungsten carbide design. High wear resistant tungsten carbide quality. Tear free edges in panels with glued plastic edges. Robust. Design with reduced centre point and spurs for deep holes in thin panels.

GL 57 mm, Z 2 / V 2
WB 310-0-13

D mm	GL mm	L mm	S mm	ID LL		ID RL	
15	57	54,5	10x26	**034841**	●	**034842**	●
20	57	54,5	10x26	**034843**	●	**034844**	●
25	57	54,5	10x26	**034845**	●	**034846**	●
26	57	54,5	10x26	**034847**	●	**034848**	●
30	57	54,5	10x26	**034849**	●	**037200**	●
35	57	54,5	10x26	**037201**	●	**037202**	●

RPM: n = 3000 - 9000 min^{-1}

GL 70 mm, Z 2 / V 2
WB 310-0-13

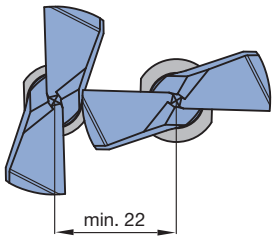
D mm	GL mm	L mm	S mm	ID LL		ID RL	
15	70	68	10x26	**037203**	●	**037204**	●
20	70	68	10x26	**037205**	●	**037206**	●
25	70	68	10x26	**037207**	●	**037208**	●
26	70	68	10x26	**037209**	●	**037210**	●
30	70	68	10x26	**037211**	●	**037212**	●
35	70	68	10x26	**037213**	●	**037214**	●

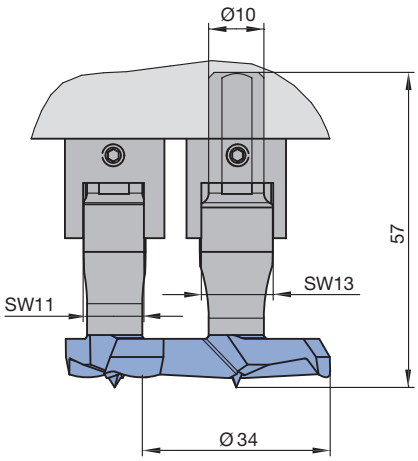
RPM: n = 3000 - 9000 min^{-1}

Spare parts:

BEZ	ABM mm	BEM	ID	
Allen screw	M5x10	Length adjustment	**005802**	●
Anti twist allen screw	M5x10	Length adjustment	**007438**	●

HW





Double furniture hinge boring bit in aggregate.

Shank 10 mm, double furniture hinge

Application:
For drilling holes for hinges and pivots in window manufacture in single or twin drill design.

Machine:
Routers with/without CNC control, machining centres, special boring machines for the frame production, automatic boring machines, multi spindle units.

Workpiece material:
Softwood and hardwood, modified woods for window production, gluelam (plywood etc.) composites.

Technical information:
Round spur geometry for high hole edge quality. Solid tungsten carbide design. High wear resistant tungsten carbide quality. Minimum distance of drill spindle 22 mm.

Boring bit set, consisting of 1 pc. RH and LH
AB 710-0

D mm	GL mm	L mm	S mm	QAL	DRI	ID	
34	57	54,5	10x23	HW solid	LL / RL	**036784**	□

RPM: n = 3000 - 9000 min^{-1}

Universal application for drilling holes for hinges and pivots on machines and aggregates for the following manufacturers: Weinig, SCM, Ganner, Götzinger, Striffler etc.

GL 57 mm, Z 2 / V 2, single tool
WB 310-0-13

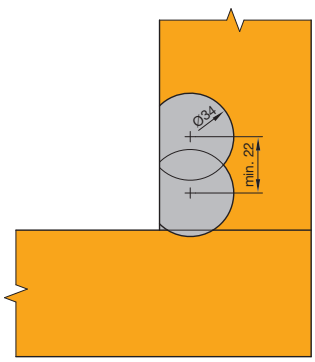
D mm	GL mm	L mm	S mm	QAL	ID LL	ID RL	
34	57	54,5	10x23	HW solid	**034839**	**034838**	●

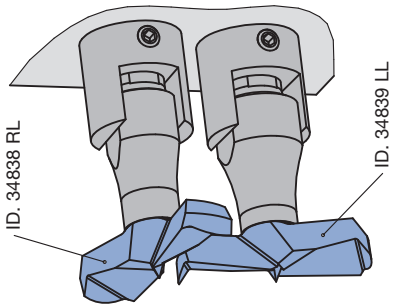
RPM: n = 3000 - 9000 min^{-1}

Spare parts:

BEZ	ABM mm	BEM	ID	
Allen screw	M5x10	Length adjustment	**005802**	●
Anti twist allen screw	M5x10	Length adjustment	**007438**	●

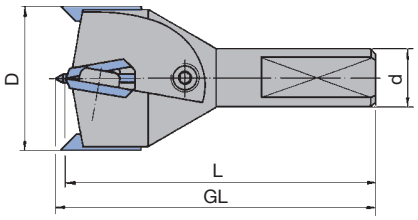
Application example:
Double hinges for corner pivots.



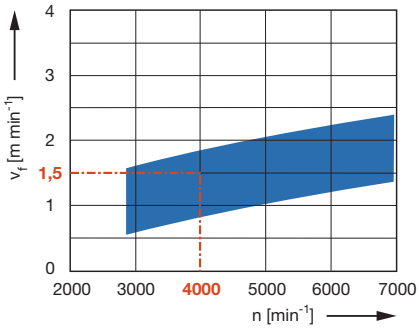


● available ex stock
□ available at short notice
Instruction manual visit www.leitz.org

HW



Feed speed v_f depending on the spindle RPM n



Workpiece material:
Chipboard plastic coated
Working step:
Boring
Correction factor for v_f:
Veneered = 0.8
Paper coated = 0.8
MDF = 0.7

Shank 10 mm

Application:
For drilling hinge and furniture hinge holes.

Machine:
Point-to-point drilling machines, through feed drilling machines, CNC machining centres, hinge boring machines, multi spindle units.

Workpiece material:
Softwood and hardwood, chipboard and fibre materials (MDF, HF etc.), untreated, plastic coated, veneered etc., gluelam (plywood etc.).

Technical information:
Spur and raker turnblade knives. Replaceable centre point, resharpenable and adjustable for deep holes near to the bottom surface layer without marks. Diameter constant tool.

GL 57 mm, Z 2 / V 2
WL 920-0

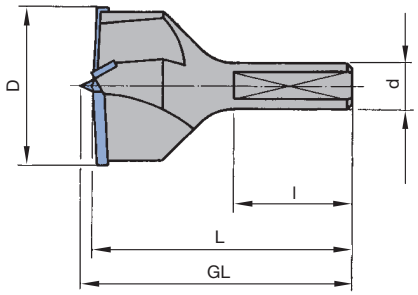
D mm	GL mm	L mm	S mm	ID RL	
35	57	54,5	10x26	**034565**	●
34	57	54,5	M 12x1	**034566**	●

RPM: n = 2800 - 7000 min^{-1}

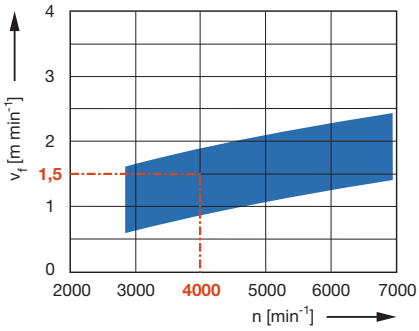
Spare parts:

BEZ	ABM mm	BEM	ID	
Turnblade knife	15,2x12x1,5	ø34	**005152**	●
Turnblade knife	15,7x12x1,5	ø35	**007673**	●
Turnblade spur	18x6x3.5		**007669**	●
Centering pin	D3x40		**008151**	●
Torx® key	Torx® 15		**005457**	●
Allen screw	M5x10	Length adjustment	**005802**	●
Allen screw	M6x4	Clamp. screw f. centre point	**005837**	●
Screw	M3,5x4 (head D7)		**006068**	●
Countersink screw	M3,5x6	Clamp. screw for spur	**007062**	●
Anti twist allen screw	M5x10	Length adjustment	**007438**	●

DP



Feed speed v_f depending on the spindle RPM n



Workpiece material:
Chipboard plastic coated
Working step:
Boring
Correction factor for v_f:
Veneered = 0.8
Paper coated = 0.8
MDF = 0.7

Shank 10 mm

Application:
For drilling hinge and furniture hinge holes with maximum durability. Ideal for drilling materials with hard and abrasive coatings (e.g. HPL, CPL etc.).

Machine:
Point-to-point drilling machines, through feed drilling machines, CNC machining centres, hinge boring machines, multi spindle units.

Workpiece material:
Chipboard and fibre materials (MDF, HF etc.), untreated, plastic coated, veneered etc., flame resistant particle and fibre materials, gluelam (plywood etc.).

Technical information:
DP tipped for increased performance time compared to tungsten carbide designs. Suitability for high volume production. Diamaster PRO tipping, resharpen two/three times with normal wear. Preferred used on automatic machines. Can only be used in vertical boring machines if workpieces are securely clamped.

GL 57 / GL 70 mm, Z 2 / V 2
WB 310-0-50

D mm	GL mm	L mm	S mm	ID LL		ID RL	
15	70	68,5	10x26			**191023**	●
20	57	54,5	10x26			**191022**	●
25	70	68,5	10x26			**091197**	●
26	70	68,5	10X26	**191028**	●	**191029**	●
35	57	54,5	10x26			**091181**	●
35	70	68,5	10x26	**091184**	●	**091183**	●

RPM: n = 2800 - 7000 min^{-1}

Spare parts:

BEZ	ABM mm	BEM	ID	
Allen screw	M5x10	Length adjustment	**005802**	●
Anti twist allen screw	M5x10	Length adjustment	**007438**	●

● available ex stock
□ available at short notice
Instruction manual visit www.leitz.org

Application

To drill holes for the furniture industry and in timber frame construction.

Workpiece material

Soft and hardwood.
Chipboard and fibre materials (chipboard, MDF, HF, etc.), without coating, with plastic coating, veneer etc. (only HW).
Glulam (plywood, etc.; only HW).

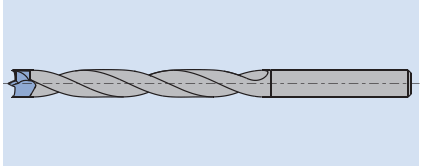
Machine

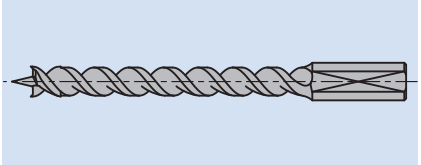
Vertical boring machines,
Automatic boring machines,
Special boring machines,
Portable boring machines.

Design

1. Twist drills

Twist drills with a centre point and spurs (Z2/V2) are used for drilling holes deeper than possible with dowel drills.
There is a choice of cutting materials – SP, HS and HW – the matrix details the recommended cutting material for the different workpiece materials:



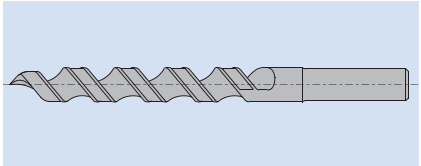


	SP	HS	HW
Softwood, dry	♦	♦	♦
Softwood, wet	♦	♦	◇
Hardwood, dry	◇	♦	♦
Hardwood, wet	◇	♦	◇
Glulam (plywood, etc.)			♦
Chipboard and fibre materials			
– paper coated			♦
– plastic coated			♦
– veneered			♦
Solid wood, veneered			♦

♦ suitable ◇ partly suitable

HW spiral boring bits are supplied with single or double heel. The design with double heel improves guidance during boring and return stroke and reduces the friction between flute and hole. HW solid Z2/V2 design suitable for drilling deep holes in solid wood without interim clearance strokes and for high feed speeds.

2. Levin type drill

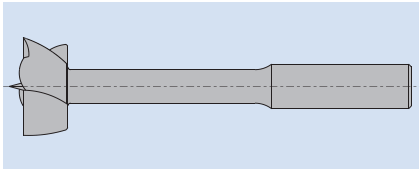


Levin type drills are used to bore deep holes. The key feature is a spiral flute with a large chip gullet cross section giving excellent chip clearance.
Two designs are available:

a) With V point in HS: recommended for through hole drilling and boring holes in cross grain.

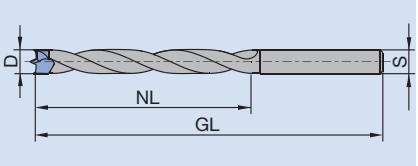
b) With centre point and spurs in HW: recommended when drilling hardwood and glulam.

3. Machine bit



Machine bits are used to drill tear free holes in solid wood, for blind holes, for hinge holes and holes for repair plugs.

Technical features



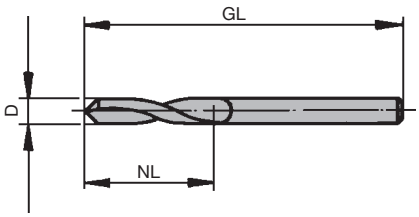
The dimensions listed in the tool tables refer to the following tool parameters:

D	Hole diameter.
S	Shank diameter x shank length.
NL	Working length = possible boring depth.
GL	Total length of the boring bit including the projection of the centre point.

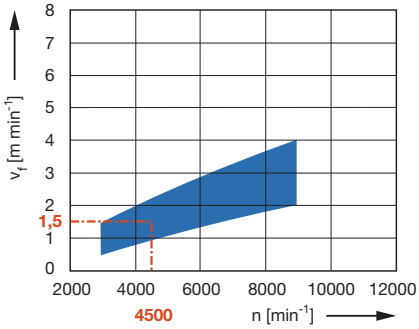
Application Data

RPM/feed speeds

The optimum RPM and feed speeds are detailed in the diagrams attached to the tool tables.



Feed speed v_f depending on the spindle RPM n



Workpiece material:
Chipboard plastic coated
Working step:
Boring
Correction factor for v_f:
MDF, solid wood = 0.7
Chipboard, untreated = 1.3

HW solid, Z 2

Application:
For multi purpose drilling of blind holes and through holes.

Machine:
Point-to-point drilling machines, through feed drilling machines, CNC machining centres, hinge boring machines, multi spindle units, vertical boring machine, portable boring machine.

Workpiece material:
Softwood and hardwood, chipboard and fibre materials (MDF, HF etc.), untreated, plastic coated, veneered etc., gluelam (plywood etc.), plastics (thermoplastic, fibre reinforced etc.), NE metals (aluminium, copper etc.).

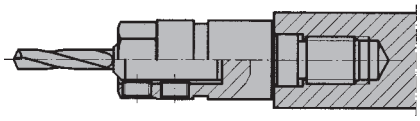
Technical information:
Flat V point. Shank diameter identical to drill diameter. Convert for shank D 10 mm with reducing sleeve TB 110-0 or PM 320-0-25 (see following pages).

V point 120°
WB 101-0-04

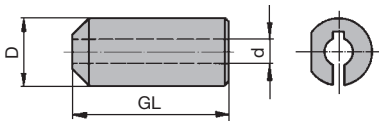
D mm	GL mm	NL mm	QAL	ID LL		ID RL	
2	40	17,5	HW solid	**034410**	●	**034411**	●
2,5	40	18	HW solid	**034412**	●	**034413**	●
3	46	16	HW solid	**034414**	●	**034415**	●
3,2	49	18	HW solid	**034420**	●	**034421**	●
3,5	52	20	HW solid	**034416**	●	**034417**	●
4	55	22	HW solid	**034418**	●	**034419**	●
5	62	26	HW solid	**034424**	●	**034425**	●

RPM: n = 3000 - 9000 min^{-1}

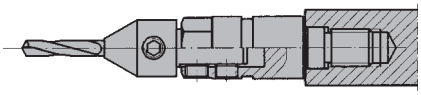
● available ex stock
□ available at short notice
Instruction manual visit www.leitz.org



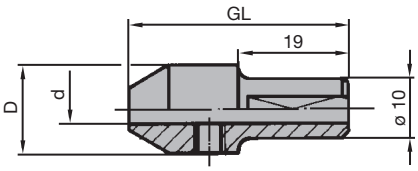
Boring bit clamping using the reducing sleeve TB 110-0 to use the full drill working length



Reducing sleeve with short clamping length



Boring bit clamping with increased stability using reducing sleeve PM 320-0-25



Reducing sleeve with increased clamping length

HW solid, Z 2

Application:
To hold twist drill WB 101-0-04, to use the full drill working length.

Technical information:
Adaptor can be used in boring spindles or adjustable drill chucks with side clamping screw. Not suitable for use in most quick-change drill adpators such as PM 320-0-55/-56/-57/-58.

Reducing sleeves with short clamping length
TB 110-0

D mm	d mm	GL mm	ID	
10	2	23	**034520**	●
10	2,5	23	**034521**	●
10	3	23	**034522**	●
10	3,18 / 3,2	23	**034525**	●
10	3,5	23	**034523**	●
10	4	23	**034524**	●
10	5	23	**034526**	●

Application:
To hold twist drill WB 101-0-04 with reduced risk of breaking the clamped drill by reduce the length of the unsupported drill.

Technical information:
Adaptor can be used in boring spindles or adjustable drill chucks with side clamping screw. The sleeve shank length adjustment screw ID 007408 allows for trouble-free clamping in adjustable drill chucks PM 320-0-55/-56/-57/-58.

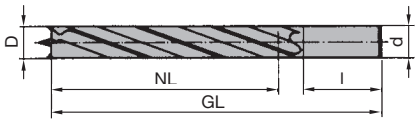
Reducing sleeves with increased clamping length
PM 320-0-25

D mm	d mm	GL mm	S mm	ID	
15	2	38	10x19	**034490**	●
15	2,5	38	10x19	**034491**	●
15	3	38	10x19	**034492**	●
15	3,18 / 3,2	38	10x19	**034495**	●
15	3,5	38	10x19	**034493**	●
15	4	38	10x19	**034494**	●
15	5	38	10x19	**034496**	●

Spare parts:

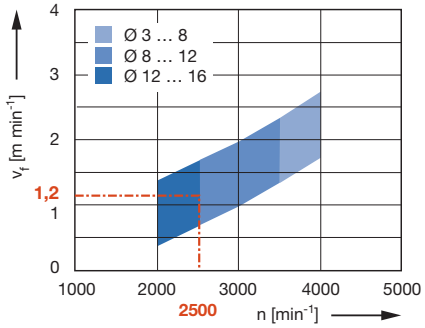
BEZ	ABM mm	ID	
Allen Key	SW 3	**005433**	●
Allen screw	M6x5	**005836**	●


HS



WB 120-0-02 / 05 / 06, with single heel

Feed speed v_f depending on the spindle RPM n



Workpiece material:
Softwood
Working step:
Boring
Correction factor for v_f:
Hardwood = 0.7

HS solid, Z 2 / V 2

Application:
For multi purpose drilling of tear free blind holes.

Machine:
Vertical boring machines, automatic boring machines, multi spindle units, special purpose boring machines, portable drills.

Workpiece material:
Softwood and hardwood, gluelam (plywood etc.), plastics (thermoplastic).

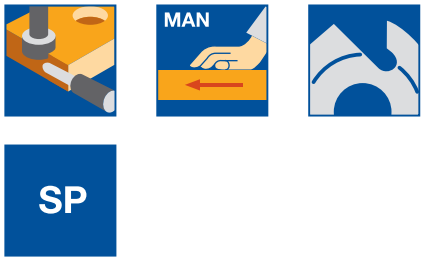
Technical information:
Design in HS solid with long centre point and round spurs. Shank diameter identical to drill diameter. Design with single heel to reduce friction in the hole.

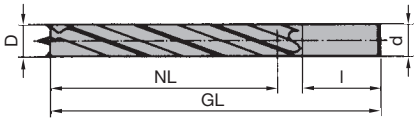
Shank diameter identical to drill diameter
WB 120-0-05

D mm	GL mm	NL mm	S mm	QAL	DRI	ID	
3	70	35	3x30	HS	RL	**035852**	●
4	80	45	4x30	HS	RL	**035853**	●
4,5	85	50	4,5x30	HS	RL	**035892**	●
5	90	50	5x30	HS	RL	**035854**	●
5,5	95	55	5,5x35	HS	RL	**035893**	●
6	100	60	6x35	HS	RL	**035855**	●
6,5	105	65	6,5x35	HS	RL	**035894**	●
7	110	65	7x40	HS	RL	**035856**	●
7,5	115	70	7,5x40	HS	RL	**035895**	●
8	120	75	8x40	HS	RL	**035857**	●
8,5	120	75	8,5x40	HS	RL	**035896**	●
9	130	80	9x40	HS	RL	**035858**	●
10	140	85	10x50	HS	RL	**035859**	●
11	150	90	11x50	HS	RL	**035860**	●
12	155	95	12x50	HS	RL	**035861**	●

RPM: n = 1500 - 4000 min^{-1}

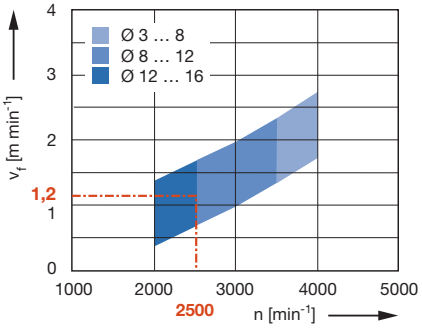
● available ex stock
□ available at short notice
Instruction manual visit www.leitz.org





WB 120-0-02 / 05 / 06, with single heel

Feed speed v_f depending on the spindle RPM n



Workpiece material:
Softwood
Working step:
Boring
Correction factor for v_f:
Hardwood = 0.7

SP solid, Z 2 / V 2

Application:
For multi purpose drilling of tear free blind holes.

Machine:
Vertical boring machines, automatic boring machines, multi spindle units, special purpose boring machines, portable drills.

Workpiece material:
Softwood and hardwood, gluelam (plywood etc.), plastics (thermoplastic).

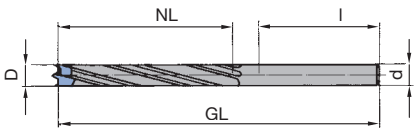
Technical information:
Design in SP solid with long centre point and round spurs. Shank diameter different from the drill diameter. Design with single heel to reduce friction in the hole.

Shank diameter different from drill diameter
WB 120-0-02, WB 120-0-06

D mm	GL mm	NL mm	S mm	QAL	DRI	ID	
10	94	60	8x30	SP	RL	**035982**	●
12	93,5	60	8x30	SP	RL	**035983**	●
15	185	120	13x50	SP	RL	**035762**	●
16	190	125	16x50	SP	RL	**035763**	●

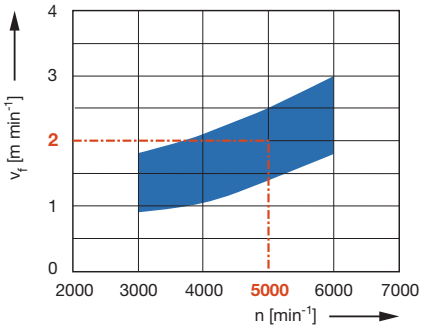
RPM: n = 1500 - 4000 min^{-1}

HW



WB 120-0-27 / 25, with double heel

Feed speed v_f depending on the spindle RPM n



Workpiece material:
Chipboard plastic coated
Working step:
Boring
Correction factor for v_f:
Solid wood = 0.7
Glulam = 0.8

When drilling holes with a depth greater than 4 x drill diameter interim clearance stroke is recommended!

HW, Z 2 / V 2

Application:
For multi purpose drilling of tear free blind holes.

Machine:
Vertical boring machines, automatic boring machines, multi spindle units, special purpose boring machines, portable drills.

Workpiece material:
Softwood and hardwood, chipboard and fibre materials (MDF, HF etc.), untreated, plastic coated, veneered etc., gluelam (plywood etc.).

Technical information:
Design HW tipped. Shank diameter identical to the drill diameter. Design with double heel for improved guidance during drilling and return stroke from the hole.

Short version
WB 120-0-27

D mm	GL mm	NL mm	S mm	QAL	DRI	ID	
5	70	35	5x35	HW	RL	**035885**	●
6	70	35	6x35	HW	RL	**035886**	●
7	70	35	7x35	HW	RL	**035887**	●
8	70	35	8x35	HW	RL	**035888**	●
10	70	35	10x35	HW	RL	**035889**	●
11	70	35	11x35	HW	RL	**035890**	●
12	70	35	12x35	HW	RL	**035891**	●

RPM: n = 3000 - 6000 min^{-1}

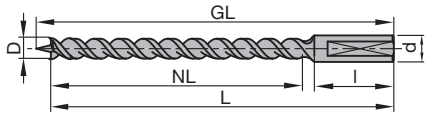
Long version
WB 120-0-25

D mm	GL mm	NL mm	S mm	QAL	DRI	ID	
4	80	55	4x25	HW	RL	**035882**	●
4,5	85	60	4,5x25	HW	RL	**035883**	●
5	90	60	5x30	HW	RL	**035872**	●
5,5	100	65	5,5x35	HW	RL	**035873**	●
6	100	65	6x35	HW	RL	**035874**	●
6,5	110	70	6,5x40	HW	RL	**035875**	●
7	110	70	7x40	HW	RL	**035876**	●
8	120	75	8x45	HW	RL	**035877**	●
8,5	130	80	8,5x50	HW	RL	**035884**	●
9	130	80	9x50	HW	RL	**035878**	●
10	140	90	10x50	HW	RL	**035879**	●
11	150	95	11x55	HW	RL	**035880**	●
12	155	100	12x55	HW	RL	**035881**	●

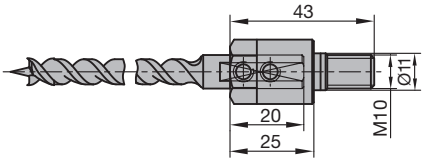
RPM: n = 3000 - 6000 min^{-1}

● available ex stock
□ available at short notice
Instruction manual visit www.leitz.org



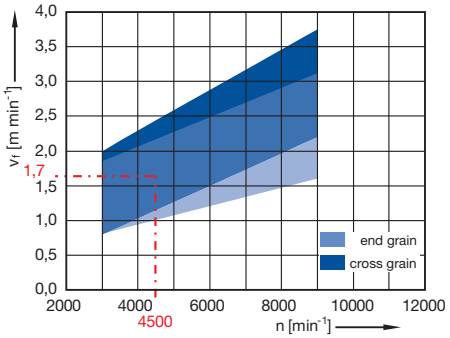


WB 120-0-34, drills HW solid



WB 120-0-34, drills HW solid with adaptor

Feed speed v_f depending on the spindle RPM n



Workpiece material:
Softwood
Working step:
Boring
Correction factor for v_f:
Hardwood = 0.8
Glulam = 1.8

HW solid, Z 2 / V 2, Marathon

Application:
For drilling very deep holes without interim clearance strokes. Suitable for drilling connecting and dowel holes in timber frame and window constructions.

Machine:
Overhead routers with/without CNC control, machining centres, special boring machines for frame production, vertical boring machines, automatic boring machines, multi spindle units, portable boring machines.

Workpiece material:
Softwood and hardwood, modified woods for window production, gluelam (plywood etc.) composites.

Technical information:
Design in HW solid, Z 2 / V 2 and centre point. Marathon coating for increased performance time. Extra long centre point for use of the drills at an angle. Large gullets for good chip removal especially when boring in cross grain.

GL 105 mm
WB 120 0 34

D mm	GL mm	L mm	NL mm	S mm	DRI	ID with adaptor		ID without adaptor	
3	105	102	70	10x25	RL	**230121**	□	**230021**	●
3,5	105	102	70	10x25	LL	**230122**	□	**230022**	●
4,5	105	101	70	10x25	RL	**230123**	□	**230023**	●
6	105	100,5	70	10x25	RL	**230108**	□	**230008**	●
6	105	100,5	70	10x25	LL	**230109**	□	**230009**	●
8	105	99,5	70	10x25	RL	**230110**	□	**230010**	●
8	105	99,5	70	10x25	LL	**230111**	□	**230011**	●
8,8	105	99,5	70	10x25	LL	**230124**	□	**230024**	●
10	105	98,5	70	10x25	RL	**230112**	□	**230012**	●
10	105	98,5	70	10x25	LL	**230113**	□	**230013**	●
12	105	97,5	70	10x25	RL	**230114**	□	**230014**	●
12	105	97,5	70	10x25	LL	**230115**	□	**230015**	●

RPM: n = 3000 - 9000 min^{-1}

GL 130 mm
WB 120 0 34

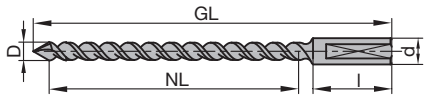
D mm	GL mm	L mm	NL mm	S mm	DRI	ID with adaptor		ID without adaptor	
6	130	125,5	90	10x30	RL	**230100**	□	**230000**	●
6	130	125,5	90	10x30	LL	**230101**	□	**230001**	●
6,5	130	125,5	90	10x25	RL	**230120**	□	**230020**	●
8	130	124,5	90	10x30	RL	**230102**	□	**230002**	●
8	130	124,5	90	10x30	LL	**230103**	□	**230003**	●
10	130	123,5	90	10x30	RL	**230104**	□	**230004**	●
10	130	123,5	90	10x30	LL	**230105**	□	**230005**	●
12	130	122,5	90	10x30	RL	**230106**	□	**230006**	●
12	130	122,5	90	10x30	LL	**230107**	□	**230007**	●

RPM: n = 3000 - 9000 min^{-1}

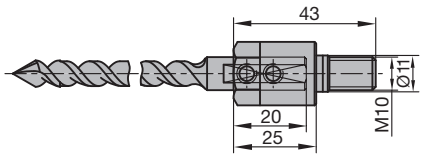
GL 150 mm
WB 120 0 34

D mm	GL mm	L mm	NL mm	S mm	DRI	ID with adaptor		ID without adaptor	
14	150	140,5	100	10x30	RL	**230116**	□	**230016**	●
14	150	140,5	100	10x30	LL	**230117**	□	**230017**	●
16	150	140	100	10x30	RL	**230118**	□	**230018**	●
16	150	140	100	10x30	LL	**230119**	□	**230019**	●

● available ex stock
□ available at short notice
Instruction manual visit www.leitz.org

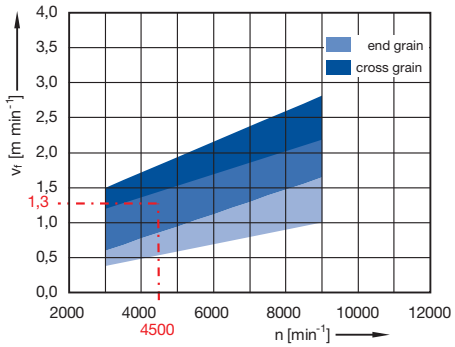


WB 101-0-02, twist drill with V point



WB 101-0-02, twist drill with V point, with adaptor

Feed speed v_f depending on the spindle RPM n



Workpiece material:
Softwood
Working step:
Boring, through feed hole
Correction factor for v_f:
Hardwood = 0.8
Gluelam = 1.8

HW solid, Z 2 V point, Marathon

Application:
For drilling very deep holes without interim clearance strokes especially in timber frame and window constructions.

Machine:
Overhead routers with/without CNC control, machining centres, special boring machines for the frame production, vertical boring machines, automatic boring machines, multi spindle units, portable boring machines.

Workpiece material:
Softwood and hardwood, modified woods in the window construction, gluelam (plywood, etc.), composites.

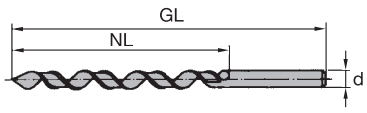
Technical information:
Design HW solid, Z 2 with V point. Marathon coating for increased performance time. Large gullet areas for good chip removal.

GL 130 / 160 mm
WB 101-0-02

D mm	GL mm	NL mm	S mm	DRI	ID with adaptor		ID without adaptor	
6	130	90	10x30	RL	**230400**	□	**230300**	●
7	130	90	10x30	RL	**230401**	□	**230301**	●
9	160	120	10x30	RL	**230402**	□	**230302**	●
10	160	120	10x30	RL	**230403**	□	**230303**	●
12	160	120	10x30	RL	**230404**	□	**230304**	●

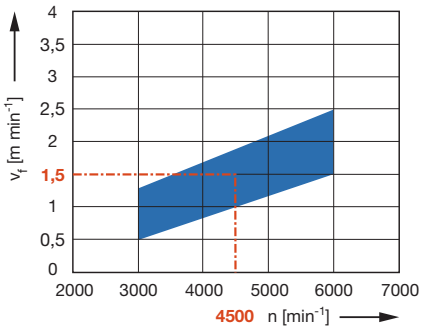
RPM: n = 3000 - 9000 min^{-1}

● available ex stock
□ available at short notice
Instruction manual visit www.leitz.org



WB 100-0, with V point

Feed speed v_f depending on the spindle RPM n



Workpiece material:
Solid wood
Working step:
Boring
Correction factor for v_f:
Boring depth > 4 x diameter = 0.8

HS solid, Z 1

Application:
For drilling deep holes. Suitable for depths up to approx. 4 times the diameter without interim clearance strokes.

Machine:
Vertical boring machines, automatic boring machines, multi spindle units, special purpose boring machines, portable drills.

Workpiece material:
Softwood and hardwood.

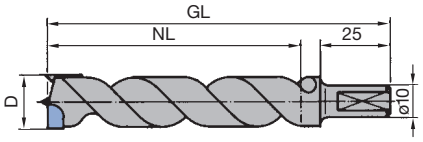
Technical information:
Solid tungsten carbide quality, Z 1. V point for producing tear free holes on both sides when drilling through holes. Large gullets for good chip removal especially cross grain.

V point for through hole drilling
WB 100-0

D mm	GL mm	NL mm	QAL	Z	DRI	ID	
5	90	50	HS	1	RL	**036110**	●
6	100	60	HS	1	RL	**036111**	●
8	120	80	HS	1	RL	**036112**	●
10	120	80	HS	1	RL	**036113**	●
12	140	100	HS	1	RL	**036114**	●

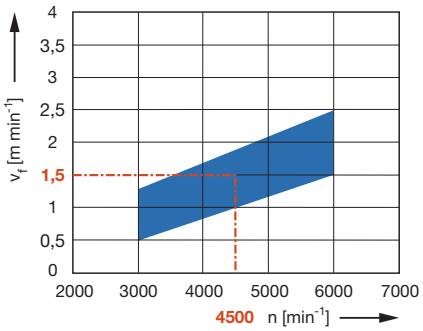
RPM: n = 3000 - 6000 min^{-1}

HW



WB 110-0, shank with clamping flat and adjusting screw.

Feed speed v_f depending on the spindle RPM n



Workpiece material:
Solid wood
Working step:
Boring
Correction factor for v_f:
Boring depth > 4 x diameter = 0.8

HW, Z 1 / V 1

Application:
For drilling deep holes. Suitable for depths up to 75 mm without interim clearance strokes. Suitable for producing connecting holes in timber frame constructions.

Machine:
Vertical boring machines, automatic boring machines, multi spindle units, special purpose boring machines, portable drills.

Workpiece material:
Softwood and hardwood, gluelam (plywood etc.), composites.

Technical information:
Design HW, Z 1 / V 1 and centre point. Large gullets for good chip removal, particularly when drilling cross grain.

Drill point for blind holes
WB 110-0

D mm	GL mm	NL mm	S mm	QAL	ID LL		ID RL	
12	110	80	10x25	HW	**036174**	●	**036175**	●
14	110	80	10x25	HW	**036176**	●	**036177**	●
16	110	80	10x25	HW	**036178**	●	**036179**	●

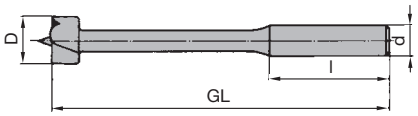
RPM: n = 3000 - 7500 min^{-1}

Spare parts:

BEZ	ABM mm	BEM	ID	
Allen screw	M5x10	Length adjustment	**005802**	●
Anti twist allen screw	M5x10	Length adjustment	**007438**	●

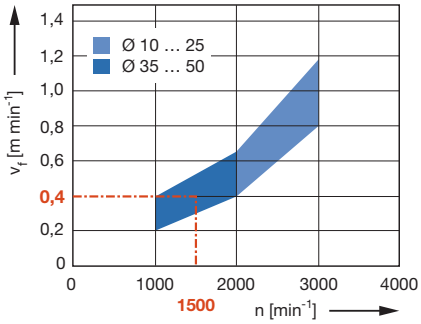
● available ex stock
□ available at short notice
Instruction manual visit www.leitz.org


SP



WB 310-0-02, reinforced shank 13/16 mm

Feed speed v_f depending on the spindle RPM n



Workpiece material:
Softwood
Working step:
Boring

SP, Z 2 / V 2

Application:
For drilling hinge and furniture hinge holes and for fittings in timber construction.

Machine:
Vertical boring machines, special purpose boring machines, portable drills.

Workpiece material:
Softwood.

Technical information:
SP solid, Z 2 / V 2. Shank 10 mm suitable for stationary boring machines and portable drills.

Shank 10 mm
WB 310-0-03

D mm	GL mm	S mm	DRI	ID
15	90	10x55	RL	**036650** ●
20	90	10x55	RL	**036655** ●
25	90	10x70	RL	**036658** ●
30	90	10x70	RL	**036661** ●
34	90	10x65	RL	**036663** ●
35	90	10x65	RL	**036664** ●
40	90	10x65	RL	**036667** ●

RPM: n = 1000 - 3000 min^{-1}

Technical information:
SP solid, Z 2 / V 2. Reinforced shank for heavy machining in vertical and horizontal boring machines and powerful portable drills.

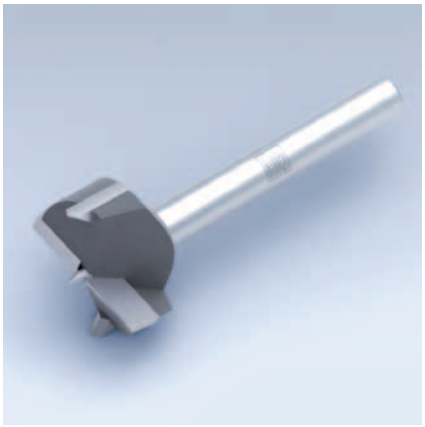
Shank 13 - 16 mm, reinforced design
WB 310-0-02

D mm	GL mm	S mm	DRI	ID
10	120	13x50	RL	**036421** ●
12	120	13x50	RL	**036422** ●
15	140	13x50	RL	**036424** ●
20	140	13x50	RL	**036427** ●
25	140	13x50	RL	**036430** ●
30	140	13x50	RL	**036433** ●
35	140	16x50	RL	**036436** ●

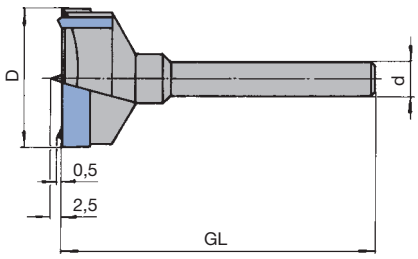
RPM: n = 1000 - 3000 min^{-1}

Drill set
AB 610-0-01

BEM	ABM mm	QAL	ID
1 pc each WB 310-0-03 SP	D = 15, 20, 25, 30, 35	SP	**036780** ●

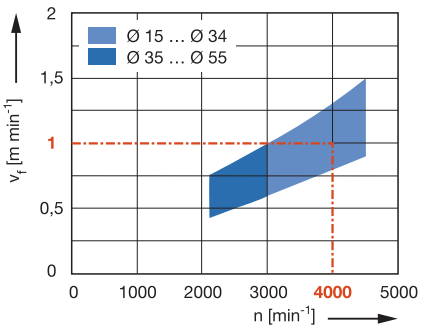



HW



WB 310-0-03, shank 10 mm,
GL = 90 mm

Feed speed v_f depending on the spindle RPM n



Workpiece material:
Hardwood
Working step:
Boring
Correction factor for v_f:
Chipboard = 1.2
Gluelam = 1.1

HW, Z 2 / V 2

Application:
For drilling hinge and furniture hinge holes.

Machine:
Vertical boring machines, automatic boring machines, multi spindle units, special purpose boring machines, portable drills.

Workpiece material:
Softwood and hardwood.

Technical information:
Design HS, Z 2 / V 2. Shank 10 mm suitable for stationary boring machines and portable drills.

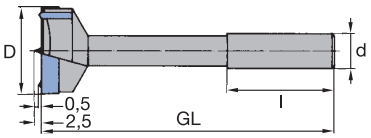
Shank 10 mm
WB 310-0-03

D mm	GL mm	S mm	DRI	ID	
15	90	10x55	RL	**036668**	●
16	90	10x55	RL	**036669**	●
17	90	10x55	RL	**036670**	●
18	90	10x55	RL	**036671**	●
19	90	10x55	RL	**036672**	●
20	90	10x55	RL	**036673**	●
22	90	10x55	RL	**036674**	●
24	90	10x70	RL	**036676**	●
25	90	10x70	RL	**036677**	●
26	90	10x70	RL	**036678**	●
28	90	10x70	RL	**036679**	●
30	90	10x70	RL	**036680**	●
34	90	10x65	RL	**036682**	●
35	90	10x65	RL	**036683**	●
40	90	10x65	RL	**036686**	●

RPM: n = 1200 - 4500 min^{-1}

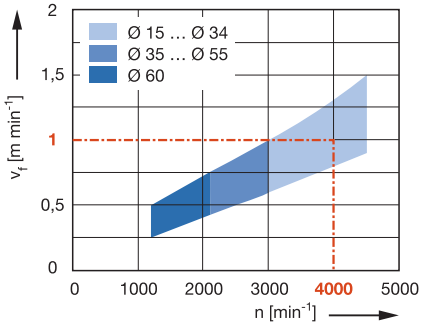
● available ex stock
□ available at short notice
Instruction manual visit www.leitz.org


HW



Tungsten carbide tipping with large resharpening area

Feed speed v_f depending on the spindle RPM n



Workpiece material:
Hardwood
Working step:
Boring
Correction factor for v_f:
Chipboard = 1.2
Gluelam = 1.1

HW, Z 2 / V 2

Application:
For drilling hinge and furniture hinge holes.

Machine:
Vertical boring machines, automatic boring machines, special purpose boring machines, portable drills.

Workpiece material:
Softwood and hardwood.

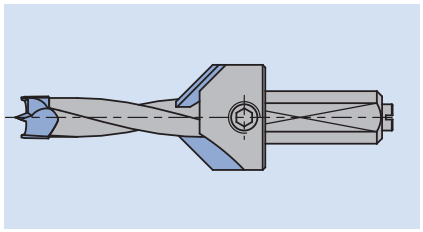
Technical information:
Design HW, Z 2 / V 2. Reinforced shank for use in vertical and horizontal boring machines and powerful portable drills.

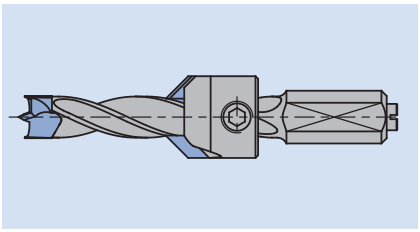
Shank 13 - 16 mm, reinforced design
WB 310-0-02

D mm	GL mm	S mm	DRI	ID	
20	140	13x50	RL	**036462**	●
22	140	13x50	RL	**036463**	●
25	140	13x50	RL	**036465**	●
30	140	13x50	RL	**036468**	●
35	140	16x50	RL	**036471**	●
40	140	16x50	RL	**036474**	●
50	150	16x50	RL	**036480**	●
55	150	16x50	RL	**036483**	●
60	150	16x50	RL	**036486**	●

RPM: n = 1200 - 4500 min^{-1}

Application	To countersink holes.
Workpiece material	Soft and hardwood. Chipboard and fibre materials (chipboard, MDF, HF, etc.), without coating, plastic coated, veneered etc. (only HW). Glulam (plywood, etc.; only HW). Plastomers (only HW). Duromers (only HW). Solid surface material (Corian, Varicor, Noblan, etc.; only HW). Laminated materials (HPL, solid melamine, etc; only HW). Compound materials (only HW). Non-ferrous metals (only HW).
Machine	Continuous boring machines, Point-to-point machines, Machining centres, Vertical boring machines, Automatic boring machines, Special boring machines, Portable boring machines.
Design	**1. Loose countersink for mounting on dowel drills.** The loose countersink is clamped on the shank or flute (for dowel drills or through hole boring bits with heel). It allows drilling and countersinking at the same time. It is possible to clamp and adjust the loose countersink on the flute of drills with heel.

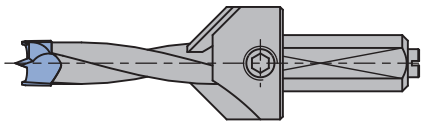




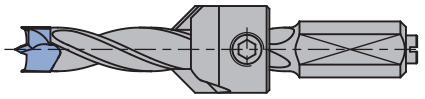
2. Loose countersink for mounting on twist drills.
Countersink with a countersink angle of 90° or 180° can be clamped to twist drills.

3. Single part countersink.
Single part countersinks are used for subsequent countersinking of holes. Nearly all materials can be countersunk with the HW design. Usually this countersink is used to countersink holes for flush screws.

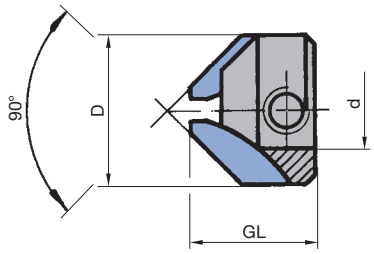

HW



Mounting example fixing on drill shank



Mounting example fixing on flute



WB 701-0-02
Countersink fixing on drill shank,
suitable drill types
WB 120-0-10 / -11 / -12 / -29 / -30

WB 701-0-03
Countersink fixing on flute,
suitable drill types
WB 101-0-05 / -06
WB 120-0-23 / -24 / -26

HW, Z 2

Application:
To countersink and bore in one working step.

Machine:
Point-to-point drilling machines, through feed drilling machines, CNC machining centres, hinge boring machines, multi spindle units, vertical boring machine, portable drills.

Workpiece material:
Softwood and hardwood, chipboard and fibre materials (MDF, HF etc.), untreated, plastic coated, veneered etc., gluelam (plywood etc.), plastics (thermoplastic, fibre reinforced etc.), NE metals (aluminium, copper etc.).

Technical information:
Loose countersink 90°, fastened on the shank of dowel or through hole drills.

Fastened on shank
WB 701-0-02

D mm	GL mm	d mm	D boring bit mm	Allan screw mm	ID LL		ID RL	
20	17,5	10	6 - 10	M6x5	**034350**	●	**034351**	●

RPM: n = 3000 - 9000 min^{-1}

Spare parts:

BEZ	ABM mm	for S mm	ID	
Allen Key	SW 3	M6	**005433**	●
Allen screw	M6x5	SW 3	**005836**	●

Technical information:
Loose countersink 90°. Fixed on flute of dowel and through hole drills with double heel. Stepless axial positioning of countersink on flute for variable boring and countersink depth.

Fastened on flute
WB 701-0-03

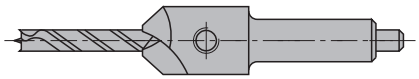
D mm	GL mm	d mm	D boring bit mm	Allan screw mm	ID LL		ID RL	
15,5	17,5	4	4	M5x5	**034370**	●	**034371**	●
15,5	17,5	5	5	M5x5	**034372**	●	**034373**	●
15,5	17,5	6	6	M6x5	**034374**	●	**034375**	●
15,5	17,5	8	8	M6x4	**034376**	●	**034377**	●
20	17,5	10	10	M6x5	**034378**	●	**034379**	●

RPM: n = 3000 - 9000 min^{-1}

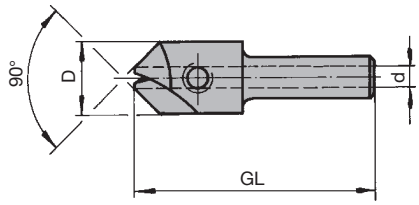
Spare parts:

BEZ	ABM mm	for S mm	ID	
Allen Key	SW 2,5	M5	**005432**	●
Allen Key	SW 3	M6	**005433**	●
Allen screw	M5x5	SW 2,5	**005805**	●
Allen screw	M6x5	SW 3	**005836**	●
Allen screw	M6x4	SW 3	**005837**	●

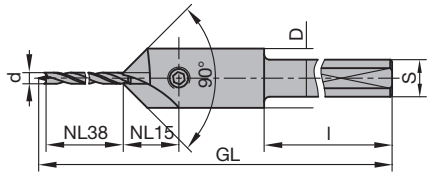
SP



Mounting example
Countersink WB 701-0-01 mounted on drill WB 120-0-05



WB 701-0-01, cylindrical shank



SB 204-0, countersink with drill

SP, Z 2

Application:
To countersink and bore in one working step.

Machine:
Multi spindle unit, vertical boring machine, portable drills.

Workpiece material:
Softwood and hardwood.

Technical information:
Loose countersink 90°, fastened on drills WB 120-2-05.

Countersink 90°
WB 701-0-01

D mm	GL mm	S mm	d mm	QAL	DRI	ID	
16	55	10x30	3	SP	RL	**036250**	●
16	55	10x30	4	SP	RL	**036251**	●
16	55	10x30	5	SP	RL	**036252**	●
16	55	10x30	6	SP	RL	**036253**	●

RPM: n = 3000 - 6000 min^{-1}

Countersink 90°, with drill
SB 204-0

D mm	GL mm	NL mm	S mm	QAL	DRI	ID	
16	136	38/15	10x60	SP/HS	RL	**036257**	●

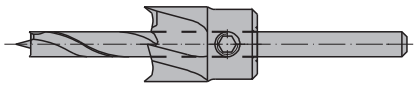
RPM: n = 3000 - 6000 min^{-1}

Spare parts:

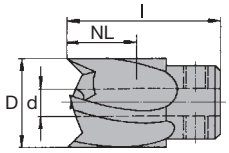
BEZ	ABM mm	BEM	ID	
Allen Key	SW 3		**005433**	●
Allen screw	M6x5		**005836**	●
Twist drill	D4.5/S4.5x30/GL85	for ID 036257	**035892**	●

● available ex stock
□ available at short notice
Instruction manual visit www.leitz.org

HS



Mounting example
WB 711-0, cylindrical shank



WB 711-0, with 2 clamping screws

HS, Z 2

Application:
To countersink and bore in one working step.

Machine:
Multi spindle units, vertical boring machine, portable drills.

Workpiece material:
Softwood and hardwood.

Technical information:
Loose countersink 180°, fastened on drills WB 120-2-05.

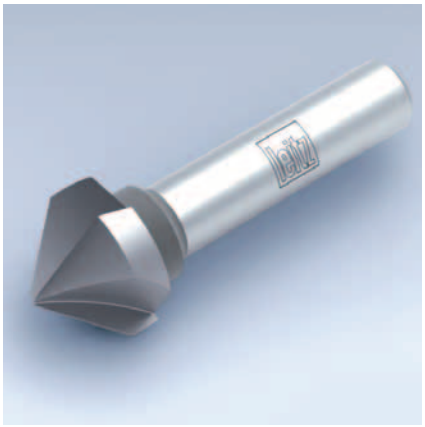
Counterbore 180°
WB 711-0

D mm	GL mm	NL mm	d mm	QAL	DRI	ID	
15	22	10	6	HS	RL	**036301**	●
20	25	12	8	HS	RL	**036303**	●
25	25	12	10	HS	RL	**036305**	●
30	28	15	12	HS	RL	**036307**	●

RPM: n = 3000 - 6000 min^{-1}

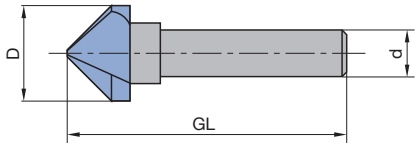
Spare parts:

BEZ	ABM mm	BEM	ID	
Allen Key	SW 2,5	for D = 15 - 25 mm / 180°	**005432**	●
Allen screw	M5x5	for D = 15 - 25 mm / 180°	**005805**	●
Allen Key	SW 3	for D = 30 mm / 180°	**005433**	●
Allen screw	M5x6	for D = 30 mm / 180°	**005836**	●

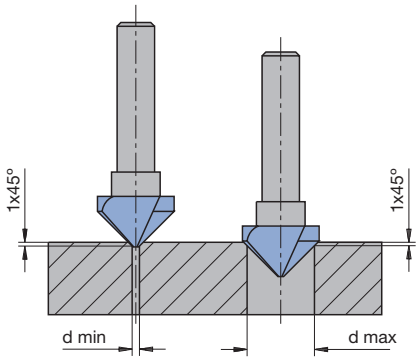


SP

HW



WB 700-0 cylindrical shank, without clamping flat



The illustrations show the smallest and largest hole diameters possible, countersunk with a 1x45° bevel:
Countersink 90° SP:
D_{min} = 4.00 mm, D_{max} = 12.00 mm

Countersink 90° HW:
D_{min} = 2.00 mm, D_{max} = 18.00 mm

Shank 10 mm

Application:
To countersink holes.

Machine:
Multi spindle units, vertical boring machine, portable drills.

Workpiece material:
Softwood and hardwood, chipboard and fibre materials (MDF, HF etc.), untreated, plastic coated, veneered etc., gluelam (plywood etc.), plastics (thermoplastic, fibre reinforced etc.), NE metals (aluminium, copper etc.).

Technical information:
Countersink 90° Z 1 SP solid (only for soft and hardwood).
Countersink 90° Z 3 HW solid. Special ground for clean and chatter free cut.

Countersink 90°
WB 700-0, WB 702-0

D mm	GL mm	S mm	QAL	DRI	ID	
16	75	10x50	SP	RL	**036220**	●
20,5	58	10x40	HW solid	RL	**036255**	●

RPM: n = 2500 - 6000 min^{-1}

● available ex stock
□ available at short notice
Instruction manual visit www.leitz.org

Application

To drill stepped bores.
To cut plugs for longitudinal joints.

Workpiece material

Step drill
Soft and hardwood.
Chipboard and fibre materials (chipboard, MDF, HF, etc.), without coating, with plastic coating, veneer etc.
Glulam (plywood, etc.).
Plastomer.
Duromers.
Solid surface material (Corian, Varicor, Noblan etc.).
Composite materials.
Non-ferrous metals.
Plug cutter
Soft and hardwood.

Machine

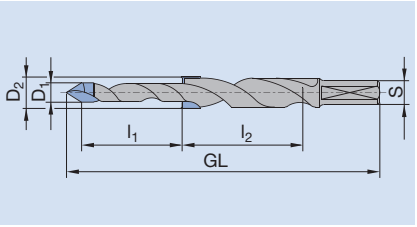
Through feed boring machines,
Point-to-point boring machines,
Machining centres,
Vertical boring machines,
Automatic boring machines,
Special boring machines,
Portable boring machines.

Design

Step drill
Step drills are characterised by two drilling operations.
The first drill can have either a V point or a centre point with spurs.
The second operation can have either a flat 180° counterbore or an angled countersink < 180°.
Plug cutters
Plug cutters are designed with spiral cutting edges to give a long plug and good chip clearance. Large plugs are used, for example, for joining handrails in stair construction.

Technical features

Step drill
The dimensions listed in the tool tables refer to the following tool parameters:

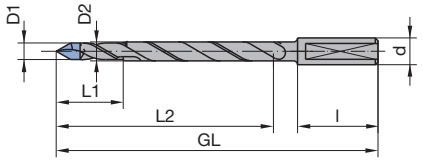


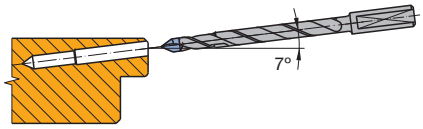
D_1	Hole diameter, pre-boring bit.
D_2	Hole diameter, 1st step.
l_1	Working length pre-boring bit.
l_2	Working length, 1st step.
S	Shank diameter x shank length.
GL	Total length of the boring bit including the projection to the centre point.

Application Data

RPM/feed speeds
The optimum RPM and feed speeds are detailed in the diagrams attached to the tool tables.

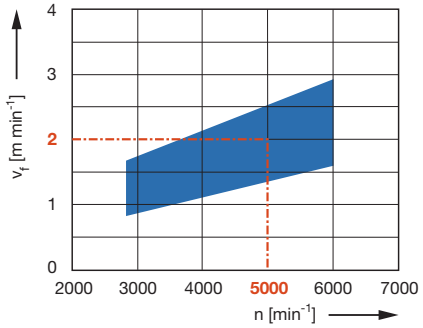

HW





Drilling hole for screwed hinge at an inclined angle of 7° up to 9°.

Feed speed v_f depending on the spindle RPM n



Workpiece material:
Chipboard plastic coated
Working step:
Step drilling
Correction factor for v_f:
MDF, solid wood = 0.7

Shank 10 mm

Application:
To produce stepped holes for screwed hinge holes for doors.

Machine:
Multi spindle units, CNC machining centres, portable drills.

Workpiece material:
Softwood and hardwood, chipboard and fibre materials (MDF, HF etc.), untreated, plastic coated, veneered etc., gluelam (plywood etc.), plastics (thermoplastic, fibre reinforced etc.), NE metals (aluminium, copper etc.).

Technical information:
Design HW Z 2, 2-steps. 1st step with V point drill.

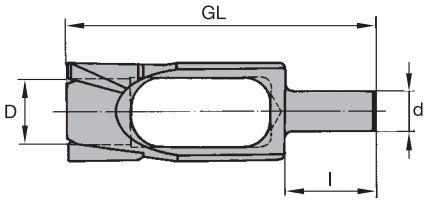
HW, Z 2
WB 201-0

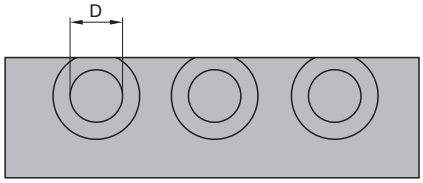
Type	D_1 mm	D_2 mm	GL mm	L_1 mm	L_2 mm	S mm	DRI	ID	
Anuba 14,5	5,5	7,1	120	25	85	10x30	RL	**035800**	●
Anuba 16	6,2	7,7	120	30	85	10x30	RL	**035801**	●
Anuba 18	7,5	8,8	120	30	85	10x30	RL	**035802**	●
Simons	5,5	6,8	120	15	85	10x30	RL	**035803**	●

RPM: n = 3000 - 6000 min^{-1}

● available ex stock
□ available at short notice
Instruction manual visit www.leitz.org

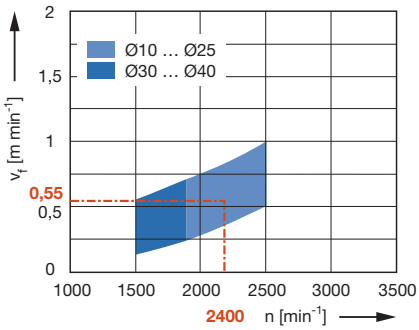
SP





Position the edge of the plug cutter at the edge of the workpiece so the cutter is open to the outside. This improves chip clearance, increases cut quality and performance time.

Feed speed v_f depending on the spindle RPM n



Shank 16 mm

Application:
To produce plugs, e.g. for handrail joints in stair production or to produce wooden plugs such as knot-hole repairs.

Machine:
Multi spindle units, vertical boring machine, portable drills.

Workpiece material:
Softwood and hardwood.

Technical information:
Design SP Z 2 / V 2. Reinforced shank for use in vertical and horizontal boring machines.

SP, Z 2 / V 2
WB 600-0

D mm	GL mm	S mm	DRI	ID	
10	140	16x50	RL	**036880**	●
15	140	16x50	RL	**036881**	●
20	140	16x50	RL	**036882**	●
25	140	16x50	RL	**036883**	●
30	140	16x50	RL	**036884**	●
35	140	16x50	RL	**036885**	●

RPM: n = 1500 - 2500 min^{-1}

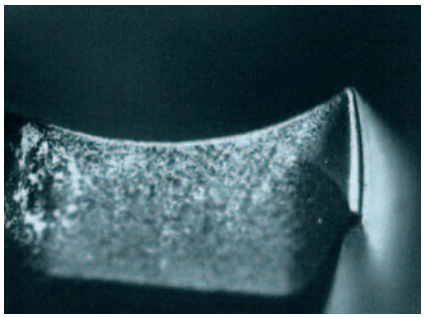
Workpiece material:
Softwood
Working step:
Machining plugs

Problem	Possible cause	Action
Boring bit wears quickly	– Feed rate per rotation too low.	Increase feed rate or reduce RPM (see charts on product pages).
High wear to spurs	– Tool remains stationary at the reversal point when boring dowel holes.	Reduce RPM or increase acceleration of the feed axis (when possible). Change program.
	– Abrasive workpiece material.	Select boring bit with more wear resistant cutting edge material (HW or DP).
Uneven edges (new boring bit)	– Feed rate per rotation too high as the bit enters or leaves the workpiece.	Reduce feed rate or increase RPM (see charts on product pages).
	– Insufficient concentricity of boring bit.	Check concentric clamping of bit and chuck. Check spindle and chuck for deformation.
	– Insufficient centering on return stroke of the boring bit.	Check spindle and chuck for signs of wear. Use boring bit with heel.
Chips and workpiece become hot	– Tool too long at the reversal point when boring dowel holes.	Reduce RPM or increase acceleration of the feed axis (when possible). Change program.
Burn marks at the bore wall (new boring bit)	– Insufficient chip flow.	Clear gullet from time to time when boring deep holes. Select boring bit type for large chip quantities (e. g. Levin type).
Bore too large	– Error in concentricity or the centre-point is not central.	Check boring bit clamping for concentricity. Check boring bit chuck and motor spindle for deformation and wear. Check the concentric running of the centre point.
Unclean countersunk wood	– Chips jammed between flute and loose countersink.	Use one-piece stepped boring bit when machining solid wood.
Broken boring bit	– Wrong application parameters.	Reduce feed rate, increase RPM (see charts on product pages).
	– Bore is full of chips.	Clear gullet from time to time when boring deep holes. Select boring bit type for large chip quantities (e. g. Levin type).
	– Non-uniform workpiece material.	Check workpiece for foreign objects Reduce feed rate.
	– Premature loosening of workpiece clamping.	Adjust program
	– Worn boring spindle.	Check spindle bearing, repair if necessary.
Broken spurs	– High feed rate when boring hard workpiece materials.	Reduce feed rate.
	– Workpiece material not suitable for machining with spurs.	Grind off spur and chamfer cutting edge at change-over to the minor cutting edge.

Worn spurs
(abrasive wear)
The natural end of the performance time of a dowel or hinge boring bit is deter-mined by worn spurs by abrasion. The cutting forces on the workpiece surface increase with increasing wear. The surface is subject to severe deformation before it is cut.

Consequently, the edge of the boring hole arches. Coated panel materials will show tear-outs and veneered surfaces crack at the edge of the boring hole. The boring bit must be replaced.

The performance time is set by the quality requirement of the holes. With visible holes such as holes for shelves, drill replacement replacement should be carried out earlier than for holes for dowel joints.



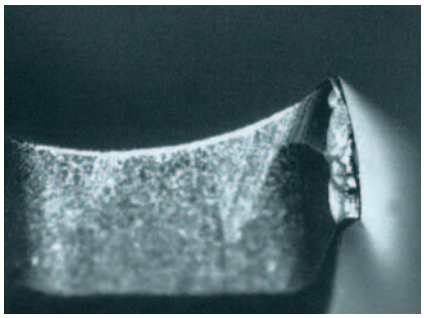
Worn spurs.

Broken spurs
The sharp and precise spurs of dowel and hinge boring bits are prone to mechanical overstress. They can break when used under unfavourable operating conditions.

This can be caused by worn spindles or chucks, if the workpiece is not clamped firmly or by hard foreign objects in the workpiece such as small stones or metal particles.

Broken spurs do not produce a clean cut since the break geometry is random. As a rule, this results in break-outs or tear-outs at the edge of the hole.

If the break geometry is favourable, the drilling quality does not deteriorate immediately. With continued use, these broken spurs are subject to fast abrasive wear. Performance times are considerably reduced. The wear can conceal the damaged spurs.



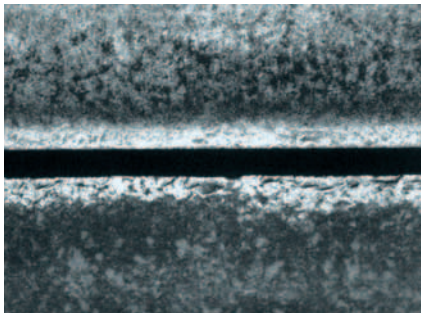
Broken spurs.

Thermal wear
Because of the permanent contact between the cutting edges and the workpiece material and the deep boring depth, operating conditions can occur which lead to heat stress.

Heat stress occurs when the heat developed by the friction at the main cutting edges cannot be dispersed by the chips. This can be caused by the wrong operating conditions such as high RPM at a low feed rate or when the boring bit remains stationary too long at the reversal point when boring dowel holes.

Insufficient chip removal at deep depths or resin build-up at the gullet can also lead to frictional heat.

The structure of the cutting material is destroyed thermally regardless of using HS, HW or DP. HS cutting materials overheat and lose hardness. The binding agent of sintered cutting materials such as HW or DP is attacked, grain breakage at the cutting edge can occur.



The cutting edges in the illustrations show the difference between abrasive wear (top) and wear caused by heat (bottom).

Inquiry/order form special tools – drilling

Customer details: Customer number: (if known) ☐☐☐☐☐☐☐☐

☐ Inquiry
☐ Order

Delivery date: (not binding) ☐☐ CW

Company:

Street:

Post code/place:

Country:

Phone/fax:

Contact person:

Signature:

Date:

Inquiry/order no.:

Tool ID: (if known)

No. of pieces:

Workpiece material:

Type:

☐ Solid wood	Type:	Type of coating:
☐ Wood-derived material	Type:	Type of coating:
☐ Others	Type:	Type of coating:

Machining:

☐ along grain/across grain (solid wood only)
☐ in end grain (solid wood only)
☐ through hole boring
☐ pocket boring

Boring depth: mm

Boring depth: mm

Machine:

Manufacturer:

Type:

Application data:

Feed rate: m/min^{-1}

RPM: min^{-1}

Tool:

Tool type (see selection pages):

Dimensions:

Diameter: mm

Working length: mm

Shank diameter: mm

Total length: mm

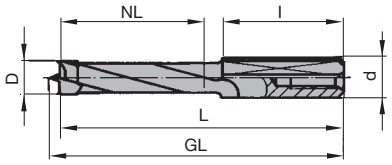
No. of teeth:

Cutting material:
☐ SP
☐ HS
☐ HW
☐ HW solid
☐ DP

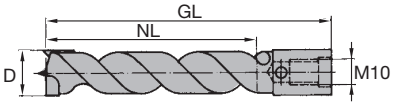
Direction of rotation:
☐ left hand
☐ right hand

Please indicate existing data on tool, machine and workpiece material.

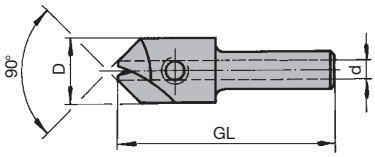
Illustrations show standard boring bit types – in case of order please indicate dimensions or make a sketch with all dimensions needed (see a bottom).



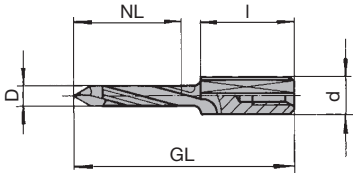
Dowel drill



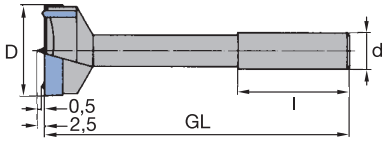
Levin type drill HW/HS Z1/V1



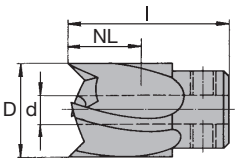
Countersink 90°



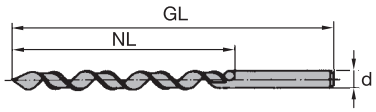
Through hole drilling



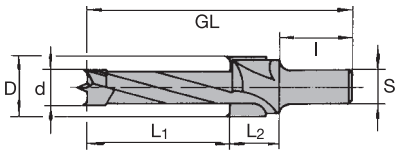
Machine bit



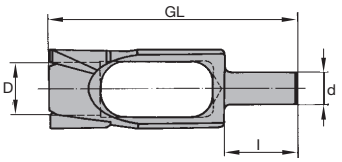
Counterbore 180°



Levin type drill HS V point



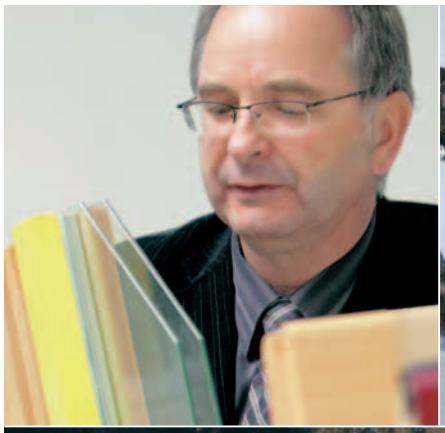
Step drill



Plug cutter

Enter boring bit dimensions, special shank dimensions, workpiece side to table, face side on top/bottom on sketch.

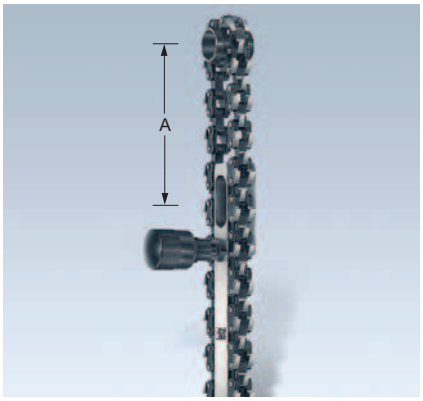
6

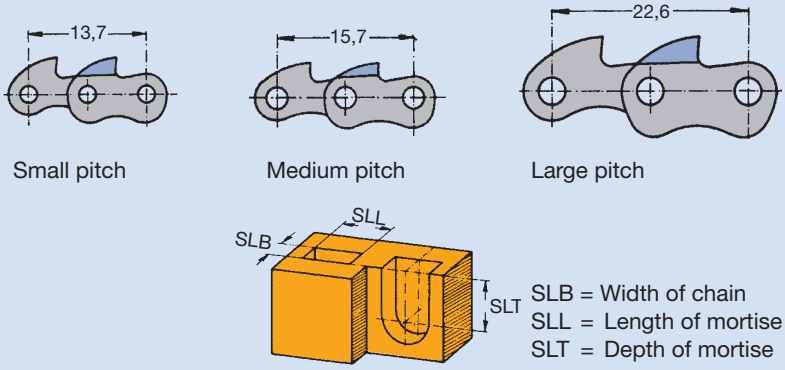


7. Mortising

Chain pitch

	Small pitch	Medium pitch	Large pitch
Width of mortise	4 – 25 mm	4 – 40 mm	6 – 40 mm
Length of mortise	20 – 28 mm	20 – 28 mm	36 – 70 mm
Depth of mortise	75 – 125 mm	125 – 150 mm	100 – 175 mm
Pitch	13.70 mm = 0.54”	15.70 mm = 0.62”	22.60 mm = 0.89”





Application

For mortising rectangular single or double slots.

Work piece material

Softwood and hardwood.

Machine

Chain mortisers, hand chain mortisers etc.

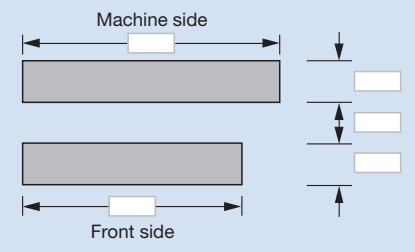
Order information

for complete sets
- Make of machine
- Mortise dimensions (SLBxSLLxSLT)
- Number of links (DGL)
- Dimension A

for guide bars
- Width of chain (SLB)
- Length of mortise (SLL)
- Depth of mortise (SLT)
- Make of machine (lubrication)

for mortise chains
- Width of chain (SLB)
- Pitch
- Number of links (DGL)

for sprockets
- Width of chain (SLB)
- Length of mortise (SLL)
- Depth of mortise (SLT)



for double slotting set
1. Machine make and dimension A
2. Dimensions of slots (SLBxSLLxSLT)
3. Distance between slots
4. Arrangements of slots (machine-/operator related)

Note: When fitting a double sprocket, please check and state the length of the motor spindle.

Design

Chain mortise tools are manufactured in 3 chain pitches depending on the required slot sizes. A mortise chain set consists of chain, guide bar with grease pocket for lubrication and sprocket, mounted on a mortising machine. The guide bar is manufactured with grease pockets or on request with grease nipple for semi-automatic or automatic lubrication.

Cutting material

SP

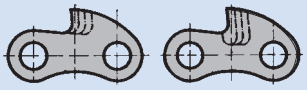
Cutting speed

v_c min: 4 m sec^{-1}, v_c opt: 6 m sec^{-1}

Recommendation

- Chromium plated mortise chains are available on request for abrasive workpiece materials.
- If the number of links (DGL) cannot be given, indicate make and type of machine or dimension A. Dimension A = distance between centre of sprocket bore and guide bar securing slot.
- For hand chain mortisers, please indicate make and type of machine.
- Mortise chains are available ex stock or at short notice.

Maintenance/instruction for use



The chains must be resharpened regularly to maintain performance and life, not only the chain, but also the guide bar and sprocket. Resharpen the cutting edges on the face as sketch.

- Pay attention to the lubrication of chain/guide bar.
- Check the tension of the chain (allow 4 – 6 mm lift at the middle of the guide bar).
- Replace or resharpen chains regularly.

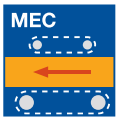
Standard dimensions

Bore of sprocket:	Standard 16 mm
Groove of guide bar:	Standard 13 mm
Slot of guide bar:	Standard 13 x 40 mm

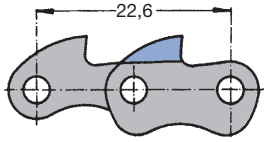
Chain mortise tools, determination of no. of links

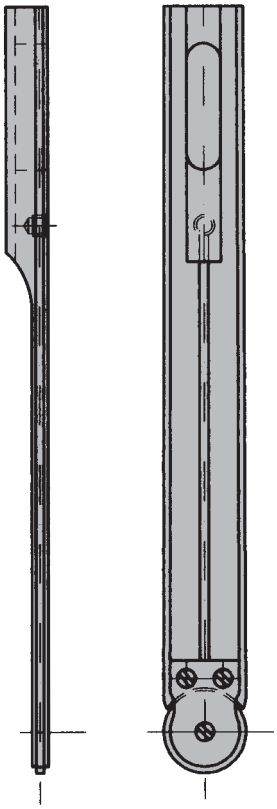
Dimension A, length of slot **SLL** and depth of slot **SLT** are known.

Pitch	SLT	SLL	70	85	90	100	110	120	125	130	135	140	145	150	160	165	175	180	200	225
13.7	75	20	42	44	45	46	48	49	50	51	52	52	53	54	55	56	58	58	61	65
13.7	100	25 – 27	42	44	45	46	48	49	50	51	52	52	53	54	55	56	58	58	61	65
13.7	125	28 – 30	42	44	45	46	48	49	50	51	52	52	53	54	55	56	58	58	61	65
15.7	100	30 – 37	37	39	40	41	42	43	44	44	45	45	47	47	48	49	51	52	54	57
15.7	125	30 – 37	37	39	40	41	42	43	44	44	45	45	47	47	48	49	51	52	54	57
15.7	150	30 – 37	40	42	43	44	45	46	47	47	48	48	50	50	51	52	53	54	56	60
22.6	125	38 – 45	26	27	28	28	29	30	30	31	31	32	32	33	34	34	35	35	37	40
22.6	125	50	27	28	29	30	30	31	32	32	33	33	34	34	35	35	36	36	38	41
22.6	125	55 – 60	28	29	30	31	32	32	33	33	34	34	35	35	36	36	37	38	39	42
22.6	125	65	–	31	31	32	33	33	34	34	35	35	36	36	37	37	38	39	40	43
22.6	125	70 – 75	–	32	32	33	34	35	35	35	36	36	37	37	38	39	39	40	41	44
22.6	150	38 – 45	28	29	30	31	32	32	33	33	33	34	35	35	36	36	37	37	39	42
22.6	150	50	29	30	31	32	33	34	34	34	35	35	36	36	37	37	38	39	41	43
22.6	150	55 – 60	30	31	32	33	34	35	35	35	36	36	37	37	38	38	40	40	42	44
22.6	150	65	–	33	33	34	35	36	36	36	37	37	38	38	39	39	41	41	43	45
22.6	150	70 – 75	–	34	34	35	36	37	37	38	38	39	39	40	41	41	42	42	44	46
22.6	175	38 – 45	–	31	32	33	34	34	35	35	35	36	37	37	38	38	39	39	41	44
22.6	175	50	–	32	33	34	35	36	36	36	37	37	38	38	39	40	40	41	43	45
22.6	175	55 – 60	–	33	34	35	36	37	37	37	38	38	39	39	40	40	42	42	44	46
22.6	175	65	–	35	35	36	37	38	38	38	39	39	40	40	41	41	43	43	45	47
22.6	175	70 – 75	–	36	36	37	38	39	39	40	40	41	41	42	43	43	44	44	46	48
Hand chain mortisers																				
15.7	100	30 – 35	–	–	36	37	–	–	–	–	–	42	–	–	–	–	–	–	–	–
22.6	100	35 – 50	–	–	26	27	–	–	–	–	–	30	–	–	–	–	–	–	–	–
		60	–	–	28	29	–	–	–	–	–	32	–	–	–	–	–	–	–	–



SP





Guide bar

Mortise chains, guide bars, sprockets

Application:
For mortising rectangular single and double slots.

Machine:
Chain mortising machines, hand chain mortisers, chain mortising aggregates etc.

Workpiece material:
Softwood and hardwood.

Technical information:
Mortise chains with 22.6 mm pitch for slotting widths of 8-20 mm, slotting lengths of 40/50 mm and slotting depths of 150 mm.

A-value 70 mm
TS 100-0, TS 120-0, TS 172-0

SLB mm	SLL mm	SLT mm	DGL PCS	TG	ID Guide bar	ID Mortise chain	ID Sprocket
10	50	150	29	large	**052324** ●	**051214** ●	**052834** ●
12	50	150	29	large	**052334** ●	**051248** ●	**052835** ●
14	50	150	29	large	**052334** ●	**051282** ●	**052835** ●
16	50	150	29	large	**052334** ●	**051316** ●	**052835** ●

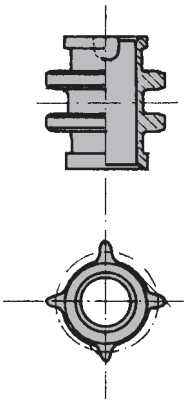
A-value 130 mm
TS 100-0, TS 120-0, TS 172-0

SLB mm	SLL mm	SLT mm	DGL PCS	TG	ID Guide bar	ID Mortise chain	ID Sprocket
8	40	150	34	large	**052310** ●	**051185**	**052823** ●
10	40	150	34	large	**052320** ●	**051219**	**052824** ●
12	40	150	34	large	**052330** ●	**051253**	**052825** ●
14	40	150	34	large	**052330** ●	**051287**	**052825** ●
16	40	150	34	large	**052330** ●	**051321** ●	**052825** ●

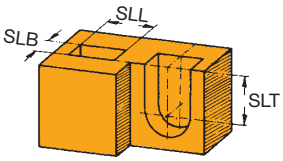
A-value 150 mm
TS 100-0, TS 120-0, TS 172-0

SLB mm	SLL mm	SLT mm	DGL PCS	TG	ID Guide bar	ID Mortise chain	ID Sprocket
8	40	150	36	large	**052310** ●	**051187** ●	**052823** ●
10	40	150	36	large	**052320** ●	**051221** ●	**052824** ●
12	40	150	36	large	**052330** ●	**051255** ●	**052825** ●
14	40	150	36	large	**052330** ●	**051289** ●	**052825** ●
16	40	150	36	large	**052330** ●	**051323** ●	**052825** ●
20	40	150	36	large	**052340** ●	**051374** ●	**052826** ●

● available ex stock
□ available at short notice
Instruction manual visit www.leitz.org



Sprocket



SLB = Chain width
SLL = Slotting length
SLT = Slotting depth

Spare parts:

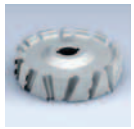
Tool Type	Machine	ID	
Grease pocket, short design		**008800**	●
Grease pocket, long design		**008801**	●
Grease nipple	ELU	**007936**	●

Order example:
Tool: Mortise chain set
A-value: 150 mm
SLB/SLL/SLT: 12/40/50 mm
DGL: 36 pces.
Chain: ID **051255**
Guide bar: ID **052330**
Sprocket: ID **052825**
Required notes: Machine model

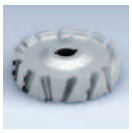
7

8. Clamping systems

8. Clamping systems

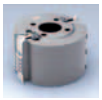
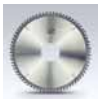
Adaptors / Tool types	 **Spindle without safety against twisting**	 **Spindle with safety against twisting - keyway**	 **Spindle with safety against twisting - hexagon**	 **Spindle with HSK-F63 modified**
Circular sawblades 	 page 576 8.1.2 Hydro clamping - Closed system - Hydro-Duo clamping element with integrated safety against twisting  page 572 8.1.1 Hydro clamping - Open system - clamping element with clamping nut - clamping element with end ring and clamping screws	 page 581 8.1.3 Clamping sleeves - Flanged sleeve for circular sawblades with BO 65  page 587 8.2.2 Mechanical clamping - Quick clamping element Type 110 for scoring sawblades and cutting tools		 page 633 8.4.2 Arbors - Arbors HSK-F 63 modified A = 12,5, 20, 52 mm
Hoggers 	 page 576 8.1.2 Hydro clamping - Closed system - Hydro-Duo clamping element with integrated safety against twisting	 page 582 8.1.3 Clamping sleeves - Flanged sleeve for cutting- and hogging tools with BO 80  page 589 8.2.2 Mechanical clamping - Quick clamping element Type 160 for cutting- and hogging tools	 page 578 8.1.2 Hydro clamping - Hydro clamping element for cutting- and hogging tools for BO 60 und 80  page 585 8.2.1 Hydro clamping - Closed system - Quick clamping element Type 160 Hydro for cutting- and hogging tools  page 586 8.2.1 Hydro clamping - Closed system - Quick clamping element Type 160 Hydro-Duo for cutting- and hogging tools	 page 633 8.4.2 Arbors - Arbors HSK-F 63 modified A = 12,5, 20, 52 mm
Cutters/ cutterheads  	 page 572 8.1.1 Hydro clamping - Open system - clamping element with clamping nut - clamping element with end ring and clamping screws  page 573 8.1.2 Hydro clamping - Closed system - clamping element with clamping nut - clamping element with end ring and clamping screws	 page 582 8.1.3 Clamping sleeves - Flanged sleeve for cutting- and hogging tools with BO 80  page 587 8.2.2 Mechanical clamping - Quick clamping element Type 110 for scoring sawblades and cutting tools	 page 578 8.1.2 Hydro clamping - Closed system - Hydro clamping element for cutting- and hogging tools for BO 60 und 80  page 577 8.1.2 Hydro clamping - Closed system - Hydro clamping element with end ring and clamping screws for tools with BO 60	 page 633 8.4.2 Arbors - Arbors HSK-F 63 modified A = 12,5, 20, 52 mm

8. Clamping systems

Adaptors / Tool types	 **Spindle without safety against twisting**	 **Spindle with safety against twisting - keyway**	 **Spindle with safety against twisting - hexagon**	 **Spindle with HSK-F63 modified**
Cutters/ cutterheads  	 page 576 8.1.2 Hydro clamping - Closed system - Hydro-Duo clamping element with integrated safety against twisting	 page 589 8.2.2 Mechanical clamping - Quick clamping element Type 160 for cutting- and hogging tools	 page 585 8.2.1 Hydro clamping - Closed system - Quick clamping element Type 160 Hydro for cutting- and hogging tools  page 586 8.2.1 Hydro clamping - Closed system - Quick clamping element Type 160 Hydro-Duo for cutting- and hogging tools	
Hogger sets/ cutterhead sets  	 page 572 8.1.1 Hydro clamping - Open system - clamping element with clamping nut - clamping element with end ring and clamping screws  page 573 8.1.2 Hydro clamping - Closed system - clamping element with clamping nut - clamping element with end ring and clamping screws  page 574 8.1.2 Hydro clamping - Closed system - Clamping element with end ring Clamping screws and safe against twisting  page 575 8.1.2 Hydro clamping - Closed system - Hydro-Duo clamping element with 2 chambers axial piston clamping and fine adjustment  page 583 8.1.3 Clamping sleeves - Clamping sleeve with end ring and safety against twisting - Spindle filling spacers with safety against twisting  page 584 8.1.3 Clamping sleeves - Reduction sleeve with collar - Reduction sleeve without collar		 page 577 8.1.2 Hydro clamping - Closed system - Hydro clamping element with end ring and clamping screws for toolsets with BO 60  page 579 8.1.2 Hydro clamping - Closed system - Hydro-Duo clamping element with double piston clamping  page 580 8.1.2 Hydro clamping - Closed system - Hydro-Duo clamping element with 2 chambers axial piston clamping and fine adjustment	 page 633 8.4.2 Arbors - Arbors HSK-F 63 modified A = 12,5, 20, 52 mm

8

8. Clamping systems

Adaptors / Tool types	SK 30	ISO 30 SCM/ Morbidelli	ISO 30 CMS	BT 30 BT 35	SK 40
Router cutters 	page 592 8.3.1 Shrink-fit chucks page 599 page 600 page 601 8.3.3 Collet chucks	page 602 page 603 8.3.3 Collet chucks	page 604 8.3.3 Collet chucks	page 605 8.3.3 Collet chucks	page 592 8.3.1 Shrink-fit chucks page 601 8.3.3 Collet chucks
Cutter-heads with shank 	page 592 8.3.1 Shrink-fit chucks page 599 page 600 page 601 8.3.3 Collet chucks	page 602 page 603 8.3.3 Collet chucks	page 604 8.3.3 Collet chucks	page 605 8.3.3 Collet chucks	page 592 8.3.1 Shrink-fit chucks page 601 8.3.3 Collet chucks
Tools with borehole 	page 629 page 630 8.4.2 Arbors	page 631 8.4.2 Arbors	page 628 8.4.2 Arbors + page 604 8.3.3 Collet chucks	page 628 8.4.2 Arbors + page 605 8.3.3 Collet chucks	page 629 page 630 8.4.2 Arbors
Circular sawblades 	page 639 8.4.3 Adaptors for sawblades + page 629 page 630 8.4.2 Arbors	page 639 8.4.3 Adaptors for sawblades + page 631 8.4.2 Arbors			page 639 8.4.3 Adaptors for sawblades + page 629 page 630 8.4.2 Arbors
Drills with cylindrical shank 	page 592 8.3.1 Shrink-fit chucks page 599 page 600 page 601 8.3.3 Collet chucks page 624 8.3.5 Drill chucks	page 602 page 603 8.3.3 Collet chucks	page 604 8.3.3 Collet chucks	page 605 8.3.3 Collet chucks	page 592 8.3.1 Shrink-fit chucks page 601 8.3.3 Collet chucks page 624 8.3.5 Drill chucks
Drills with cylindrical shank with clamping area 	page 592 8.3.1 Shrink-fit chucks page 599 page 600 page 601 8.3.3 Collet chucks page 624 8.3.5 Drill chucks	page 602 page 603 8.3.3 Collet chucks	page 604 8.3.3 Collet chucks	page 605 8.3.3 Collet chucks	page 592 8.3.1 Shrink-fit chucks page 601 8.3.3 Collet chucks page 624 8.3.5 Drill chucks

	HSK-E 40	HSK-F 50	HSK-E 63	HSK-F 63	HSK 85 WS	Threaded shank with / without tapered seating
	page 606 8.3.3 Collet chucks	page 607 8.3.3 Collet chucks	page 593 8.3.1 Shrink-fit chucks page 608 8.3.3 Collet chucks	page 593 8.3.1 Shrink-fit chucks page 596 8.3.2 Hydro chucks page 609 page 610 page 611 8.3.3 Collet chucks		
	page 606 8.3.3 Collet chucks	page 607 8.3.3 Collet chucks	page 593 8.3.1 Shrink-fit chucks page 608 8.3.3 Collet chucks	page 593 8.3.1 Shrink-fit chucks page 596 8.3.2 Hydro chucks page 609 page 610 page 611 8.3.3 Collet chucks		
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	page 606 8.3.3 Collet chucks	page 607 8.3.3 Collet chucks	page 593 8.3.1 Shrink-fit chucks page 608 8.3.3 Collet chucks	page 593 8.3.1 Shrink-fit chucks page 609 page 610 page 611 8.3.3 Collet chucks page 624 8.3.5 Drill chucks		
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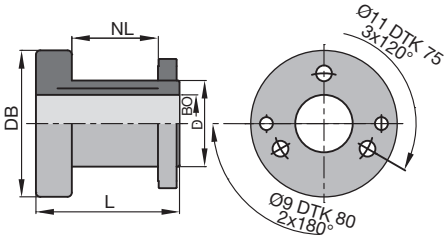
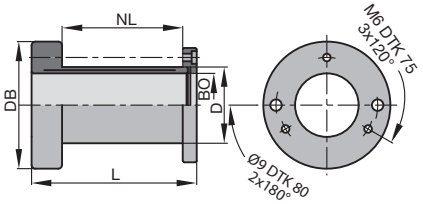


Hydro-Duo clamping sleeve
PH 130-0-01 with clamping nut



Hydro-Duo clamping sleeve
PH 130-0-02 with end ring and clamping screws

For spindle without safety device against twisting

Application:
Clamping sleeve for centric, play free clamping of tools and cutterheads.

Machine:
Machines with high precision spindles e.g. moulders etc.

Technical information:
Hydro-Duo open clamping system, activation of hydro clamping by a grease gun.
Suitable for right and left hand rotation.

With clamping nut
PH 130-0-01

D mm	BO mm	NL mm	L mm	DB mm	ID	
60	40	60	100	102	**030503**	●
60	45	60	100	102	**030505**	●
60	50	60	100	102	**030507**	●
60	50	40	80	102	**030515**	●

Spare parts:

BEZ	ABM mm	ID	
Allen Key	SW 5	**005452**	●
Sickle spanner adjustable	D60/90; L250; DIN1816; tenon 6	**005461**	●
Sickle spanner adjustable	D90/155; L290; DIN1816; tenon 6	**005462**	●
Grease gun		**008239**	●
Grease cartridge	for Hydro sleeve	**007934**	●
Grease nipple	M10x1	**007935**	●
Cylindrical screw with ISK	M6x70	**005936**	●

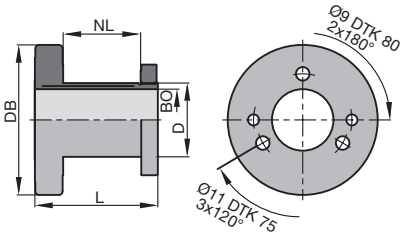
With end ring and clamping screws
PH 130-0-02

D mm	BO mm	NL mm	L mm	DB mm	ID	
50	40	95	130	92	**030600**	●
60	45	35	55	102	**030605**	●
60	50	95	130	102	**030602**	●

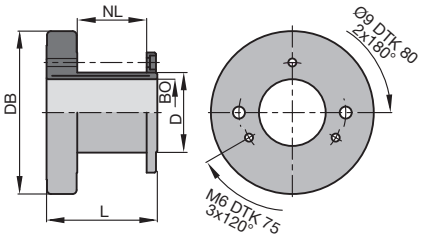
Spare parts:

BEZ	ABM mm	ID	
Allen Key	SW 5	**005452**	●
Sickle spanner adjustable	D90/155; L290; DIN1816; tenon 6	**005462**	●
Grease gun		**008239**	●
Grease cartridge	for Hydro sleeve	**007934**	●
Grease nipple	M10x1	**007935**	●
Cylindrical screw with ISK	M6x70	**005936**	●
Cylindrical screw with ISK	M6x120	**005942**	●

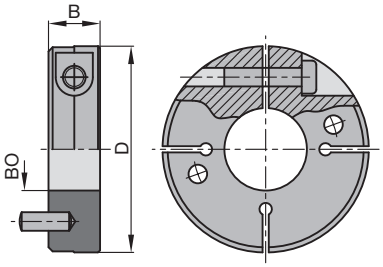
● available ex stock
□ available at short notice
Instruction manual visit www.leitz.org



Hydro-Duo clamping sleeve
PH 130-0-05 with clamping nut



Hydro-Duo clamping sleeve
PH 130-0-06 with end ring and clamping screws



Locking collar without thread

For spindle without safety device against twisting

Application:
Clamping sleeve for centric clamping of tools, tool sets and cutterheads.

Machine:
Machines with high precision spindles e.g. moulders, double end tenoners, edge banding machines, window manufacture machines etc.

Technical information:
Hydro-Duo closed hydro clamping system, activation of hydro clamping by internal clamping system without greese gun. Suitable for right and left hand rotation.

With clamping nut
PH 130-0-05

D mm	BO mm	NL mm	L mm	DB mm	ID	
60	45	60	100	122	**031603**	□
60	50	63	100	122	**031601**	●
70	60	43	80	130	**031605**	●

Spare parts:

BEZ	ABM mm	ID	
Allen Key	SW 5	**005452**	●
Sickle spanner adjustable	D60/90; L250; DIN1816; tenon 6	**005461**	●
Sickle spanner adjustable	D90/155; L290; DIN1816; tenon 6	**005462**	●

With end ring and screws
PH 130-0-06

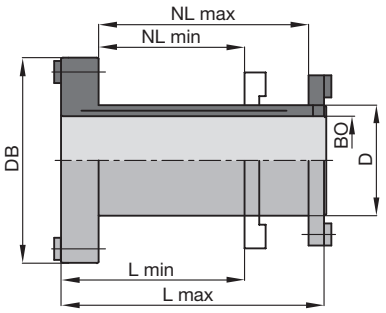
D mm	BO mm	NL mm	L mm	DB mm	ID	
60	50	52	83	122	**031650**	●

Spare parts:

BEZ	ABM mm	ID	
Allen Key	SW 5	**005452**	●
Sickle spanner adjustable	D60/90; L250; DIN1816; tenon 6	**005461**	●
Sickle spanner adjustable	D90/155; L290; DIN1816; tenon 6	**005462**	●
Cylindrical screw with ISK	M6x70	**005936**	●

Clamping collars without thread
TD 870-0

D mm	B mm	BO mm	BO in	ID	
100	22	40		**030700**	●
100	22	50		**030702**	●
100	22		1 13/16“	**030704**	●



Hydro-Duo clamping sleeve
PH 130-0-13 with end ring, clamping screws and safety device against twisting

For spindle without safety device against twisting

Application:
Clamping sleeve for centric, play free clamping of tool sets, for window tools on stacked spindle machines.

Machine:
Machines with high precision spindles, e.g. moulders, double end tenoners, edge banding machines, window manufacture machines etc.

Technical information:
Hydro-Duo closed hydro clamping system, activation of hydro clamping by internal clamping system without grease gun.
Total length of sleeves adjusted as required.

With end ring, clamping screws and safety device against twisting
PH 130-0-13

D mm	BO mm	NL mm	L mm	DB mm	ID	
50	40	35 - 55	60 - 80	85	**031658**	□
50	40	55 - 75	80 - 100	85	**031659**	□
50	40	75 - 95	100 - 120	85	**031660**	●
60	40	95 - 115	120 - 140	93	**031661**	●
60	50	35 - 55	60 - 80	93	**031655**	●
60	50	55 - 75	80 - 100	93	**031652**	●
60	50	75 - 95	100 - 120	93	**031653**	●
60	50	95 - 115	120 - 140	93	**031654**	●
60	50	115 - 135	140 - 160	93	**031657**	●

Spare parts:

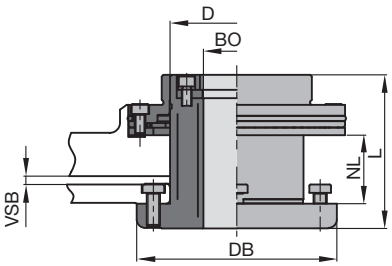
BEZ	ABM mm	BEM	ID	
Cylindrical screw with ISK	M6x50		**005932**	●
Cylindrical screw with ISK	M6x70		**005936**	●
	M6x90		**005939**	●
Cylindrical screw with ISK	M6x100		**005940**	●
	M6x110		**005941**	●
Cylindrical screw with ISK	M6x130		**006542**	●
	M6x150		**006400**	●
Countersink screw with slot	M4x6	for feather key 1	**005752**	●
Countersink screw with slot	M4x10	for feather key 2,3,4	**005753**	●
Feather key 1	19x8x7		**008525**	●
Feather key 2	10x8,5x6,5		**008526**	●
Feather key 3	19x8x3,5		**008527**	●
Feather key 4	19x8x7		**008528**	●
Allen Key	SW 5		**005452**	●

End ring with safety device against twisting
TR 112-0

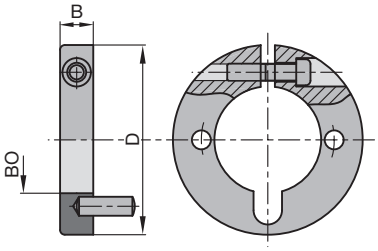
D mm	BO mm	TK mm	DIK mm	ID	
85	50	65	8	**008245**	●
93	60	75	8	**008222**	●

● available ex stock
□ available at short notice
Instruction manual visit www.leitz.org





Hydro-Duo clamping sleeve with axial piston clamping and fine adjustment
PH 130-0-11 / 14



Locking collar without thread

For spindle without safety device against twisting Hydro-Duo clamping sleeve with stepless fine adjustment of 2 part tool sets

Application:
Hydro-Duo clamping sleeve with fine thread and axial piston clamping for stepless adjustment of 2 part tool sets. Additional locking collar with safety device against twisting.

Machine:
Machines with high precision spindles, e.g. moulders, double end tenoners, edge banding machines etc.

Technical information:
High precision fine thread adjustment with a 0.01 mm scale for fine adjustment of 2 part cuttersets with repeatability. Adjustment range 10 mm. Maintenance free hydro clamping mechanism.

With Hydro-Duo 2 chamber axial piston clamping and fine adjustment
PH 130-0-11

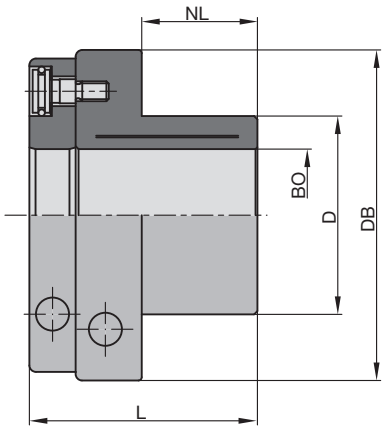
D mm	BO mm/in	L mm	DB mm	VSB mm	ID	
80	40	117	120	10	**031555**	●
80	45	117	120	10	**031556**	●
80	46,04/1 13/15“	117	120	10	**031557**	●
100	50	117	140	10	**030566**	●
100	53,97/2 1/8“	117	140	10	**031552**	●

Spare parts:

BEZ	ABM mm	ID	
Allen Key	SW 5	**005452**	●

Locking collars without thread
TD 870-0

D mm	B mm	BO mm/in	ID	
80	14	40	**030713**	●
80	14	45	**030714**	●
80	14	46,04/1 13/15“	**030715**	●
80	14	50	**030716**	●
80	14	53,97/2 1/8“	**030717**	●



For spindle without safety device against twisting - Hydro-Duo clamping sleeve for saws, cutters and hoggers

Application:
Hydro-Duo clamping sleeve for high precision clamping and flexible positioning of saws, cutters and hoggers on spindles without using spacers or spindle nuts.

Machine:
Multi blade circular saw machines, four side moulders, double end tenoners etc.

Technical information:
Closed hydro clamping system with maintenance free pressure piston mechanism.

With integrated safety device against twisting
PH 130-0-10

D mm	BO mm	NLA mm	NL mm	L mm	DB mm	ID	
60	40	3/6/75	35	69	100	**030572**	●
60	50	3/6/75	35	69	100	**030574**	●
90	70	6/6/106	35	70	120	**030571**	
115	100	3/6/131	14	49,5	145	**030557**	●
115	100	3/6/131	48,5	84	145	**030555**	●

with clamping screws

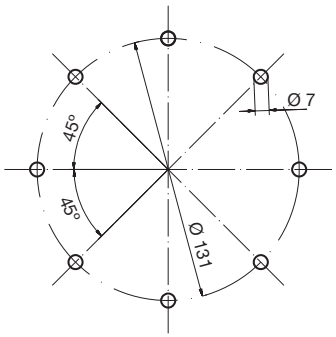
Spacer set, aluminium screwed, for mounting saws
AT 102-0

D mm	B mm	BO mm	NLA mm	ID	
120	15/15	90	6/7/106	**028482**	●
145	22/22	115	6/7/131	**028480**	●

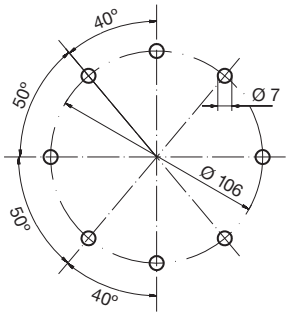
Spacer set, aluminium and steel screwed, for mounting sawblade sets
AT 102-0

D mm	B mm	exist. of	BO mm	NLA mm	ID	
120	20	2 pieces width 9.5 mm 3 pieces width 1 mm	90	6/7/106	**028483**	●
145	38	1 piece width 22 mm 1 piece width 13 mm 3 pieces width 1 mm	115	6/7/131	**028481**	●

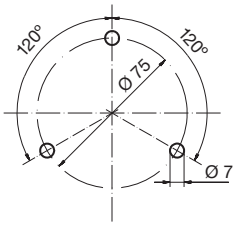
Bore pattern for tools for mounting on:



Hydro sleeve ID **030555** and **030557**

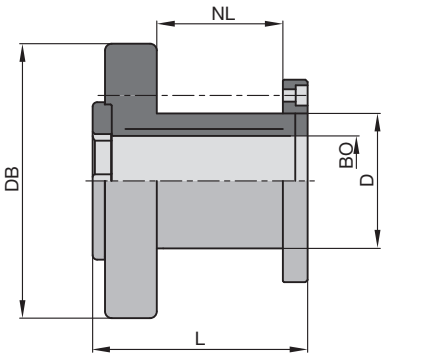


Hydro sleeve ID **030571**



Hydro sleeve ID **030572** und **030574**

● available ex stock
□ available at short notice
Instruction manual visit www.leitz.org



Hydro-Duo clamping sleeve
PH 130-0-04

For spindle with safety device against twisting - hexagon HF spindle Hydro-Duo clamping sleeve

Application:
Hydro-Duo clamping element for clamping cutting tools on high precision spindle with hexagon safety device against twisting (HF spindle).

Machine:
Machines with high precision spindles, e.g. moulders, double end tenoners, edge banding machines etc.

Technical information:
Closed hydro clamping system with maintenance free pressure piston mechanism.
Speed $n_{max.}$ 12000 rpm.
Warning: Comply with maximum admissible speed for the mounted tools!

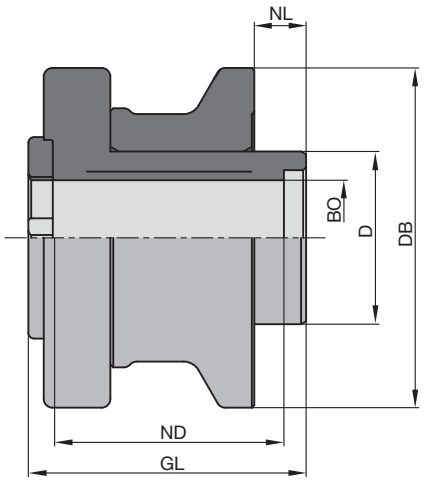
With end ring and clamping screws, for tool sets with bore 60 mm
PH 130-0-04

D mm	BO mm	NL mm	L mm	DB mm	ID	
60	40	55	94	122	**030551**	●

Spindle securing part consists of:
Conical spring washer, clamping nut, hexagon spanner, brace

Spare parts:

BEZ	ABM mm	ID	
Securing part	for HF-spindle HF 40	**066473**	●
Cylindrical screw with ISK	M6x75	**005937**	●
Allen Key	SW 5	**005452**	●



Hydro clamping sleeve PH 130-0-03

For spindle with safety device against twisting - hexagon HF spindle
Hydro clamping sleeve

Application:
Hydro clamping sleeve for clamping hogging/cutting tools on high precision spindle with hexagon safety device against twisting (HF spindle).

Machine:
Machines with high precision spindles, e.g. moulders, double end tenoners, edge banding machines etc.

Technical information:
Closed hydro clamping system with maintenance free pressure piston mechanism.
Speed $n_{max.}$ 12000 rpm.
Warning: Comply with maximum admissible speed for the mounted tools!

For cutting tools and hoggers with bore 60/80 mm
PH 130-0-03

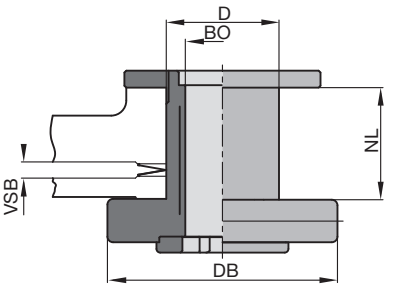
D mm	BO mm	NL mm	ND mm	GL mm	DB mm	ID	
60	40	18	80,3	96,5	118	**061702**	●
80	40	18	70	98,5	110	**061703**	●

Spindle securing part consists of:
Conical spring washer, clamping nut, hexagon spanner, brace

Spare parts:

BEZ	ABM mm	ID	
Securing part	for HF-spindle HF 40	**066473**	●

● available ex stock
□ available at short notice
Instruction manual visit www.leitz.org



Hydro-Duo clamping sleeve with fine adjustment PH 130-0-07

For spindle with safety device against twisting - hexagon HF spindle
Hydro-Duo clamping sleeve, adjustable

Application:
Hydro-Duo clamping sleeve for clamping cutting tools on high precision spindle with hexagon safety device against twisting (HF spindle). With extra fine thread and dual piston clamping for stepless adjustment of 2 part tool sets on the spindle.

Machine:
Machines with high precision spindles, e.g. moulders, double end tenoners, edge banding machines etc.

Technical information:
Closed hydro clamping system with maintenance free pressure piston mechanism.
Speed $n_{max.}$ 12000 rpm.
Dual piston clamping, independent clamping: sleeve - spindle and sleeve - tool.
Warning: Comply with maximum admissible speed for the mounted tools!

With dual piston clamping and hexagon safety device against twisting, fine adjustment
PH 130-0-07

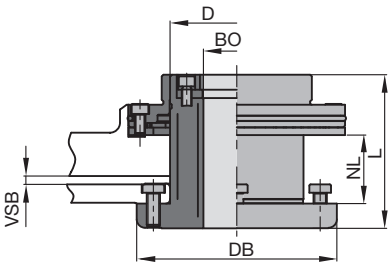
D mm	BO mm	NL mm	DB mm	VSB mm	ID	
60	40	58	122	2	**030553**	●
60	40	58	122	10	**030556**	●

Included in delivery: Duo sleeve complete with parts for mounting cutter and adjusting mechanism.

Spare parts:

BEZ	ABM mm	ID	
Allen Key	SW 5	**005452**	●

8



Hydro-Duo clamping sleeve with axial piston clamping and fine adjustment
PH 130-0-11 / 14

For spindle with safety device against twisting - hexagon HF spindle
Hydro-Duo clamping sleeve, adjustable

Application:
Hydro-Duo clamping sleeve for clamping cutting tools on high precision spindle with hexagon safety device against twisting (HF spindle). Model with extra fine thread and axial dual piston clamping for stepless adjustment of 2 part tool sets on the spindle.

Machine:
Machines with high precision spindles, e.g. moulders, double end tenoners, edge banding machines etc.

Technical information:
Closed Hydro-Duo clamping system with axial dual piston clamping, independent clamping: sleeve - spindle and sleeve - tool.

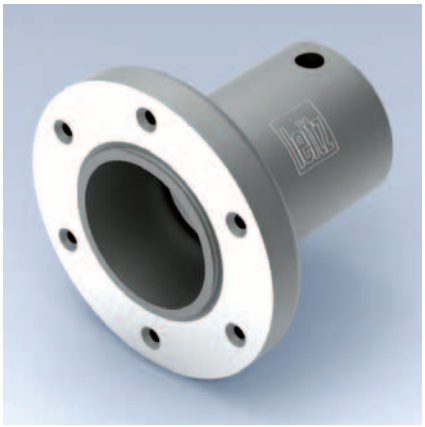
With dual piston clamping and hexagon safety device against twisting, fine adjustment
PH 130-0-14

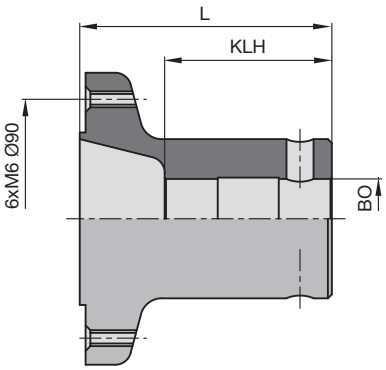
D mm	BO mm	NL mm	DB mm	VSB mm	ID	
80	40	45	122	10	**031554**	●

Spare parts:

BEZ	ABM mm	ID	
Allen Key	SW 5	**005452**	●

● available ex stock
□ available at short notice
Instruction manual visit www.leitz.org





Flanged sleeve

Flanged sleeve

Application:
Flanged sleeve for mounting scoring and grooving sawblades.

Machine:
Double end tenoners, edge banding machines etc.

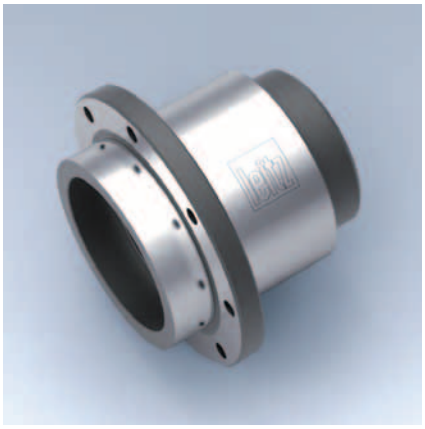
Technical information:
For standard spindle (DKN). Case hardened steel tool body with high concentricity. Spindle fixing parts are supplied by the machine manufacturer.

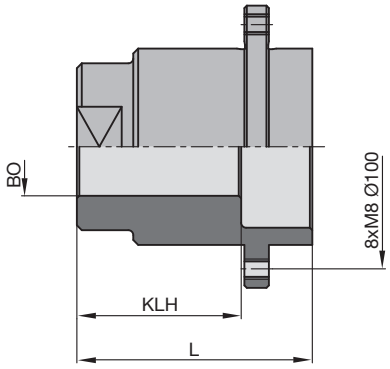
For circular sawblades with bore 65 mm
TB 300-0

Machine	L mm	KLH mm	BO mm	ID	
Homag, IMA	95	63	30 DKN	**065600**	●

Spare parts:

BEZ	ABM mm	ID	
Countersink screw with ISK	M6x10	**005780**	●
Locking disc left	48x24x18	**066561**	●
Locking disc right	48x24x18	**066562**	●





Flanged sleeve TB 300-0

Flanged sleeve

Application:
Flanged sleeve for mounting hoggers, segment hoggers, solid hoggers and folding hoggers.

Machine:
Double end tenoners, finger joint machines, edge banding machines etc.

Technical information:
For standard spindle (with or without keyway). Case hardened steel tool body with high concentricity. Spindle fixing parts are supplied by the machine manufacturer.

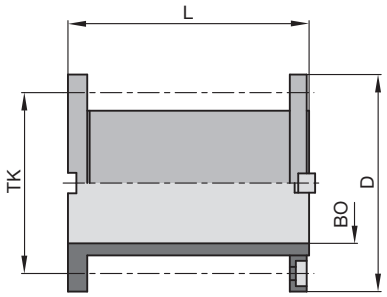
For cutting and hogging tools with bore 80 mm
TB 300-0, TB 300-0-01, TB 300-0-03, TB 300-0-06, TB 300-0-08, TB 300-0-11, TB 300-0-12

Machine	L mm	KLH mm	BO mm	ID	
Schwabedissen	96	67	40 DKN	**061654**	●
Torwegge	90	63	35 DKN	**061655**	●
Celaschi	95	65	35 KN	**061652**	●
Grecon	75	45	30 KN	**061660**	●
Homag, IMA	90	63	35 KN	**061650**	●
Gabbiani	95	65	40 KN	**061657**	●
Grecon, Dimter	59	61	40 KN	**061679**	●

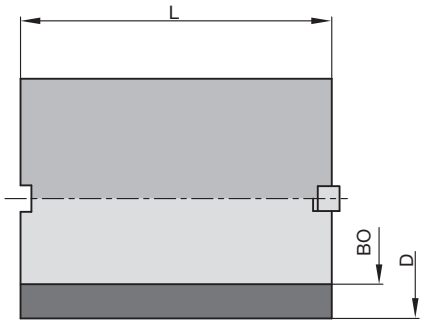
Spare parts:

BEZ	ABM mm	ID	
Cylindrical screw with ISK	M8x18	**005945**	●
Cylindrical screw with ISK	M8x20	**005946**	●

● available ex stock
□ available at short notice
Instruction manual visit www.leitz.org



Clamping sleeve TB 260-0 with end ring and safety device against twisting



Spacer with safety device against twisting

Clamping sleeve with end ring

Application:
Clamping sleeve for mounting sets of single tools.

Machine:
Spindle moulders, moulders, double end tenoners, edge banding machines and window manufacture machines.

Technical information:
Suitable for the use with several tool sets mounted on top of each other e.g. stacked spindle machines.

With end ring and safety device against twisting
TB 260-0

D mm	BO mm	TK mm	L mm	ID	
50	40	65	112	**029676**	●
60	40	75	112	**029677**	●
60	40	75	100	**029678**	●
60	50	75	100	**029679**	●
60	50	75	95	**029680**	●
60	50	75	80	**029697**	●

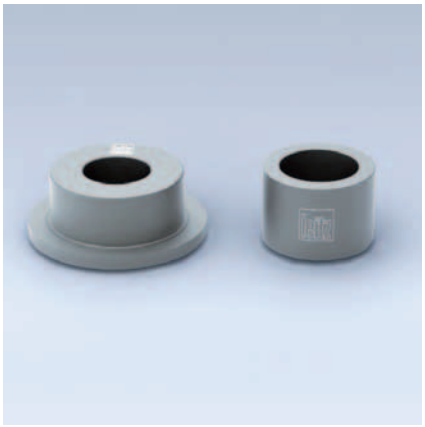
Spare parts:

BEZ	for L mm	ABM mm	ID	
Cylindrical screw with ISK	80	M6x74	**007075**	●
Cylindrical screw with ISK	100	M6x94	**007077**	●
Cylindrical screw with ISK	112	M6x106	**007078**	●
Countersink screw with slot		M4x10	**005753**	●
Feather key		B 8x7x16	**008506**	●
Allen Key		SW 5	**005452**	●

Application:
Spacer element for use with clamping sleeves with safety device against twisting to fill free spindle lengths.

Spindle filler spacers with safety device against twisting
TR 112-0

D mm	BO mm	KLH mm	ID	
77	50	60	**027875**	●
77	50	80	**027876**	●
77	50	100	**027878**	●

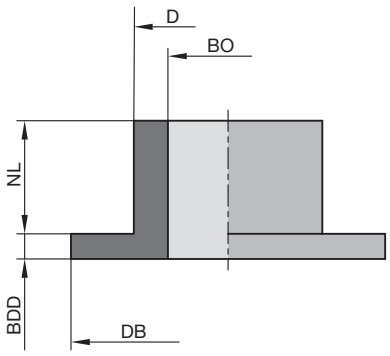


Reducing sleeve

Application:
Reducing sleeve with/without flange for cutting tools and tool sets for use on spindles of various diameters.

Machine:
Spindle moulders.

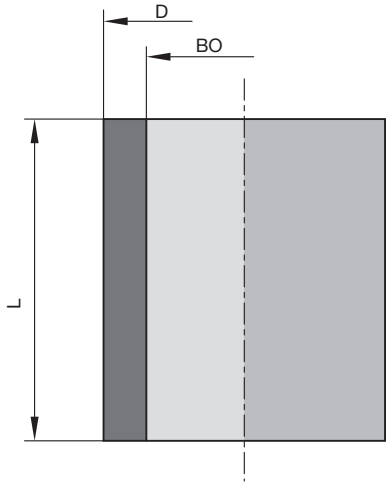
Technical information:
The length of the reducing sleeve should be approximately 2 mm shorter than the width of the hub or the total height of the tool / tool set.
For safety reasons, the use of reducing sleeves should be avoided if possible.



Reducing sleeve TB 200-0 with flange

With flange
TB 200-0

D mm	BO mm/in	DB mm	NL mm	BDD mm	ID	
30	25	50	18	4	**028201**	●
35	30	55	18	5	**028204**	●
40	30	60	18	5	**028206**	●
40	35	60	18	6	**028207**	●
40	31,75/1 1/4“	60	18	6	**028220**	●
50	30	70	18	6	**028208**	●
50	35	70	18	6	**028210**	●
50	40	70	18	6	**028211**	●
50	45	70	18	6	**028209**	●
60	30	80	18	5	**028212**	●
60	40	80	18	6	**028214**	●
60	50	80	18	6	**028216**	●

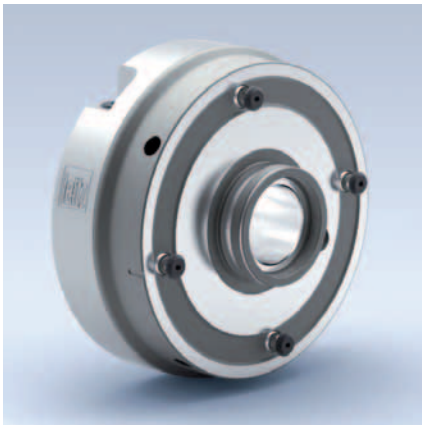


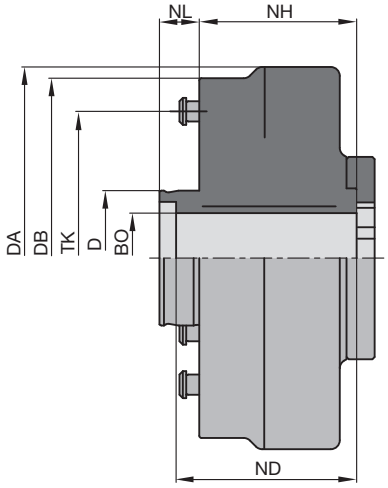
Reducing sleeve TB 100-0-01 without flange

Without flange
TB 100-0-01

D mm	BO mm	L mm	ID	
35	30	10	**028290**	●
35	30	40	**028293**	●
35	30	60	**028294**	●
35	30	96	**028295**	●
40	30	20	**028296**	●
40	30	40	**028298**	●
40	30	53	**028300**	●
40	30	60	**028301**	●
40	30	96	**028302**	●
40	35	30	**028304**	●
40	35	40	**028305**	●
40	35	60	**028306**	●
40	35	96	**028307**	●
50	40	96	**028310**	●

● available ex stock
□ available at short notice
Instruction manual visit www.leitz.org





Hydro quick clamping sleeve type 160 HF

For spindle with safety device against twisting - hexagon HF spindle
Quick clamping sleeve type 160 Hydro

Application:
Quick clamping sleeve for tools and hoggers on high precision spindle D = 40 mm with hexagon safety device against twisting.

Machine:
Double end tenoners, finger joint machines etc.

Technical information:
Hardened steel tool body, with mechanical quick clamping mechanism without compressed air. Tool is mounted directly on the quick clamping system without intermediate flange, closed hydro clamping system with maintenance free pressure piston mechanism, suitable for right hand and left hand rotation. Speed n_{max} = 9000 rpm. Tools must have four bayonet holes on 130 mm pitch.
Warning: Comply with maximum admissible speed for the mounted tools!

For tools and hoggers
PM 110-0-01

BEM	DA mm	DB mm	D mm	ND mm	NH mm	NL mm	BO mm	TK mm	Clamping bolts PCS	ID	
For HF-spindle with hexagon	170	160	60	80	70	17,7	40	130	4	**150100**	●

Spare parts:

BEZ	ABM mm	ID	
Securing part	for HF-spindle HF 40	**066473**	●
Hexagon key	SW 6	**117516**	●

Spindle securing part consists of:
Conical spring washer, clamping screw, hexagon spanner, brace.

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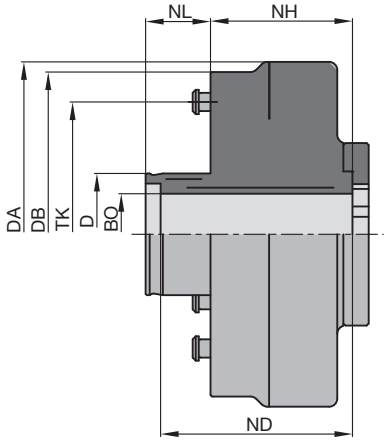


Hydro-Duo quick clamping sleeve type 160 HF

For spindle with safety device against twisting - hexagon HF spindle
Quick clamping sleeve type 160 Hydro-Duo

Application:
Quick clamping sleeve for tools and hoggers on high precision spindle D = 40 mm with hexagon safety device against twisting. Double acting hydro centering clamping eliminating the tolerance between spindle and tool.

Machine:
Double end tenoners, finger joint machines etc.

Technical information:
Hardened steel tool body, with mechanical quick clamping mechanism without compressed air. Tool is mounted directly on the quick clamping system without flange, closed hydro clamping system with maintenance free pressure piston mechanism, suitable for right hand and left hand rotation. Speed n_{max} = 9000 rpm. Tools must have four bayonet holes on 130 mm pitch.
Warning: Comply with maximum admissible speed for the mounted tools!

For tools and hoggers
PM 110-0-02

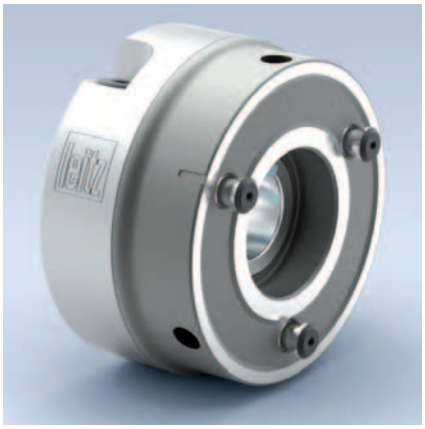
BEM	DA mm	DB mm	D mm	ND mm	NH mm	NL mm	BO mm	TK mm	Clamping bolts PCS	ID	
For HF-spindle with hexagon	170	160	60	80	56	32	40	130	4	**150200**	●

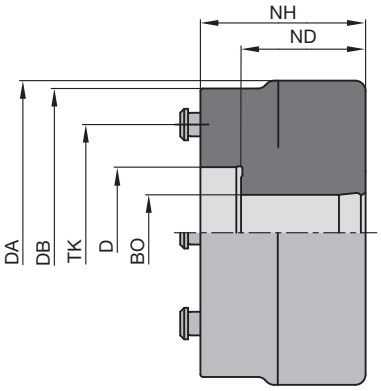
Spare parts:

BEZ	ABM mm	ID	
Securing part	for HF-spindle HF 40	**066473**	●
Hexagon key	SW 6	**117516**	●

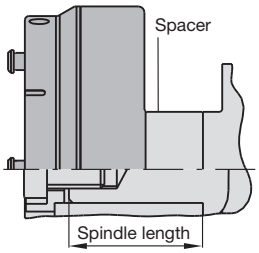
Spindle securing part consists of:
Conical spring washer, clamping screw, hexagon spanner, brace.

● available ex stock
□ available at short notice
Instruction manual visit www.leitz.org

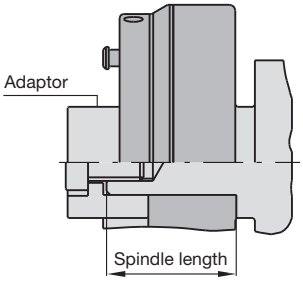




Quick clamping sleeve



Quick clamping sleeve, flush mounted on spindle



Quick clamping sleeve with spindle adaptor for direct mounting of tools without flange

For spindle with safety device against twisting - keyway
Quick clamping sleeve type 110

Application:
For quick clamping of scoring saws, grooving saws and tools.

Machine:
Double end tenoners, finger joint machines, edge banding machines etc.

Technical information:
For standard spindle (DKN), hardened steel tool body with mechanical operation of the quick clamping mechanism without compressed air. Tool is mounted directly or by using a flange, suitable for right hand rotation and left hand rotation.

For scoring saws and tools
PM 110-0-01

DA mm	DB mm	D mm	ND mm	NH mm	BO mm	DKN mm	TK mm	Clamping bolts PCS	ID	
116	110	50	47,5	63	30	8x3	80	3	**150000**	●

Spare parts:

BEZ	Machine	ID LL		ID RL	
Securing part	IMA	**066477**	●	**066477**	●
Securing part	Homag	**066541**	●	**066540**	●
Hexagon key				**117516**	●

Spindle securing part consists of:
Conical spring washer, clamping nut or clamping screw, spanner or hexagon spanner, brace.

Application:
Spacer for flush mounting when using flanges type 110/1, type 110/2 and type 110/3.

Spacer for flush mounting
TR 111-0

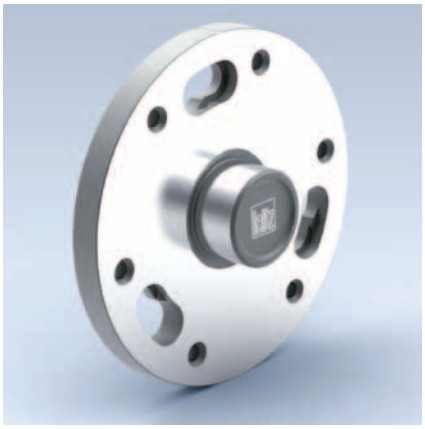
Machine	ABM mm	ABM-spindle mm	ID	
Homag, IMA	60x26x30,DKN	30 DKN x68	**028800**	●

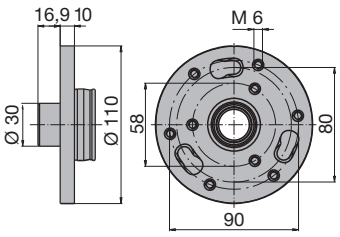
Application:
Reducing sleeve for direct mounting of cutting tools, without a tool flange.

Technical information:
Tools must have three bayonet holes on 80 mm pitch.

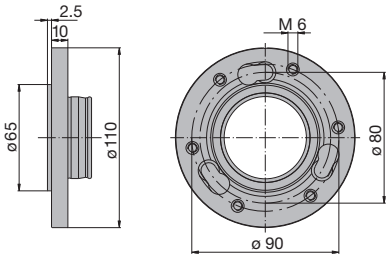
Spindle adaptor for direct mounting
TB 100-0

Machine	ABM mm	ABM-spindle mm	ID	
Homag left IMA	50x41x30,DKN	30 DKN x68	**028850**	●
Homag right	50x41x30,DKN		**028854**	●

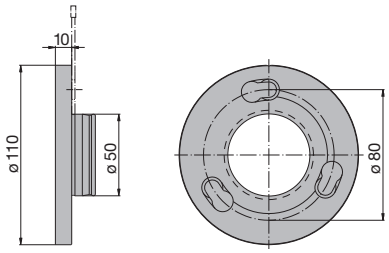




Tool flange type 110-1 for tools



Tool flange type 110/2 for scoring saws



Tool flange type 110/3 for clamping saws with a thickness of the sawbody of 1.8 to 2.2 mm

For spindle with safety device against twisting - keyway
Tool flange type 110

Application:
Tool flange for quick clamping sleeve type 110. Hardened steel tool body for quick clamping of scoring/grooving sawblades and tools.

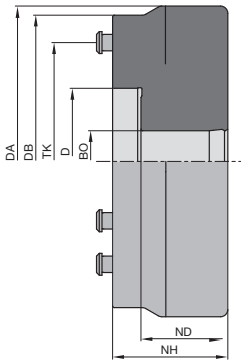
Machine:
Double end tenoners, finger joint machines, edge banding machines etc.

Technical information:
Tool mounted directly on tool flange. Speed n_{max} = 12000 rpm.
Warning: Comply with maximum admissible speed for the mounted tools!

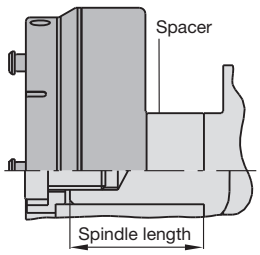
Tool flange
TD 882-0-01, TD 883-0-01

Tool Type	ID LL	ID RL
110/1 for cutting tools bore size 30 mm	**159053** ●	**159054** ●
110/2 for scoring saws mounted on flange	**159051** ●	**159052** ●
110/3 for clamping circular saw blades BO 50 mm, sawbody thickness 1.8 to 2.2 mm	**159001** ●	**159001** ●

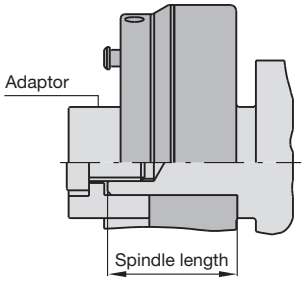
● available ex stock
□ available at short notice
Instruction manual visit www.leitz.org



Quick clamping sleeve



Quick clamping sleeve, flush mounted on spindle



Quick clamping sleeve with spindle adaptor for direct mounting of tools without flange

For spindle with safety device against twisting - keyway
Quick clamping sleeve type 160

Application:
For quick clamping of hoggers and tools.

Machine:
Double end tenoners, finger joint machines etc.

Technical information:
For standard spindle (KN/DKN). Hardened steel tool body, with mechanical operation of the quick clamping mechanism without compressed air. Tool is mounted directly on the quick clamping sleeve or by a flange, suitable for right hand rotation and left hand rotation. Speed n_{max} 9000 rpm.
Warning: Comply with maximum admissible speed for the mounted tools!

For tools and hoggers
PM 110-0-01

DA mm	DB mm	D mm	ND mm	NH mm	BO mm	TK mm	Clamping bolts PCS	ID	
170	160	80	47,5	63	35 DKN	130	4	**150001**	●
170	160	80	47,5	63	40 DKN	130	4	**150008**	●

Spare parts:

Machine	BEZ	ID LL		ID RL	
Homag	Securing part	**066460**	●	**066461**	●
IMA	Securing part	**066556**	●	**066556**	●
	Hexagon key			**117516**	●

Spindle securing part consists of:
Conical spring washer, clamping nut or clamping screw, spanner or hexagon spanner, brace.

Application:
Spacer for flush mounting when using cutter flange type 160/1, type 160/2 or type 160/3.

Spacer for flush mounting
TR 111-0, AT 100-0

Machine	Type	ABM mm	ABM-spindle mm	ID	
IMA	160/1	60x35x35,DKN	35 DKNx93	**028801**	●
Homag	160/1	60x30x35,DKN	35 DKNx70	**028802**	●
IMA	160/2 - 3	60x15/20x35,DKN	35 DKNx93	**028803**	●
Homag	160/2 - 3	60x10/20x35,DKN	35 DKNx70	**028804**	●

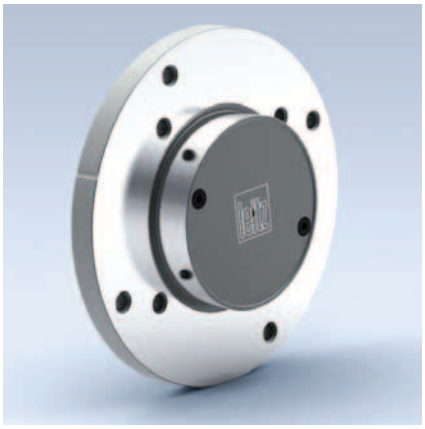
Application:
Reducing sleeve for direct mounting of tools, without a tool flange.

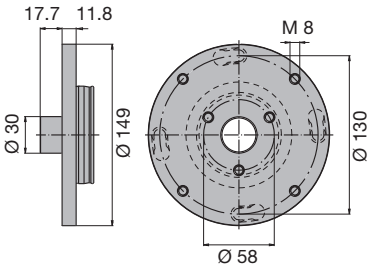
Technical information:
Tools must have four bayonet holes on 130 mm pitch.

Spindle adaptor for direct mounting
TB 100-0

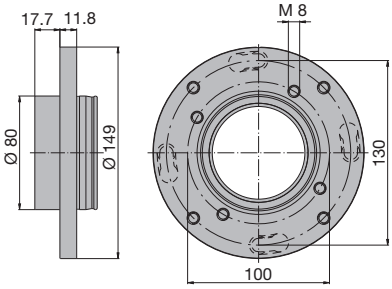
Machine	ABM mm	ABM-spindle mm	ID	
IMA	60x41x35,DKN	35 DKNx93	**028851**	●
Homag left	60x41x35,DKN	35 DKNx70	**028852**	●
Homag right	60x41x35,DKN	35 DKNx70	**028853**	●

● available ex stock
□ available at short notice
Instruction manual visit www.leitz.org

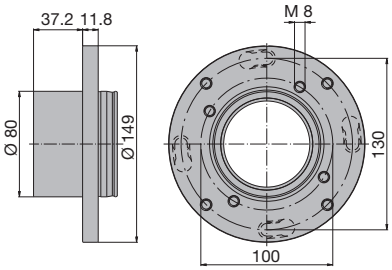




Tool flange type 160/1, for tools



Tool flange type 160/2, for hoggers



Tool flange type 160/3, for hoggers

For spindle with safety device against twisting - keyway
Tool flange type 160

Application:
Tool flange for quick clamping sleeve type 160. Hardened steel tool body for quick clamping of tools and hoggers.

Machine:
Double end tenoners, finger joint machines, edge banding machines etc.

Technical information:
Tool mounted directly on the flange. Speed n_{max} 9000 rpm.
Warning: Comply with maximum admissible speed for the mounted tools!

Tool flange
TD 882-0-01, TD 883-0-01

Tool Type	ID LL	ID RL
160/1 for cutting tools BO 30 mm/NL 17.7	**159059** ●	**159060** ●
160/2 for hoggers BO 80 mm/NL 17.7	**159063** ●	**159064** ●
160/3 for hoggers BO 80 mm/NL 37.2	**159065** ●	**159066** ●

● available ex stock
□ available at short notice
Instruction manual visit www.leitz.org

8.3 Clamping chucks
8.3.1 Shrink-fit chucks

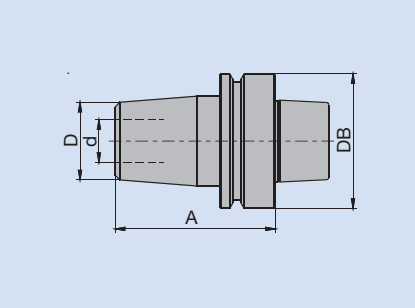
Application

Shank tool clamping with high precision and stability.

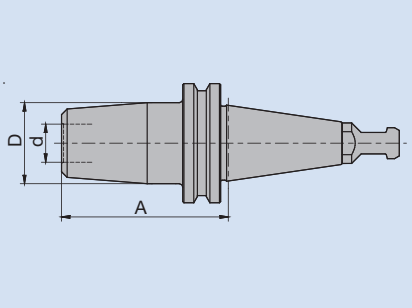
Machine

Routers with/without CNC and cutter spindles for automatic tool change.
Special machines with cutter spindles for automatic tool change.

Technical features



Shrink-fit chuck with hollow taper shank.



Shrink-fit chuck with steep taper.

D	Largest diameter of the chuck in the clamping area
d	Clamping or bore diameter
DB	Outer diameter of groove
A	Length from reference point on steep taper or HSK reference surface

Permissible shank tolerances

Tools clamped in shrink-fit chucks must have at least the following tool shank tolerances:

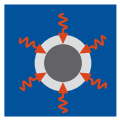
	Diameter of shank	
Tools mounted in	< 12 mm	≥ 12 mm
Shrink-fit chucks	ISO h6	ISO g6

Application data

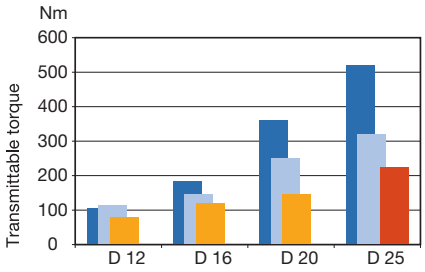
Maximum RPM
The maximum RPM for shrink-fit chucks: n_{max} = 36000 min^{-1}

Operation

Shrink-fit chucks have a bore smaller than the diameter of the shank to be clamped. The chuck is opened by heating the chuck in the clamping area. The HF generator, enables quick and secure expansion of the shrink-fit chucks by induction heating allowing.
The tool can be fitted / replaced. After the chuck has cooled down the tool is ready for use.

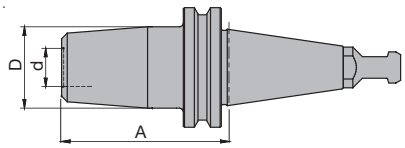


Comparison of transferable torque of traditional clamping chucks



- ThermoGrip® shrink-fit chuck
- Collet DIN 6388-B25, 75 Nm Tightening torque
- Collet DIN 6499-B32 (ER32), 75 Nm Tightening torque
- Hydro clamping chuck

The clamping range of collet chucks and hydro clamping chucks includes shank tolerances g7 and h6. Leitz ThermoGrip® chucks are designed for a shank tolerance h6 with clamping diameters d < 12 mm and a shank tolerance g6 with clamping diameters d ≥ 12 mm



Shrink-fit chuck ThermoGrip® with steep taper

Application:
High precision tool chuck for clamping shank tools by thermal shrinking. Provides highest stability and stiffness of all known shank tool clamping systems, suitable for HSC and HPC machining.

Technical information:
Tool chuck for high performance. Finely balanced for speeds up to 36000 rpm. Short, slim design for improved chip flow extraction. For clamping tungsten carbide and steel shanks. Clamping excentricity e ≤ 0.01 mm.

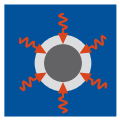
SK 30, DIN 69871
PT 301-0

Machine	d mm	D mm	A mm	Length adj. mm	STO	Weight kg	ID
MAKA, Weeke,	12	34	70	7	g6	0,7	**670200** □
Reichenbacher	16	34	70	7	g6	0,7	**670201** □
	20	42	70	7	g6	0,8	**670202** □
	25	42	80	7	g6	1,0	**670210** □
Biesse from YOM 9/92 on	12	34	70	7	g6	0,7	**670203** □
	16	34	70	7	g6	0,7	**670204** □
	20	42	70	7	g6	0,8	**670205** □
	25	42	80	7	g6	1,0	**670211** □

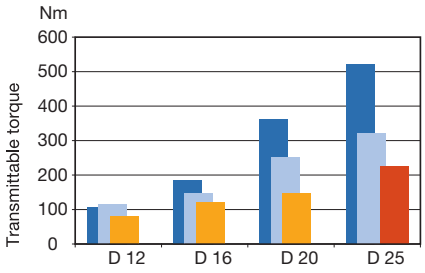
SK 40, DIN 69871
PT 302-0

Machine	d mm	D mm	A mm	Length adj. mm	STO	Weight kg	ID
Homag, IMA,	12	34	70	7	g6	1,1	**670206** □
MAKA,	16	34	70	7	g6	1,1	**670207** □
Reichenbacher,	20	42	70	7	g6	1,2	**670208** □
SCM	25	42	80	7	g6	1,2	**670209** □

● available ex stock
□ available at short notice
Instruction manual visit www.leitz.org

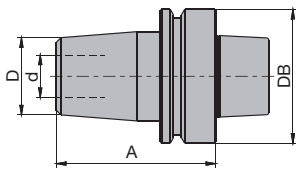


Comparison of transferable torque of traditional clamping chucks



- ThermoGrip® shrink-fit chuck
- Collet DIN 6388-B25, 75 Nm Tightening torque
- Collet DIN 6499-B32 (ER32), 75 Nm Tightening torque
- Hydro clamping chuck

The clamping range of collet chucks and hydro clamping chucks includes shank tolerances g7 and h6. Leitz ThermoGrip® chucks are designed for a shank tolerance h6 with clamping diameters d < 12 mm and a shank tolerance g6 with clamping diameters d ≥ 12 mm



Shrink-fit chuck ThermoGrip® with hollow taper shank

Application:
High precision tool chuck for clamping shank tools by thermal shrinking. Provides highest stability and stiffness of all known shank tool clamping systems, suitable for HSC and HPC machining.

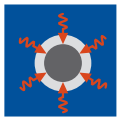
Technical information:
Tool chuck for high performance. Finely balanced for speeds up to 36000 rpm. Short, slim design for improved chip flow extraction. For clamping tungsten carbide and steel shanks. Clamping excentricity e ≤ 0.01 mm.

HSK-E 63, DIN 69893
PT 300-0

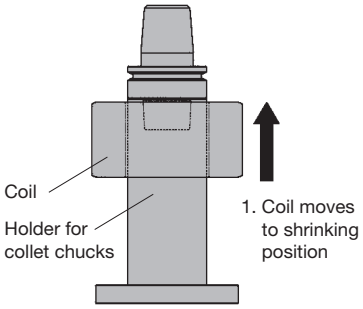
Machine	d mm	D mm	A mm	STO	Weight kg	ID	
Biesse, CMS,	8	27	75	h6	0,9	**670002**	●
CML, Weinig,	10	32	75	h6	0,9	**670003**	●
Working process	12	34	75	h6	0,9	**670004**	●
and others	14	34	75	h6	0,9	**670005**	●
	16	34	75	h6	0,9	**670006**	●
	18	42	75	h6	1,0	**670007**	●
	20	42	75	h6	1,0	**670008**	●
	25	42	75	h6	1,0	**670009**	●

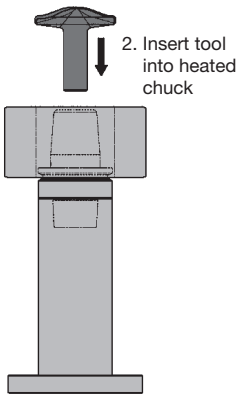
HSK-F 63, DIN 69893
PT 300-0

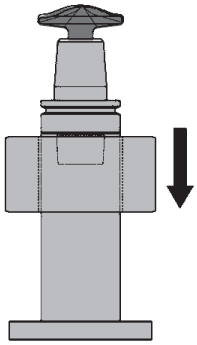
Machine	d mm/in	D mm	A mm	STO	Weight kg	ID With chip		ID Without chip	
Biesse, Homag,	6	27	75	h6	0,8	**037753**	□	**037713**	●
Holz Her, IMA,	8	27	75	h6	0,8	**037754**	□	**037714**	●
MAKA, MKM,	9,53/3/8“	32	75	h6	0,9	**670013**	□	**670010**	●
Reichenbacher,	10	32	75	h6	0,9	**037755**	□	**037715**	●
SCM, Weeke,	12	34	75	g6	0,9	**037752**	□	**037712**	●
Weinig	12,7/1/2“	34	75	h6	0,9	**670014**	□	**670011**	●
and others	14	34	75	g6	0,9	**037756**	□	**037716**	●
	16	34	75	g6	0,9	**037719**	□	**037709**	●
	18	42	75	g6	1,0	**037757**	□	**037718**	●
	19,05/3/4“	42	75	h6	0,9	**670015**	□	**670012**	●
	20	42	75	g6	1,0	**037750**	□	**037710**	●
	25	42	75	g6	0,9	**037751**	□	**037711**	●
	32	53	90	g6	1,2	**670001**	□	**670000**	●



Shrinking of profile tools:







Process controlled high frequency generator

Application:
Process controlled high frequency generator for thermal clamping of shank tools in ThermoGrip® shrink-fit chucks.

Technical information:
Maximum tool diameter that can be shrunk:
ISG 2200 = 32 mm, ISG 3200 = 50 mm / 250 mm (without / with additional set for profile tools).

Basic device for shrink fitting and removing shank tools
VN 799-0

BEZ	Tool Type	Model	for S mm	ID
High frequency generator	Incl. coil and cover plates, max. tool diameter 50mm	ISG 3200	6 - 32	**081904**
High frequency generator	Incl. coil and cover plates	ISG 2200	6 - 25	**081903**

- Fast clamping and unclamping of tungsten carbide and steel shanks.
- Short cooling time through localised, induction heating and integrated cooling system:
  ISG 2200: 1 cooling location, 7.5 KW generator performance.
  ISG 3200: 4 cooling locations, 11 KW generator performance.
- Adjusting the shrink coils to the required shank diameter by easy change of coils (only ISG 3200) and cover plates.
- ISG 2200 only for cylindrical shank tools.
- ISG 3200 also for shrink fitting and removing profile tools. For profile tools with tool diameters of more than 50 mm and shank diameters of 20 - 32 mm additional set ID **081942** required.
- Shrink fitting profile tools with a special induction coil that moves to the required position from below and after the heating sequence moves down again.

Accessories for ISG 2200/3200

BEZ	for S mm	ID	
Holder for collet chucks HSK-E63		**081946**	
Holder for collet chucks HSK-F63		**081932**	
Holder for collet chucks SK40		**081940**	
Holder for collet chucks SK 30/ISO 30		**081941**	
Cooler	12 - 16	**081933**	
Cooler	20 - 25	**081934**	
Storage and cooling plate for removed tools		**081937**	●

Accessories for fitting and removing profile tools with tool diameter > 50 mm, for device ISG 3200

BEZ	for S mm	ID	
Additional set for profile tools with tool diameters > 50mm	20 - 32	**081945**	
Holder for collet chucks HSK-E63		**081947**	●
Holder for collet chucks HSK-F63		**081938**	●
Holder for collet chucks SK 40		**081939**	●

Additional set ID **081942** for ISG 3200 consists of:
1. Induction coil for profile tools
2. Stops (2 pieces)

Note: A suitable collet chuck holder for profile tools must be ordered.

● available ex stock
□ available at short notice
Instruction manual visit www.leitz.org

Application

High precision clamping of shank tools.

Machine

Routers with CNC and spindles for automatic tool change.
Special machines with spindles for automatic tool change.

Technical features

Hydro chucks are used to clamp shank tools in spindles with high precision.
Hydro chucks have the same concentric run out tolerance as shrink-fit chucks, but shrink-fit chucks have considerably higher stability.
Shrink-fit chucks are recommended for high cutting forces machining operations.

Permissible shank tolerances

Tools clamped in hydro chucks must have the following tool shank tolerances:

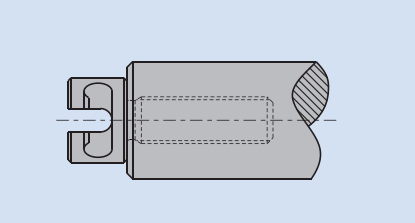
	Diameter of shank	
Tools mounted in	< 12 mm	≥ 12 mm
Hydro chucks	ISO h6	ISO g6

Safety information

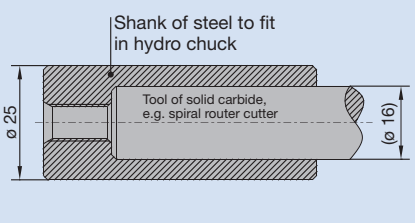
In case of loss of clamping pressure, tools clamped in hydro chucks must have safety screws to retain the tool in the chuck. The screw is selected from the table below depending on the shank dimensions:

Shank diameter	Safety screw
12 + 16 mm	ID 7071
20 + 25 mm	ID 7069

Solid tungsten carbide shank tools can only be mounted in hydro chucks with a safety screw if the shank is steel. The solid carbide tool element must be rigidly connected to the steel shank e. g. by brazing, shrunk or glued.



Shank with safety screw.



Solid tungsten cutter with steel shank.

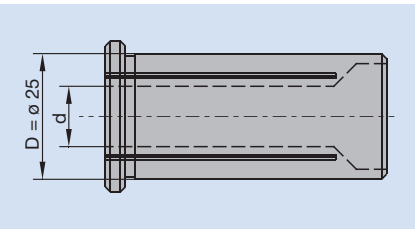
Application data

Maximum RPM
Maximum RPM for hydro chucks: n_{max} = 25000 min^{-1}

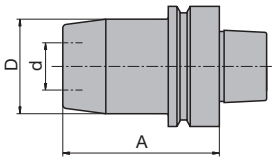
Reducing the clamping diameter

The standard clamping diameter for Leitz hydro chucks is 25 mm. Other shank diameters are clamped using reducing sleeves. Using reducing sleeves significantly decreases the clamping force and the concentric run out tolerance. It is recommended not to reduce the shank diameter except when absolutely necessary.

The following shank diameters can be clamped with reducing sleeves:



D	25 mm
d	12 mm
	14 mm
	16 mm
	20 mm



Hydro chuck HSK-F 63

Hydro chucks for shank tools with hollow shank taper HSK-F 63

Application:
High precision tool chuck for hydro clamping shank tools with cylindrical shank and shank diameters up to d_{max} = 25 mm.

Technical information:
Reduction of clamping diameter by special reduction inserts. Independent of direction of rotation, suitable for right hand and left hand rotation tool. Tool axial safety device by special length adjustment screw. Easy handling clamping system. Tool adaptor finely balanced. Maximum admissible speed n_{max} = 25000 rpm.

Clamping diameter 25 mm
PH 350-0

Machine	D mm	d mm	A mm	S mm	Weight kg	ID	
IMA, Homag, Eima, Weeke, MAKA, Morbidelli, SCM, Biesse, MKM, Reichenbacher and others	50	25	85	HSK-F 63	1,1	**039086**	●

Sales unit consists of chuck and clamping key.

Spare parts:

BEZ	ABM mm	ID	
Reducing sleeve	d12/25x56x12	**039081**	●
Reducing sleeve	d14/25x56x14	**039082**	●
Reducing sleeve	d16/25x56x16	**039083**	●
Reducing sleeve	d20/25x56x20	**039084**	●
Length adjustment screw	M8x25 / 14,5x35	**007069**	●
Length adjustment screw	M6x25	**007071**	●
Allen Key	SW 5	**005446**	●

● available ex stock
□ available at short notice
Instruction manual visit www.leitz.org

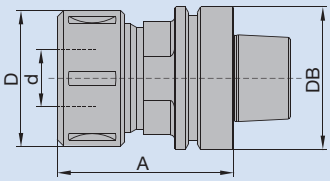
Application

Clamping system for shank tools.

Machine

Router machines with/without CNC, CNC machining centres
Special machines with spindle for shank tools,
Router machines without automatic tool change,
Hand routers.

Technical features



Collet chuck HSK-F 63.

D	Largest diameter of the chuck in the clamping area
d	Tool shank clamping diameter
DB	Diameter of chuck face
A	Length to reference point (SK) or to reference surface (HSK)

Permissible shank tolerances

Tools clamped in collet chucks must have at least the following tool shank tolerances:

	Diameter of shank	
Tools mounted in	< 12 mm	≥ 12 mm
Collet chuck	ISO g7	ISO g7

Collet nut clamping torque

The following torques are required for safe clamping of the tool in the collet chuck:

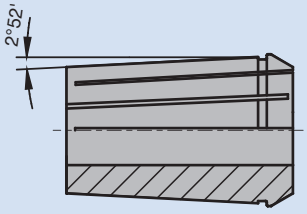
Collet nut thread	Spanner type	Clamping torque
M 30 x 1.5	SW 40/42	60 Nm
M 33 x 1.5	SW 40/42	60 Nm
M 40 x 1.5	SW 45/50	80 Nm
M 48 x 2	SW 58/62	100 Nm
M 50 x 2	SW 58/62	100 Nm

Application data

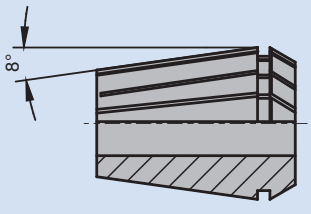
Maximum RPM
The maximum RPM for collet chucks:
n_{max} = 24000 min^{-1} (shank diameters up to 25 mm)
HSC Collet chucks (High Speed Cutting) have a max. RPM: n_{max} = 30000 min^{-1}

Collet chuck design

Leitz collet chucks are available for the two designs of collet below.

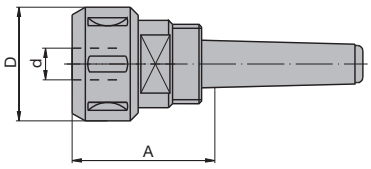


Collet taper angle 2°52': DIN 6388.

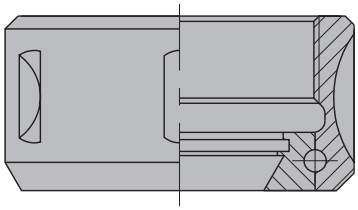


Collet taper angle 8°: DIN 6499.

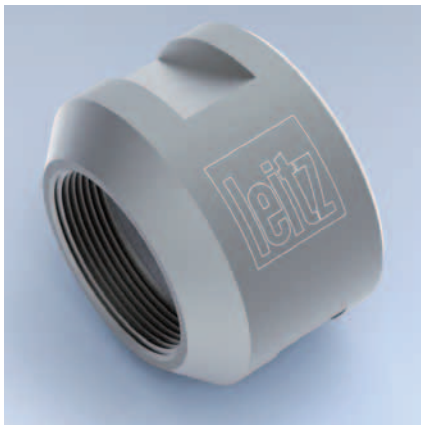
Collets with a taper angle of 2°52', taper tolerance 1:10, DIN 6388 are recommended.

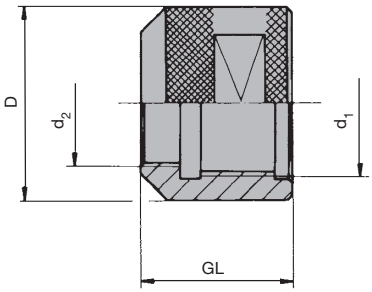


Design shank MK II



Ball bearing collet nut





Fixing nut TK 510-0
d_1 = machine related
d_2 = tool related

Precision collet chuck, cylindrical shank

Application:
Precision tool chuck with collet for clamping shank tools with cylindrical shank.
For shank diameters up to d_{max} = 16 mm.

Technical information:
Exact concentricity through hardened, ground and double slotted collets. Easy handling through automatic collet opening when loosening the collet nut. Suitable for right and left hand rotation because of ball bearing collet nut. Ball bearing collet nut for increased clamping forces and improved concentricity compared to 1 part design.

Model with ball bearing collet nut
PM 350-0-03

D mm	d mm	GL mm	A mm	S mm	Type	ID
35	6 - 12,7	77		25x50	1	**671001** ●
43	6 - 16	115	55	MK II/ M30	2	**037493** ●
43	6 - 16	108		25x60	2	**037494** ●

Sales unit consists of clamping chuck, collet nut and key, without collet.

Spare parts:

BEZ	ABM mm	for S mm	ID Type 1	ID Type 2
Collet (2°52')		6	**679013** ●	**037473** ●
Collet (2°52')		7	**679015** ●	
Collet (2°52')		8	**679016** ●	**037475** ●
Collet (2°52')		9	**679017** ●	**037476** ●
Collet (2°52')		9,5		**037477** ●
Collet (2°52')		10	**679019** ●	**037479** ●
Collet (2°52')		11		**037480** ●
Collet (2°52')		12	**679020** ●	**037481** ●
Collet (2°52')		13		**037483** ●
Collet (2°52')		14		**037485** ●
Collet (2°52')		16		**037486** ●
Collet (2°52')		6,35 (1/4")	**679014** ●	**037474** ●
Collet (2°52')		9,53 (3/8")	**679018** ●	**037478** ●
Collet (2°52')		12,7 (1/2")	**679021** ●	**037482** ●
Sickle spanner	34/36		**005498** ●	
Sickle spanner	40/42			**005469** ●
	M27x1,5		**006653** ●	
Collet chuck nut	M33x1,5			**005685** ●

Clamping nut for morse taper II shanks

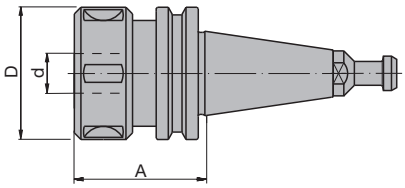
Application:
For clamping tools or tool chucks with morse taper II shanks (MK II).

Technical information:
d_1 = W 1 3/8" suitable for Perske and Maka motor spindles.
d_1 = M 33 X 3 suitable for Italian overhead routers.

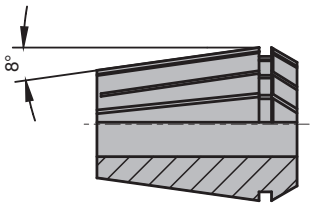
With differential thread
TK 510-0

D mm	d_1 mm	d_2 mm	GL mm	ID RL
45	W 1 3/8"	M30x1,5	30	**005682** ●
45	M33x3	M30x1,5	35	**006624** ●

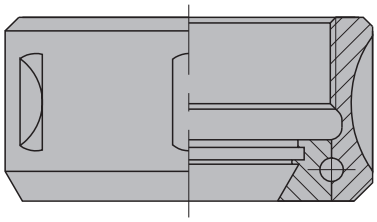
● available ex stock
□ available at short notice
Instruction manual visit www.leitz.org



Collet chuck with steep taper



Collet angle 8°: DIN 6499



Ball bearing collet nut

Collet chuck with steep taper SK 30

Application:
Precision tool chuck with collet for clamping shank tools with cylindrical shank and shank diameters up to d_{max} = 20 mm.

Technical information:
Steep taper design as per DIN 69871, without grooves and notches. Exact centric running through hardened, ground and double slotted collets. Vibration free cutting by short design. Easy handling by automatic collet opening when loosening the collet nut. Suitable for right hand and left hand rotation because of ball bearing collet nut. Ball bearing collet nut for increased clamping forces and improved concentricity compared to 1 part design. Tool chuck and collet nut fine balanced. Suitable mounting device VN 799-0 see section 9, mounting devices.

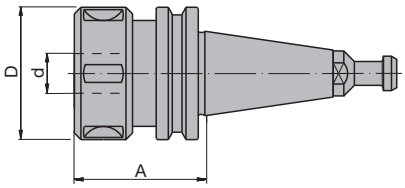
SK 30, A = 50 / 63 mm, clamping area 6-20 mm, 8° taper angle of the the collet
PM 350-0-04

Machine	D mm	d mm	A mm	S mm	Weight kg	ID	
Biesse from YOM 9/92 on Masterwood from YOM 1/99 on	50	6 - 20	50	SK 30	0,6	**037904**	●
Biesse from YOM 9/92 on Masterwood from YOM 1/99 on	50	6 - 20	63	SK 30	0,7	**672001**	●

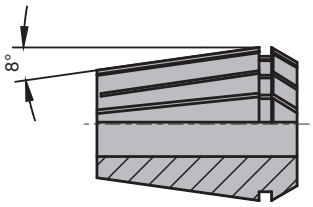
Sales unit consists of clamping chuck with ball bearing collet nut, without collet or spanner.

Spare parts:

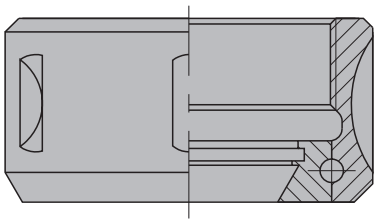
BEZ	ABM mm	for S mm	ID	
Collet (8°)		6	**037439**	●
Collet (8°)		8	**037440**	●
Collet (8°)		10	**037441**	●
Collet (8°)		12	**037442**	●
Collet (8°)		13	**037443**	●
Collet (8°)		14	**037444**	●
Collet (8°)		16	**037445**	●
Collet (8°)		18	**037446**	●
Collet (8°)		20	**037447**	●
Collet (8°)		6,35 (1/4“)	**037509**	●
Collet (8°)		9,53 (3/8“)	**037510**	●
Collet (8°)		12,7 (1/2“)	**037511**	●
Collet (8°)		15,88 (5/8“)	**037507**	●
Collet (8°)		19,05 (3/4“)	**037506**	●
Sickle spanner	45/50		**005491**	●
Collet chuck nut with ball bearing	M40x1,5		**005718**	●



Collet chuck with steep taper



Collet angle 8°: DIN 6499



Ball bearing collet nut

Collet chuck with steep taper SK 30

Application:
Precision tool chuck with collet for clamping shank tools with cylindrical shank and shank diameters up to d_{max} = 25.4 mm (1”).

Technical information:
Steep taper design as per DIN 69871, without grooves and notches. Exact centric running through hardened, ground and double slotted collets. Easy handling by automatic collet opening when loosening the collet nut. Suitable for right hand and left hand rotation because of ball bearing collet nut. Ball bearing collet nut for increased clamping forces and improved concentricity compared to 1 part design. Tool chuck and collet nut fine balanced. Suitable mounting device VN 799-0 see section 9, mounting devices.

SK 30, A = 61 mm, 8° taper angle of collet, clamping range 6-25.4 mm
PM 350-0-16

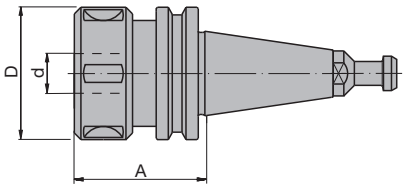
Machine	D mm	d mm	A mm	Weight kg	ID	
Biesse from YOM 9/92 on Masterwood from YOM 1/99 on	63	6 - 25,4	61	0,9	**037968**	●

Sales unit consists of clamping chuck with ball bearing collet nut, without collet or spanner.

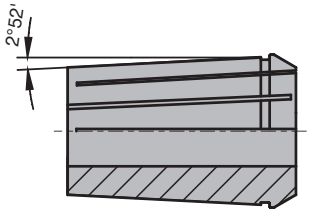
Spare parts:

BEZ	ABM mm	for S mm	ID	
Collet (8°)		6	**037926**	●
Collet (8°)		8	**037927**	●
Collet (8°)		10	**037928**	●
Collet (8°)		12	**037929**	●
Collet (8°)		14	**037930**	●
Collet (8°)		16	**037931**	●
Collet (8°)		20	**037932**	●
Collet (8°)		25	**037933**	●
Collet (8°)		6,35 (1/4“)	**037934**	●
Collet (8°)		9,53 (3/8“)	**037935**	●
Collet (8°)		12,7 (1/2“)	**037936**	●
Collet (8°)		15,88 (5/8“)	**037937**	●
Collet (8°)		19,05 (3/4“)	**037938**	●
Collet (8°)		25,4 (1“)	**037939**	●
Sickle spanner	58/62		**005458**	●
Collet chuck nut with ball bearing	M50x1,5		**006639**	●

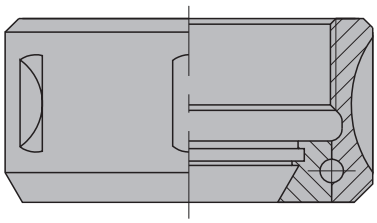
● available ex stock
□ available at short notice
Instruction manual visit www.leitz.org



Collet chuck with steep taper



Collet angle 2°52': DIN 6388



Ball bearing collet nut

Collet chuck with steep taper SK 30 / SK 40

Application:
Precision tool chuck with collet for clamping shank tools with cylindrical shank and shank diameters up to d_{max} = 25.4 mm (1”).

Technical information:
Steep taper design as per DIN 69871, without grooves and notches. Exact centric running through hardened, ground and double slotted collets. Easy handling by automatic collet opening when loosening the collet nut. Suitable for right hand and left hand rotation because of ball bearing collet nut. Ball bearing collet nut for increased clamping forces and improved concentricity compared to 1 part design. Tool chuck and collet nut fine balanced. Suitable mounting device VN 799-0 see section 9, mounting devices.

SK 30, A = 70 mm, clamping range 6-25.4 mm
PM 350-0-05

Machine	D mm	d mm	A mm	Weight kg	ID	
MAKA, Weeke, Reichenbacher	60	6 - 25,4	70	0,9	**037421**	●

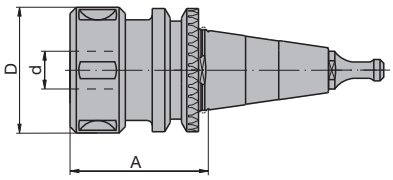
SK 40, A = 70 mm, clamping range 6-25.4 mm
PM 350-0-05

Machine	D mm	d mm	A mm	Weight kg	ID	
IMA, MAKA, Reichenbacher, SCM, Stegherr	60	6 - 25,4	70	1,5	**037422**	●

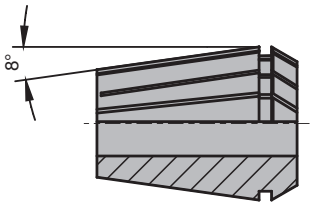
Sales unit consists of clamping chuck with ball bearing collet nut, without collet or spanner.

Spare parts:

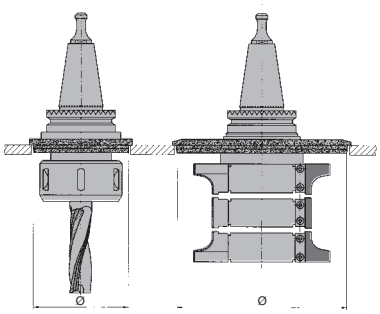
BEZ	ABM mm	for S mm	ID	
Collet (2° 52’)		6	**037429**	●
Collet (2° 52’)		8	**037430**	●
Collet (2° 52’)		10	**037431**	●
Collet (2° 52’)		12	**037432**	●
Collet (2° 52’)		13	**037433**	●
Collet (2° 52’)		14	**037434**	●
Collet (2° 52’)		16	**037435**	●
Collet (2° 52’)		18	**037436**	●
Collet (2° 52’)		20	**037437**	●
Collet (2° 52’)		25	**037438**	●
Collet (2° 52’)		6,35 (1/4“)	**037495**	●
Collet (2° 52’)		9,53 (3/8“)	**037505**	●
Collet (2° 52’)		12,7 (1/2“)	**037496**	●
Collet (2° 52’)		15,88 (5/8“)	**037502**	●
Collet (2° 52’)		19,05 (3/4“)	**037497**	●
Collet (2° 52’)		25,4 (1“)	**037508**	●
Sickle spanner	58/62		**005458**	●
Collet chuck nut with ball bearing	M48x2		**005714**	●
Locking nut with Euchner chip	SK 40		**081600**	●
Locking nut with Balluff chip	SK 40		**081601**	●



Collet chuck ISO 30 with serration



Collet angle 8°: DIN 6499



Tool chucks in the “pick-up” magazine. Chuck and arbors with aluminium discs required. All Leitz tool chucks for SCM/Morbidelli can be equipped with aluminium discs. These allow the chucks to be used on machines with “pick-up” tool magazines. Diameter of aluminium discs available on request.

Collet chuck with steep taper ISO 30 for SCM and Morbidelli

Application:
Precision tool chuck with collet for clamping shank tools with cylindrical shank and shank diameters up to d_{max} = 20 mm.

Technical information:
Steep taper design ISO 30, with serration. Exact centric running through hardened, ground and double slotted collets. Easy handling by automatic collet opening when loosening the collet nut. Suitable for right hand and left hand rotation because of ball bearing collet nut. Ball bearing collet nut for increased clamping forces and improved concentricity compared to 1 part design. Tool chuck and collet nut fine balanced. Suitable mounting device VN 799-0 see section 9, mounting devices.

A = 55 mm, clamping range 6-20 mm
PM 350-0-09

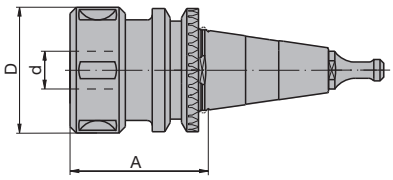
Machine	D mm	d mm	A mm	Weight kg	ID	
Morbidelli, SCM	50	6 - 20	55	0,6	**037418**	●

Sales unit consists of clamping chuck with ball bearing collet nut, without collet or spanner.

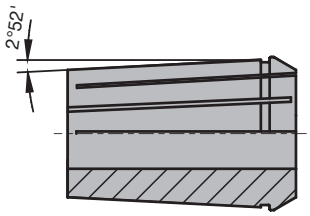
Spare parts:

BEZ	ABM mm	for S mm	ID	
Collet (8°)		6	**037439**	●
Collet (8°)		8	**037440**	●
Collet (8°)		10	**037441**	●
Collet (8°)		12	**037442**	●
Collet (8°)		13	**037443**	●
Collet (8°)		14	**037444**	●
Collet (8°)		16	**037445**	●
Collet (8°)		18	**037446**	●
Collet (8°)		20	**037447**	●
Collet (8°)		6,35 (1/4“)	**037509**	●
Collet (8°)		9,53 (3/8“)	**037510**	●
Collet (8°)		12,7 (1/2“)	**037511**	●
Collet (8°)		15,88 (5/8“)	**037507**	●
Collet (8°)		19,05 (3/4“)	**037506**	●
Sickle spanner	45/50		**005491**	●
Collet chuck nut with ball bearing	M40x1,5		**005718**	●

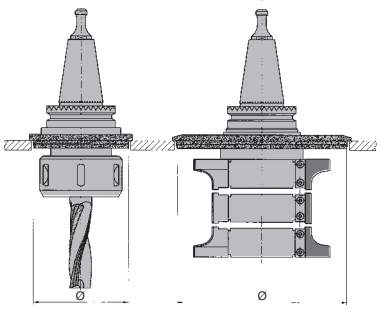
● available ex stock
□ available at short notice
Instruction manual visit www.leitz.org



Collet chuck ISO 30 with serration



Collet angle 2°52': DIN 6388



Tool chucks in the “pick-up” magazine. Chuck and arbors with aluminium discs required. All Leitz tool chucks for SCM/Morbidelli can be equipped with aluminium discs. These allow the chucks to be used on machines with “pick-up” tool magazines. Diameter of aluminium discs available on request.

Collet chuck with steep taper ISO 30 for SCM and Morbidelli

Application:
Precision tool chuck with collet for clamping shank tools with cylindrical shank and shank diameters up to d_{max} = 25.4 mm (1”).

Technical information:
Steep taper design ISO 30, with serration. Exact centric running through hardened, ground and double slotted collets. Easy handling by automatic collet opening when loosening the collet nut. Suitable for right hand and left hand rotation because of ball bearing collet nut. Ball bearing collet nut for increased clamping forces and improved concentricity compared to 1 part design. Tool chuck and collet nut fine balanced. Suitable mounting device VN 799-0 see section 9, mounting devices.

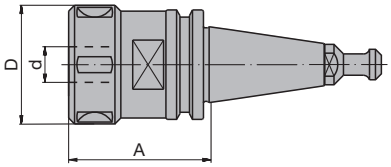
A = 70 mm, clamping range 6-25.4 mm
PM 350-0-09

Machine	D mm	d mm	A mm	Weight kg	ID	
Morbidelli, SCM	60	6 - 25,4	70	0,9	**037910**	●

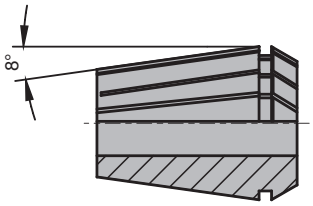
Sales unit consists of clamping chuck with ball bearing collet nut, without collet or spanner.

Spare parts:

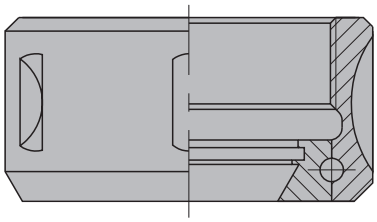
BEZ	ABM mm	for S mm	ID	
Collet (2° 52’)		6	**037429**	●
Collet (2° 52’)		8	**037430**	●
Collet (2° 52’)		10	**037431**	●
Collet (2° 52’)		12	**037432**	●
Collet (2° 52’)		13	**037433**	●
Collet (2° 52’)		14	**037434**	●
Collet (2° 52’)		16	**037435**	●
Collet (2° 52’)		18	**037436**	●
Collet (2° 52’)		20	**037437**	●
Collet (2° 52’)		25	**037438**	●
Collet (2° 52’)		6,35 (1/4“)	**037495**	●
Collet (2° 52’)		9,53 (3/8“)	**037505**	●
Collet (2° 52’)		12,7 (1/2“)	**037496**	●
Collet (2° 52’)		15,88 (5/8“)	**037502**	●
Collet (2° 52’)		19,05 (3/4“)	**037497**	●
Collet (2° 52’)		25,4 (1“)	**037508**	●
Sickle spanner	58/62		**005458**	●
Collet chuck nut with ball bearing	M48x2		**005714**	●



Collet chuck ISO 30, CMS



Collet angle 8°: DIN 6499



Ball bearing collet nut

Collet chuck with steep taper ISO 30 for CMS

Application:
Precision tool chuck with collet for clamping shank tools with cylindrical shank and shank diameters up to d_{max} = 20 mm.

Technical information:
Steep taper design as per DIN 69871 without grooves and notches, special design for CMS machines. Exact centric running through hardened, ground and double slotted collets. Vibration free cutting by short design. Easy handling by automatic collet opening when loosening the collet nut. Suitable for right hand and left hand rotation because of ball bearing collet nut. Ball bearing collet nut for increased clamping forces and improved concentricity compared to 1 part design. Tool chuck and collet nut fine balanced. Suitable mounting device VN 799-0 see section 9, mounting devices.

A = 60 mm, clamping range 6-20 mm
PM 350-0-11

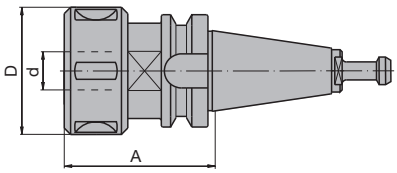
Machine	D mm	d mm	A mm	Weight kg	ID	
CMS	50	6 - 20	60	0,6	**037503**	●

Sales unit consists of clamping chuck with ball bearing collet nut, without collet or spanner.

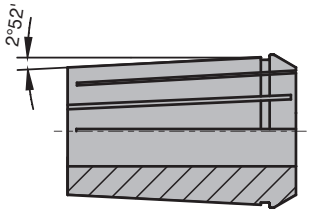
Spare parts:

BEZ	ABM mm	for S mm	ID	
Collet (8°)		6	**037439**	●
Collet (8°)		8	**037440**	●
Collet (8°)		10	**037441**	●
Collet (8°)		12	**037442**	●
Collet (8°)		13	**037443**	●
Collet (8°)		14	**037444**	●
Collet (8°)		16	**037445**	●
Collet (8°)		18	**037446**	●
Collet (8°)		20	**037447**	●
Collet (8°)		6,35 (1/4“)	**037509**	●
Collet (8°)		9,53 (3/8“)	**037510**	●
Collet (8°)		12,7 (1/2“)	**037511**	●
Collet (8°)		15,88 (5/8“)	**037507**	●
Collet (8°)		19,05 (3/4“)	**037506**	●
Sickle spanner	45/50		**005491**	●
Collet chuck nut with ball bearing	M40x1,5		**005718**	●

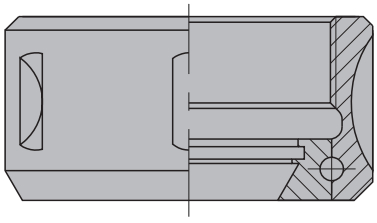
● available ex stock
□ available at short notice
Instruction manual visit www.leitz.org



Collet chuck BT 35



Collet angle 2°52': DIN 6388



Ball bearing collet nut

Collet chuck with steep taper BT 30 and BT 35

Application:
Precision tool chuck with collet for clamping shank tools with cylindrical shank and shank diameters up to d_{max} = 25.4 mm (1”).

Technical information:
Steep taper design BT 30 or BT 35. Exact centric running through hardened, ground and double slotted collets. Easy handling by automatic collet opening when loosening the collet nut. Suitable for right hand and left hand rotation because of ball bearing collet nut. Ball bearing collet nut for increased clamping forces and improved concentricity compared to 1 part design. Tool chuck and collet nut fine balanced. Suitable mounting device VN 799-0 see section 9, mounting devices.

Steep taper BT 30 with grooves and notches
PM 350-0-07

Machine	D mm	d mm	A mm	Weight kg	ID
Shoda	60	6 - 25,4	70	0,9	**037940** ●

Steep taper BT 30 without grooves and notches
PM 350-0-07

Machine	D mm	d mm	A mm	Weight kg	ID
Anderson	60	6 - 25,4	70	0,9	**037962** ●

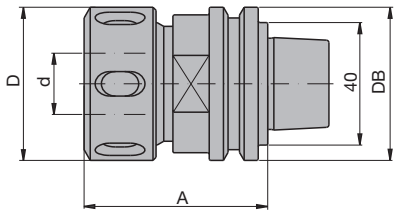
Steep taper BT 35 with grooves and notches
PM 350-0-07

Machine	D mm	d mm	A mm	Weight kg	ID
Heian, Shoda	60	6 - 25,4	70	1	**037414** ●

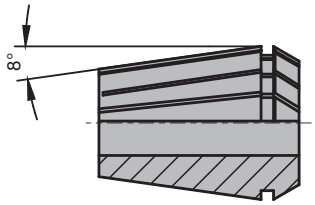
Sales unit consists of clamping chuck with ball bearing collet nut, without collet or spanner.

Spare parts:

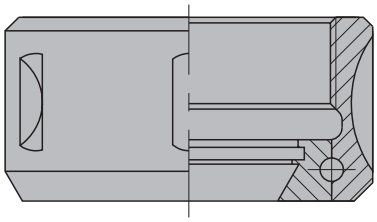
BEZ	ABM mm	for S mm	ID
Collet (2° 52’)		6	**037429** ●
Collet (2° 52’)		8	**037430** ●
Collet (2° 52’)		10	**037431** ●
Collet (2° 52’)		12	**037432** ●
Collet (2° 52’)		13	**037433** ●
Collet (2° 52’)		14	**037434** ●
Collet (2° 52’)		16	**037435** ●
Collet (2° 52’)		18	**037436** ●
Collet (2° 52’)		20	**037437** ●
Collet (2° 52’)		25	**037438** ●
Collet (2° 52’)		6,35 (1/4“)	**037495** ●
Collet (2° 52’)		9,53 (3/8“)	**037505** ●
Collet (2° 52’)		12,7 (1/2“)	**037496** ●
Collet (2° 52’)		15,88 (5/8“)	**037502** ●
Collet (2° 52’)		19,05 (3/4“)	**037497** ●
Collet (2° 52’)		25,4 (1“)	**037508** ●
Sickle spanner	58/62		**005458** ●
Collet chuck nut with ball bearing	M48x2		**005714** ●



Collet chuck HSK-E 40



Collet angle 8°: DIN 6499



Ball bearing collet nut

Collet chuck with hollow taper shank HSK-E 40

Application:
Precision tool chuck with collet for clamping shank tools with cylindrical shank and shank diameters up to d_{max} = 20 mm.

Technical information:
Hollow taper shank as per DIN 69893. Exact centric running through hardened, ground and double slotted collets. Vibration free cutting by short design. Easy handling by automatic collet opening when loosening the collet nut. Suitable for right hand and left hand rotation because of ball bearing collet nut. Ball bearing collet nut for increased clamping forces and improved concentricity compared to 1 part design. Tool chuck and collet nut fine balanced. Suitable mounting device VN 799-0 see section 9, mounting devices.

HSK-E 40, clamping range up to 20 mm
PM 350-0-15

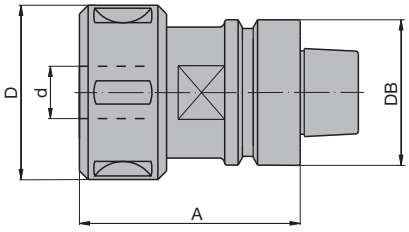
Machine	D mm	d mm	A mm	DB mm	Weight kg	ID	
Alberti	50	6 - 20	60	50	0,75	**037991**	●

Sales unit consists of clamping chuck with ball bearing collet nut, without collet or spanner.

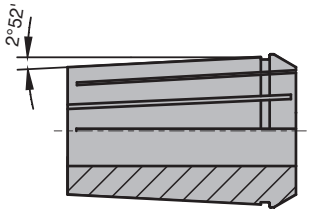
Spare parts:

BEZ	ABM mm	for S mm	ID	
Collet (8°)		6	**037439**	●
Collet (8°)		8	**037440**	●
Collet (8°)		10	**037441**	●
Collet (8°)		12	**037442**	●
Collet (8°)		13	**037443**	●
Collet (8°)		14	**037444**	●
Collet (8°)		16	**037445**	●
Collet (8°)		18	**037446**	●
Collet (8°)		20	**037447**	●
Collet (8°)		6,35 (1/4“)	**037509**	●
Collet (8°)		9,53 (3/8“)	**037510**	●
Collet (8°)		12,7 (1/2“)	**037511**	●
Collet (8°)		15,88 (5/8“)	**037507**	●
Collet (8°)		19,05 (3/4“)	**037506**	●
Sickle spanner	45/50		**005491**	●
Collet chuck nut with ball bearing	M40x1,5		**005718**	●

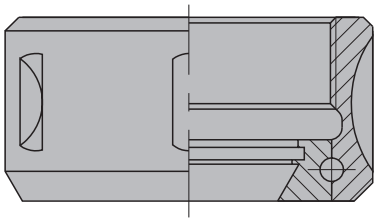
● available ex stock
□ available at short notice
Instruction manual visit www.leitz.org



Collet chuck HSK-F 50



Collet angle 2°52': DIN 6388



Ball bearing collet nut

Collet chuck with hollow taper shank HSK-F 50

Application:
Precision tool chuck with collet for clamping shank tools with cylindrical shank and shank diameters up to d_{max} = 25.4 mm (1”).

Technical information:
Hollow taper shank as per DIN 69893. Exact centric running through hardened, ground and double slotted collets. Easy handling by automatic collet opening when loosening the collet nut. Suitable for right hand and left hand rotation because of ball bearing collet nut. Ball bearing collet nut for increased clamping forces and improved concentricity compared to 1 part design. Tool chuck and collet nut fine balanced. Suitable mounting device VN 799-0 see section 9, mounting devices.

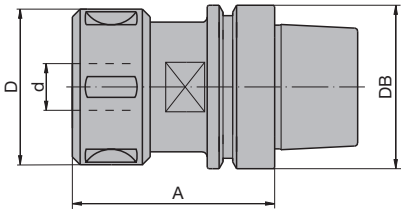
HSK-F 50, DIN 69893, clamping range up to 25.4 mm
PM 350-0-06

Machine	D mm	d mm	A mm	DB mm	Weight kg	ID	
Biesse, Dubus, Eima, Weeke	60	6 - 25,4	76	50	0,9	**037500**	●
Biesse, Dubus, Weeke	60	6 - 25,4	105	50	1,3	**037925**	●

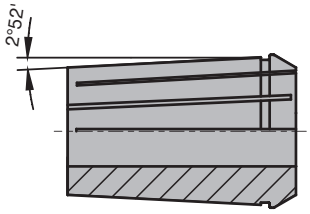
Sales unit consists of clamping chuck with ball bearing collet nut, without collet or spanner.

Spare parts:

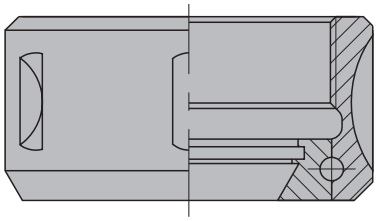
BEZ	ABM mm	for S mm	ID	
Collet (2° 52’)		6	**037429**	●
Collet (2° 52’)		8	**037430**	●
Collet (2° 52’)		10	**037431**	●
Collet (2° 52’)		12	**037432**	●
Collet (2° 52’)		13	**037433**	●
Collet (2° 52’)		14	**037434**	●
Collet (2° 52’)		16	**037435**	●
Collet (2° 52’)		18	**037436**	●
Collet (2° 52’)		20	**037437**	●
Collet (2° 52’)		25	**037438**	●
Collet (2° 52’)		6,35 (1/4“)	**037495**	●
Collet (2° 52’)		9,53 (3/8“)	**037505**	●
Collet (2° 52’)		12,7 (1/2“)	**037496**	●
Collet (2° 52’)		15,88 (5/8“)	**037502**	●
Collet (2° 52’)		19,05 (3/4“)	**037497**	●
Collet (2° 52’)		25,4 (1“)	**037508**	●
Sickle spanner	58/62		**005458**	●
Collet chuck nut with ball bearing	M48x2		**005714**	●



Collet chuck HSK-E 63



Collet angle 2°52': DIN 6388



Ball bearing collet nut

Collet chuck with hollow taper shank HSK-E 63

Application:
Precision tool chuck with collet for clamping shank tools with cylindrical shank and shank diameters up to d_{max} = 25.4 mm (1").

Technical information:
Hollow taper shank as per DIN 69893. Exact centric running through hardened, ground and double slotted collets. Vibration free cutting by short design. Easy handling by automatic collet opening when loosening the collet nut. Suitable for right hand and left hand rotation because of ball bearing collet nut. Ball bearing collet nut for increased clamping forces and improved concentricity compared to 1 part design. Tool chuck and collet nut fine balanced. Tool chuck corrosion protected. Suitable mounting device VN 799-0 see section 9, mounting devices.

HSK-E 63, DIN 69893, A = 78 mm, clamping range 6-25.4 mm
PM 350-0-06

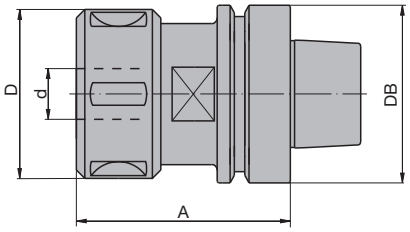
Machine	D mm	d mm	A mm	DB mm	Weight kg	ID	
Biesse, CML, CMS, Weinig, Working Process and others	60	6 - 25,4	78	63	1,1	**037914**	●

Sales unit consists of clamping chuck with ball bearing collet nut, without collet or spanner.

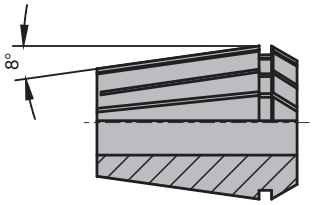
Spare parts:

BEZ	ABM mm	for S mm	ID	
Collet (2° 52')		6	**037429**	●
Collet (2° 52')		8	**037430**	●
Collet (2° 52')		10	**037431**	●
Collet (2° 52')		12	**037432**	●
Collet (2° 52')		13	**037433**	●
Collet (2° 52')		14	**037434**	●
Collet (2° 52')		16	**037435**	●
Collet (2° 52')		18	**037436**	●
Collet (2° 52')		20	**037437**	●
Collet (2° 52')		25	**037438**	●
Collet (2° 52')		6,35 (1/4")	**037495**	●
Collet (2° 52')		9,53 (3/8")	**037505**	●
Collet (2° 52')		12,7 (1/2")	**037496**	●
Collet (2° 52')		15,88 (5/8")	**037502**	●
Collet (2° 52')		19,05 (3/4")	**037497**	●
Collet (2° 52')		25,4 (1")	**037508**	●
Sickle spanner	58/62		**005458**	●
Collet chuck nut with ball bearing	M48x2		**005714**	●

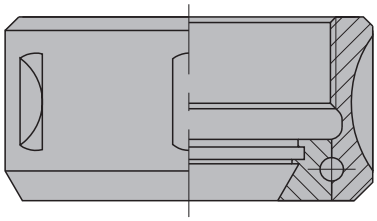
● available ex stock
□ available at short notice
Instruction manual visit www.leitz.org



Collet chuck HSK-F 63



Collet angle 8°: DIN 6499



Ball bearing collet nut

Collet chuck with hollow taper shank HSK-F 63

Application:
Precision tool chuck with collet for clamping shank tools with cylindrical shank and shank diameters up to d_{max} = 25.4 mm (1”).

Technical information:
Hollow taper shank as per DIN 69893. Exact centric running through hardened, ground and double slotted collets. Easy handling by automatic collet opening when loosening the collet nut. Suitable for right hand and left hand rotation because of ball bearing collet nut. Ball bearing collet nut for increased clamping forces and improved concentricity compared to 1 part design. Tool chuck and collet nut fine balanced. Tool chuck corrosion protected. Suitable mounting device VN 799-0 see section 9, mounting devices.

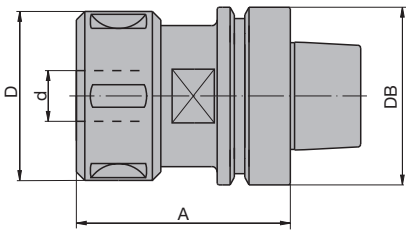
HSK-F 63, DIN 69893, A = 76 mm, clamping range 6-25.4 mm, short design, 8° taper angle of the collet
PM 350-0-15

Machine	D mm	d mm	A mm	DB mm	Weight kg	ID	
Biesse, Busellato, Morbidelli, SCM	63	6 - 25,4	76	63	1	**037970**	●

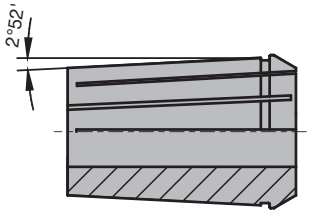
Sales unit consists of clamping chuck with ball bearing collet nut, without collet or spanner.

Spare parts:

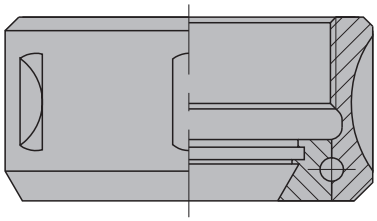
BEZ	ABM mm	for S mm	ID	
Collet (8°)		6	**037926**	●
Collet (8°)		8	**037927**	●
Collet (8°)		10	**037928**	●
Collet (8°)		12	**037929**	●
Collet (8°)		14	**037930**	●
Collet (8°)		16	**037931**	●
Collet (8°)		20	**037932**	●
Collet (8°)		25	**037933**	●
Collet (8°)		6,35 (1/4“)	**037934**	●
Collet (8°)		9,53 (3/8“)	**037935**	●
Collet (8°)		12,7 (1/2“)	**037936**	●
Collet (8°)		15,88 (5/8“)	**037937**	●
Collet (8°)		19,05 (3/4“)	**037938**	●
Collet (8°)		25,4 (1“)	**037939**	●
Sickle spanner	58/62		**005458**	●
Collet chuck nut with ball bearing	M50x1,5		**006639**	●
Chip-Balluff	HSK-F63		**081309**	●



Collet chuck HSK-F 63



Collet angle 2°52': DIN 6388



Ball bearing collet nut

Collet chuck with hollow taper shank HSK-F 63

Application:
Precision tool chuck with collet for clamping shank tools with cylindrical shank and shank diameters up to d_{max} = 25.4 mm (1").

Technical information:
Hollow taper shank as per DIN 69893. Exact centric running through hardened, ground and double slotted collets. Easy handling by automatic collet opening when loosening the collet nut. Suitable for right hand and left hand rotation because of ball bearing collet nut. Ball bearing collet nut for increased clamping forces and improved concentricity compared to 1 part design. Tool chuck and collet nut fine balanced. Tool chuck corrosion protected. Suitable mounting device VN 799-0 see section 9, mounting devices.

HSK-F 63, DIN 69893, A = 78 / 105 mm, clamping range 6-25.4 mm
PM 350-0-06

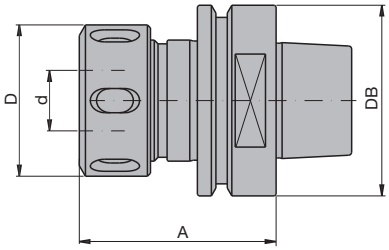
Machine	D mm	d mm	A mm	DB mm	Weight kg	ID	
Biesse, Dubus, Eima, Homag,	60	6 - 25,4	78	63	1,1	**037412**	●
MKM, Morbidelli, SCM, Weeke, IMA, Busselato	60	6 - 25,4	105	63	1,5	**037924**	●

Sales unit consists of clamping chuck with ball bearing collet nut, without collet or spanner.

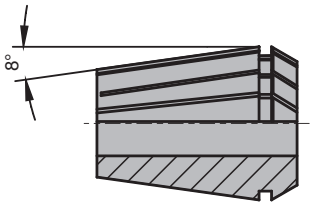
Spare parts:

BEZ	ABM mm	for S mm	ID	
Collet (2° 52')		6	**037429**	●
Collet (2° 52')		8	**037430**	●
Collet (2° 52')		10	**037431**	●
Collet (2° 52')		12	**037432**	●
Collet (2° 52')		13	**037433**	●
Collet (2° 52')		14	**037434**	●
Collet (2° 52')		16	**037435**	●
Collet (2° 52')		18	**037436**	●
Collet (2° 52')		20	**037437**	●
Collet (2° 52')		25	**037438**	●
Collet (2° 52')		6,35 (1/4")	**037495**	●
Collet (2° 52')		9,53 (3/8")	**037505**	●
Collet (2° 52')		12,7 (1/2")	**037496**	●
Collet (2° 52')		15,88 (5/8")	**037502**	●
Collet (2° 52')		19,05 (3/4")	**037497**	●
Collet (2° 52')		25,4 (1")	**037508**	●
Sickle spanner	58/62		**005458**	●
Collet chuck nut with ball bearing	M48x2		**005714**	●
Chip-Balluff	HSK-F63		**081309**	●

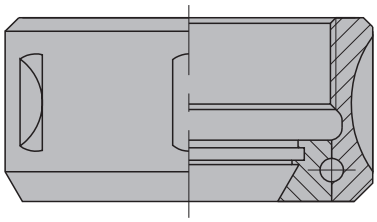
● available ex stock
□ available at short notice
Instruction manual visit www.leitz.org



Collet chuck HSK-F 63



Collet angle 8°: DIN 6499



Ball bearing collet nut

Table for max. tool projection:

shank diameter d	max. projection
20	2,2 x d
12-16	3,0 x d
6-10	3,0 x d

Collet chuck with hollow taper shank HSK-F 63, HSC machining

Application:
Precision tool chuck with collet for clamping shank tools with cylindrical shank.
For speeds up to n_{max} = 30000 rpm.

Technical information:
Hollow taper shank as per DIN 69893. Exact centric running through hardened, ground and double slotted collets. Vibration free cutting by short design. Easy handling by automatic collet opening when loosening the collet nut. Suitable for right hand and left hand rotation because of ball bearing collet nut. Ball bearing collet nut for increased clamping forces and improved concentricity compared to 1 part design. Tool chuck and collet nut fine balanced.

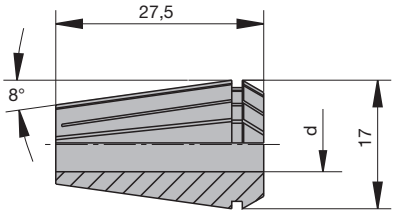
HSK-F 63, DIN 69893, A = 65 mm clamping range up to 20 mm, n max. = 30000 rpm
PM 350-0-15

Machine	D mm	d mm	A mm	DB mm	Weight kg	ID	
Dubus, Eima, Homag, IMA, MKM, Morbidelli, SCM, Weeke	50	6 - 20	65	63	0,85	**037989**	●

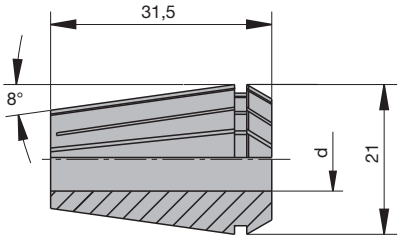
Sales unit consists of clamping chuck with ball bearing collet nut, without collet or spanner.

Spare parts:

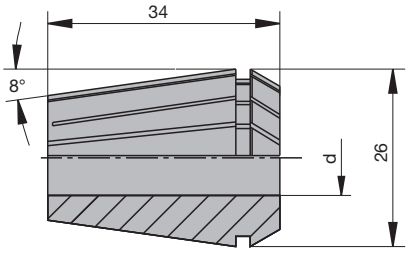
BEZ	ABM mm	for S mm	ID	
Collet (8°)		6	**037439**	●
Collet (8°)		8	**037440**	●
Collet (8°)		10	**037441**	●
Collet (8°)		12	**037442**	●
Collet (8°)		13	**037443**	●
Collet (8°)		14	**037444**	●
Collet (8°)		16	**037445**	●
Collet (8°)		18	**037446**	●
Collet (8°)		20	**037447**	●
Collet (8°)		6,35 (1/4“)	**037509**	●
Collet (8°)		9,53 (3/8“)	**037510**	●
Collet (8°)		12,7 (1/2“)	**037511**	●
Collet (8°)		15,88 (5/8“)	**037507**	●
Collet (8°)		19,05 (3/4“)	**037506**	●
Sickle spanner	45/50		**005491**	●
Collet chuck nut with ball bearing	M40x1,5		**005718**	●
Chip-Balluff	HSK-F63		**081309**	●



ER 16 collet for clamping range 6-10 mm



ER 20 collet for clamping range 6-13 mm



ER 25 collet for clamping range 6-16 mm

Collets, type ER, DIN 6499

Application:
For collet chucks and multi spindle units and trimming units with 8° taper angle (type ER, DIN 6499).

Technical information:
Double slotted design for maximum clamping forces and concentricity.

For clamping range 6-10 mm, ER 16, DIN 6499
PM 150-0

BEZ	for S mm	ID
Collet (8°)	6	**037972** ●
Collet (8°)	8	**037973** ●
Collet (8°)	10	**037974** ●
Collet (8°)	6,35	**679022** ●
Collet (8°)	9,53	**679023** ●

Spare parts:

BEZ	ABM mm	D mm	Clamping range mm	DRI	ID
Sickle spanner	30/32		6 - 10		**005516** ●
Collet chuck nut with ball bearing	M22x1,5	32	6 - 10	RL	**006645** ●
Collet chuck nut with ball bearing	M22x1,5	32	6 - 10	LL	**006646** ●

For clamping range 6-13 mm, ER 20, DIN 6499
PM 150-0

BEZ	for S mm	ID
Collet (8°)	6	**037975** ●
Collet (8°)	8	**037976** ●
Collet (8°)	10	**037977** ●
Collet (8°)	12	**037978** ●
Collet (8°)	6,35	**679024** ●
Collet (8°)	9,53	**679025** ●
Collet (8°)	12,7	**679026** ●

Spare parts:

BEZ	ABM mm	D mm	Clamping range mm	DRI	ID
Sickle spanner	34/36		6 - 13		**005517** ●
Collet chuck nut with ball bearing	M25x1,5	35	6 - 13	RL	**006647** ●
Collet chuck nut with ball bearing	M25x1,5	35	6 - 13	LL	**006648** ●

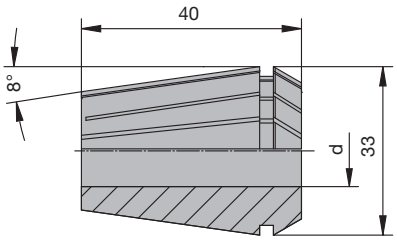
For clamping range 6-16 mm, ER 25, DIN 6499
PM 150-0

BEZ	for S mm	ID
Collet (8°)	6	**037979** ●
Collet (8°)	8	**037980** ●
Collet (8°)	10	**037981** ●
Collet (8°)	12	**037982** ●
Collet (8°)	14	**037983** ●
Collet (8°)	16	**037984** ●
Collet (8°)	6,35	**679027** ●
Collet (8°)	9,53	**679028** ●
Collet (8°)	12,7	**679029** ●
Collet (8°)	15,88	**679030** ●

● available ex stock
□ available at short notice
Instruction manual visit www.leitz.org

Spare parts:

BEZ	ABM mm	D mm	Clamping range mm	DRI	ID
Sickle spanner	40/42		6 - 16		**005518** ●
Collet chuck nut with ball bearing	M32x1,5	42	6 - 16	RL	**006649** ●
Collet chuck nut with ball bearing	M32x1,5	42	6 - 16	LL	**006650** ●



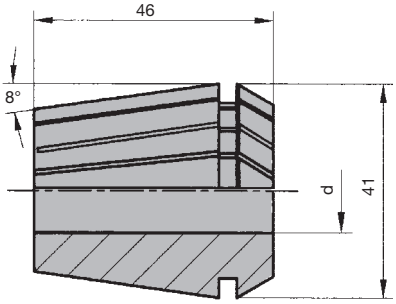
ER 32 collet for clamping range 6-20 mm

For clamping range 6-20 mm, ER 32, DIN 6499
PM 150-0

BEZ	for S mm	ID
Collet (8°)	6	**037439** ●
Collet (8°)	8	**037440** ●
Collet (8°)	10	**037441** ●
Collet (8°)	12	**037442** ●
Collet (8°)	13	**037443** ●
Collet (8°)	14	**037444** ●
Collet (8°)	16	**037445** ●
Collet (8°)	18	**037446** ●
Collet (8°)	20	**037447** ●
Collet (8°)	6,35 (1/4“)	**037509** ●
Collet (8°)	9,53 (3/8“)	**037510** ●
Collet (8°)	12,7 (1/2“)	**037511** ●
Collet (8°)	15,88 (5/8“)	**037507** ●
Collet (8°)	19,05 (3/4“)	**037506** ●

Spare parts:

BEZ	ABM mm	D mm	Clamping range mm	DRI	ID
Sickle spanner	45/50				**005491** ●
Collet chuck nut with ball bearing	M40x1,5	50	6 - 20	RL	**005718** ●
Collet chuck nut with ball bearing	M40x1,5	50	6 - 20	LL	**006631** ●



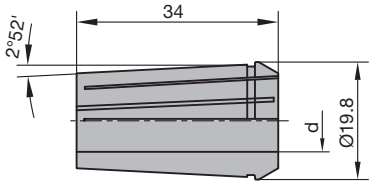
ER 40 collet for clamping range 6-26 mm

For clamping range 6-26 mm, ER 40, DIN 6499
PM 150-0

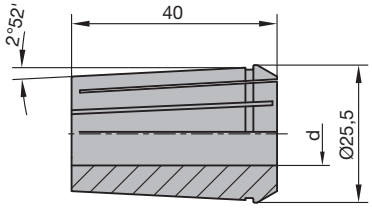
BEZ	for S mm	ID
Collet (8°)	6	**037926** ●
Collet (8°)	8	**037927** ●
Collet (8°)	10	**037928** ●
Collet (8°)	12	**037929** ●
Collet (8°)	14	**037930** ●
Collet (8°)	16	**037931** ●
Collet (8°)	20	**037932** ●
Collet (8°)	25	**037933** ●
Collet (8°)	6,35 (1/4“)	**037934** ●
Collet (8°)	9,53 (3/8“)	**037935** ●
Collet (8°)	12,7 (1/2“)	**037936** ●
Collet (8°)	15,88 (5/8“)	**037937** ●
Collet (8°)	19,05 (3/4“)	**037938** ●
Collet (8°)	25,4 (1“)	**037939** ●

Spare parts:

BEZ	ABM mm	D mm	Clamping range mm	DRI	ID
Sickle spanner	58/62		6 - 25,4		**005458** ●
Collet chuck nut with ball bearing	M50x1,5	63	6 - 25,4	RL	**006639** ●
Collet chuck nut with ball bearing	M50x1,5	63	6 - 25,4	LL	**006640** ●



Collet type 407E for clamping range 6-12.7 mm



Collet type 415E for clamping range 6-16 mm

Collet, DIN 6388, taper ratio 1:10

Application:
For collet chucks as well as for multi spindle units and trimming units with 2°52' taper angle (taper ratio 1:10).

Technical information:
Design double slotted for maximum clamping forces and concentricity.

For clamping range 6-12.7 mm, type 407E
PM 150-0

BEZ	for S mm	ID
Collet (2°52')	6	**679013** ●
Collet (2°52')	7	**679015** ●
Collet (2°52')	8	**679016** ●
Collet (2°52')	9	**679017** ●
Collet (2°52')	10	**679019** ●
Collet (2°52')	12	**679020** ●
Collet (2°52')	6,35 (1/4")	**679014** ●
Collet (2°52')	9,53 (3/8")	**679018** ●
Collet (2°52')	12,7 (1/2")	**679021** ●

Spare parts:

BEZ	ABM mm	D mm	Clamping range mm	DRI	ID
Sickle spanner	34/36		6 - 12,7		**005498** ●
	M27x1,5	35		RL	**006653** ●

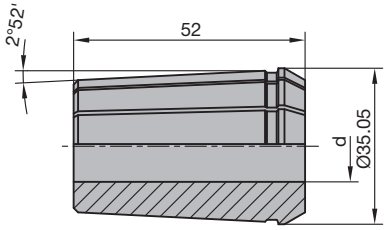
For clamping range 6-16 mm, type 415E
PM 150-0

BEZ	for S mm	ID
Collet (2°52')	6	**679005** ●
Collet (2°52')	8	**679032** ●
Collet (2°52')	9	**679033** ●
Collet (2°52')	9,5	**679034** ●
Collet (2°52')	10	**679006** ●
Collet (2°52')	11	**679035** ●
Collet (2°52')	12	**679036** ●
Collet (2°52')	13	**679007** ●
Collet (2°52')	14	**679037** ●
Collet (2°52')	16	**679008** ●
Collet (2°52')	6,35 (1/4")	**679009** ●
Collet (2°52')	9,53 (3/8")	**679010** ●
Collet (2°52')	12,7 (1/2")	**679011** ●
Collet (2°52')	15,88 (5/8")	**679012** ●

Spare parts:

BEZ	ABM mm	D mm	Clamping range mm	DRI	ID
Sickle spanner	40/42		6 - 16		**005469** ●
Collet chuck nut	M33x1,5	43		RL	**005685** ●

● available ex stock
□ available at short notice
Instruction manual visit www.leitz.org



Collet type 462E for clamping range 6-25.4 mm

For clamping range 6-25.4 mm, type 462E
PM 150-0

BEZ	for S mm	ID	
Collet (2° 52')	6	**037429**	●
Collet (2° 52')	8	**037430**	●
Collet (2° 52')	10	**037431**	●
Collet (2° 52')	12	**037432**	●
Collet (2° 52')	13	**037433**	●
Collet (2° 52')	14	**037434**	●
Collet (2° 52')	16	**037435**	●
Collet (2° 52')	18	**037436**	●
Collet (2° 52')	20	**037437**	●
Collet (2° 52')	25	**037438**	●
Collet (2° 52')	6,35 (1/4")	**037495**	●
Collet (2° 52')	9,53 (3/8")	**037505**	●
Collet (2° 52')	12,7 (1/2")	**037496**	●
Collet (2° 52')	15,88 (5/8")	**037502**	●
Collet (2° 52')	19,05 (3/4")	**037497**	●
Collet (2° 52')	25,4 (1")	**037508**	●

Spare parts:

BEZ	ABM mm	D mm	Clamping range mm	DRI	ID	
Sickle spanner	58/62		6 - 25,4		**005458**	●
Collet chuck nut with ball bearing	M48x2	60		RL	**005714**	●
Collet chuck nut with ball bearing	M48x2			LL	**006632**	●

Application

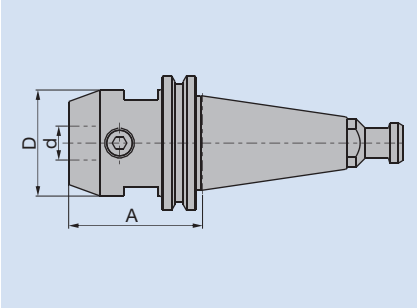
High-stability shank tool clamping.

Machine

Routers with CNC and spindles for automatic tool change.
Special machines with spindles for automatic tool change.

Technical features

Weldon chucks are used to clamp shank tools rigidly.
Weldon chucks have a similar rigidity to shrink-fit chucks, but the run out tolerance of shrink-fit chucks is significantly higher.
Shrink-fit chucks are recommend for machining operations demanding high quality.



D	Largest diameter of the chuck in the clamping area
d	Clamping or bore diameter
A	Length from the reference point on the steep taper or the HSK reference surface

Permissible shank tolerances

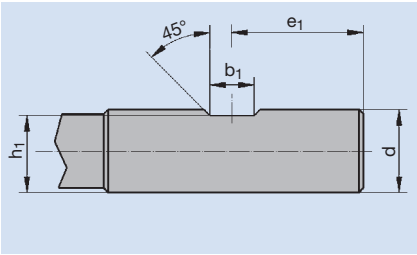
Tools clamped in weldon chucks must have at least the following tool shank tolerances:

	Diameter of shank	
Tools mounted in Weldon chucks	16 mm	20 mm
	ISO g7	ISO g7

Clamping flat

The shanks of tools clamped in Weldon chucks must have a clamping flat to DIN 1835.

The following drawing details the dimensions of the clamping flat:



d	e_1	b_1	h_1
16	24	10	14.2
20	25	11	18.2

Application data

Maximum RPM
Maximum RPM for Weldon chucks: n_{max} = 24000 min^{-1}

Order information

Weldon chucks supplied on request.

Application

Clamping drills.

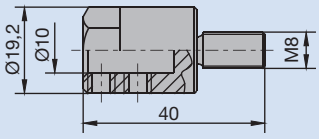
Machine

Routers with CNC and spindles for automatic tool change.
Special machines with spindles for automatic tool change.
Routers without automatic tool change.
Drilling machines.

Technical features

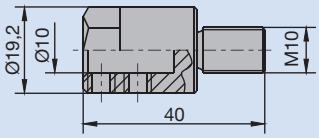
1. Conventional drill adaptors
Drill adaptors are used to mount dowel drills, through hole drills or hinge boring bits in drilling machines.
Below an overview of the available adaptors:

A



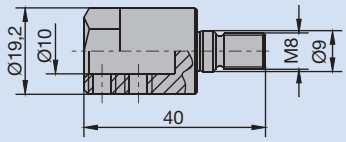
Nottmeyer
(old machine design)

B



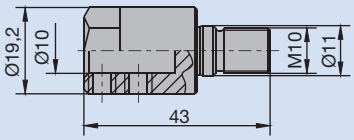
Ayen, Brandt
Knoevenagel
Mayer
Reichenbacher
Torwegge
Zubiola

C



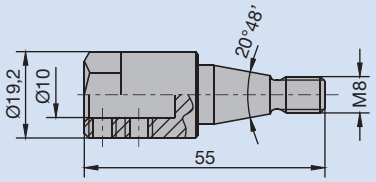
Lehbrink
Nottmeyer
(new machine design)

D



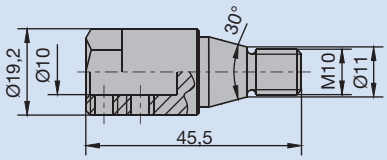
Alberti, Balestrini, Biesse
Böttcher & Gessner
Busellato, Goma, Grotefeld
Hüllhorst, Holz-Her, Koch
Morbidelli, Reimall, Torwegge
Vitap (after year 4/91)
Weeke

E



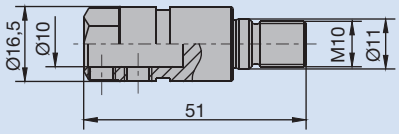
Bilek Type K and N
Knoevenagel

F



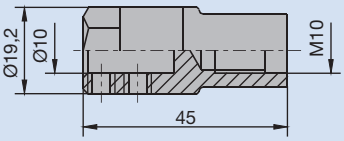
Alberti, Balestrini, Bilek
Busellato, Dubus, Goma
Grotefeld, Ompec, Reimall
SCM, Schleicher, Tanzani
Viciani, Vitap (before year 4/91)
Weingärtner

G



Morbidelli

H

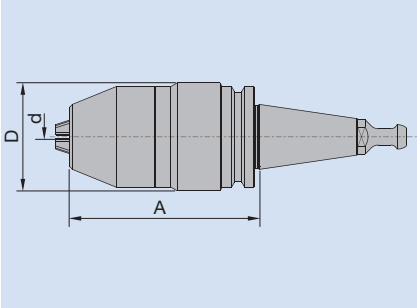


Scheer

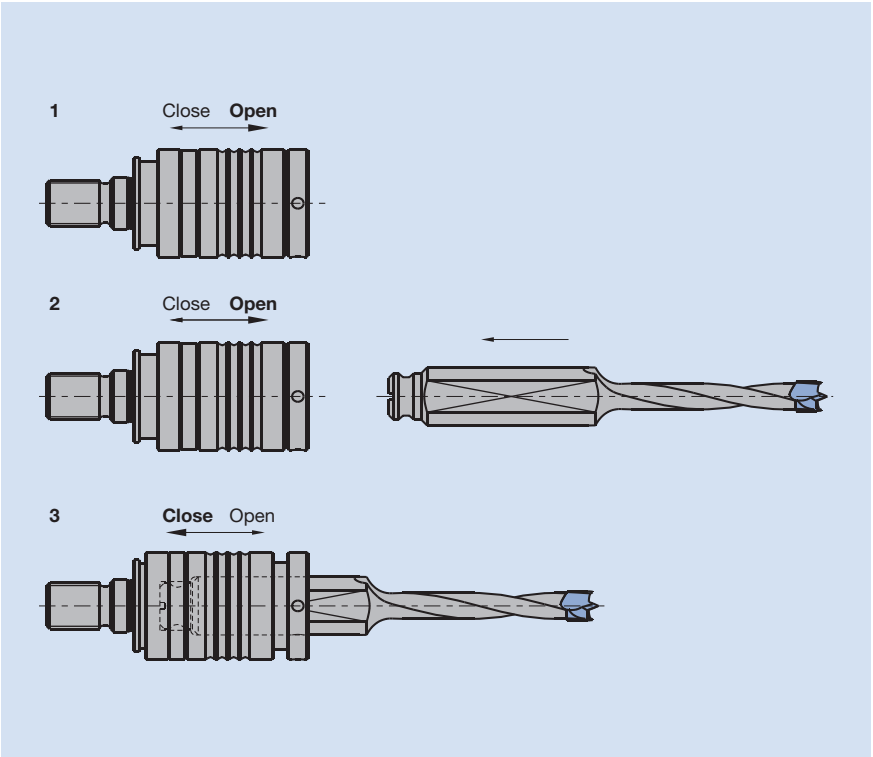
The drill is clamped in the adaptor by a screw. The shank has to have a clamping flat.

2. Drill chuck for CNC machining centres
Drill chucks are an easy way to carry drills in machines with magazines. The drill chuck is a 3 wedge chuck with an interface to suit the tool spindle.

D	Largest external diameter of the chuck.
d	Clamping diameter.
A	Length from the reference point (steep taper) or reference surface (HSK).



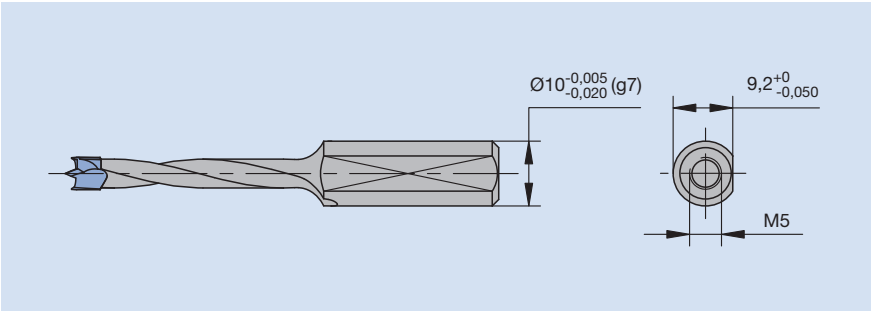
3. Quick change adaptor
Adaptor system for dowel drills, through hole drills and hinge boring bits for different drilling machines. The quick change adaptor is a quick and easy way to change drills in the machine without using tools.



Changing a drill.
For a perfect fit of the shank a special length adjustment screw (ID **007408**) is required. This screw allows exact length adjustment of the mounted drills.

Required shank tolerance

Clamping drills safely requires the following shank and clamping flat tolerance:



Application Data

Max. allowable RPM
Maximum allowable RPM for drill adaptors (adaptor in spindle):
n_{max} = 9000 min^{-1}.

Conventional drill adaptors and quick change adaptors can be used up to
n_{max} = 12000 min^{-1}.

Drill adaptor, conventional clamping

Application:
Clamping chuck for boring bits with 10 mm shank diameter and clamping flat for boring spindles with threaded adaptor.

Technical information:
Stable, safe clamping of drills by 2 clamping screws. Smallest pitch drilling: 21 mm. For narrower pitches, 8 mm shank chucks and drills must be used.

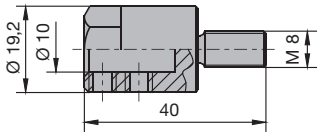
Clamping chuck for drills with 10 mm shank and clamping flat
PM 320-0-28, PM 320-0-29, PM 320-0-30, PM 320-0-32, PM 320-0-34, PM 320-0-40, PM 320-0-42, PM 320-0-46, PM 320-0-50

Machine	GL mm	Pic.	ID LL	ID RL
Nottmeyer (old machine type)	40	A	**033088** ●	**033089** ●
Ayen, Reichenbacher, Holzma, Zubiola, Knoevenagel, Brandt, Mayer, Torwegge	40	B	**033092** ●	**033093** ●
Lehbrink, Nottmeyer (new machine type)	40	C	**033080** ●	**033081** ●
Lehbrink, Nottmeyer (new machine type)	52	C	**033082** ●	**033083** ●
Alberti, Hüllhorst, Reimall, Balestrini, Koch, Weeke, Biesse, Holz-Her, Goma, Böttcher & Gessner, Busellato, Torwegge, Grotefeld, Morbidelli Vitab (from YOM 4/91 on)	43	D	**033086** ●	**033087** ●
Bilek Knoevenagel	55	E	**033084** ●	**033085** ●
Balestrini, Alberti, Bilek, Dubus, Goma, Busellato, Grotefeld, Ompec, Reimall, SCM, Schleicher, Tanzani, Viciani, Weingärtner, Vitap (up to YOM 4/91)	45,5	F	**033090** ●	**033091** ●
Morbidelli	51	G	**033094** ●	**033095** ●
Scheer	45	H	**033096** ●	**033097** ●

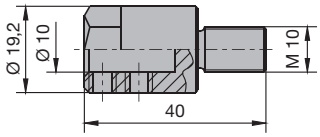
Spare parts:

BEZ	ABM mm	ID
Allen Key	SW 3	**005433** ●
Allen screw	M6x5	**005836** ●

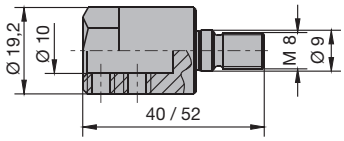
A



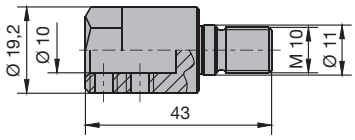
B



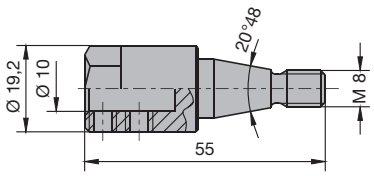
C



D



E



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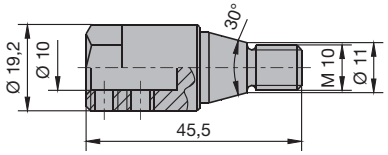
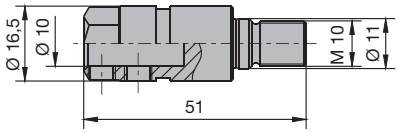
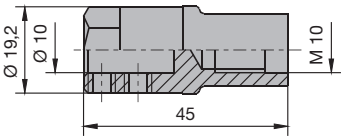


G



H



● available ex stock
□ available at short notice
Instruction manual visit www.leitz.org

Drill adaptor, quick clamping design

Application:
Quick clamping chuck for drills with 10 mm shank and clamping flat for boring spindles with threaded adaptor.

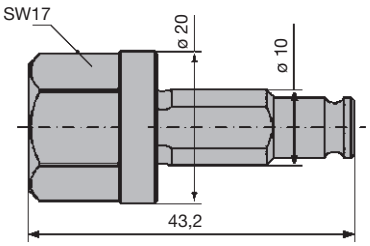
Technical information:
The drill is held in the chuck by the length adjusting screw (ID **007408**). Ideal if the hole diameter must be changed quickly. Quick clamping chucks not in use should be covered using the optional dust cover. Note: The drill shanks require an appropriate shank and clamping flat dimensional tolerance to ensure trouble free operation. Drills from the Leitz range guarantees functional reliability. Speed up to 12000 rpm (quick change drill adaptor without drill must be covered with the dust cover ID **115521** for speeds exceeding 9000 rpm to prevent unbalance).

Clamping chuck for drills with 10 mm shank and clamping flat
PM 320-0-55, PM 320-0-56, PM 320-0-57, PM 320-0-58

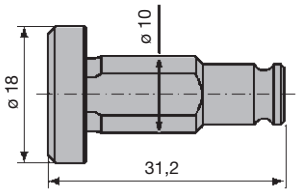
Machine	GL mm	Pic.	ID LL		ID RL	
Lehbrink, Nottmeyer (new machine type)	45	A	**033102**	●	**033103**	●
Ayen, Brandt, Holzma, Reichenbacher, Knoevenagel, Mayer, Zubiola, Torwegge	45	B	**033104**	●	**033105**	●
Nottmeyer (old machine type)	45	C	**033098**	●	**033099**	●
Alberti, Balestrini, Koch, Biesse, Böttcher & Gessner, Busellato, Grotefeld, Goma, Morbidelli, Reimall, Torwegge, Hüllhorst, Holz-Her, Weeke, Vitap (from YOM 4/91 on)	46	D	**033100**	●	**033101**	●
Multi purpose (for LL/RL), shank D-10mm	50	E	**033106**	●	**033106**	●

Spare parts:

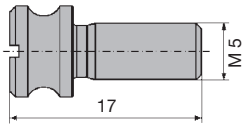
BEZ	ABM mm	ID	
Dust cover	d8/10/D18/L31,2	**115521**	●
Mounting device	d8/10/D20/L43,2/SW17	**115522**	●
Length adjustment screw	M5x17	**007408**	●



Mounting device ID **115522**

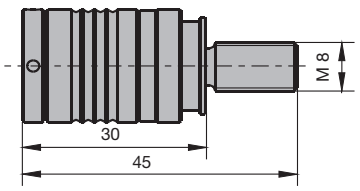


Dust cover ID **115521**

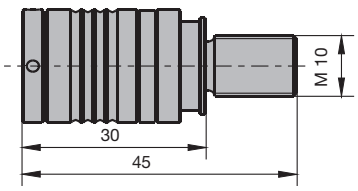


Length adjusting screw ID **007408**

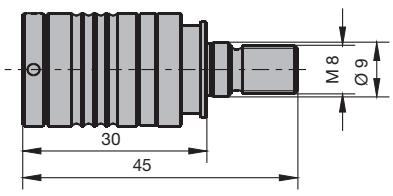
A



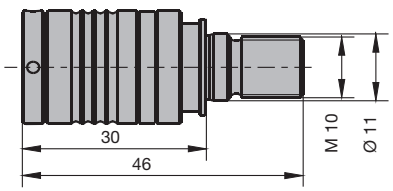
B



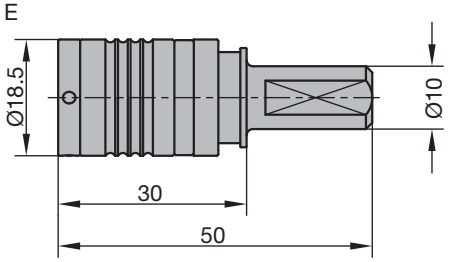
C



D



E



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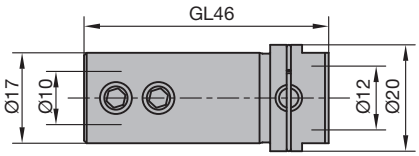


For Weeke drill adaptor

Drill adaptor

Application:
For mounting dowel drills, through hole drills and hinge boring bits on point-to-point machines, through feed machines and stationary boring machines.

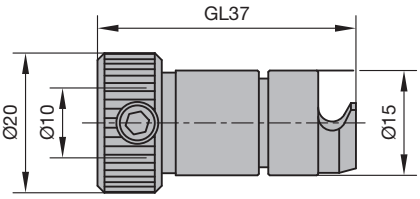
Technical information:
Wear resistant material, ground surface. High concentricity for clean borings and long drill life time.

For Weeke through feed machines
PM 320-0

Machine	D mm	d mm	GL mm	ID	
Weeke	20	10	46	**033107**	●

Spare parts:

BEZ	ABM mm	ID	
Allen Key	SW 3	**005433**	●
Allen screw	M6x4	**005837**	●



For Biesse drill adaptor

Drill adaptor

Application:
For mounting dowel drills, through hole drills and hinge boring bits on point-to-point machines, through feed machines and stationary boring machines.

Technical information:
Wear resistant material, ground surface. High concentricity for clean borings and long drill life time.

For Biesse boring units
PM 320-0

Machine	D mm	d mm	GL mm	ID	
Biesse	20	10	37	**033108**	●

Spare parts:

BEZ	ABM mm	ID	
Allen Key	SW 3	**005433**	●
Allen screw	M6x5	**005836**	●

● available ex stock
□ available at short notice
Instruction manual visit www.leitz.org

Quick change drill adaptor, spare parts for previous system

Tool adaptor for drills with 10 mm shanks
PM 320-0-02

D mm	d mm	ID LL	ID RL
20	10	**033270** ●	**033271** ●

Spare parts:

BEZ	ABM mm	ID
Allen Key	SW 3	**005433** ●
Allen screw	M6x5	**005836** ●

Tool adaptor for drills with 8 mm shanks
PM 320-0-01

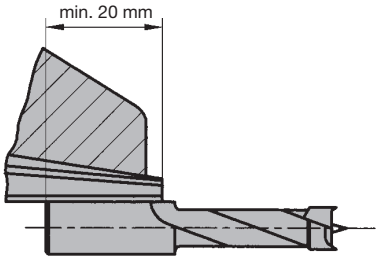
D mm	d mm	ID LL	ID RL
15,5	8	**033170** ●	**033171** ●

Spare parts:

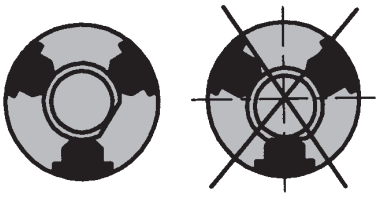
BEZ	ABM mm	ID
Allen Key	SW 3	**005433** ●
Allen screw	M6x5	**005836** ●

When clamping, please ensure that the following criteria are met:

- Minimum clamping length
  l_{min} = 20 mm
- Maximum clamping lenght
  l_{max} = 29 mm



- Do not clamp tapered shanks
- If possible use cylindrical shanks without clamping flat, grooves or other recesses



- If drills with clamping flat are used, the clamping flat is not allowed to touch the clamping wedges.
  See illustration

Drill chuck for CNC spindle

Application:
Clamping chuck for drills for the spindle of CNC routers and machining centres.

Technical information:
Precision design with high concentricity < 0.02 mm. Special clamping mechanism with improved holding forces to prevent the tool shank from slipping. Steplessly adjustable clamping range: 0.5 - 13 mm (SK 30, ISO30, SK40), 3-16 mm (HSK-E/-F 63). Fine balanced design. Clamping wedges hardened for improved wear resistance. Suitable for right hand and left hand rotation. To be used only for drilling.

Steplessly adjustable clamping range
PM 330-0

Machine	D mm	d mm	S mm	A mm	Weight kg	ID	
MAKA, Reichenbacher, Weeke	53	0,5 - 13	SK 30	94	1,30	**037700**	□
Biesse from YOM 9/92 on	53	0,5 - 13	SK 30	94	1,30	**037701**	□
Alberti	53	0,5 - 13	SK 30	94	1,30	**037702**	□
Homag, MAKA, Reichenbacher, SCM, Stegherr	52	0,5 - 13	SK 40	94	1,50	**037704**	●
IMA from YOM 9/94 on Dubus, Eima, Homag, Weeke	52	3 - 16	HSK-F 63	100	1,70	**037705**	●

Spare parts:

BEZ	ABM mm	ID	
Allen Key	SW 4, L 100	**005451**	●

● available ex stock
□ available at short notice
Instruction manual visit www.leitz.org

8.4 Clamping arbors
8.4.1 Hydro clamping arbors

Application

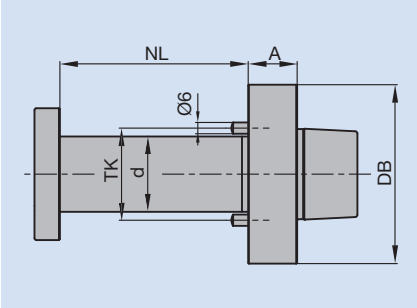
Play free mounting of single cutters or cuttersets with bore.

Machine

Routers with CNC and spindles for automatic tool change.
Special machines with spindles for automatic tool change.

Technical features

Hydro clamping arbors are used to mount tools, cutterheads, cutters and sawblades on CNC machining centres or continuous machines with spindles for automatic tool change. The clamping length can be adjusted to suit the application and tool.

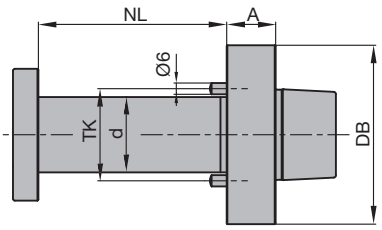


d	Diameter of the arbor
l	Clamping length
DB	Outer diameter groove
A	Length from reference point (steep taper) or reference surface (HSK)
DTK	Pitch diameter, screw or pin bore

Permissible bore tolerances

Tools mounted on arbors must have at least the following bore tolerance:

	Bore tolerance
Tools mounted on hydro clamping chucks	ISO H7



Hydro clamping arbor
HSK 85 WS - PH 160-4-14

Hydro clamping arbor HSK 85 WS

Application:
For precise, play free mounting of tools with bore or tool sets with bore.

Machine:
Machines with HSK 85 WS interface e.g. moulders (Weinig Powermat), window manufacture machines, etc.

Technical information:
Play free and precise mounting of tools with bore by hydro clamping arbors. Radial clamping by closed hydro system. Easy and safe handling with optionally lifting rings (see TR 100-0).

HSK 85 WS, A = 26 mm
PH 160-4-14

Machine	NL mm	d mm	A mm	DB mm	TK mm	ID	
Weinig	100	40	26	85	58	**663800**	●
Weinig	170	40	26	85	58	**663802**	●

Suitable spacers, see section 9.3.

● available ex stock
□ available at short notice
Instruction manual visit www.leitz.org

Application

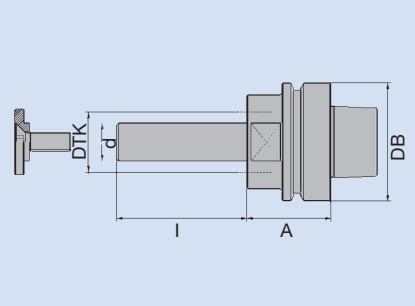
For mounting single cutters or cuttersets with bore.

Machine

Routers with CNC and spindles for automatic tool change Through feed machines and special machines with spindles for automatic tool change.

Technical features

Cutter arbors are used to mount tools, cutterheads, cutters and sawblades on CNC machining centres or continuous machines with spindles for automatic tool change. The arbor clamping length can be adjusted to suit the application and tool.

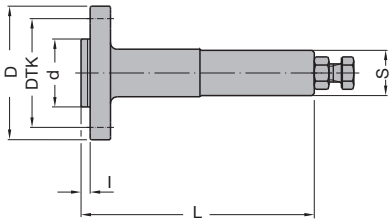


d	Diameter of the arbor
l	Clamping length
DB	Outer diameter groove
A	Length from reference point (steep taper) or reference surface (HSK)
DTK	Pitch diameter, screw or pin bore

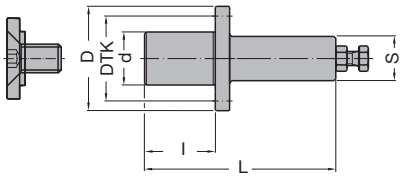
Permissible bore tolerances

Tools mounted on arbors must have at least the following bore tolerance:

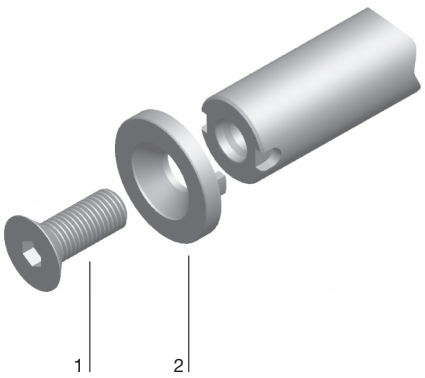
	Bore tolerance
Tools mounted on arbors	ISO H7



Arbor, short design



Arbor, long design



1 Clamping screw
2 Conical spring washer for safety against twisting

Cutter arbor with cylindrical shank

Application:
Arbor for single tools with bore or tool sets with bore.

Technical information:
Cylindrical shank or morse taper shank design. Short design for grooving cutter and sawblades up to widths NB = 10 mm. Long design for one part or multi part tools / tool sets. Safety device against tool twisting by screw or pin. Cutter arbors are fine balanced. If conical spring washers with safety device against twisting are used, slots are required in the cutter arbor. Note: Maximum admissible speed n_{max} depends on the tools mounted. Please comply with the specifications regarding the maximum admissible weight and diameters detailed by the machine manufacturer.

Short design
TI 501-0-04

D mm	d mm	L mm	l mm	S mm	TK mm	ID	
59	30	102	4	25x90	48	**041367**	●
59	30	102	4	20x90	48	**041368**	●
59	30	127	4	25x115	48	**042980**	●
60	30	85	4	16x50	48	**041429**	●

Complete with four countersunk screws M6X16 and four cylinder head screws.

Long design
TI 501-0-03

D mm	d mm	L mm	l mm	S mm	TK mm	ID	
50	20	107	40	25x60	32	**041124**	●
50	20	122	50	25x60	32	**041125**	●
50	20	137	70	25x60	32	**041126**	●
59	30	93	25	25x60	48	**041127**	□
59	30	108	40	25x60	48	**041128**	●
50	20	83	25	20x50	32	**042982**	□
50	20	98	40	20x50	32	**042983**	□
50	20	113	55	20x50	32	**042984**	●
59	30	83	25	20x50	48	**042985**	□
59	30	98	40	20x50	48	**042986**	●

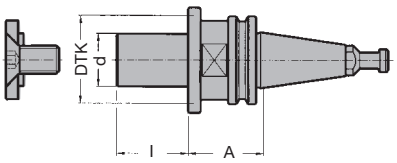
Sales unit consists of arbor, clamping screw and conical spring washer (flat design), without spacers.

Spare parts:

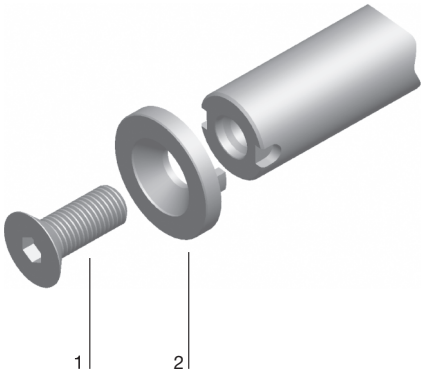
BEZ	ABM mm	BEM	ID	
Washer with safety device against twisting, M10	20/35x16x10,5	for d = 20	**006768**	●
Washer with safety device against twisting, M16	30/45x16x16,5	for d = 30	**006769**	●

Suitable spacers, see section 9.3.

● available ex stock
□ available at short notice
Instruction manual visit www.leitz.org



Arbor SK 30/SK 40



1 Clamping screw
2 Conical spring washer for safety against twisting

Cutter arbor with steep taper SK 30 / SK 40

Application:
Arbor for single tools with bore or tool sets with bore.

Technical information:
Steep taper design as per DIN 69871, without grooves and notches. Short design, suitable for low vibration cutting. Safety device against tool twisting by screw or pin. Arbors are fine balanced. If conical spring washers with safety device against twisting are used, slots are required in the arbor. For suitable mounting device VN 799-0, see section 9. Note: Please comply with the specifications regarding the maximum admissible weight and diameters detailed by the machine manufacturer.

SK 30, A = 42 mm
TI 501-0-01

Machine	l mm	d mm	TK mm	Weight kg	ID	
Reichenbacher,	70	20	32	1	**041137**	□
Biesse up to YOM 9/92,	80	30	48	1,3	**042814**	□
Masterwood from YOM 1/99 on	70	20	32	1	**042832**	□
Biesse from YOM 9/92 on	80	30	48	1,3	**042836**	□
	70	20	32	1	**041370**	□
	80	30	48	1,3	**041373**	□

SK 40, A = 42 mm
TI 501-0-01

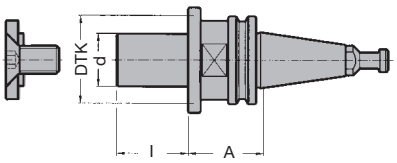
Machine	l mm	d mm	TK mm	Weight kg	ID	
IMA, SCM, Stegherr,	70	20	32	1,5	**042804**	●
Reichenbacher	80	30	48	1,8	**042815**	●

Sales unit consists of arbor with draw bolt, clamping screw and conical spring washer (flat design), without spacers.

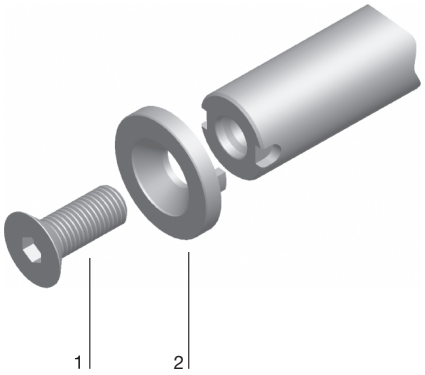
Spare parts:

BEZ	BEM	ABM mm	ID	
Washer with safety device against twisting, M10	for d = 20	20/35x16x10,5	**006768**	●
Washer with safety device against twisting, M16	for d = 30	30/45x16x16,5	**006769**	●
Locking nut with Balluff chip		SK 40	**081601**	●

Suitable spacers, see section 9.3.



Arbor SK 30/SK 40



1 Clamping screw
2 Conical spring washer for safety against twisting

Cutter arbor with steep taper SK 30 / SK 40

Application:
Arbor for single tools with bore or tool sets with bore.

Technical information:
Steep taper design as per DIN 69871, without grooves and notches. Outside dimension A= 63 mm for longer tool length in the machine. Safety device against tool twisting by screw or pin. Arbors are fine balanced. If conical spring washers with safety device against twisting are used, slots are required in the arbor. For suitable mounting device VN 799-0, see section 9. Note: Please comply with the specifications regarding the maximum admissible weight and diameters detailed by the machine manufacturer.

SK 30, A = 63 mm
TI 501-0-01

Machine	l mm	d mm	TK mm	Weight kg	ID	
MAKA, Weeke,	70	20	32	1,3	**042818**	●
Alberti	80	30	48	1,6	**042822**	●
	70	20	32	1,3	**041376**	●
	80	30	48	1,6	**041380**	●

SK 40, A = 63 mm
TI 501-0-01

Machine	l mm	d mm	TK mm	Weight kg	ID	
MAKA, Reichenbacher	70	20	32	1,9	**042825**	●
	80	30	48	2,2	**042829**	●

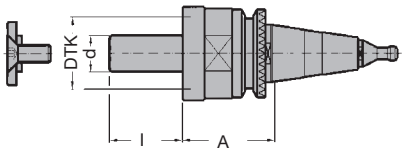
Sales unit consists of arbor with draw bolt, clamping screw and conical spring washer (flat design), without spacers.

Spare parts:

BEZ	BEM	ABM mm	ID	
Washer with safety device against twisting, M10	for d = 20	20/35x16x10,5	**006768**	●
Washer with safety device against twisting, M16	for d = 30	30/45x16x16,5	**006769**	●
Locking nut with Balluff chip		SK 40	**081601**	●

Suitable spacers, see section 9.3.

● available ex stock
□ available at short notice
Instruction manual visit www.leitz.org



Arbor ISO 30, SCM, Morbidelli

Cutter arbor with steep taper ISO 30 for SCM and Morbidelli

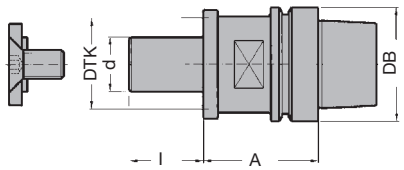
Application:
Arbor for single tools with bore or tool sets with bore.

Technical information:
Steep taper design as per ISO 30 with serration. Safety device against tool twisting by screw or pin. Arbors are fine balanced. If conical spring washers with safety device against twisting are used, slots are required in the arbor. Note: Please comply with the specifications regarding the maximum admissible weight and diameters detailed by the machine manufacturer.

ISO 30, A = 63 mm
TI 501-0-10

Machine	l mm	d mm	TK mm	Weight kg	ID	
Morbidelli, SCM	70	20	32	1,3	**041383**	●
	55	30	48	1,6	**041386**	●

Sales unit consists of arbor with draw bolt, clamping screw and conical spring washer (flat design), without spacers.



Arbor HSK-E 63

Cutting arbor with hollow taper shank HSK-E 63

Application:
Arbor for single tools with bore or tool sets with bore.

Technical information:
Hollow taper shank design as per DIN 69893. Safety device against tool twisting by screw or pin. Arbors are fine balanced. If conical spring washers with safety device against twisting are used, slots are required in the arbor. For suitable mounting device VN 799-0, see section 9. Note: Please comply with the specifications regarding the maximum admissible weight and diameters detailed by the machine manufacturer.

HSK-E 63, DIN 69893, A = 45 mm
TI 501-0-07

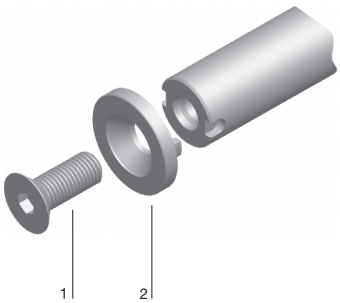
Machine	l mm	d mm	A mm	DB mm	TK mm	Weight kg	ID	
Biesse, CML,	70	20	45	63	32	1,2	**039801**	●
CMS, Weinig, Working Process and others	80	30	45	63	48	1,6	**039805**	●

Sales unit consists of arbor, clamping screw and conical spring washer (flat design), without spacers.

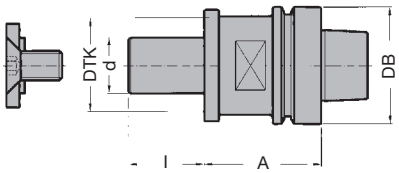
Spare parts:

BEZ	BEM	ABM mm	ID	
Washer with safety device against twisting, M10	for d = 20	20/35x16x10,5	**006768**	●
Washer with safety device against twisting, M16	for d = 30	30/45x16x16,5	**006769**	●

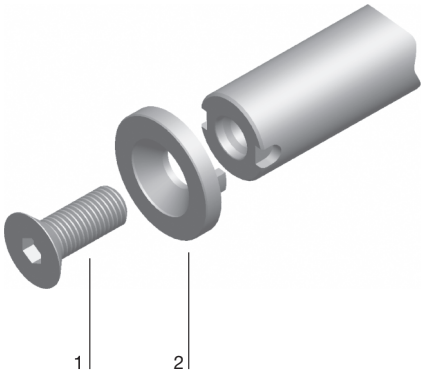
Suitable spacers, see section 9.3.



1 Clamping screw
2 Conical spring washer for safety against twisting



Arbor HSK-F 63



1 Clamping screw
2 Conical spring washer for safety against twisting

Cutting arbor with hollow taper shank HSK-F 63

Application:
Arbor for single tools with bore or tool sets with bore.

Technical information:
Hollow taper shank design as per DIN 69893. Safety device against tool twisting by screw or pin. Arbors are fine balanced. If conical spring washers with safety device against twisting are used, slots are required in the arbor. For suitable mounting device VN 799-0, see section 9. Note: Preferably use short model for low vibration. Please comply with the specifications regarding the maximum admissible weight and diameters detailed by the machine manufacturer.

HSK-F 63, DIN 69893, A = 45 mm
TI 501-0-07

Machine	l mm	d mm	A mm	DB mm	TK mm	Weight kg	ID	
IMA from YOM 9/94 on Biesse, Dubus, Eima, Homag,	70	20	45	63	32	1,2	**042987**	●
MKM, Morbidelli, SCM, Weeke	80	30	45	63	48	1,6	**042988**	●
Weinig Conturex, SCM	140	30	45	63	48	1,9	**041426**	●
Weinig Conturex, SCM	192	35	45	63	52	2,6	**041425**	●

HSK-F 63, DIN 69893, A = 80 mm
TI 501-0-07

Machine	l mm	d mm	A mm	DB mm	TK mm	Weight kg	ID	
IMA from YOM 9/94 on Biesse, Dubus, Eima, Homag,	70	20	80	63	32	1,7	**042847**	●
SCM, Weeke, MKM, Morbidelli	80	30	80	63	48	2,1	**042951**	●
Weinig Conturex, SCM	120	30	80	63	48	2,4	**041427**	●

HSK-F 63, DIN 69893, A = 90 mm
TI 501-0-07

Machine	l mm	d mm	A mm	DB mm	TK mm	Weight kg	ID	
Weinig Conturex, SCM	170	35	90	63	52	3,2	**041428**	●

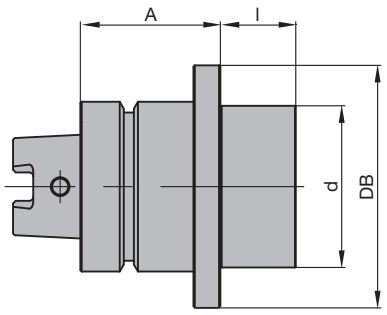
Sales unit consists of arbor, clamping screw and conical spring washer (flat design), without spacers.

Spare parts:

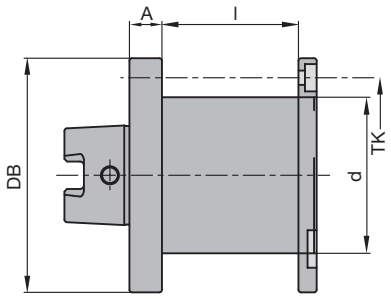
BEZ	BEM	ABM mm	ID	
Washer with safety device against twisting, M10	for d = 20	20/35x16x10,5	**006768**	●
Washer with safety device against twisting, M16	for d = 30	30/45x16x16,5	**006769**	●
Washer with safety device against twisting, M16	for d = 35	35/42x16x16,5	**006770**	●
Chip-Balluff		HSK-F63	**081309**	●

Suitable spacers, see section 9.3.

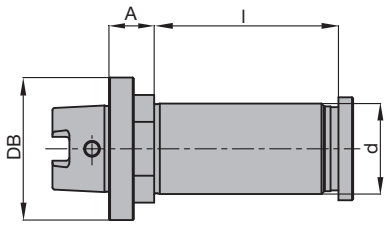
● available ex stock
□ available at short notice
Instruction manual visit www.leitz.org



Arbors HSK-F 63 mod. (ID 663052) with flange



Arbor HSK-F 63 mod. (ID 663053) with end ring and clamping screws



Arbor HSK-F 63 mod. (ID 663054) with hexagon safety against twisting and conical spring washer

Cutting arbor with hollow taper shank HSK-F 63 mod.

Application:
Arbors for single tools with bore or tool sets with bore. For precise clamping in the machine spindle and quick tool change, mainly on Homag through feed machines with HSK-F 63 mod. motor spindle.

Machine:
Double end tenoner, flooring machines, edge banding machines, etc.

Technical information:
Fine balanced arbors with hollow shank taper modified design as per DIN 69893 HSK-F 63. Precise tool clamping for high concentricity. Clamping screws and end ring are part of the arbor.

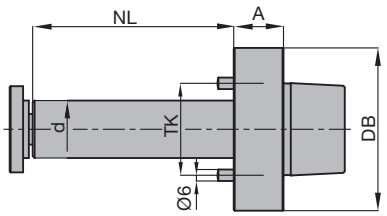
HSK-F 63 mod., A = 12.5 mm, 20 mm and 52 mm
TB 300 0

Machine	l mm	d mm	A mm	DB mm	TK mm	ID	
Homag	28	60	52	90	6/M6/75	**663052**	●
Homag	55	60	12,5	90	6/M6/75	**663053**	●
Homag	75	40	20	63	Hexagon	**663054**	●

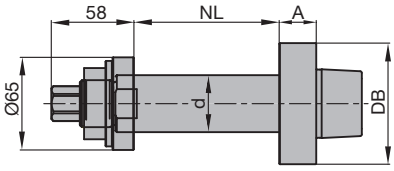
Spare parts:

BEZ	ABM mm	ID	
Cylindrical screw with ISK	M6x30	**005928**	●
Cylindrical screw with ISK	M6x65	**005935**	●
Allen Key	SW 5	**005452**	●

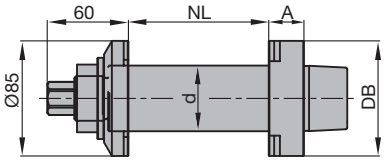
8



Arbor HSK 85 WS - TI 501-0-14



Arbor HSK 85 WS, with spindle nut



HSK 85 WS spindle for hydro sleeves, with spindle nut

Cutting arbor with hollow shank taper HSK 85 WS

Application:
For mounting saws, tools, tool sets and cutterheads.

Machine:
Machines with HSK 85 WS interface e.g. moulders, window manufacture machines, etc.

Technical information:
Easy and safe handling with optional lifting rings.

HSK 85 WS, A = 26 mm, for Weinig Powermat with 2 safety pins against twisting.
TI 501-0-14

Machine	NL mm	d mm	A mm	DB mm	TK mm	ID	
Weinig	70	20	26	85	32	**663028**	
Weinig	50	30	26	85	48	**663029**	●
Weinig	80	30	26	85	48	**663030**	●
Weinig	105	30	26	85	48	**663031**	●

Spare parts:

BEZ	ABM mm	BEM	ID	
Washer without safety device against twisting, M10	20/35/10,5x8	for d = 20	**006745**	●
Washer without safety device against twisting, M16	30/45/16,5x10	for d = 30	**006746**	●

HSK 85 WS, A = 26 mm, for Weinig Powermat without safety device against twisting
TI 501-0-14

Machine	NL mm	d mm	A mm	DB mm	ID	
Weinig	80	40	26	85	**663062**	●
Weinig	80	50	26	85	**663063**	●
Weinig	130	40	26	85	**663034**	●
Weinig	170	40	26	85	**663035**	●
Weinig	240	40	26	85	**663036**	●
Weinig	130	50	26	85	**663037**	●
Weinig	170	50	26	85	**663038**	●
Weinig	240	50	26	85	**663039**	●

Spare parts:

BEZ	ABM mm	BEM	ID	
Spindle nut SW50	M33x1.5	for d = 40 / 50	**006651**	●
Spindle ring	65x15x40	for d = 40 or 50	**008241**	●
Spindle ring	85x18x40,DTK65	for d = 50	**008242**	●

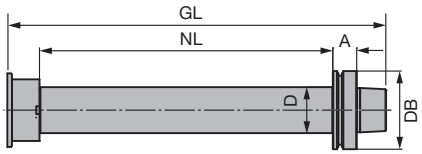
HSK 85 WS, A = 26 mm, for Weinig Powermat, with safety device against twisting, suitable for Hydro-Duo clamping sleeve PH 130-0-13.
TI 501-0-14

Machine	NL mm	d mm	A mm	DB mm	ID
Weinig	80,5	40	26	85	**663041**
Weinig	120,5	40	26	85	**663042**
Weinig	100,5	50	26	85	**663043**
Weinig	140,5	50	26	85	**663040**

● available ex stock
□ available at short notice
Instruction manual visit www.leitz.org

Spare parts:

BEZ	ABM mm	BEM	ID
Spindle nut SW50	M33x1.5	for d = 40 / 50	**006651** ●
Spindle ring	85x18x40,DTK65	for d = 50	**008242** ●
Spindle ring	65x15x40	for d = 40 or 50	**008241** ●



HSK 85, A = 26 mm and A = 33 mm, for SCM
TI 501-0-14

Machine	NL mm	d mm	A mm	DB mm	ID
SCM	130	40	33	63	**663061** ●
SCM	319	50	26	85	**663055** ●

With end ring, suitable for the machine tool lifting device.

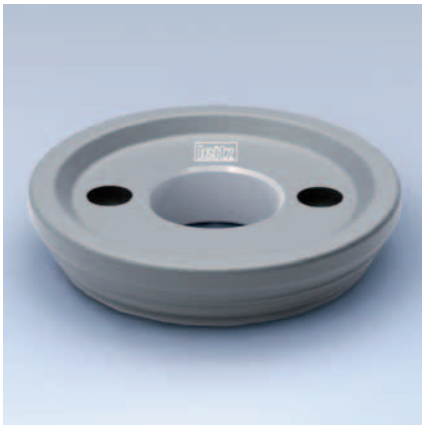
Blanking arbor HSK 85 WS

Application:
Dust cover for spindles when not in use.

Machine:
Machines with HSK 85 WS interface e.g. moulders (Weinig Powermat), window manufacture machines, etc.

Blanking arbor for Weinig Powermat
TI 501-0-14

Machine	ID
Weinig	**663044** ●

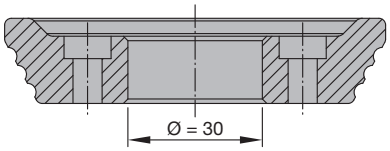


Lifting ring, HSK 85 WS

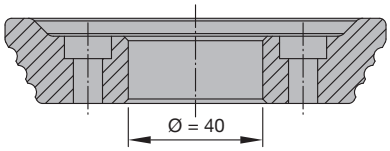
Application:
Lifting rings can be mounted on arbors for easy and safe tool handling.

Lifting ring for HSK 85 WS arbors
TR 100-0

Machine	NL mm	d mm	TK mm	BEM	ID	
Weinig	30 - 100	Zu 30	48	for ID **663029**, **663030**, **663031**	**008248**	●
Weinig	30 - 120	Zu 30	48	for ID **663029**, **663030**, **663031**	**008249**	●
Weinig	30 - 240	Zu 40	58	for ID **663047**, **663048**	**008350**	●
Weinig	40 - 240	Zu 40/50	65	for ID **663034** - **663039**	**008250**	●



ID **008248**



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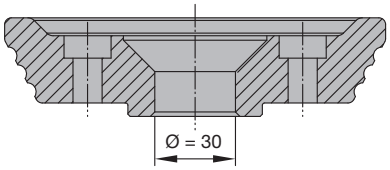
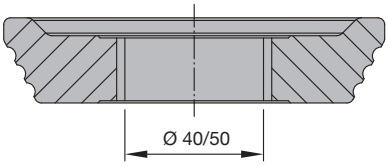


ID **008249**



ID **008250**

Mounting device for tools with HSK interface

Application:
For mounting saws, tools, tool sets and cutterheads.

Machine:
Machines with HSK 85 WS or HSK-F 63 interface.

Mounting device for tools with HSK 85 / HSK-F 63 interface
VN 799-0

BEZ	Machine	l mm	d mm	ID	
Mounting device EASY-Hold HSK 85 WS	Weinig	30 - 310	20 - 50	**079010**	●
Mounting device EASY-Hold HSK-F 63				**079009**	●

For quick and easy mounting of knives or tools on arbors.

● available ex stock
□ available at short notice
Instruction manual visit www.leitz.org

Application

Clamping and mounting of circular sawblades.

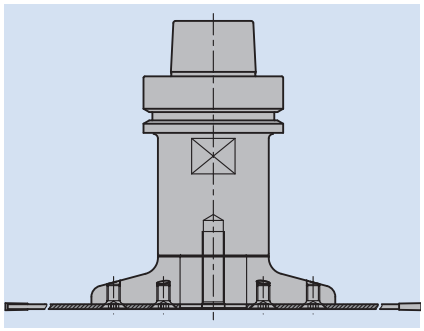
Machines

Overhead routers with CNC control and spindles for automatic tool change.
Special routers with cutting spindles for automatic tool change.

Technical features

Circular sawblade adaptors are used to mount sawblades on CNC machining centres or through feed machines with automatic tool change tool spindles.
- Design without flange suitable for deep mitre cuts on 5-axis CNC machining centres.
- Design with clamping flange for precise cuts and multi purpose applications.
- Multi purpose design for variable applications on all arbors with diameter d = 30 mm.

Sawblade mounting flange with HSK-F63 adaptor

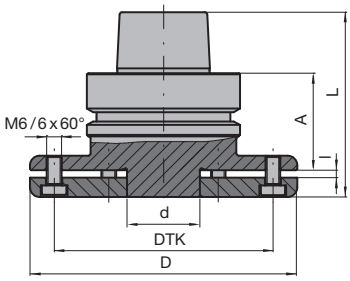


Sawblade flange mounted on arbor with hollow taper shank HSK-F63

Allowed bore tolerances

Circular sawblades mounted on sawblade flanges have to have the following bore tolerances:

	Bore tolerance
Circular sawblade for sawblade flange	ISO H7



Machine	Measure A
Homag Drive 5+	40 mm
Homag Drive 5C+	50 mm

Tool adaptor for circular sawblades

Application:
Arbor for circular sawblades.

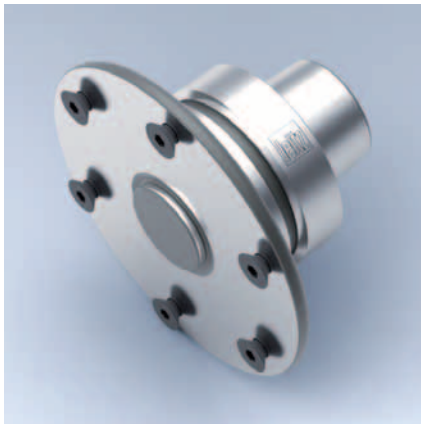
Technical information:
For 5-axis CNC machining centres, for sawblades diameters up to 350 mm with clamping flange.

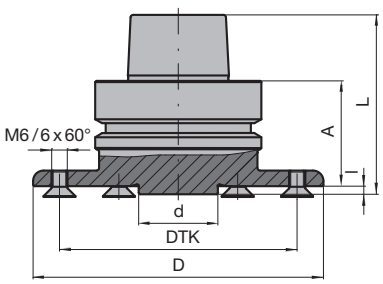
HSK-F 63, DIN 69893, model with 2 part flange
TI 501-0-07

Machine	A mm	d mm	D mm	l max. mm	TK mm	L mm	Weight kg	ID	
Homag	40	30	110	3,5	90	76	1,9	**663049**	●
	50	30	110	3,5	90	86	2,1	**663059**	●

Spare parts:

BEZ	ABM mm	ID	
Cylindrical screw with ISK	M6x12	**005924**	●
Allen Key	SW 4	**005434**	●





Machine	Measure A
Homag Drive 5+	40 mm
Homag Drive 5C+	50 mm

Tool adaptor for circular sawblades

Application:
Arbor for circular sawblades.

Technical information:
For 5-axis CNC machining centres, for sawblades diameters up to 350 mm.
Flush mounted, suitable for deep mitre and sizing cuts.

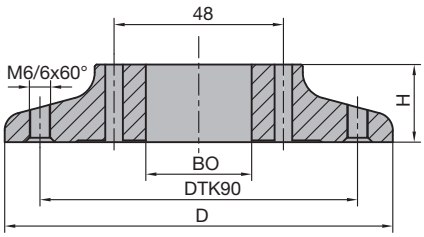
HSK-F 63, DIN 69893, model with flush flange
TI 501-0-07

Machine	A mm	d mm	D mm	l max. mm	TK mm	L mm	Weight kg	ID	
Homag	40	30	110	3,5	90	68	1,3	**663050**	●
	50	30	110	3,5	90	78	1,5	**663060**	●

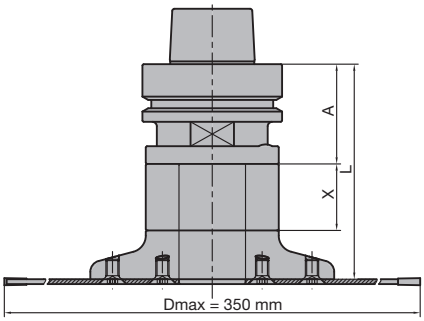
Spare parts:

BEZ	ABM mm	ID	
Countersink screw with ISK	M6x10	**005780**	●
Allen Key	SW 4	**005434**	●

● available ex stock
□ available at short notice
Instruction manual visit www.leitz.org



Flange TR 810-0



Flange for circular sawblades

Application:
To mount circular sawblades on arbors.

Technical information:
Sawblade flange is mounted on arbor with diameter d = 30 mm by clamping screws and pins. The length and the dimension A is flexible and defined by spacers.
Maximum sawblade diameter 350 mm.

Flange adaptor
TR 810-0

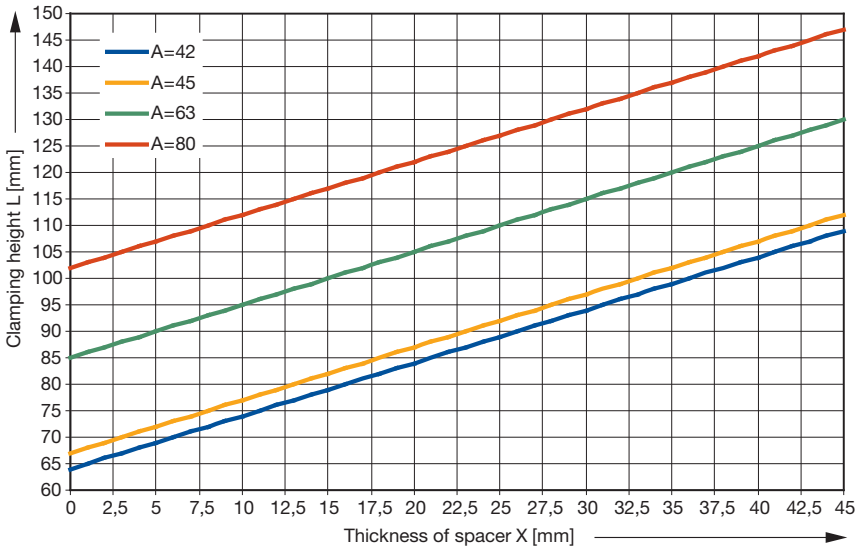
Machine	H mm	BO mm	D mm	L max. mm	TK mm	Weight kg	ID	
Multi purpose	22	30	110	3,5	90	0,6	**066751**	●

Spare parts:

BEZ	ABM mm	ID	
Countersink screw with ISK	M6x10	**005780**	●
Allen Key	SW 4	**005434**	●

Suitable spacers, see section 9.3.

Clamping length L depending on spacer thickness X and the dimension A of the arbor used:



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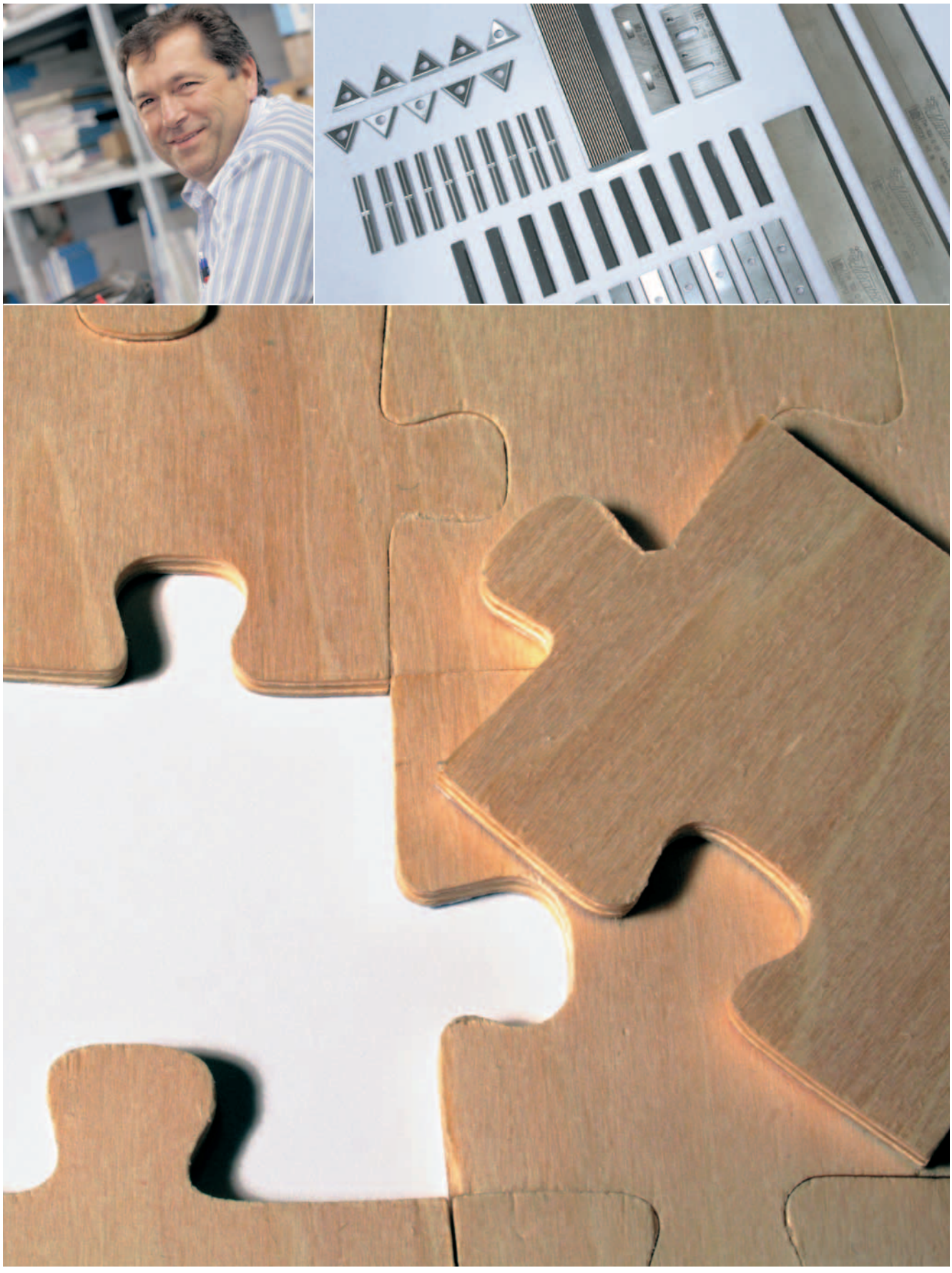
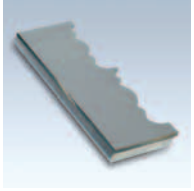
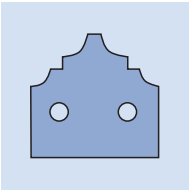
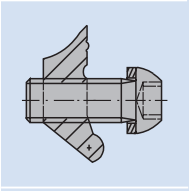
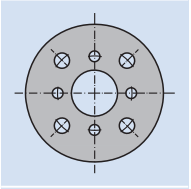


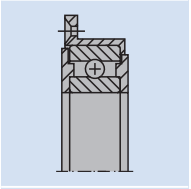


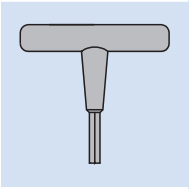
9. Knives and spare parts

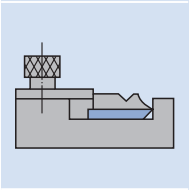


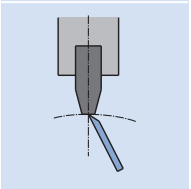


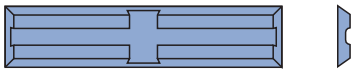












Turnblade knife for router cutter WL 100-1

Workpiece material:
Softwood and hardwood

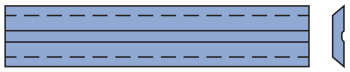
Cutting material:
HW

Knife height up to 5.5 mm

HW-05
TM 410-0

SB mm	H mm	DIK mm	KBZ	QAL	VE PCS	ID	
20	4,1	1,1	WL 100-1	HW-05	10	**005186**	●
20	5,5	1,1	WL 100-1	HW-05	10	**005187**	●
25	5,5	1,1	WL 100-1	HW-05	10	**005188**	●
30	5,5	1,1	WL 100-1	HW-05	10	**005189**	●
40	5,5	1,1	WL 100-1	HW-05	10	**005190**	●
50	5,5	1,1	WL 100-1	HW-05	10	**005191**	●

ID = 1 piece



Turnblade knife HW

Workpiece material:
Softwood and hardwood

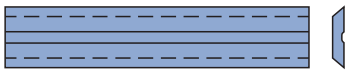
Cutting material:
HW fine grain quality

Knife height 8 mm

HW-30F
TM 410-0

SB mm	H mm	DIK mm	KBZ	QAL	VE PCS	ID	
7,7	8	1,5	WP 8/8	HW-30F	10	**005068**	●
9,7	8	1,5	WP 8/10	HW-30F	10	**005197**	●
11,7	8	1,5	WP 8/12	HW-30F	10	**005069**	●
14,7	8	1,5	WP 8/15	HW-30F	10	**005070**	●
19,7	8	1,5	WP 8/20	HW-30F	10	**005071**	●
25	8	1,5	WP 8/25	HW-30F	10	**005198**	●
30	8	1,5	WP 8/30	HW-30F	10	**005072**	●
35	8	1,5	WP 8/35	HW-30F	10	**005073**	●
40	8	1,5	WP 8/40	HW-30F	10	**005074**	●
45	8	1,5	WP 8/45	HW-30F		**007679**	□
50	8	1,5	WP 8/50	HW-30F	10	**005075**	●
60	8	1,5	WP 8/60	HW-30F	10	**005076**	●
70	8	1,5	WP 8/70	HW-30F		**007680**	□
80	8	1,5	WP 8/80	HW-30F	10	**005077**	●
100	8	1,5	WP 8/100	HW-30F		**005184**	●
120	8	1,5	WP 8/120	HW-30F		**005185**	●

ID = 1 piece



Turnblade knife HW

Cutting material:
HW fine grain quality

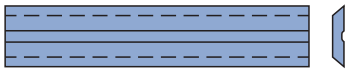
Cutting edges with microfinish for high surface quality and cutting performance

HW-30F Microfinish
TM 410-0

SB mm	H mm	DIK mm	KBZ	QAL	VE PCS	ID	
7,7	8	1,5	WP 8/8 MF	HW-30F	10	**007517**	●
9,7	8	1,5	WP 8/10 MF	HW-30F	10	**007518**	●
11,7	8	1,5	WP 8/12 MF	HW-30F	10	**007519**	●
14,7	8	1,5	WP 8/15 MF	HW-30F	10	**007520**	●
19,7	8	1,5	WP 8/20 MF	HW-30F	10	**007521**	●
25	8	1,5	WP 8/25 MF	HW-30F	10	**007522**	●
30	8	1,5	WP 8/30 MF	HW-30F	10	**007523**	●
35	8	1,5	WP 8/35 MF	HW-30F	10	**007524**	●
40	8	1,5	WP 8/40 MF	HW-30F	10	**007525**	●
45	8	1,5	WP 8/45 MF	HW-30F		**007683**	□
50	8	1,5	WP 8/50 MF	HW-30F		**007526**	●
60	8	1,5	WP 8/60 MF	HW-30F		**007527**	●
70	8	1,5	WP 8/70 MF	HW-30F		**007684**	□
80	8	1,5	WP 8/80 MF	HW-30F		**007528**	●
100	8	1,5	WP 8/100 MF	HW-30F		**007529**	●
120	8	1,5	WP 8/120 MF	HW-30F		**007530**	●

ID = 1 piece

● available ex stock
□ available at short notice
Instruction manual visit www.leitz.org



Turnblade knife HW

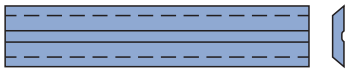
Workpiece material:
For abrasive wood derived materials and plastics

Cutting material:
HW

HW-05
TM 410-0

SB mm	H mm	DIK mm	KBZ	QAL	VE PCS	ID	
7,7	8	1,5	WP 8/8 B	HW-05	10	**005053**	●
9,7	8	1,5	WP 8/10 B	HW-05	10	**005054**	●
11,7	8	1,5	WP 8/12 B	HW-05	10	**005055**	●
14,7	8	1,5	WP 8/15 B	HW-05	10	**005056**	●
19,7	8	1,5	WP 8/20 B	HW-05	10	**005057**	●
25	8	1,5	WP 8/25 B	HW-05	10	**005058**	●
30	8	1,5	WP 8/30 B	HW-05	10	**005059**	●
35	8	1,5	WP 8/35 B	HW-05	10	**005400**	●
40	8	1,5	WP 8/40 B	HW-05	10	**005401**	●
45	8	1,5	WP 8/45 B	HW-05		**007681**	●
50	8	1,5	WP 8/50 B	HW-05	10	**005402**	●
60	8	1,5	WP 8/60 B	HW-05	10	**005403**	●
70	8	1,5	WP 8/70 B	HW-05		**007682**	●
80	8	1,5	WP 8/80 B	HW-05		**005404**	●
100	8	1,5	WP 8/100 B	HW-05		**005405**	●
120	8	1,5	WP 8/120 B	HW-05		**005406**	●

ID = 1 piece



Turnblade knife HW

Workpiece material:
For extremely abrasive wood derived materials and plastics

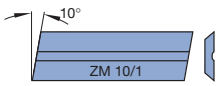
Cutting material:
HW UF-ultra-fine grain quality

Cutting edges with microfinish for high surface quality and cutting performance

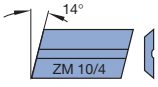
HW-02UF Microfinish
TM 410-0

SB mm	H mm	DIK mm	KBZ	QAL	VE PCS	ID	
19,7	8	1,5	WP 8/20 D	HW-02UF	10	**601001**	●
30	8	1,5	WP 8/30 D	HW-02UF	10	**601002**	●
40	8	1,5	WP 8/40 D	HW-02UF	10	**601003**	●
50	8	1,5	WP 8/50 D	HW-02UF	10	**601004**	●

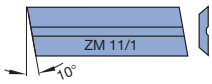
ID = 1 piece



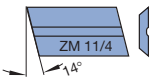
Turnblade knife ZM 10/1



Turnblade knife ZM 10/4



Turnblade knife ZM 11/1



Turnblade knife ZM 11/4

Workpiece material:
Softwood and hardwood

Cutting material:
HW fine grain quality

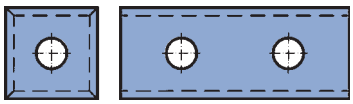
Knife height 8 mm (bevel/tenoning tools)

HW-F
TM 410-0

SB mm	H mm	DIK mm	KBZ	QAL	ID	
21	8	1,5	ZM 10/1	HW-F	**005004**	●
15	8	1,5	ZM 10/4	HW-F	**005050**	●
21	8	1,5	ZM 11/1	HW-F	**005006**	●
15	8	1,5	ZM 11/4	HW-F	**005051**	●

ID = 1 piece

Knife type:
Type 1 Type 2



Turnblade knife

Workpiece material:
Solid wood, wood derived materials

Cutting material:
HW

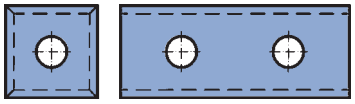
Knife height 12 mm

HW-05
TM 405-0

Knife	SB mm	H mm	DIK mm	KBZ	QAL	VE PCS	ID	
1	7,5	12	1,5	WP 12/7,5	HW-05	10	**005080**	●
1	9	12	1,5	WP 12/9	HW-05	10	**005158**	●
1	12	12	1,5	WP 12/12	HW-05	10	**005081**	●
2	15	12	1,5	WP 12/15	HW-05	10	**005082**	●
2	20	12	1,5	WP 12/20	HW-05	10	**005083**	●
2	30	12	1,5	WP 12/30	HW-05	10	**005084**	●
2	40	12	1,5	WP 12/40	HW-05	10	**005085**	●
2	50	12	1,5	WP 12/50	HW-05	10	**005086**	●
2	60	12	1,5	WP 12/60	HW-05	10	**005087**	●

ID = 1 piece

Knife type:
Type 1 Type 2



Turnblade knife

Workpiece material:
For abrasive wood derived materials and plastics

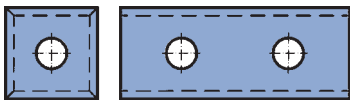
Cutting material:
HW fine grain quality

HW-03F
TM 405-0

Knife	SB mm	H mm	DIK mm	QAL	VE PCS	ID	
1	20	12	1,5	HW-03F	10	**006904**	●
2	30	12	1,5	HW-03F	10	**006905**	●
2	50	12	1,5	HW-03F	10	**006906**	●

ID = 1 piece

Knife type:
Type 1 Type 2



Turnblade knife

Workpiece material:
For extremely abrasive wood derived materials and plastics

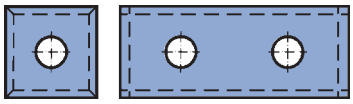
Cutting material:
HW UF-ultra-fine grain quality

HW-02UF
TM 405-0

Knife	SB mm	H mm	DIK mm	KBZ	QAL	VE PCS	ID	
1	12	12	1,5	WB 12/12 D	HW-02UF	10	**602000**	●
2	20	12	1,5	WP 12/20 D	HW-02UF	10	**602001**	●
2	30	12	1,5	WP 12/30 D	HW-02UF	10	**602002**	●
2	40	12	1,5	WP 12/40 D	HW-02UF	10	**602003**	●
2	50	12	1,5	WP 12/50 D	HW-02UF	10	**602004**	●

ID = 1 piece

● available ex stock
□ available at short notice
Instruction manual visit www.leitz.org



Turnblade knife with polished face

Workpiece material:
Solid wood, wood derived materials

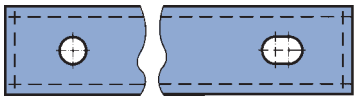
Cutting material:
HW

Knife height 12 mm with polished face

HW-05
TM 405-0

SB mm	H mm	DIK mm	QAL	VE PCS	ID
30	12	1,5	HW-05	10	**005161** ●
50	12	1,5	HW-05	10	**006506** ●

ID = 1 piece



Turnblade knife with polished face

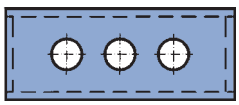
Workpiece material:
For extremely abrasive wood derived materials and plastics

Cutting material:
HW UF-ultra-fine grain quality

HW-02UF
TM 405-0

SB mm	H mm	DIK mm	QAL	VE PCS	ID
30	12	1,5	HW-02UF	10	**602005** ●
50	12	1,5	HW-02UF	10	**602006** ●

ID = 1 piece



Turnblade knife with polished face and 3 holes

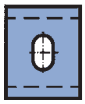
Workpiece material:
HW-05 for solid wood, wood derived materials HW-02UF for extremely abrasive wood derived materials and plastics

Cutting material:
HW / HW-UF

HW-05 / HW-02UF with 3 holes
TM 405-0

SB mm	H mm	DIK mm	QAL	VE PCS	ID
50	12	1,7	HW-05	10	**007668** ●
50	12	1,5	HW-02UF	10	**602007** ●

ID = 1 piece



Turnblade knife

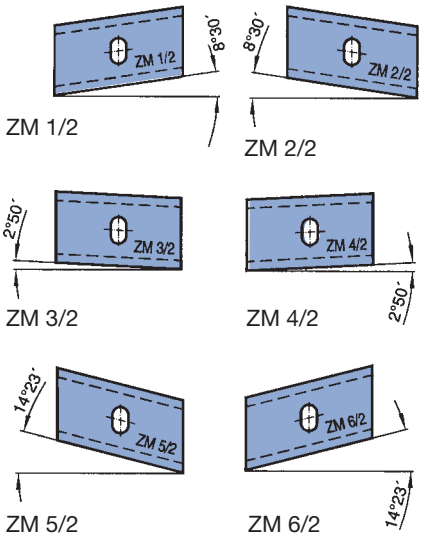
Workpiece material:
Softwood and hardwood

Cutting material:
HW

Knife height 12 mm (slotting tools)

HW
TM 405-0

SB mm	H mm	DIK mm	KBZ	QAL	ID
7,6	12	1,5	SM 1/1	HW	**005120** ●
9,6	12	1,5	SM 1/2	HW	**005121** ●
11,6	12	1,5	SM 1/3	HW	**005122** ●



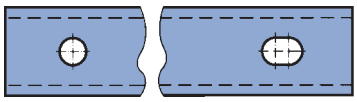
Knife height 12 mm (tenoning tools)

HW
TM 405-0

SB mm	H mm	DIK mm	KBZ	QAL	ID
21,5	12	1,5	ZM 1/2	HW	**005124** ●
21,5	12	1,5	ZM 2/2	HW	**005125** ●
21,5	12	1,5	ZM 3/2	HW	**005126** ●
21,5	12	1,5	ZM 4/2	HW	**005127** ●
21,5	12	1,5	ZM 5/2	HW	**005128** ●
21,5	12	1,5	ZM 6/2	HW	**005129** ●

Workpiece material:
Softwood and hardwood

Cutting material:
HW



Turnblade knife

Knife height 13 mm

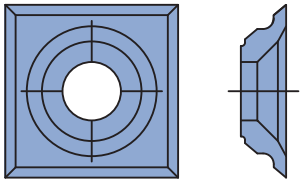
HW
TM 405-0

SB mm	H mm	DIK mm	QAL	VE PCS	ID
80	13	2,2	HW	10	**005096** ●
100	13	2,2	HW	10	**005097** ●
120	13	2,2	HW	10	**005098** ●

ID = 1 piece

Workpiece material:
Softwood and hardwood

Cutting material:
HW



Turnblade knife with 4 cutting edges

Knife height 21 mm with 4 cutting edges

HW
TM 410-0

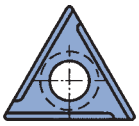
SB mm	H mm	DIK mm	QAL	ID
21	21	5.5	HW	**009527** ●

Workpiece material:
Softwood and hardwood

Cutting material:
HW

● available ex stock
□ available at short notice
Instruction manual visit www.leitz.org

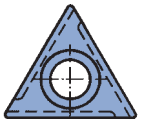
VS 1



VS 3L

VS 2

VS 4



VS 3R

Workpiece material:
Solid wood, wood derived materials

Cutting material:
HW fine grain quality / DP*

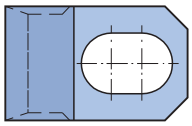
Spurs

HW / DP
TM 480-0

SB mm	H mm	DIK mm	KBZ	QAL	VE PCS	ID	
14	14	2	VS 1	HW-F	10	**005099**	●
14	14	1,2	VS 4	HW	10	**005130**	●
14	14	1,2	Holz-Her	HW	10	**602500**	●
15	15	2		HW		**005100**	●
19		2	VS 2	HW-F	10	**005115**	●
19		2	VS 2MF	HW-F	10	**009541**	●
19		2	VS 2R*	HW-F	10	**006615**	●
19		2	VS 2L*	HW-F	10	**006616**	●
19		2	VS 2	DP*	10	**006607**	●
19		2	VS 3R	HW-F		**005116**	●
19		2	VS 3L	HW-F		**005159**	●

* Spurs with reduced slotting depth. Knives can be used in VS2 knife seating.
MF Cutting edge with Microfinish for high surface quality and cutting performance.
DP* diamond coated.

ID = 1 piece



Spur knife VS 801

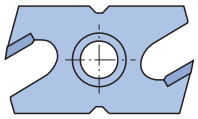
Workpiece material:
Softwood and hardwood

Cutting material:
HS / HW

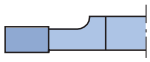
Spur knives resharpenable

HS / HW
TM 180-0

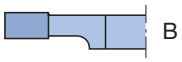
SB mm	H mm	DIK mm	QAL	ID	
22	38	7	HS	**006505**	●
22	38	7	HW	**006605**	●



Grooving knife



Grooving knife mirror image



Grooving knife image

Workpiece material:
Softwood and hardwood

Cutting material:
HW fine grain quality

Grooving knives - length cutting

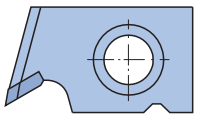
Mechanical feed
TM 460-0

SB mm	KBZ	QAL	ID
3	NA 3B	HW-F	**008315** ●
3	NA 3S	HW-F	**008316** ●
3	NAK 3B*	HW-F	**616002** ●
3	NAK 3S*	HW-F	**616003** ●
4,5	NA 4,5	HW-F	**008333** ●
4	NA 4	HW-F	**008317** ●
5	NA 5	HW-F	**008318** ●
7	NA 7	HW-F	**008319** ●
8	NAN 8	HW-F	**008349** ●
9	NA 9	HW-F	**008320** ●

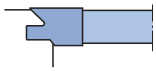
Manual feed
TM 460-1

SB mm	KBZ	QAL	ID
3	NB 3B	HW-F	**008321** ●
3	NB 3S	HW-F	**008322** ●
3	NBK 3B*	HW-F	**616000** ●
3	NBK 3S*	HW-F	**616001** ●
4	NB 4	HW-F	**008323** ●
5	NB 5	HW-F	**008324** ●
7	NB 7	HW-F	**008325** ●
8	NBN 8	HW-F	**008348** ●
9	NB 9	HW-F	**008326** ●

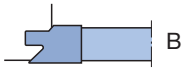
* Grooving knife with reduced grooving depth



Profile grooving knife



Profile grooving knife mirror image



Profile grooving knife image

Workpiece material:
Softwood and hardwood

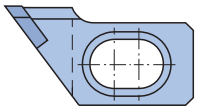
Cutting material:
HW fine grain quality

Profile grooving knives

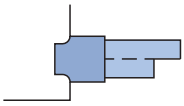
For sealing strip
TM 160-0

SB mm	KBZ	QAL	ID
8	NC 1B	HW-F	**008327** ●
8	NC 1S	HW-F	**008328** ●

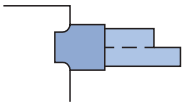
● available ex stock
□ available at short notice
Instruction manual visit www.leitz.org



Profile grooving knife



Profile grooving knife image



Profile grooving knife mirror image

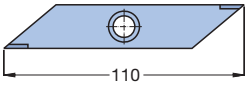
Workpiece material:
Softwood and hardwood

Cutting material:
HW

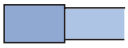
Profile grooving knives

For EURO Groove
TM 240-0

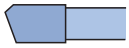
SB mm	KBZ	QAL	ID
11	NH 1B	HW	**008313** ●
11	NH 1S	HW	**008342** ●



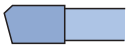
Profile grooving knife



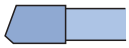
Grooving knife



Grooving knife 15° bevel image



Grooving knife 20° bevel image



Grooving knife 20° bevel mirror image

Cutting material:
HW

For slot and tenon tools
TM 661-0

SB mm	FAW	KBZ	QAL	ID
5,1		ND 5,1	HW	**008311** ●
5,3		ND 5,3	HW	**008263** ●
6,1		ND 6,1	HW	**008314** ●
5,2	15°	NE 1B	HW	**008266** ●
5,2	20°	NE 2B	HW	**008264** ●
5,2	20°	NE 2S	HW	**008265** ●

Lamello turnblade knives

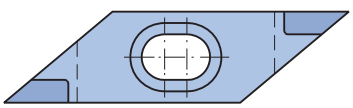
Cutting material:
HW

Lamello turnblade knives

HW
TM 463-0

SB mm	H mm	DIK mm	KBZ	QAL	VE PCS	ID
18	18	1,95	WP 18/1,95	HW	10	**005114** ●
18	18	2,5	WP 18/2,5	HW	10	**005195** ●

ID = 1 piece



Rhomboid turnblade knives

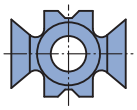
Cutting material:
HW fine grain quality

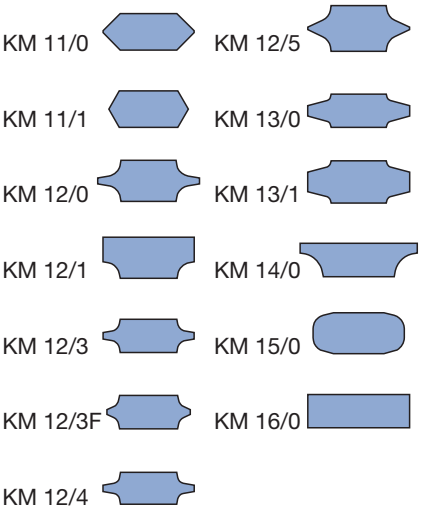
Rhomboid turnblade knives

HW-F
TM 461-0

SB mm	H mm	DIK mm	KBZ	QAL	ID
45,416	12	5,6	RMA 5,6	HW-F	**008329** ●
45,416	12	6,6	RMA 6,6	HW-F	**008330** ●

● available ex stock
□ available at short notice
Instruction manual visit www.leitz.org





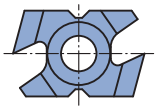
Workpiece material:
Softwood and hardwood

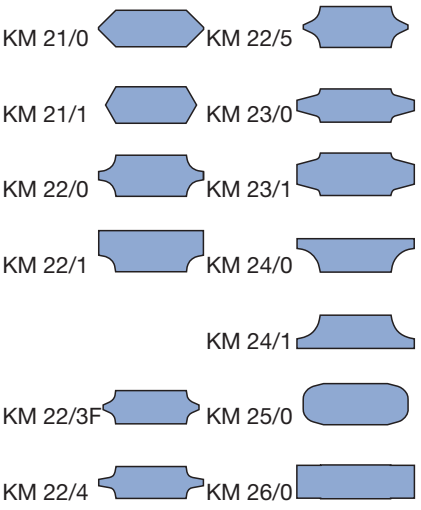
Cutting material:
HW fine grain quality

Mechanical feed

HW-F
TM 462-0

SB mm	H mm	DIK mm	KBZ	QAL	ID	
20	15	8	KM 11/0 45°	HW-F	**008268**	●
20	15	7	KM 12/4 R1,5	HW-F	**008272**	●
20	15	7,3	KM 12/3 R2	HW-F	**008307**	●
22,3	15	9	KM 12/0 R3	HW-F	**008270**	●
22	15	9	KM 15/0 R3	HW-F	**008275**	●
20	15	9	KM 12/1 R3	HW-F	**008271**	●
17,5	15	8	KM 11/1 60°	HW-F	**008269**	●
18,3	15	7,3	KM 12/3F R2F	HW-F	**008308**	●
22,3	15	10	KM 12/5 R3F	HW-F	**008273**	●
22,3	15	7,3	KM 13/0 Groove 5	HW-F	**008274**	●
22,3	15	9	KM 13/1 Groove 7	HW-F	**008287**	●
22,3	15	7,3	KM 16/0	HW-F	**008286**	●
22.3			KM 14/0 R5	HW-F	**008347**	●





Workpiece material:
Softwood and hardwood

Cutting material:
HW fine grain quality

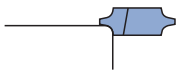
Manual feed

HW-F
TM 462-1

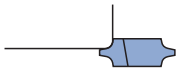
SB mm	H mm	DIK mm	KBZ	QAL	ID	
23	15	7,3	KM 22/3 R2	HW-F	**008309**	●
23	15	8	KM 21/0 45°	HW-F	**008292**	●
23	15	9	KM 22/1 R3	HW-F	**008290**	●
25,7	15	7,3	KM 24/0 R5	HW-F	**008305**	●
23	15	7	KM 22/4 R1,5	HW-F	**008295**	●
23	15	9	KM 25/0 R3	HW-F	**008291**	●
25,7	15	9,3	KM 23/1 Groove 7	HW-F	**008298**	●
25,7	15	7,3	KM 24/1 R5	HW-F	**008306**	●
23	15	9	KM 22/0 R3	HW-F	**008293**	●
20,5	15	8	KM 21/1 60°	HW-F	**008294**	●
21	15	7,3	KM 22/3F R2F	HW-F	**008310**	●
23	15	9	KM 22/5 R3F	HW-F	**008296**	●
25,7	15	7,3	KM 23/0 Groove 5	HW-F	**008297**	●
25,7	15	7,3	KM 26/0	HW-F	**008299**	●

● available ex stock
□ available at short notice
Instruction manual visit www.leitz.org

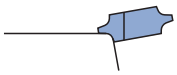
KC 1 B
KC 2 B



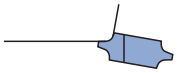
KC 1 S
KC 2 S



KC 3 B
KC 4 B



KC 4 S



With bevelled cutting area

HW-F
TM 462-0

SB mm	H mm	DIK mm	KBZ	QAL	ID	
20	15	8,3	KC 1B (R2)	HW-F	**008334**	●
20	15	10	KC 2B (R3)	HW-F	**008335**	●
20	15	8,3	KC 1S (R2)	HW-F	**008336**	●
20	15	10	KC 2S (R3)	HW-F	**008337**	●
18,3	15	8,3	KC 3B (R2)	HW-F	**008338**	●
20	15	10	KC 4B (R3)	HW-F	**008339**	●
20	15	10	KC 4S (R3)	HW-F	**008341**	●

Workpiece material:
Softwood and hardwood

Cutting material:
HW fine grain quality

KM/1-0

KM/4-0

Previous design

HW
TM 462-0, TM 405-0

KBZ	QAL	ID	
KM 1/0	HW	**008277**	●
KM 4/0	HW	**008276**	●

Workpiece material:
Softwood and hardwood

Cutting material:
HW

Cutting material recommendation	HS	MC
Solid wood dry	♦	♦
Solid wood wet	◇	♦
Hardwood dry	◇	♦
Hardwood wet	◇	♦
Glulam		◇
Thermoplastics (PE, PP, PVC, etc.)	♦	♦
WPC (Wood-Plastic-Composite)	◇	♦

♦ suitable ◇ partly suitable

Cross section of planer knife (HS / MC)

Cross section of planer knife (HW)

Cutting material:
HS / MC / HW

Wedge angle:
40° (HS / MC)
50° (HW)

Knife height 30 mm

For planerhead wedge-type system WM 200-2-05
TM 100-0, TM 100-0-01

SB mm	H mm	DIK mm	VE PCS	ID HS	ID HW	ID MC
60	30	3	2	**027101** ●	**027277** ●	**605700** ●
80	30	3	2	**027102** ●	**027278** ●	**605701** ●
100	30	3	2	**027103** ●	**027279** ●	**605702** ●
110	30	3	2	**027104** ●	**027280** ●	**605703** ●
120	30	3	2	**027105** ●	**027281** ●	**605704** ●
130	30	3	2	**027106** ●	**027282** ●	**605705** ●
150	30	3	2	**027107** ●	**027283** ●	**605706** ●
170	30	3	2	**027108** ●	**027284** ●	**605707** ●
180	30	3	2	**027109** ●	**027285** ●	**605708** ●
190	30	3	2	**027144** ●	**027322** ●	**605709** ●
210	30	3	2	**027110** ●	**027286** ●	**605710** ●
230	30	3	2	**027111** ●	**027287** ●	**605711** ●
240	30	3	2	**027134** ●	**027323** ●	**605712** ●
250	30	3	2	**027161** ●		**605713** ●
260	30	3	2	**027112** ●	**027288** ●	**605714** ●
270	30	3	2	**027162** ●		**605715** ●
310	30	3	2	**027113** ●	**027289** ●	**605716** ●
360	30	3	2	**027114** ●	**027292** ●	**605729** ●
400	30	3	2	**027115** ●		**605730** ●
410	30	3	2	**027116** ●	**027293** ●	**605731** □
460	30	3	2	**027130** ●	**027295** ●	**605732** □
500	30	3	2	**027117** ●		**605733** □
510	30	3	2	**027118** ●	**027296** ●	**605734** □
600	30	3	2	**027119** ●		**605735** □
610	30	3	2	**027120** ●	**027297** ●	**605736** □
630	30	3	2	**027125** ●	**027298** ●	**605737** □
640	30	3	2	**027121** ●	**027299** ●	**605738** □
710	30	3	2	**027122** ●	**027300** ●	**605739** □
810	30	3	2	**027123** ●	**027302** ●	**605740** □

ID = 1 piece

Cutting material recommendation	HS	MC
Solid wood dry	♦	♦
Solid wood wet	◇	♦
Hardwood dry	◇	♦
Hardwood wet	◇	♦
Glulam		◇
Thermoplastics (PE, PP, PVC, etc.)	♦	♦
WPC (Wood-Plastic-Composite)	◇	♦

♦ suitable ◇ partly suitable

Cross section of planer knife (HS / MC)

Cutting material:
HS / MC

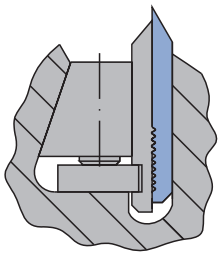
Wedge angle:
30°

For hydro planerhead HM 200-2-05
TM 100-0-01, TM 100-0-02

SB mm	H mm	DIK mm	VE PCS	ID HS	ID MC
60	30	3	2	**009362** ●	**605717** □
100	30	3	2	**009350** ●	**605718** ●
130	30	3	2	**009351** ●	**605719** ●
150	30	3	2	**009352** ●	**605720** ●
160	30	3	2	**009363** ●	**605721** ●
180	30	3	2	**009353** ●	**605722** □
210	30	3	2	**009364**	**605723** □
230	30	3	2	**009354** ●	**605724** ●
260	30	3	2	**009355** ●	**605725** □
310	30	3	2	**009365** ●	**605726** ●
320	30	3	2	**009366**	**605941**

ID = 1 piece

● available ex stock
□ available at short notice
Instruction manual visit www.leitz.org



Cutting material:
HS

Wedge angle:
30°

Knife height 30 mm

For hydro planerhead RotaPlan Plus
TM 110-0-05

SB mm	H mm	DIK mm	VE PCS	QAL	ID	
100	30	3	2	HS	**605500**	●
130	30	3	2	HS	**605501**	●
160	30	3	2	HS	**605502**	●
230	30	3	2	HS	**605503**	●

ID = 1 piece

Cutting material recommendation	HS	MC
Solid wood dry	♦	♦
Solid wood wet	◇	♦
Hardwood dry	◇	♦
Hardwood wet	◇	♦
Glulam		◇
Thermoplastics (PE, PP, PVC, etc.)	♦	♦
WPC (Wood-Plastic-Composite)	◇	♦

♦ suitable ◇ partly suitable

Cross section of planer knife (HS / MC)

Cross section of planer knife (HW)

Cutting material:
HS / MC / HW

Wedge angle:
40° (HS / MC)
50° (HW)

Knife height 35 mm

For long planerheads wedge-type system
TM 100-0, TM 100-0-01

SB mm	H mm	DIK mm	VE PCS	ID HS		ID HW		ID MC	
310	35	3	2	**027351**	●	**027303**	●	**605800**	●
320	35	3	2	**027352**	●	**027304**	●	**605801**	●
330	35	3	2	**027353**	●	**027305**	●	**605802**	●
360	35	3	2	**027354**	●	**027306**	●	**605803**	●
400	35	3	2	**027355**	●	**027307**	●	**605804**	●
410	35	3	2	**027356**	●	**027308**	●	**605805**	□
450	35	3	2	**027357**	●	**027309**	●	**605806**	□
460	35	3	2	**027358**	●	**027310**	●	**605807**	□
500	35	3	2	**027359**	●	**027311**	●	**605808**	□
510	35	3	2	**027360**	●	**027312**	●	**605809**	□
600	35	3	2	**027361**	●	**027313**	●	**605810**	□
610	35	3	2	**027362**	●	**027314**	●	**605811**	□
630	35	3	2	**027363**	●	**027315**	●	**605812**	□
635	35	3	2	**027364**	●	**027316**	●	**605813**	□
640	35	3	2	**027365**	●	**027317**	●	**605814**	□
700	35	3	2	**027366**	●	**027318**	●	**605815**	□
710	35	3	2	**027367**	●	**027319**	●	**605816**	□
740	35	3	2	**027368**	●	**027320**	●	**605817**	□
810	35	3	2	**027369**	●	**027321**	●	**605818**	□

ID = 1 piece

For hydro planerhead RotaPlan HM 200-2-06
TM 100-0-01, TM 100-0-02

SB mm	H mm	DIK mm	VE PCS	ID HS		ID MC	
60	35	3	2	**009342**	●	**605950**	□
100	35	3	2	**009343**	●	**605951**	□
160	35	3	2	**009344**	●	**605952**	□
230	35	3	2	**009345**	●	**605953**	□
320	35	3	2	**009346**	●	**605954**	□

ID = 1 piece

Cutting material recommendation	HS	MC
Solid wood dry	♦	♦
Solid wood wet	◇	♦
Hardwood dry	◇	♦
Hardwood wet	◇	♦
Glulam		◇
Thermoplastics (PE, PP, PVC, etc.)	♦	♦
WPC (Wood-Plastic-Composite)	◇	♦

♦ suitable ◇ partly suitable

Cross section of planer knife (HS / MC)

Wedge angle:
30°

Cutting material:
HS / MC

● available ex stock
□ available at short notice
Instruction manual visit www.leitz.org

Cutting material recommendation	HS	HW
Solid wood dry	♦	
Solid wood wet	◇	
Hardwood dry		♦
Hardwood wet		♦
Glulam		♦
Chipboard		◇
MDF		◇
Thermoplastics (PE, PP, PVC, etc.)		◇
WPC (Wood-Plastic-Composite)		◇

♦ suitable ◇ partly suitable

Cross section of planer knife (HS / MC)

Cross section of planer knife (HW)

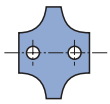
Cutting material:
HS / HW

Grooving knife

Bevel knife

Fluting knife

Half-fluting knife



Radius knife

Cutting material:
HS / HW

Knives for cassette system

Planer knives 30 mm with threaded bore
TM 105-0

SB mm	H mm	DIK mm	VE PCS	ID HS	ID HW
130	30	3	2	**006825** ●	**006915** ●
150	30	3	2	**006928** ●	**006931** ●
180	30	3	2	**006826** ●	**006916** ●
190	30	3	2	**006929** ●	**006932** ●
230	30	3	2	**006827** ●	**006917** ●
240	30	3	2	**006926** ●	**006933** ●

ID = 1 piece

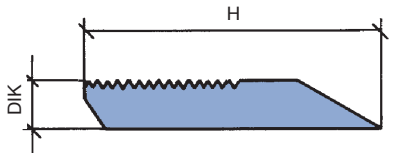
Profile knives for cassette system
TM 160-0, TM 435-0

BEZ	SB mm	H mm	DIK mm	QAL	DRI	ID
Bevelling knife 45°	18	32,2	12	HW	LL	**006890** ●
Bevelling knife 45°	18	32,2	12	HW	RL	**006891** ●
Grooving knife, SB 8	18	35,7	9,5	HW	LL	**006896** ●
Grooving knife, SB 8	18	35,7	9,5	HW	RL	**006897** ●
Fluting knife, R4	18	30	10	HW	LL	**006898**
Fluting knife, R4	18	30	10	HW	RL	**006899**
Half-fluting knife R5	18	31,2	10	HW	LL	**006900**
Half-fluting knife R5	18	31,2	10	HW	RL	**006901**
Half-fluting knife R3	18	29,2	10	HW	LL	**006902**
Half-fluting knife R3	18	29,2	10	HW	RL	**006903**
Radius knife R 3	30	29	4	HS	LL / RL	**007660** ●
Radius knife R 4	30	31	4	HS	LL / RL	**007661** ●
Radius knife R 6	30	35	4	HS	LL / RL	**007663**
Radius knife R 7	30	37	4	HS	LL / RL	**007664**
Radius knife R 8	30	39	4	HS	LL / RL	**007665** ●
Radius knife R 9	30	41	4	HS	LL / RL	**007666**
Radius knife R 10	30	43	4	HS	LL / RL	**007667** ●
Radius knife R 5	30	33	4	HS	LL / RL	**007662** ●

● available ex stock
□ available at short notice
Instruction manual visit www.leitz.org

Cutting material recommendation	MC
Solid wood dry	♦
Solid wood wet	♦
Hardwood dry	♦
Hardwood wet	♦
Glulam	◇
Chipboard	
MDF	
Thermoplastics (PE, PP, PVC, etc.)	♦
WPC (Wood-Plastic-Composite)	♦

♦ suitable ◇ partly suitable



Cutting material:
MC

Knife height 40 mm

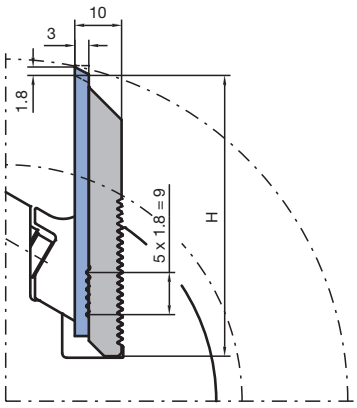
For 60° serrated back knife planer heads
AT 103-0-22

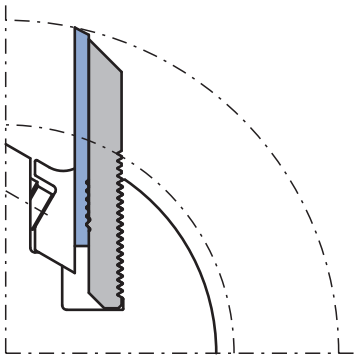
SB mm	H mm	DIK mm	SET PCS	QAL	ID	
40	40	5	2	MC	**697156**	●
60	40	5	2	MC	**697157**	●
80	40	5	2	MC	**697158**	●
100	40	5	2	MC	**697159**	●
130	40	5	2	MC	**697160**	●
150	40	5	2	MC	**697161**	●
170	40	5	2	MC	**697162**	●
180	40	5	2	MC	**697163**	●
190	40	5	2	MC	**697164**	●
210	40	5	2	MC	**697165**	●
230	40	5	2	MC	**697166**	●
240	40	5	2	MC	**697167**	●
270	40	5	2	MC	**697168**	●
310	40	5	2	MC	**697169**	●

Set of the same weight.

Cutting material recommendation	HW-30F jointable	HW-10F not jointable
Solid wood dry	♦	
Solid wood wet		
Hardwood dry	♦	♦
Hardwood wet		◇
Glulam	◇	♦
Chipboard		♦
MDF	♦	♦
Thermoplastics (PE, PP, PVC, etc.)	♦	♦
WPC (Wood-Plastic-Composite)	♦	♦

♦ suitable ◇ partly suitable





Cutting material:
HW-30F / HW-10F

Attention:
Maximum knife protrusion above the backing plate 4.5 mm. For safety reasons, only mount knives and backing plates of same weight in opposite seatings.

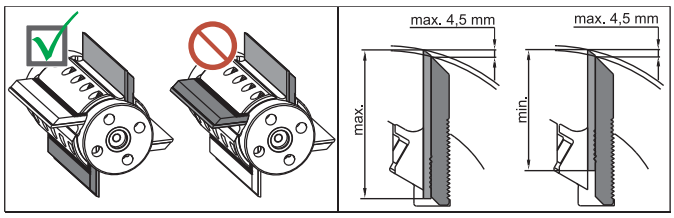
Knife height 40 mm - Powerknife system PKS®

For 60° serrated back knife planer heads
AT 103 0 26, AT 107 0 26

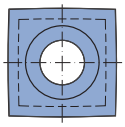
SB mm	H mm	DIK mm	SET PCS	QAL	ID Blank knife set	ID Blank knife set with backing plate
40	40	10	2	HW-30F	**696614** □	**697814** □
60	40	10	2	HW-30F	**696615** □	**697815** □
80	40	10	2	HW-30F	**696616** □	**697816** □
100	40	10	2	HW-30F	**696617** □	**697817** □
130	40	10	2	HW-30F	**696618** □	**697818** □
150	40	10	2	HW-30F	**696619** ●	**697819** ●
170	40	10	2	HW-30F	**696620** ●	**697820** ●
180	40	10	2	HW-30F	**696621** □	**697821** □
190	40	10	2	HW-30F	**696622** □	**697822** □
210	40	10	2	HW-30F	**696623** ●	**697823** ●
230	40	10	2	HW-30F	**696624** □	**697824** □
240	40	10	2	HW-30F	**696625** ●	**697825** ●
270	40	10	2	HW-30F	**696626** □	**697826** □
310	40	10	2	HW-30F	**696627** ●	**697827** ●
40	40	10	2	HW-10F	**696600** □	**697800** □
60	40	10	2	HW-10F	**696601** □	**697801** □
80	40	10	2	HW-10F	**696602** □	**697802** □
100	40	10	2	HW-10F	**696603** □	**697803** □
130	40	10	2	HW-10F	**696604** □	**697804** □
150	40	10	2	HW-10F	**696605** ●	**697805** ●
170	40	10	2	HW-10F	**696606** ●	**697806** ●
180	40	10	2	HW-10F	**696607** □	**697807** □
190	40	10	2	HW-10F	**696608** □	**697808** □
210	40	10	2	HW-10F	**696609** ●	**697809** ●
230	40	10	2	HW-10F	**696610** □	**697810** □
240	40	10	2	HW-10F	**696611** ●	**697811** ●
270	40	10	2	HW-10F	**696612** □	**697812** □
310	40	10	2	HW-10F	**696613** ●	**697813** ●

Set of the same weight.

- Blank knives with polished cutting face for high cutting edge quality.
- Solid tungsten carbide - profile knives, adjustable (1.80 mm steps).
- Knives supported by profiled backing plates.
- Resharpening area 10.8 mm at max. profile depth.



● available ex stock
□ available at short notice
Instruction manual visit www.leitz.org



HW turnblade knife

Workpiece material:
Softwood and hardwood

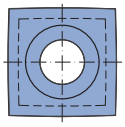
Cutting material:
HW

Turnblade planing knives Heliplan

For cutterhead system HeliPlan
TM 405-0

BEZ	ABM mm	QAL	VE PCS	ID	
Turnblade knife	15x15x2,5	HW	10	**009535**	●

ID = 1 piece



HW turnblade knife

Workpiece material:
Softwood and hardwood

Cutting material:
HW

Turnblade planing knives CASTOR

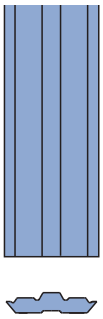
For cutterhead system CASTOR
TM 405-0

BEZ	ABM mm	QAL	VE PCS	ID	
Turnblade knife	15x15x2,5	HW	10	**009540**	●

ID = 1 piece

Cutting material recommendation	HS	MC	HW
Solid wood dry	◆	◆	
Solid wood wet	◇	◆	
Hardwood dry		◇	◆
Hardwood wet		◆	◆
Glulam		◆	◆
Clipboard			◇
MDF			◇

◆ suitable ◇ partly suitable



Turnblade knife CentroFix

Cutting material:
HS

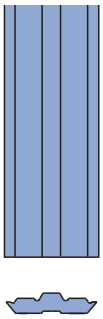
Turnblade planing knives CentroStar, CentroFix, QuickFix

For cutterhead system CentroStar, CentroFix, QuickFix - HS
AT 103-0-02, AT 103-0-20

SB mm	H mm	DIK mm	SET PCS	QAL	ID	
100	12	2,7	4	HS	**610203**	●
120	12	2,7	4	HS	**610204**	●
124,6	12	2,7	4	HS	**610244**	●
130	12	2,7	4	HS	**610205**	●
136	12	2,7	4	HS	**610206**	●
150	12	2,7	4	HS	**610208**	●
170	12	2,7	4	HS	**610210**	●
180	12	2,7	4	HS	**610211**	●
186	12	2,7	3	HS	**610247**	●
190	12	2,7	4	HS	**610212**	●
210	12	2,7	4	HS	**610213**	●
230	12	2,7	4	HS	**610214**	●
240	12	2,7	4	HS	**610215**	●
260	12	2,7	4	HS	**610017**	●
310	12	2,7	4	HS	**610018**	●
400	12	2,7	4	HS	**610022**	●
410	12	2,7	4	HS	**610023**	●
410	12	2,7	3	HS	**610043**	●
420	12	2,7	4	HS	**610024**	●
430	12	2,7	4	HS	**610025**	●
500	12	2,7	4	HS	**610028**	●
510	12	2,7	4	HS	**610029**	●
520	12	2,7	4	HS	**610030**	●
530	12	2,7	4	HS	**610031**	●
540	12	2,7	4	HS	**610032**	●
610	12	2,7	4	HS	**610034**	●
630	12	2,7	4	HS	**610036**	●
640	12	2,7	4	HS	**610038**	●
710	12	2,7	4	HS	**610040**	●
810	12	2,7	4	HS	**610042**	●

Cutting material recommendation	HS	MC	HW
Solid wood dry	♦	♦	
Solid wood wet	◊	♦	
Hardwood dry		◊	♦
Hardwood wet		♦	♦
Glulam		♦	♦
Clipboard			◊
MDF			◊

♦ suitable ◊ partly suitable



Turnblade knife CentroFix

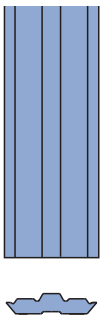
Cutting material:
MC

For cutterhead system CentroStar, CentroFix, QuickFix - MC
AT 103-0-20

SB mm	H mm	DIK mm	SET PCS	QAL	ID	
100	12	2,7	4	MC	**610278**	●
120	12	2,7	4	MC	**610279**	●
130	12	2,7	4	MC	**610280**	●
150	12	2,7	4	MC	**610281**	●
180	12	2,7	4	MC	**610282**	●
230	12	2,7	4	MC	**610283**	●
240	12	2,7	4	MC	**610284**	●
310	12	2,7	4	MC	**610285**	●

Cutting material recommendation	HS	MC	HW
Solid wood dry	♦	♦	
Solid wood wet	◊	♦	
Hardwood dry		◊	♦
Hardwood wet		♦	♦
Glulam		♦	♦
Clipboard			◊
MDF			◊

♦ suitable ◊ partly suitable



Turnblade knife CentroFix

Cutting material:
HW-F

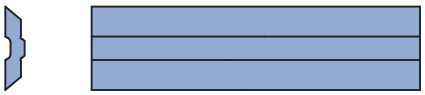
For cutterhead system CentroStar, CentroFix, QuickFix - HW-F
AT 103-0-20, TM 410-0-02

SB mm	H mm	DIK mm	SET PCS	QAL	ID	
100	12	2,7	2	HW-F	**610606**	●
120	12	2,7	2	HW-F	**610610**	●
130	12	2,7	2	HW-F	**610612**	●
136	12	2,7	2	HW-F	**610614**	●
150	12	2,7	2	HW-F	**610616**	●
170	12	2,7	2	HW-F	**610620**	●
180	12	2,7	2	HW-F	**610621**	●
190	12	2,7	2	HW-F	**610625**	●
210	12	2,7	2	HW-F	**610627**	●
230	12	2,7	2	HW-F	**610629**	●
240	12	2,7	2	HW-F	**610631**	●
400	12	2,7	1	HW-F	**612016**	●
410	12	2,7	1	HW-F	**612017**	●
420	12	2,7	1	HW-F	**612018**	●
430	12	2,7	1	HW-F	**612019**	●
500	12	2,7	1	HW-F	**612022**	●
510	12	2,7	1	HW-F	**612023**	●
520	12	2,7	1	HW-F	**612024**	●
530	12	2,7	1	HW-F	**612025**	●
540	12	2,7	1	HW-F	**612026**	●

● available ex stock
□ available at short notice
Instruction manual visit www.leitz.org

Cutting material recommendation	HS	HW
Solid wood dry	♦	
Solid wood wet	◊	
Hardwood dry		♦
Hardwood wet		♦
Glulam		♦
Clipboard		◊
MDF		◊

♦ suitable ◊ partly suitable



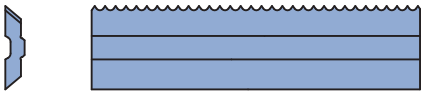
Turnblade knife VariPlan HS / HW resharpenable, for finish-cutting of soft- and hardwood

Cutting material:
HS / HW

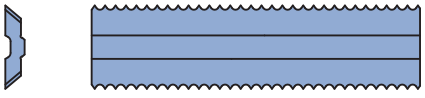
Turnblade planing knives VariPlan / VariPlan PLUS

For cutterhead system VariPlan / VariPlan PLUS
AT 103-0-03, AT 103-0-27

SB mm	H mm	DIK mm	SET PCS	ID HS	ID HS Microfinish	ID HW	ID HW Microfinish
50	16	3,7	2	**610500** □		**610700** □	
60	16	3,7	2	**610501** ●		**610701** ●	
80	16	3,7	2	**610502** ●		**610702** ●	
100	16	3,7	2	**610504** ●	**617004** □	**610704** ●	**617104** □
120	16	3,7	2	**610505** ●	**617005** □	**610705** ●	**617105** □
130	16	3,7	2	**610506** ●	**617006** ●	**610706** ●	**617106** ●
136	16	3,7	2	**610508** ●		**610708** ●	
150	16	3,7	2	**610509** ●	**617009** ●	**610709** ●	**617109** ●
170	16	3,7	2	**610511** ●	**617011** ●	**610711** ●	**617111** ●
180	16	3,7	2	**610512** ●	**617012** ●	**610712** ●	**617112** ●
190	16	3,7	2	**610514** ●	**617014** ●	**610714** ●	**617114** ●
210	16	3,7	2	**610515** ●	**617015** ●	**610715** ●	**617115** ●
230	16	3,7	2	**610516** ●	**617016** ●	**610716** ●	**617116** ●
240	16	3,7	2	**610518** ●	**617018** ●	**610718** ●	**617118** ●
270	16	3,7	2		**617065** ●		**617165** ●
310	16	3,7	2	**610522** ●	**617022** ●	**610722** ●	**617122** ●
330	16	3,7	2		**617024** □		**617124** □
360	16	3,7	2		**617025** □		**617125** □
400	16	3,7	2	**610526** □		**610726** □	
410	16	3,7	2	**610527** □		**610727** □	
410	16	3,7	3	**610528** □			
420	16	3,7	2	**610529** □		**610729** □	
430	16	3,7	2	**610530** □		**610730** □	
500	16	3,7	2	**610533** □		**610733** □	
510	16	3,7	4	**610562** □		**610762** □	
520	16	3,7	4	**610563** □		**610763** □	
530	16	3,7	2	**610536** □		**610736** □	
540	16	3,7	2	**610537** □		**610737** □	
600	16	3,7	2	**610538** □		**610738** □	
610	16	3,7	2	**610539** □		**610739** □	
630	16	3,7	2	**610541** □		**610741** □	
640	16	3,7	4	**610564** □		**610764** □	



Turnblade knife VariPlan HW Integral resharpenable, for pre and finish cutting soft and hardwood



Turnblade knife VariPlan HW RipTec resharpenable, for precutting soft and hardwood

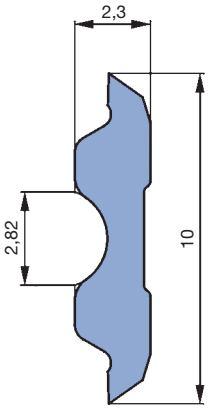
Cutting material:
HW

For cutterhead system VariPlan PLUS
AT 103-0-23, AT 103-0-24

SB mm	H mm	DIK mm	SET PCS	ID HW Integral	ID HW RipTec
100	16	3,7	2	**611904** □	**611204** □
120	16	3,7	2	**611905** □	**611205** □
130	16	3,7	2	**611906** ●	**611206** ●
150	16	3,7	2	**611909** ●	**611209** ●
170	16	3,7	2	**611911** ●	**611211** ●
180	16	3,7	2	**611912** ●	**611212** ●
190	16	3,7	2	**611914** ●	**611214** ●
210	16	3,7	2	**611915** ●	**611215** ●
230	16	3,7	2	**611916** ●	**611216** ●
240	16	3,7	2	**611918** ●	**611218** ●
270	16	3,7	2	**611965** ●	**611265** ●
310	16	3,7	2	**611922** ●	**611222** ●
330	16	3,7	2	**611924** □	**611224** □
360	16	3,7	2	**611925** □	**611225** □

Cutting material recommendation	HS	HW
Solid wood dry	♦	
Solid wood wet	◇	
Hardwood dry		♦
Hardwood wet		♦
Glulam		♦
Clipboard		◇
MDF		◇

♦ suitable ◇ partly suitable



Turnblade knife TriTec

Workpiece material:
Softwood and hardwood

Cutting material:
HS

For:

Long cutterheads
on surface planers and thickness planing machines with centrifugal force clamping system (e.g. SCM, SAC, Panhans, Martin).

Cutterheads
with centrifugal force clamping system for 4-side moulding machines (e.g. Weinig, SCM, Leadermac)

Turnblade planing knives TriTec

For cutterhead system Tersa, HS
AT 103-0-12

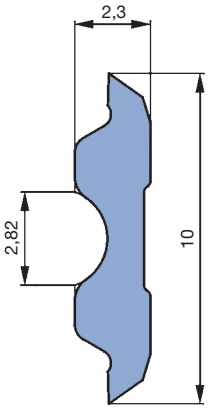
SB mm	H mm	DIK mm	QAL	SET PCS	ID	
60	10	2,3	HS	4	**610900**	□
80	10	2,3	HS	4	**610901**	□
100	10	2,3	HS	4	**610902**	□
110	10	2,3	HS	4	**610903**	□
120	10	2,3	HS	4	**610904**	●
130	10	2,3	HS	4	**610905**	●
140	10	2,3	HS	4	**610906**	●
150	10	2,3	HS	4	**610907**	□
170	10	2,3	HS	4	**610908**	●
180	10	2,3	HS	4	**610909**	●
190	10	2,3	HS	4	**610910**	●
200	10	2,3	HS	4	**610911**	●
210	10	2,3	HS	4	**610912**	□
220	10	2,3	HS	4	**610913**	●
230	10	2,3	HS	4	**610914**	●
240	10	2,3	HS	4	**610915**	●
250	10	2,3	HS	4	**610916**	□
260	10	2,3	HS	4	**610917**	●
265	10	2,3	HS	4	**610918**	●
270	10	2,3	HS	4	**610919**	●
300	10	2,3	HS	4	**610920**	□
310	10	2,3	HS	4	**610921**	●
350	10	2,3	HS	4	**610922**	□
360	10	2,3	HS	4	**610923**	□
400	10	2,3	HS	4	**610924**	●
410	10	2,3	HS	4	**610925**	●
420	10	2,3	HS	4	**610926**	□
430	10	2,3	HS	4	**610927**	●
450	10	2,3	HS	4	**610928**	□
460	10	2,3	HS	4	**610929**	□
500	10	2,3	HS	4	**610930**	●
510	10	2,3	HS	4	**610931**	●
520	10	2,3	HS	4	**610932**	●
530	10	2,3	HS	4	**610933**	●
600	10	2,3	HS	4	**610934**	□
610	10	2,3	HS	4	**610935**	●
630	10	2,3	HS	4	**610936**	●
640	10	2,3	HS	4	**610937**	●
660	10	2,3	HS	4	**610938**	□
710	10	2,3	HS	4	**610939**	□
740	10	2,3	HS	4	**610940**	□
810	10	2,3	HS	4	**610941**	●

Further dimensions on request.

● available ex stock
□ available at short notice
Instruction manual visit www.leitz.org

Cutting material recommendation	HS	HW
Solid wood dry	♦	
Solid wood wet	◊	
Hardwood dry		♦
Hardwood wet		♦
Glulam		♦
Clipboard		◊
MDF		◊

♦ suitable ◊ partly suitable



Turnblade knife MicroTec

Cutting material:
HW

Please note:
Knives longer than 540 mm are cut into pieces.

For:

Long cutterheads
on surface planers and thickness planing machines with centrifugal force clamping system (e.g. SCM, SAC, Panhans, Martin).

Cutterheads
with centrifugal force clamping system for 4-side moulding machines (e.g. Weinig, SCM, Leadermac)

Turnblade planing knives MicroTec

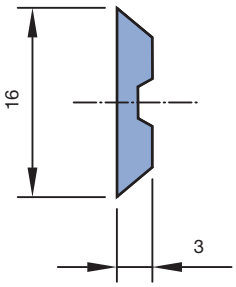
For cutterhead system Tersa, HW
AT 103-0-12

SB mm	H mm	DIK mm	QAL	SET PCS	ID	
60	10	2,3	HW	2	**610950**	□
80	10	2,3	HW	2	**610951**	□
100	10	2,3	HW	2	**610952**	□
110	10	2,3	HW	2	**610953**	□
120	10	2,3	HW	2	**610954**	□
130	10	2,3	HW	2	**610955**	□
140	10	2,3	HW	2	**610956**	□
150	10	2,3	HW	2	**610957**	□
170	10	2,3	HW	2	**610958**	□
180	10	2,3	HW	2	**610959**	□
190	10	2,3	HW	2	**610960**	□
200	10	2,3	HW	2	**610961**	□
210	10	2,3	HW	2	**610962**	□
220	10	2,3	HW	2	**610963**	□
230	10	2,3	HW	2	**610964**	□
240	10	2,3	HW	2	**610965**	□
250	10	2,3	HW	2	**610966**	□
260	10	2,3	HW	2	**610967**	□
265	10	2,3	HW	2	**610968**	□
270	10	2,3	HW	2	**610969**	□
300	10	2,3	HW	2	**610970**	□
310	10	2,3	HW	2	**610971**	□
350	10	2,3	HW	2	**610972**	□
360	10	2,3	HW	2	**610973**	□
400	10	2,3	HW	2	**610974**	□
410	10	2,3	HW	2	**610975**	□
420	10	2,3	HW	2	**610976**	□
430	10	2,3	HW	2	**610977**	□
450	10	2,3	HW	2	**610978**	□
460	10	2,3	HW	2	**610979**	□
500	10	2,3	HW	2	**610980**	□
510	10	2,3	HW	2	**610981**	□
520	10	2,3	HW	2	**610982**	□
530	10	2,3	HW	2	**610983**	□

Further dimensions on request.

Cutting material recommendation	HS	MC	HW
Solid wood dry	♦	♦	
Solid wood wet	◊	♦	
Hardwood dry		◊	♦
Hardwood wet		♦	♦
Glulam		♦	♦
Clipboard			◊
MDF			◊

♦ suitable ◊ partly suitable



Cutting material:
HS / MC / HW

Turnblade planing knives Centrolock

For cutterhead system Centrolock
AT 103-0-13

SB mm	H mm	DIK mm	SET PCS	ID HS	ID HW	ID MC
20	16	3	2	**611800** ●	**611860** ●	**611830** ●
60	16	3	2	**611801** ●	**611861** ●	**611831** ●
80	16	3	2	**611802** ●	**611862** ●	**611832** ●
100	16	3	2	**611803** ●	**611863** ●	**611833** ●
130	16	3	2	**611804** ●	**611864** ●	**611834** ●
150	16	3	2	**611805** ●	**611865** ●	**611835** ●
170	16	3	2	**611806** ●	**611866** ●	**611836** ●
180	16	3	2	**611807** ●	**611867** ●	**611837** ●
190	16	3	2	**611808** ●	**611868** ●	**611838** ●
230	16	3	2	**611809** ●	**611869** ●	**611839** ●
240	16	3	2	**611810** ●	**611870** ●	**611840** ●
260	16	3	2	**611811** ●	**611871** ●	**611841** ●
270	16	3	2	**611812** ●	**611872** ●	**611842** ●
310	16	3	2	**611813** ●	**611873** ●	**611843** ●
460	16	3	2	**611814** ●	**611874** ●	

Cutting material:
HS

Spiral planer knife

Throw-away knife for spiral planerhead
TM 101-0

BEZ	SB mm	QAL	ID
HS-Spiral knife, one-way	410	HS	**006841** ●
HS-Spiral knife, one-way	420	HS	**006910** ●
HS-Spiral knife, one-way	510	HS	**006842** ●
HS-Spiral knife, one-way	520	HS	**006911** ●
HS-Spiral knife, one-way	610	HS	**006843** ●
HS-Spiral knife, one-way	630	HS	**006912** ●
HS-Spiral knife, one-way	640	HS	**006844** ●

Cutting material:
HS

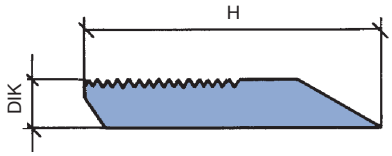
Resharpenable knife for spiral planerhead
TM 106-0

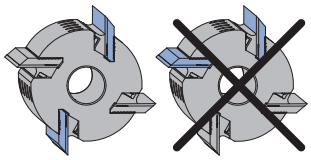
BEZ	SB mm	QAL	ID
HS-Spiral knife, resharpenable	410	HS	**006828** ●
HS-Spiral knife, resharpenable	420	HS	**006907** ●
HS-Spiral knife, resharpenable	510	HS	**006829** ●
HS-Spiral knife, resharpenable	520	HS	**006908** ●
HS-Spiral knife, resharpenable	610	HS	**006830** ●
HS-Spiral knife, resharpenable	630	HS	**006909** ●
HS-Spiral knife, resharpenable	640	HS	**006831** ●

● available ex stock
□ available at short notice
Instruction manual visit www.leitz.org

Cutting material recommendation	HS
Solid wood dry	♦
Solid wood wet	◊
Hardwood dry	◊
Hardwood wet	◊
Glulam	
Thermoplastics (PE, PP, PVC, etc.)	♦
WPC (Wood-Plastic-Composite)	◊

♦ suitable ◊ partly suitable





Warning:
For safety reasons, always mount knives of the same weight in opposite seatings.

Cutting material:
HS

Blank knives with 60° back serration

HS, for profile and hydro profile cutterheads
TC 110-0

SB mm	H mm	DIK mm	$PT_{max.}$ mm	VE PCS	QAL	ID	
40	45	6	5	2	HS	**007299**	●
60	45	6	5	2	HS	**007300**	●
80	45	6	5	2	HS	**007301**	●
60	50	5	15	2	HS	**007320**	●
40	55	6	18	2	HS	**007329**	●
60	55	6	18	2	HS	**007330**	●
80	55	6	18	2	HS	**007331**	●

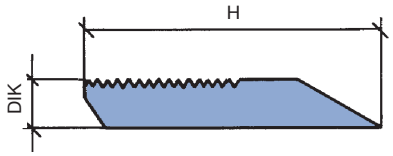
ID = 1 piece

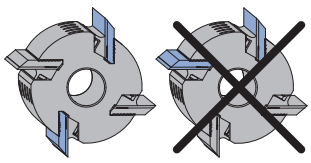
Cutting material recommendation	MC
Solid wood dry	♦
Solid wood wet	♦
Hardwood dry	♦
Hardwood wet	♦
Glulam	◇
Chipboard	
MDF	
Thermoplastics (PE, PP, PVC, etc.)	♦
WPC (Wood-Plastic-Composite)	♦

♦ suitable ◇ partly suitable

H mm	QAL	PT mm
50	MC	15
60	MC	20
70	MC	30

Table to determine max. profile depth. The profile depth figures are to be regarded as standard values. The max. profile depth depends on the tool diameter and cutting angle.





Warning:
For safety reasons, always mount knives of the same weight in opposite seatings.

Cutting material:
MC
The Leitz MC cutting quality replaces previous designs in HS and HS-Marathon.

Blank knives with 60° back serration

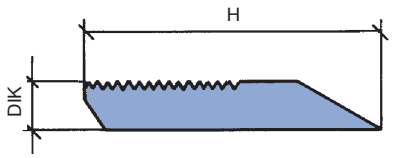
MC Marathon, for profile- and hydro profile cutterheads
AT 103-0-22

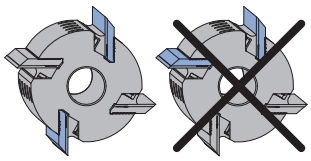
SB mm	H mm	DIK mm	$PT_{max.}$ mm	SET PCS	QAL	ID	
40	50	8	15	2	MC	**697107**	●
60	50	8	15	2	MC	**697108**	●
80	50	8	15	2	MC	**697109**	●
100	50	8	15	2	MC	**697110**	●
130	50	8	15	2	MC	**697111**	●
150	50	8	15	2	MC	**697112**	●
170	50	8	15	2	MC	**697132**	●
180	50	8	15	2	MC	**697133**	□
190	50	8	15	2	MC	**697134**	□
210	50	8	15	2	MC	**697135**	□
230	50	8	15	2	MC	**697113**	●
240	50	8	15	2	MC	**697136**	●
260	50	8	15	2	MC	**697114**	□
270	50	8	15	2	MC	**697137**	□
310	50	8	15	2	MC	**697138**	●
40	60	8	20	2	MC	**697115**	●
60	60	8	20	2	MC	**697116**	●
80	60	8	20	2	MC	**697117**	●
100	60	8	20	2	MC	**697118**	●
130	60	8	20	2	MC	**697119**	●
150	60	8	20	2	MC	**697120**	●
170	60	8	20	2	MC	**697139**	●
180	60	8	20	2	MC	**697140**	□
190	60	8	20	2	MC	**697141**	□
210	60	8	20	2	MC	**697142**	□
230	60	8	20	2	MC	**697143**	●
240	60	8	20	2	MC	**697144**	●
260	60	8	20	2	MC	**697122**	□
270	60	8	20	2	MC	**697145**	□
310	60	8	20	2	MC	**697146**	●
40	70	8	30	2	MC	**697123**	●
60	70	8	30	2	MC	**697124**	●
80	70	8	30	2	MC	**697125**	●
100	70	8	30	2	MC	**697126**	●
130	70	8	30	2	MC	**697127**	●
150	70	8	30	2	MC	**697128**	●
170	70	8	30	2	MC	**697147**	●
180	70	8	30	2	MC	**697129**	●
190	70	8	30	2	MC	**697148**	□
210	70	8	30	2	MC	**697149**	□
230	70	8	30	2	MC	**697130**	□
240	70	8	30	2	MC	**697150**	●
260	70	8	30	2	MC	**697131**	□
270	70	8	30	2	MC	**697151**	□
310	70	8	30	2	MC	**697152**	□

Set of the same weight.

● available ex stock
□ available at short notice
Instruction manual visit www.leitz.org

Cutting material recommendation	HS	MC
Solid wood dry	◆	◆
Solid wood wet	◇	◆
Hardwood dry	◇	◆
Hardwood wet	◇	◆
Glulam		◇
Thermoplastics (PE, PP, PVC, etc.)	◆	◆
WPC (Wood-Plastic-Composite)	◇	◆





Warning:
For safety reasons, always mount knives of the same weight in opposite seatings.

Cutting material:
HS / MC

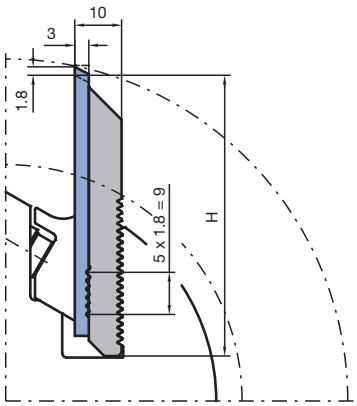
HS and MC blank knives for cutting to required cutting widths
TC 110-0, TC 110-0-01

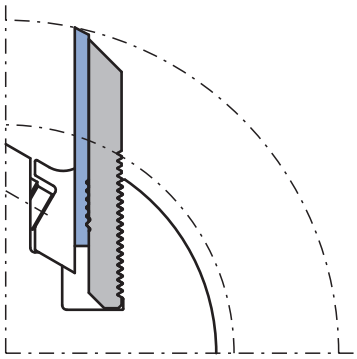
SB mm	H mm	DIK mm	$PT_{max.}$ mm	ID HS	ID MC
400	50	8	15		**635156** ●
400	60	8	20		**635158** ●
400	70	8	30		**635160** ●
650	50	8	15	**635000** ●	**635157** □
650	60	8	20	**635001** ●	**635159** □
650	70	8	30	**635002** ●	**635161** □

ID = 1 piece

Cutting material recommendation	HW-30F jointable	HW-10F not jointable
Solid wood dry	♦	
Solid wood wet		
Hardwood dry	♦	♦
Hardwood wet		◇
Glulam	◇	♦
Chipboard		♦
MDF	♦	♦
Thermoplastics (PE, PP, PVC, etc.)	♦	♦
WPC (Wood-Plastic-Composite)	♦	♦

♦ suitable ◇ partly suitable





Cutting material:
HW-30F / HW-10F

Attention:
Maximum knife protrusion above the backing plate 4.5 mm. For safety reasons, only mount knives and backing plates of same weight in opposite seatings.

Powerknife system PKS® blank knives / backing plates

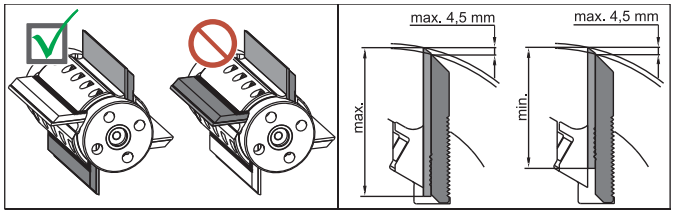
For profile- and hydro profile cutterheads, PT 15 mm
AT 103-0-26, AT 107-0-26

SB mm	H mm	DIK mm	$PT_{max.}$ mm	SET STK	QAL	ID Blank knife set		ID Blank knife set with backing plate	
40	50	10	15	2	HW-30F	**696642**	●	**697842**	●
60	50	10	15	2	HW-30F	**696643**	●	**697843**	●
80	50	10	15	2	HW-30F	**696644**	●	**697844**	●
100	50	10	15	2	HW-30F	**696645**	●	**697845**	●
130	50	10	15	2	HW-30F	**696646**	●	**697846**	●
150	50	10	15	2	HW-30F	**696647**	●	**697847**	●
170	50	10	15	2	HW-30F	**696648**	□	**697848**	□
180	50	10	15	2	HW-30F	**696649**	□	**697849**	□
190	50	10	15	2	HW-30F	**696650**	□	**697850**	□
210	50	10	15	2	HW-30F	**696651**	□	**697851**	□
230	50	10	15	2	HW-30F	**696652**	□	**697852**	□
240	50	10	15	2	HW-30F	**696653**	●	**697853**	●
270	50	10	15	2	HW-30F	**696654**	□	**697854**	□
310	50	10	15	2	HW-30F	**696655**	●	**697855**	●
40	50	10	15	2	HW-10F	**696628**	●	**697828**	●
60	50	10	15	2	HW-10F	**696629**	●	**697829**	●
80	50	10	15	2	HW-10F	**696630**	●	**697830**	●
100	50	10	15	2	HW-10F	**696631**	●	**697831**	●
130	50	10	15	2	HW-10F	**696632**	●	**697832**	●
150	50	10	15	2	HW-10F	**696633**	●	**697833**	●
170	50	10	15	2	HW-10F	**696634**	□	**697834**	□
180	50	10	15	2	HW-10F	**696635**	□	**697835**	□
190	50	10	15	2	HW-10F	**696636**	□	**697836**	□
210	50	10	15	2	HW-10F	**696637**	□	**697837**	□
230	50	10	15	2	HW-10F	**696638**	□	**697838**	□
240	50	10	15	2	HW-10F	**696639**	●	**697839**	●
270	50	10	15	2	HW-10F	**696640**	□	**697840**	□
310	50	10	15	2	HW-10F	**696641**	●	**697841**	●

The indicated profile depth values should be regarded as standard values for information. The maximum profile depth depends on the tool diameter and cutting angle.

Set of the same weight.

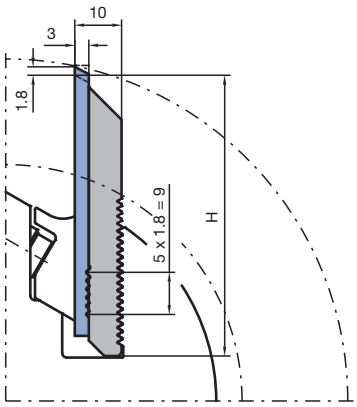
- Blank knives with polished cutting face for high cutting edge quality.
- Solid tungsten carbide - profile knives, adjustable (1.80 mm steps).
- Knives supported by profiled backing plates.
- Resharpening area 10.8 mm at max. profile depth.

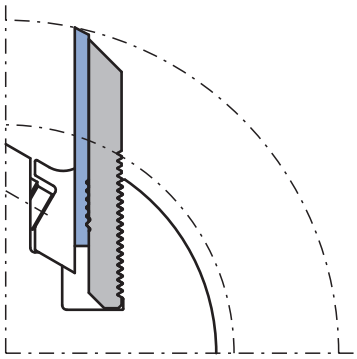


● available ex stock
□ available at short notice
Instruction manual visit www.leitz.org

Cutting material recommendation	HW-30F jointable	HW-10F not jointable
Solid wood dry	♦	
Solid wood wet		
Hardwood dry	♦	♦
Hardwood wet		◇
Glulam	◇	♦
Chipboard		♦
MDF	♦	♦
Thermoplastics (PE, PP, PVC, etc.)	♦	♦
WPC (Wood-Plastic-Composite)	♦	♦

♦ suitable ◇ partly suitable





Cutting material:
HW-30F / HW-10F

Attention:
Maximum knife protrusion above the backing plate 4.5 mm. For safety reasons, only mount knives and backing plates of same weight in opposite seatings.

Powerknife system PKS® blank knives / backing plates

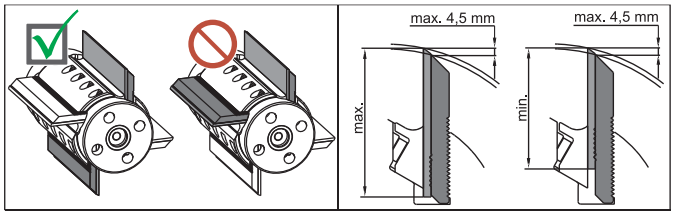
For profile- and hydro profile cutterheads, PT 20 mm
AT 103-0-26, AT 107-0-26

SB mm	H mm	DIK mm	$PT_{max.}$ mm	SET STK	QAL	ID Blank knife set		ID Blank knife set with backing plate	
40	60	10	20	2	HW-30F	**696670**	●	**697870**	●
60	60	10	20	2	HW-30F	**696671**	●	**697871**	●
80	60	10	20	2	HW-30F	**696672**	●	**697872**	●
100	60	10	20	2	HW-30F	**696673**	●	**697873**	●
130	60	10	20	2	HW-30F	**696674**	●	**697874**	●
150	60	10	20	2	HW-30F	**696675**	●	**697875**	●
170	60	10	20	2	HW-30F	**696676**	□	**697876**	□
180	60	10	20	2	HW-30F	**696677**	□	**697877**	□
190	60	10	20	2	HW-30F	**696678**	□	**697878**	□
210	60	10	20	2	HW-30F	**696679**	□	**697879**	□
230	60	10	20	2	HW-30F	**696680**	□	**697880**	□
240	60	10	20	2	HW-30F	**696681**	●	**697881**	●
40	60	10	20	2	HW-10F	**696656**	●	**697856**	●
60	60	10	20	2	HW-10F	**696657**	●	**697857**	●
80	60	10	20	2	HW-10F	**696658**	●	**697858**	●
100	60	10	20	2	HW-10F	**696659**	●	**697859**	●
130	60	10	20	2	HW-10F	**696660**	●	**697860**	●
150	60	10	20	2	HW-10F	**696661**	●	**697861**	●
170	60	10	20	2	HW-10F	**696662**	□	**697862**	□
180	60	10	20	2	HW-10F	**696663**	□	**697863**	□
190	60	10	20	2	HW-10F	**696664**	□	**697864**	□
210	60	10	20	2	HW-10F	**696665**	□	**697865**	□
230	60	10	20	2	HW-10F	**696666**	□	**697866**	□
240	60	10	20	2	HW-10F	**696667**	●	**697867**	●

The indicated profile depth values should be regarded as standard values for information. The maximum profile depth depends on the tool diameter and cutting angle.

Set of the same weight.

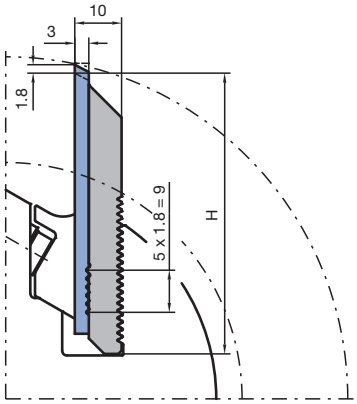
- Blank knives with polished cutting face for high cutting edge quality.
- Solid tungsten carbide - profile knives, adjustable (1.80 mm steps).
- Knives supported by profiled backing plates.
- Resharpening area 10.8 mm at max. profile depth.

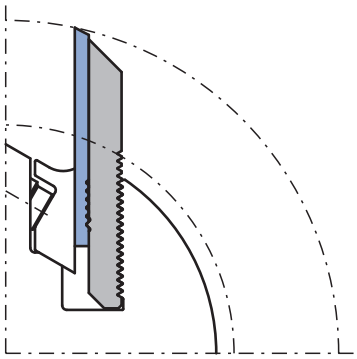


● available ex stock
□ available at short notice
Instruction manual visit www.leitz.org

Cutting material recommendation	HW-30F jointable	HW-10F not jointable
Solid wood dry	♦	
Solid wood wet		
Hardwood dry	♦	♦
Hardwood wet		◇
Glulam	◇	♦
Chipboard		♦
MDF	♦	♦
Thermoplastics (PE, PP, PVC, etc.)	♦	♦
WPC (Wood-Plastic-Composite)	♦	♦

♦ suitable ◇ partly suitable





Cutting material:
HW-30F / HW-10F

Attention:
Maximum knife protrusion above the backing plate 4.5 mm. For safety reasons, only mount knives and backing plates of same weight in opposite seatings.

Powerknife system PKS® blank knives / backing plates

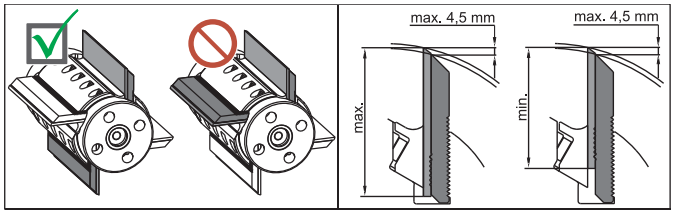
For profile- and hydro profile cutterheads, PT 30 mm
AT 103-0-26, AT 107-0-26

SB mm	H mm	DIK mm	$PT_{max.}$ mm	SET STK	QAL	ID Blank knife set	ID Blank knife set with backing plate
40	70	10	30	2	HW-30F	**696691** ●	**697891** ●
60	70	10	30	2	HW-30F	**696692** ●	**697892** ●
80	70	10	30	2	HW-30F	**696693** ●	**697893** ●
100	70	10	30	2	HW-30F	**696694** ●	**697894** ●
130	70	10	30	2	HW-30F	**696695** ●	**697895** ●
150	70	10	30	2	HW-30F	**696696** ●	**697896** ●
40	70	10	30	2	HW-10F	**696684** ●	**697884** ●
60	70	10	30	2	HW-10F	**696685** ●	**697885** ●
80	70	10	30	2	HW-10F	**696686** ●	**697886** ●
100	70	10	30	2	HW-10F	**696687** ●	**697887** ●
130	70	10	30	2	HW-10F	**696688** ●	**697888** ●
150	70	10	30	2	HW-10F	**696689** ●	**697889** ●

The indicated profile depth values should be regarded as standard values for information. The maximum profile depth depends on the tool diameter and cutting angle.

Set of the same weight.

- Blank knives with polished cutting face for high cutting edge quality.
- Solid tungsten carbide - profile knives, adjustable (1.80 mm steps).
- Knives supported by profiled backing plates.
- Resharpening area 10.8 mm at max. profile depth.



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□ available at short notice
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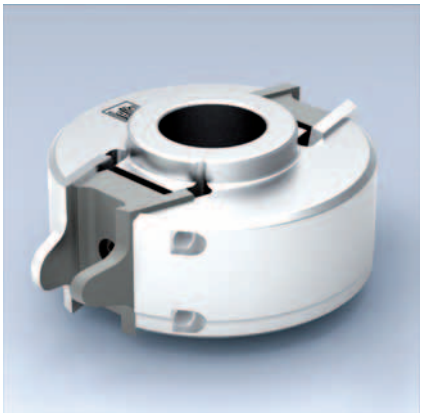


Workpiece material:
Softwood

Cutting material:
SP

For multi-purpose profile cutterheads:
WM 502-2
WM 510-1-01
WM 510-1-02

Profiles to scale 1:1 can be found on the Leitz Homepage www.leitz.org.

Profile knives for multi-purpose cutterheads

Knives
TM 135-1

LEN Profile	ID	LEN Profile	ID	LEN Profile	ID	LEN Profile	ID
1	**026101** ●	23	**026123** ●	45	**026183** ●	67	**026255** ●
2	**026102** ●	24	**026124** ●	46	**026184** ●	68	**026256** ●
3	**026103** ●	25	**026125** ●	47	**026185** ●	69	**026257** ●
4	**026104** ●	26	**026126** ●	48	**026186** ●	70	**026258** ●
5	**026105** ●	27	**026127** ●	49	**026187** ●	71	**026259** ●
6	**026106** ●	28	**026128** ●	50	**026188** ●	72	**026260** ●
7	**026107** ●	29	**026129** ●	51	**026189** ●	73	**026261** ●
8	**026108** ●	30	**026130** ●	52	**026190** ●	74	**026262** ●
9	**026109** ●	31	**026131** ●	53	**026191** ●	75	**026263** ●
10	**026110** ●	32	**026132** ●	54	**026192** ●	76	**026264** ●
11	**026111** ●	33	**026133** ●	55	**026193** ●	77	**026292** ●
12	**026112** ●	34	**026134** ●	56	**026194** ●	80	**026294** ●
13	**026113** ●	35	**026135** ●	57	**026195** ●	83	**690000** ●
14	**026114** ●	36	**026136** ●	58	**026196** ●	84	**690001** ●
15	**026115** ●	37	**026175** ●	59	**026197** ●	87	**690002** ●
16	**026116** ●	38	**026176** ●	60	**026198** ●	91	**690003** ●
17	**026117** ●	39	**026177** ●	61	**026199** ●	92	**690004** ●
18	**026118** ●	40	**026178** ●	62	**026200** ●	97	**690005** ●
19	**026119** ●	41	**026179** ●	63	**026251** ●	100	**690006** ●
20	**026120** ●	42	**026180** ●	64	**026252** ●	127	**690007** ●
21	**026121** ●	43	**026181** ●	65	**026253** ●		
22	**026122** ●	44	**026182** ●	66	**026254** ●		

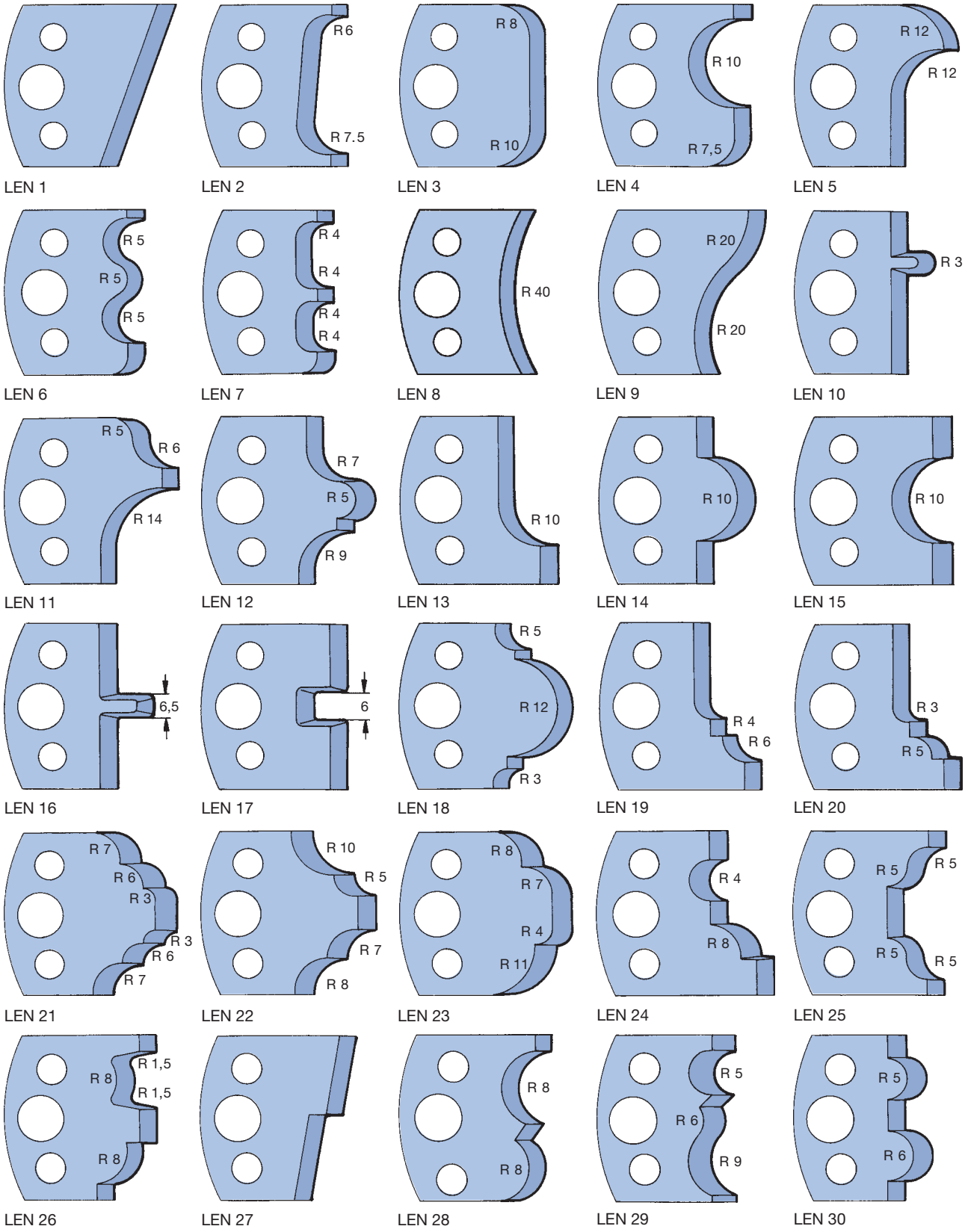
Sold in pairs only.

Limitors
TA 300-1

LEN Profile	ID	LEN Profile	ID	LEN Profile	ID	LEN Profile	ID
1	**026301** ●	23	**026323** ●	45	**026390** ●	67	**026412** ●
2	**026302** ●	24	**026324** ●	46	**026391** ●	68	**026413** ●
3	**026303** ●	25	**026325** ●	47	**026392** ●	69	**026414** ●
4	**026304** ●	26	**026326** ●	48	**026393** ●	70	**026415** ●
5	**026305** ●	27	**026327** ●	49	**026394** ●	71	**026416** ●
6	**026306** ●	28	**026328** ●	50	**026395** ●	72	**026417** ●
7	**026307** ●	29	**026329** ●	51	**026396** ●	73	**026418** ●
8	**026308** ●	30	**026330** ●	52	**026397** ●	74	**026419** ●
9	**026309** ●	31	**026331** ●	53	**026398** ●	75	**026420** ●
10	**026310** ●	32	**026332** ●	54	**026399** ●	76	**026421** ●
11	**026311** ●	33	**026333** ●	55	**026400** ●	77	**026422** ●
12	**026312** ●	34	**026334** ●	56	**026401** ●	80	**026423** ●
13	**026313** ●	35	**026335** ●	57	**026402** ●	83	**695000** ●
14	**026314** ●	36	**026336** ●	58	**026403** ●	84	**695001** ●
15	**026315** ●	37	**026382** ●	59	**026404** ●	87	**695002** ●
16	**026316** ●	38	**026383** ●	60	**026405** ●	91	**695003** ●
17	**026317** ●	39	**026384** ●	61	**026406** ●	92	**695004** ●
18	**026318** ●	40	**026385** ●	62	**026407** ●	97	**695005** ●
19	**026319** ●	41	**026386** ●	63	**026408** ●	100	**695006** ●
20	**026320** ●	42	**026387** ●	64	**026409** ●	127	**695007** ●
21	**026321** ●	43	**026388** ●	65	**026410** ●		
22	**026322** ●	44	**026389** ●	66	**026411** ●		

Sold in pairs only.

9



Profiles to scale 1:1 can be found on the Leitz Homepage www.leitz.org.

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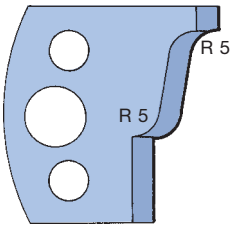

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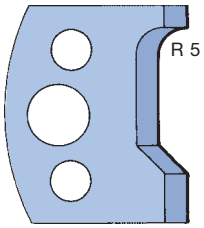

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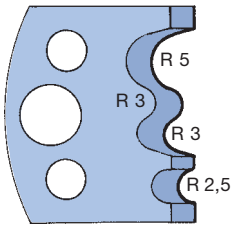

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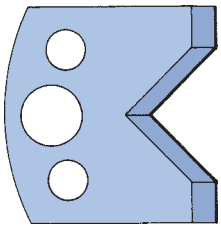
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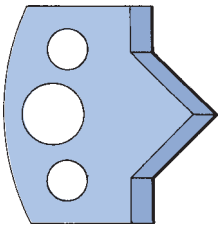
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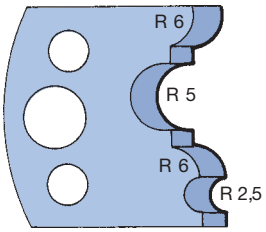

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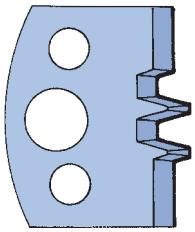
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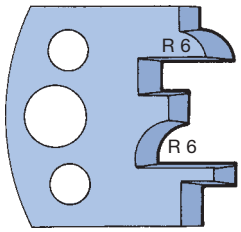

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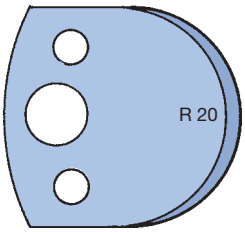

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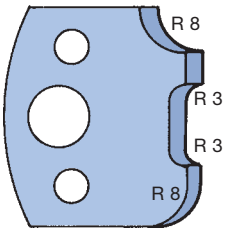

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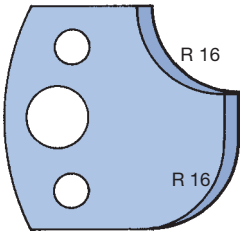

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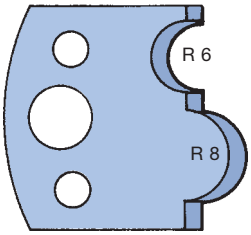

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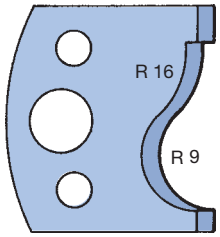

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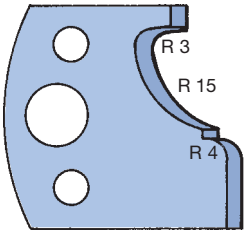

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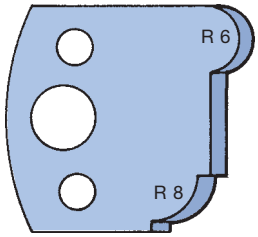

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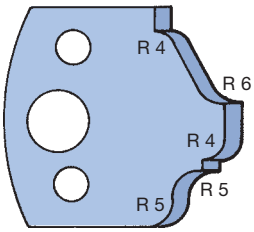

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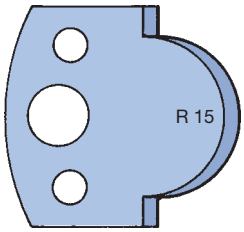

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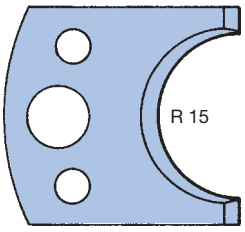

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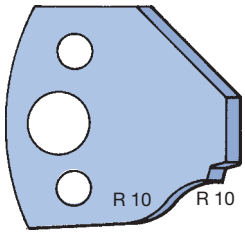

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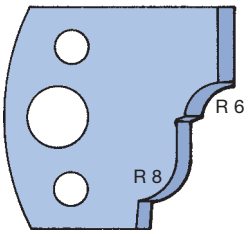

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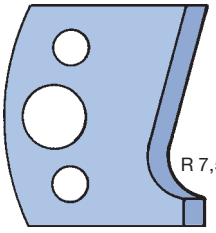

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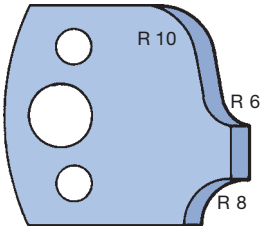

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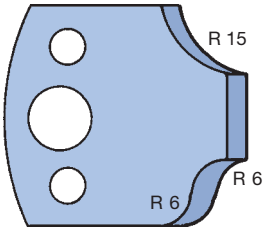

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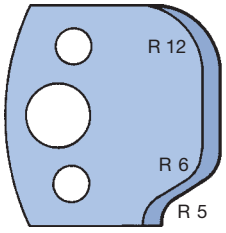

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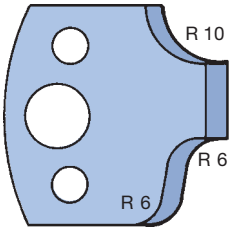

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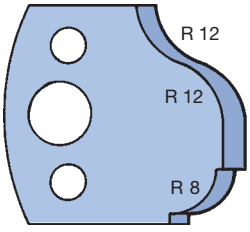

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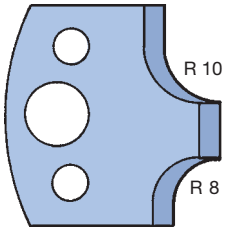

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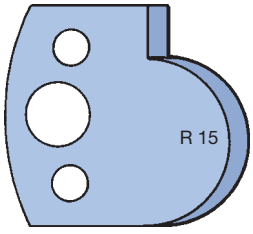

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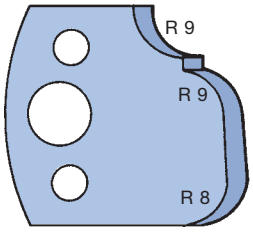

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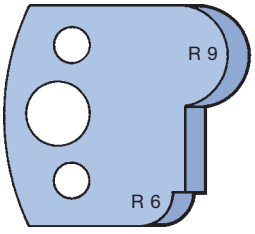
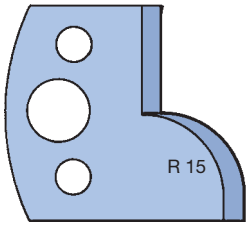


LEN 60

Profiles to scale 1:1 can be found on the Leitz Homepage www.leitz.org.



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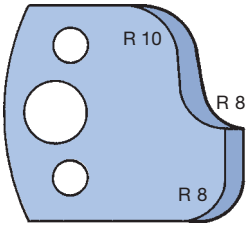

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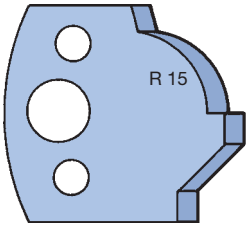

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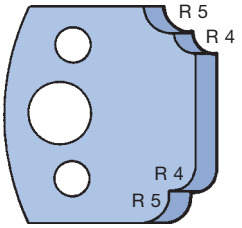

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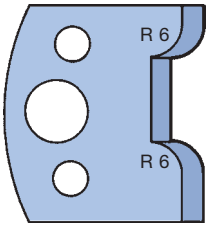

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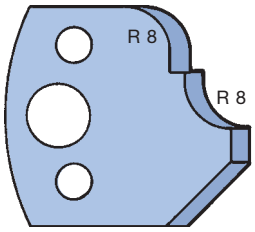

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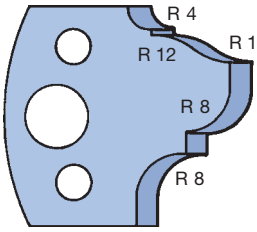

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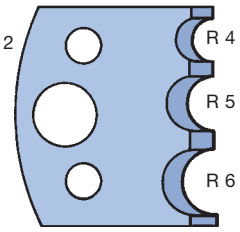

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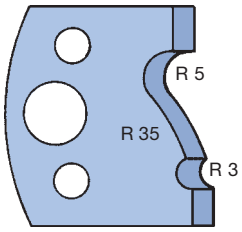

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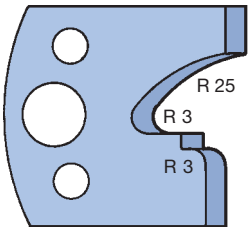

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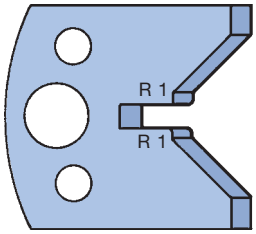

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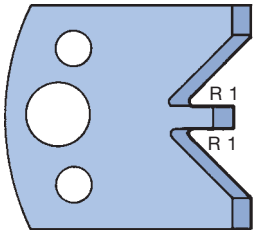

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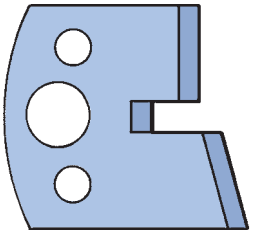
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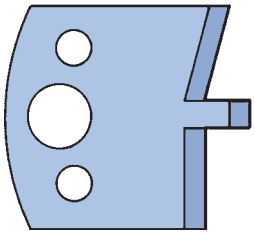
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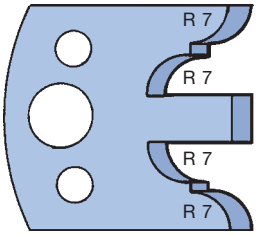

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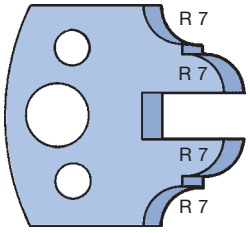

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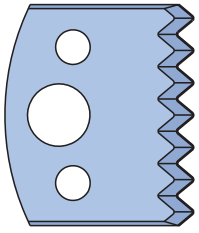
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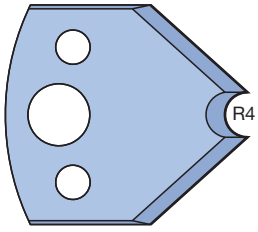

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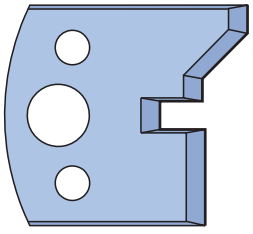
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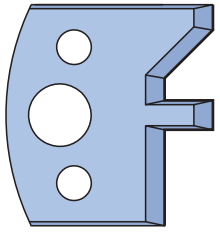
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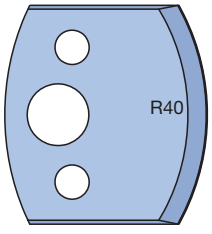

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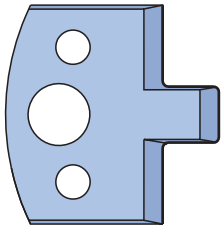
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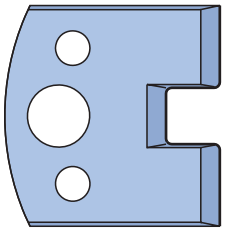
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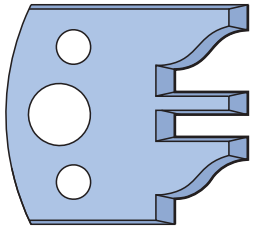
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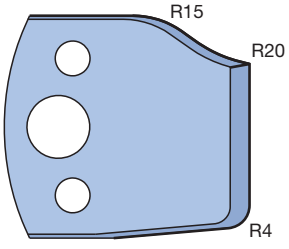

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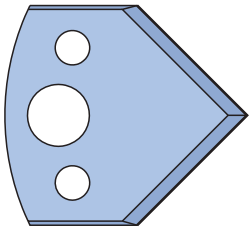
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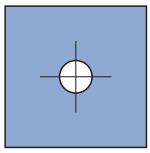
Profiles to scale 1:1 can be found on the Leitz Homepage www.leitz.org.

● available ex stock
□ available at short notice
Instruction manual visit www.leitz.org



Turnblade knife for SW 521-2

Workpiece material:
Soft and hardwood, plastic coated and veneered chipboard and fibre materials (chipboard, MDF, HF, etc.)

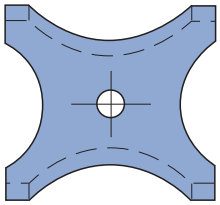
Cutting material:
HW

Turnblade knives for SW 521-2

HW-05
TM 405-0

SB mm	H mm	DIK mm	QAL	VE PCS	ID
12	12	1,5	HW-05	10	**005081** ●
17	17	2	HW-05	10	**005101** ●
30	12	1,5	HW-05	10	**005084** ●
19	19	2	HW-05	10	**005102** ●

ID = 1 piece



Profile knife for SW 541-2

Workpiece material:
Soft and hardwood, plastic coated and veneered chipboard and fibre materials (chipboard, MDF, HF, etc.)

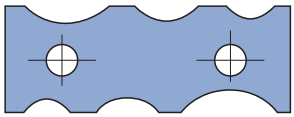
Cutting material:
HW

Profile knives for SW 541-2

HW
TM 435-0

SB mm	H mm	DIK mm	QAL	R mm	VE PCS	ID
13	16	2	HW	3	10	**005104** ●
20	21	2	HW	5	10	**005106** ●
20	21	2	HW	8	10	**005109** ●
26	24	2	HW	9	10	**005110** ●
26	24	2	HW	12	10	**005113** ●

ID = 1 piece



Profile knife for WW 500-1

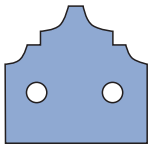
Workpiece material:
Soft and hardwood, plastic coated and veneered chipboard and fibre materials (chipboard, MDF, HF, etc.)

Cutting material:
HW

Profile knives for WW 500-1

HW
TM 435-0

SB mm	QAL	R mm	ID
50	HW	8, 10, 12	**005425** ●
30	HW	3, 4, 5	**005424** ●



Profile knife for WE 500-1-01

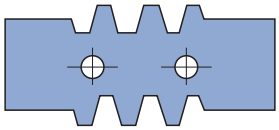
Workpiece material:
Soft and hardwood, plastic coated and veneered chipboard and fibre materials (chipboard, MDF, HF, etc.)

Cutting material:
HW

Profile knives for WE 500-1-01

HW
TM 135-0

SB mm	QAL	ID
40	HW	**006921** ●



Profile knife for WW 600-1

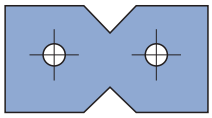
Workpiece material:
Soft and hardwood, plastic coated and veneered chipboard and fibre materials (chipboard, MDF, HF, etc.)

Cutting material:
HW

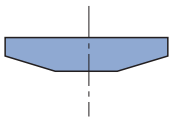
Profile knives for WW 600-1

HW
TM 435-0

SB mm	QAL	ID
50	HW	**005193** ●



Profile knife for WW 610-1



Profile knife for WW 610-1 in cross section

Workpiece material:
Soft and hardwood, plastic coated and veneered chipboard and fibre materials (chipboard, MDF, HF, etc.)

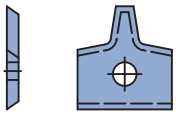
Cutting material:
HW

Profile knives for WW 610-1

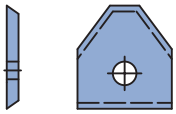
HW
TM 435-0, TM 440-0

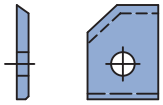
BEZ	ABM mm	QAL	ID
Turnblade profile knife	40x22,32x2	HW	**005192** ●
Turnblade bevel grooving knife	25x15x4,54	HW	**008288** ●

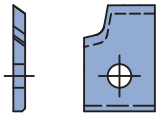
● available ex stock
□ available at short notice
Instruction manual visit www.leitz.org


Type 1


Type 4


Type 2


Type 5


Type 3

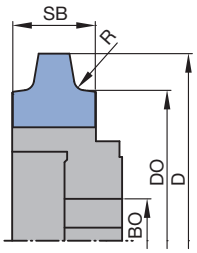

Type 6

Cutting material:
HW

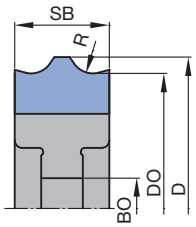
Profile knives for edge finishing

Profile knives for edge finishing
TM 135-0

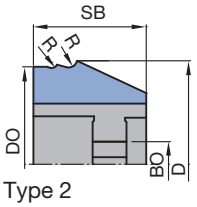
SB mm	H mm	DIK mm	QAL	Knife	R mm	FAW	ID LL		ID RL	
16	17,5	2	HW	1	2,0		**005132**	●	**005132**	●
16	17,5	2	HW	1	3,0		**005133**	●	**005133**	●
16	17,5	2	HW	1	4,0		**005134**	●	**005134**	●
16	17,5	2	HW	1	5,0		**005135**	●	**005135**	●
16	17,5	2	HW	2		45°			**009525**	●
12	18	2	HW	3	2,0		**074033**	●	**074034**	●
13	15	2	HW	3	2,0		**073505**	●	**073504**	●
12	14,5	2	HW	4	2,0		**075342**	●	**075341**	●
12	18	2	HW	3	3,0		**074035**	●	**074036**	●
12	17	2	HW	3	2,0		**073554**	●	**073555**	●
12	17	2	HW	3	3,0		**073558**	●	**073559**	●
12	14,5	2	HW	4	3,0		**075301**	●	**075300**	●
12	16	2	HW	5		45°	**073541**	●	**073540**	●
14,5	14,5	2	HW	4	2,5		**073543**	●	**073544**	●
14,5	14,5	2	HW	6		45°			**073545**	●
13	15	2	HW	3	3,0		**073509**	●	**073508**	●



Type 1



Type 3

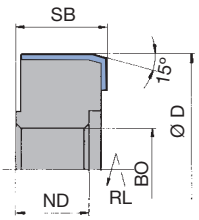


Type 2

Cutting material:
HW

Profile knives for system Biesse
TM 135-0

Type	BEZ	ABM mm	QAL	R mm	VE PCS	ID LL		ID RL	
1	Exchange knife	16x17x2	HW	1,0	10	**074600**	●	**074600**	●
1	Exchange knife	16x17x2	HW	1,5	10	**074601**	●	**074601**	●
1	Exchange knife	16x17x2	HW	2,0	10	**074602**	●	**074602**	●
1	Exchange knife	16x17x2	HW	2,5	10	**074603**	●	**074603**	●
1	Exchange knife	16x17x2	HW	3,0	10	**074604**	●	**074604**	●
2	Exchange knife	40x17x2	HW	1,0	10	**074610**	□	**074611**	□
2	Exchange knife	40x17x2	HW	1,5	10	**074612**	□	**074613**	□
2	Exchange knife	40x17x2	HW	2,0	10	**074614**	□	**074615**	□
2	Exchange knife	40x17x2	HW	2,5	10	**074616**	□	**074617**	□
2	Exchange knife	40x17x2	HW	3,0	10	**074618**	□	**074619**	□
3	Exchange knife	20x16x2	HW	1,0	10	**074620**	□	**074620**	□
3	Exchange knife	20x16x2	HW	1,5	10	**074621**	□	**074621**	□
3	Exchange knife	20x16x2	HW	2,0	10	**074622**	□	**074622**	□
3	Exchange knife	20x16x2	HW	2,5	10	**074623**	□	**074623**	□
3	Exchange knife	20x16x2	HW	3,0	10	**074624**	□	**074624**	□



Type 4:
WW 500-2-03

Cutting material:
HW

Profile knives for system Holz Her
TM 435-0

BEZ	ABM mm	QAL	VE PCS	DRI	ID	
Turnblade knife	30x12x1,5,PT1,3	HW	10	RL	**005088**	●
Turnblade knife	30x12x1,5,PT1,3	HW	10	LL	**005089**	●

9

● available ex stock
□ available at short notice
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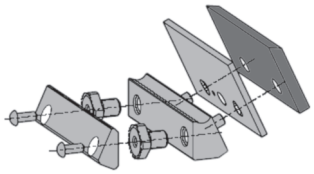


Workpiece material:
Softwood and hardwood, thermoplastics

Cutting material:
HW-30F

System benefits:
Knife resharpenable 3 to 4 times on the face.
High precision and safety by 3-point knife clamping

Profiling cassette system

For machine Martin T 90 and T 45 Contour

BEZ	SB mm	ID
Clamping wedge cassette (without blank knife backing plate)	30	**623800**
Clamping wedge cassette (without blank knife backing plate)	45	**623801**
Clamping wedge cassette (without blank knife backing plate)	60	**623802**
Clamping wedge cassette (without blank knife backing plate)	125	**623803**
Blank knife (PT 10)	30	**636254**
Blank knife (PT 10)	45	**636255**
Blank knife (PT 10)	60	**636295**
Blank knife (PT 10)	125	**636296**
Backing plate (PT 10)	30	**645010**
Backing plate (PT 10)	45	**645011**
Backing plate (PT 10)	60	**645012**
Backing plate (PT 10)	125	**645013**
Key		**117515**

● available ex stock
□ available at short notice
Instruction manual visit www.leitz.org

Turnblade knife

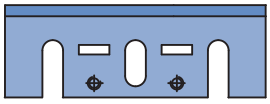
Workpiece material:
Softwood and hardwood, chipboard and fibre materials, glulam

Cutting material:
HW

Planer knives for portable planers

Turnblade knives HW
TM 410-0

Machine	SB mm	H mm	DIK mm	QAL	ID
AEG Bosch Haffner Holz-Her Mafell Metabo Scheer Festool	75,5	5,5	1,1	HW	**005064** ●
Black & Decker	75,7	5,5	1,2	HW	**005199** ●
ELU	80,5	5,9	1,2	HW	**005131** ●
AEG Mafell Makita Metabo Black & Decker ELU De Walt	82	5,5	1,1	HW	**005066** ●

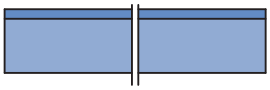


Makita

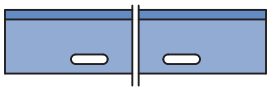
Cutting material:
HS / HW

Planer knife HS / HW
TM 105-0

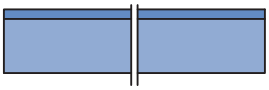
Machine	SB mm	H mm	DIK mm	ID HS	ID HW
Makita	82	29	3	**027530** ●	**027598** ●



Kity



Metabo



Scheppach

Workpiece material:
Softwood and hardwood, chipboard and fibre materials, glulam

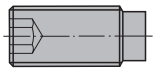
Cutting material:
HS

Planer knives for semi-stationary machines

HS
TM 100-0, TM 105-0

Machine	SB mm	H mm	DIK mm	QAL	ID
Kity	260	20	2,5	HS	**027154** ●
Metabo	263	20	3	HS	**027157** ●
Scheppach	260	18	3	HS	**027158** ●

● available ex stock
□ available at short notice
Instruction manual visit www.leitz.org



Allen screws

TK 505-0

ABM mm	for ProFix	ID	
M5x11 SW 2,5	PF 20	**007840**	●
M6x12 SW 3	PF 20	**007825**	●
M6x16 SW 3	PF 20	**007826**	●
M6x25 SW 3	PF 20	**007851**	
M6x35 SW 3	PF 20	**007852**	
M6x50 SW 3	PF 20	**007853**	
M8x1x11,5 SW 4	PF 25	**007811**	●
M8x1x13 SW 4	PF 25	**007066**	●
M8x1x18 SW 4	PF 25	**007824**	●
M8x1x30 SW 4	PF 25	**007848**	●
M8x1x40 SW 4	PF 25	**007849**	
M8x1x50 SW 4	PF 25	**007850**	

Pressure pins

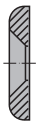
TK 515-0

ABM mm	for ProFix	ID	
5x9 without bevel	PF 20	**008839**	●
5x18 with bevel	PF 20	**008837**	●
7x22 with bevel	PF 25	**008836**	●

Screws for knife stop disc

TK 500-0

ABM mm	for ProFix	ID	
M3x7 Torx® 10	PF 20	**007819**	●
M4x8 Torx® 20	PF 25	**007820**	●



Knife stop discs

TK 540-0

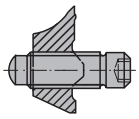
ABM mm	for ProFix	ID	
10x2	PF 20	**006749**	●
15x2,5	PF 25	**006743**	●

ProFix F ripple planerhead PF25

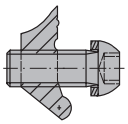
Spare knives
TM 269-0-10

SB mm	QAL	ID	
80	HW	**011039**	●
90	HW	**011040**	●
120	HW	**011049**	●

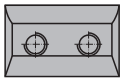
● available ex stock
□ available at short notice
Instruction manual visit www.leitz.org



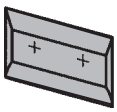
Clamping wedge for WP 8, M5



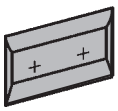
Clamping wedge for WP 8, M 6



Clamping wedge for WP 8



Clamping wedge for ZM 11, OFZS-RL

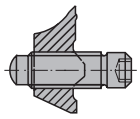


Clamping wedge for ZM 10, OFZS-RL

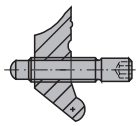
Turnblade knife 8 mm WP 8

Clamping wedges
TD 110-0

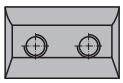
B mm	BEM	GEW	for knives	FAW	ID Cross grain processing		ID Standard	
7		M5	7,7		**622002**	●	**009763**	●
9		M5	9,7		**622003**	●	**009764**	●
11		M6	11,7		**622004**	●	**009669**	●
13		M6	14,7		**622005**	●	**009670**	●
18		M6	19,7		**622006**	●	**009671**	●
23		M6	25		**622007**	●	**009672**	●
28		M6	30		**622008**	●	**009673**	●
33	1-hole	M6	35				**009674**	●
33	2-holes	M6	35		**622031**	●	**622030**	●
38		M6	40		**622010**	●	**009675**	●
43		M6	45		**622011**	●	**009676**	●
48		M6	50		**622012**	●	**009677**	●
58		M6	60		**622013**	●	**009678**	●
68		M6	70		**622014**	●	**009679**	●
78		M6	80		**622015**	●	**009680**	●
98		M6	100		**622016**	●	**009681**	●
118		M6	120		**622017**	●	**009682**	●
13		M6	ZM 11/5	8°	**622018**	●	**009683**	●
13		M6	ZM 10/5	8°	**622019**	●	**009684**	●
13		M6	ZM 11/4	14°	**622020**	●	**009685**	●
13		M6	ZM 10/4	14°	**622021**	●	**009686**	●
19		M6	ZM 11/1	10°	**622022**	●	**009687**	●
19		M6	ZM 10/1	10°	**622023**	●	**009688**	●
24		M6	ZM 11/8	10°	**622024**	●	**009689**	●
24		M6	ZM 10/8	10°	**622025**	●	**009690**	●
29		M6	ZM 11/2	8°	**622026**	●	**009691**	●
29		M6	ZM 10/2	8°	**622027**	●	**009692**	●
29		M6	ZM 11/6	14°	**622028**	●	**009693**	●
29		M6	ZM 10/6	14°	**622029**	●	**009694**	●



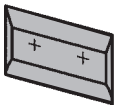
Clamping wedge for WP 8, type 1



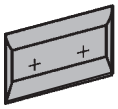
Clamping wedge for WP 8, type 2



Clamping wedge for WP 8



Clamping wedge for ZM 11, OFZS-RL



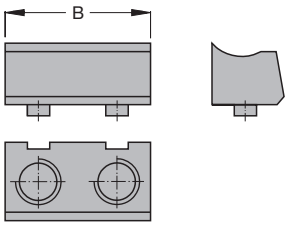
Clamping wedge for ZM 10, OFZS-RL

Turnblade knife 8 mm WP 8

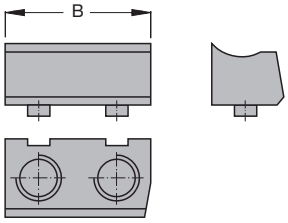
Clamping wedges for previous design
TD 110-0

B mm	BEM	GEW	for knives	Type	FAW	ID	
7		M4	7,7	1		**009243**	●
7		M4	7,7	2		**009667**	●
8		M4	9,7	1		**009299**	□
8		M4	9,7	2		**009668**	●
10		M6	11,7	1		**009244**	●
13		M6	14,7	1		**009245**	●
18		M6	19,7	1		**009246**	●
23		M6	25	1		**009298**	□
28		M6	30	1		**009247**	●
33		M6	35	1		**009248**	●
38		M6	40	1		**009249**	●
43		M6	45	1		**009621**	□
48		M6	50	1		**009250**	●
58	Previous 2-hole design	M6	60	1		**009251**	□
58	Previous 3-hole design	M6	60	1		**009964**	●
68		M6	70	1		**009622**	□
78		M6	80	1		**009252**	●
98		M6	100	1		**009267**	●
118		M6	120	1		**009268**	●
19		M6	ZM 10/1	1	9°50’	**009276**	●
13		M6	ZM 10/4	1	14°	**009933**	□
19		M6	ZM 11/1	1	9°50’	**009277**	□
13		M6	ZM 11/4	1	14°	**009934**	●

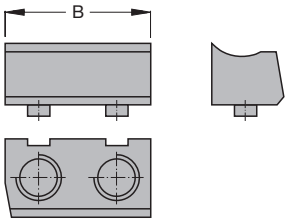
● available ex stock
□ available at short notice
Instruction manual visit www.leitz.org



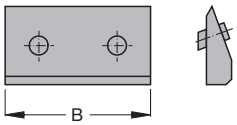
Clamping wedge, flat - Type 1



Clamping wedge, flat, right hand rotation, bottom cutting first - Type 2



Clamping wedge, flat, left hand rotation, bottom cutting first - Type 3

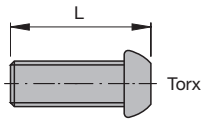


Counter wedge with pin - Type 4

Turnblade knife 12 mm WP 12

Clamping wedges with counter wedges
TD 200-0

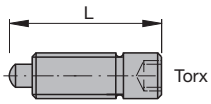
B mm	GEW	for knives	Type	ID
6,8	M5	7,5	1	**005213** ●
10	M6	12 15	1	**005216** ●
26	M8	30	1	**005231** ●
46	M8	50	1	**005241** □
56	M8	60	1	**005246** □
10	M6	12 15	2	**005217** ●
26	M8	30	2	**005232** ●
10	M6	12 15	3	**005218** ●
26	M8	30	3	**005233** ●
6,8		7,5	4	**005214** ●
10		12 15	4	**005219** ●
18		20	4	**009824** ●
28		30	4	**009825** ●
48		50	4	**009826** ●
58		60	4	**009827** ●



Clamping screws

Clamping screws for WP 8 clamping wedge for SB 12 mm and greater
TK 500-0

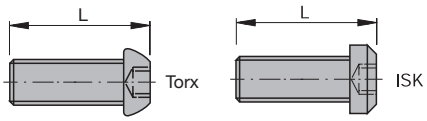
ABM mm	BEM	ID
M6x18,5	Torx® 25	**007818** ●



Clamping screws

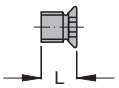
Allen screw for WP 8 clamping wedge and cutting width < 12 mm
TK 505-0

ABM mm	BEM	BEM	ID
M5x20	Torx® 15		**007380** ●
M4x20	Torx® 8	For former design	**006081** ●
M6x20	Torx® 20	For former design	**006080** ●



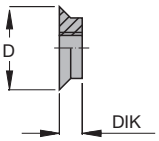
Clamping screw for ProfilCut clamping from SB 12 mm on
TK 500-0

ABM mm	BEM	BEM	ID
M6x18,5	Torx® 25		**007818** ●
M6x19	ISK 5	For former design	**007043** ●
M8x19	ISK 6	For former design	**007044** ●



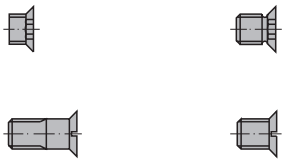
Clamping screw for WP 18 + VS 4 (Lamello)
TK 500-0

ABM mm	BEM	for knives	ID
M4x0,5x3,2	Torx® 9	WP 18/1,95	**006057** ●
M4x0,5x4,2	Torx® 9	WP 18/2,5	**005724** ●



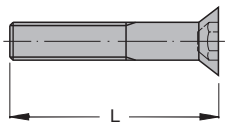
Nuts for WP 18 + VS 4 (Lamello)
TK 510-0

ABM mm	for knives	ID
M 11,9/2,20	WP 18/1,95	**005653** ●
M 11,9/2,75	WP 18/2,5	**005686** ●
M9,9/1,60	VS 4	**005654** ●



Countersunk screws for VS 1, VS 2 and VS 3
TK 500-0, TK 100-0

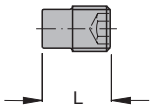
ABM mm	BEM	BEM	ID
M6x0,5x4,9	T 20 for steel-body		**006243** ●
M5x8,5	T 20 for aluminium tool body		**007808** ●
M5x12		For former design	**005744** ●
M5x6		For former design	**005758** ●



Countersunk screws for grooving- and edging knives
TK 500-0

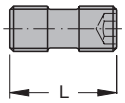
ABM mm	BEM	ID
M6x10	Torx® 20	**006083** ●
M6x12	Torx® 20	**006084** ●
M6x14	Torx® 20	**006085** ●
M6x16	Torx® 20	**006086** ●
M6x25	Torx® 20	**006088** ●
M6x30	Torx® 20	**006089** ●
M6x35	Torx® 20	**007098** ●
M6x40	Torx® 20	**006090** ●

● available ex stock
□ available at short notice
Instruction manual visit www.leitz.org



Allen screws for clamping wedges 12 mm knife system
TK 105-0

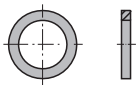
ABM mm	BEM	ID	
M5x12	ISK 2,5	**006032**	●
M6x12	ISK 3	**006035**	●
M8x12	ISK 4	**006041**	●



Double-threaded allen screws for 12 mm slot and tenon clamping wedges, previous design
TK 505-0

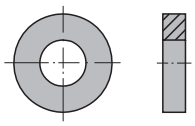
ABM mm	BEM	ID	
M4x18	Torx® 8	**006094**	●
M6x18	Torx® 15	**006095**	●

Spacers and shims



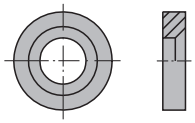
Washer for WP 8 and ProfilCut
TK 540-0

ABM mm	GEW	ID	
9/6,2x1,2	for M6	**006753**	●



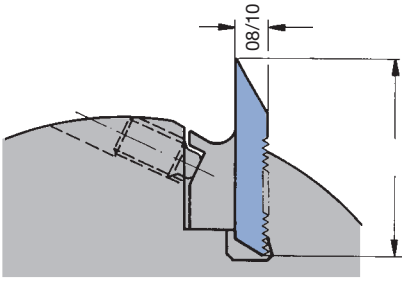
Previous ProfilCut - design
TK 540-0

ABM mm	GEW	BEM	ID	
10/6,4x1,2	for M6	Former ProfilCut design	**006739**	●
12,5/8,4x1,2	for M8	Former ProfilCut design	**006740**	●



Spacers for grooving- and edging knives
TR 100-0

ABM mm	BEM	ID	
13/6,1x0,1		**028034**	●
13/6,1x0,3		**028035**	●
13/6,1x0,5		**028036**	●
13/6,1x1		**028037**	●
13/6,1x3		**028040**	●
13/6,1x5		**028042**	●
13/6,1x12		**028045**	●
13/6,1x3	With counterbore	**028185**	●
13/6,1x5	With counterbore	**028173**	●

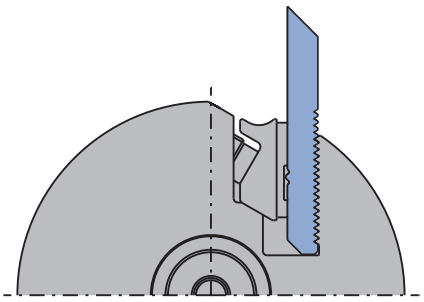


Profile cutterhead
Knife thickness 8 - 10 mm

Serrated back profile cutterheads

Filler pieces for knife thickness 8 - 10 mm
TD 510-0-05

BEZ	for SB mm	ID	
Filler piece	40	**005305**	●
Filler piece	60	**005306**	●
Filler piece	80	**005307**	●
Filler piece	100	**005308**	●
Filler piece	120	**005309**	●
Filler piece	130	**005310**	●
Filler piece	150	**005311**	●
Filler piece	170	**620770**	●
Filler piece	180	**005312**	●
Filler piece	190	**620772**	●
Filler piece	210	**620773**	●
Filler piece	230	**005313**	●
Filler piece	240	**620771**	●
Filler piece	270	**620774**	●
Filler piece	310	**620775**	●



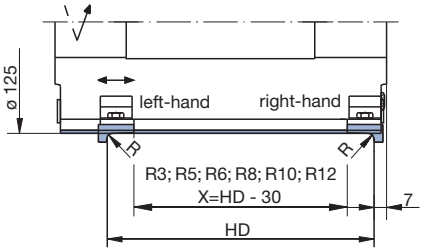
Profile cutterhead
PKS-system

Filler pieces for profiling PKS-System backing plates
TF 200-0

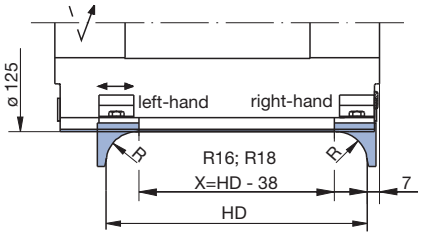
BEZ	for SB mm	ID	
Filler piece	40	**008355**	●
Filler piece	80	**008356**	●
Filler piece	130	**008357**	●
Filler piece	170	**008358**	●
Filler piece	210	**008359**	●
Filler piece	240	**008221**	●

● available ex stock
□ available at short notice
Instruction manual visit www.leitz.org

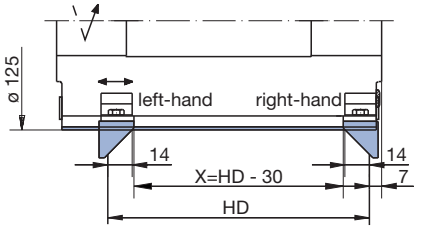
D mm	SB mm	ND mm	BO mm	$BO_{max.}$ mm	$n_{max.}$ min^{-1}	ID
125	130	136	40	45	9000	**031700** ●
125	180	186	40	45	9000	**031701** ●
125	230	236	40	45	9000	**031702** ●
140	130	130	50	60	8000	**031703**
140	180	180	50	60	8000	**031704**
140	230	230	50	60	8000	**031705**



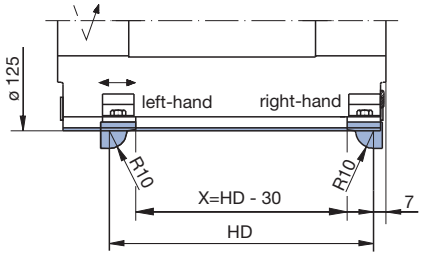
With radius knife R3 to R13 mm
HD max. = cutting width of cutterhead - 10 mm, HD min. = 30 mm



With radius knife R16 to R18 mm
HD max. = cutting width of cutterhead - 10 mm, HD min. = 38 mm



HD max. = cutting width of cutterhead - 10 mm, HD min. = 14 mm
Bevel = 30 mm (lower wood thickness possible for smaller bevels) e.g. bevel 10 mm, HD min. = 21 mm



With fluting knife
HD max. = cutting width of cutterhead - 10 mm, HD min. = 30 mm

Universal planerhead, VariPlan/ProFix system, for jointing and profiling

Spare profile knives for ID 031700 - 031705
TM 265-0, TM 265-0-10

ABM mm	QAL	R mm	FAW	DRI	ID
SB20	HS	3		LL	**012031** ●
SB20	HS	3		RL	**012032** ●
SB20	HS	4		LL	**012033** ●
SB20	HS	4		RL	**012034** ●
SB20	HS	6		LL	**012035** ●
SB20	HS	6		RL	**012036** ●
SB20	HS	8		LL	**012037** ●
SB20	HS	8		RL	**012038** ●
SB20	HS	10		LL	**012039** ●
SB20	HS	10		RL	**012040** ●
SB20	HS	12		LL	**012041** ●
SB20	HS	12		RL	**012042** ●
SB24	HS	16		LL	**012043**
SB24	HS	16		RL	**012044**
SB24	HS	18		LL	**012045**
SB24	HS	18		RL	**012046**
SB20	HS		14x45°	LL	**012047** ●
SB20	HS		14x45°	RL	**012048** ●
SB20 flute	HS	10		LL	**012049**
SB20 flute	HS	10		RL	**012050**
SB20	HW	3		LL	**012051**
SB20	HW	3		RL	**012052** ●
SB20	HW	4		LL	**012053** ●
SB20	HW	4		RL	**012054** ●
SB20	HW	6		LL	**012055** ●
SB20	HW	6		RL	**012056** ●
SB20	HW	8		LL	**012057** ●
SB20	HW	8		RL	**012058** ●
SB20	HW	10		LL	**012059** ●
SB20	HW	10		RL	**012060** ●
SB20	HW	12		LL	**012061** ●
SB20	HW	12		RL	**012062** ●
SB24	HW	16		LL	**012063**
SB24	HW	16		RL	**012064**
SB24	HW	18		LL	**012065**
SB24	HW	18		RL	**012066**
SB20	HW		14x45°	LL	**012067** ●
SB20	HW		14x45°	RL	**012068** ●
SB20 flute	HW	10		LL	**012069**
SB20 flute	HW	10		RL	**012070**

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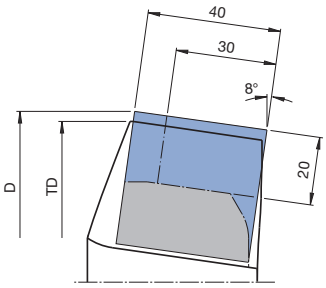
● available ex stock
□ available at short notice
Instruction manual visit www.leitz.org

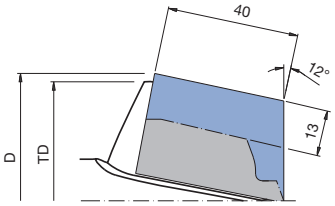


Tool body cranked 8°, right hand rotation, large diameter on top, SB 30-50 mm

Cranked profile cutterhead VariForm, for CNC

Blank knives for tool body 8° cranked, HW, spare knife for ID 135420 -135425
TC 105-0

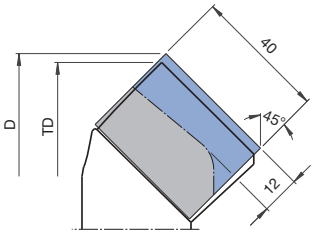
H mm	SB mm	$PT_{max.}$ mm	ID HW-10F	ID HW-30F
40	30	20	**636220** ●	**636233** ●
40	40	15	**636227** ●	**636240** ●
40	50	15	**636284** ●	**636272** ●



Tool body cranked 12°, right hand rotation, large diameter on top, SB 40 mm

Blank knives for tool body 12° cranked, HW, spare knife for ID 135428 - 135429
TC 105-0

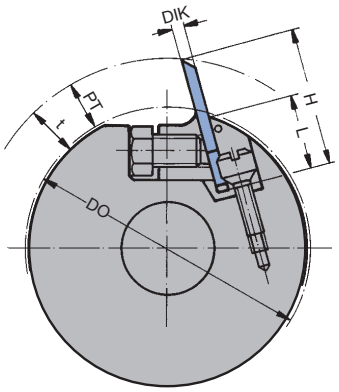
H mm	SB mm	$PT_{max.}$ mm	ID HW-10F	ID HW-30F
30	40	30	**636253** ●	**636252** ●



Tool body cranked 45°, right hand rotation, large diameter on top, SB 40 mm

Blank knives for tool body 45° cranked, HW, spare knife for ID 135426 - 135427
TC 105-0

H mm	SB mm	$PT_{max.}$ mm	ID HW-10F	ID HW-30F
30	40	30	**636225** ●	**636238** ●



Workpiece material:
Softwood and hardwood

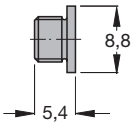
Cutting material:
SP / HS

Profile cutterhead WM 502-2

TC 105-0

BEZ	SB mm	QAL	ID
Profile blank knife	40	SP	**007601** ●
Profile blank knife	50	SP	**007602** ●
Profile blank knife	60	SP	**007603** ●
Profile blank knife	40	HS	**007284** ●
Profile blank knife	50	HS	**007285** ●
Profile blank knife	60	HS	**007286** ●

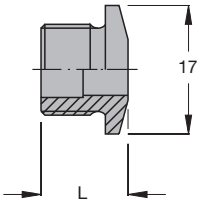
● available ex stock
□ available at short notice
Instruction manual visit www.leitz.org



Flat head screw for rhomboid knife RMA

TK 500-0

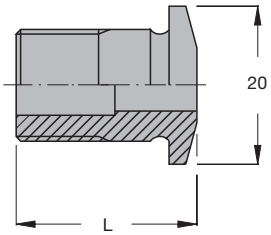
ABM mm	BEM	ID
M6x0,5x5,4	Torx® 20	**007036** ●



Clamping screws for grooving knives and Exakt and RA knives

TK 500-0

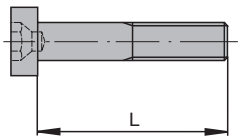
ABM mm	BEM	ID
M12x1x6,3	ISK 6	**005733** ●
M12x1x7,7	ISK 6	**005734** ●
M12x1x9,2	ISK 6	**005735** ●
M12x1x11	ISK 6	**005736** ●
M12x1x13,5	ISK 6	**005737** ●
M12x1x14,5	ISK 6	**005738** ●



Clamping screws for DuFix knives

TK 500-0

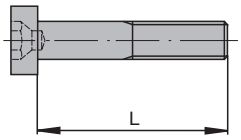
ABM mm	BEM	ID
M12x1x20,8	ISK 6	**005726** ●
M12x1x22,5	ISK 6	**005727** ●
M12x1x24	ISK 6	**005728** ●
M12x1x26	ISK 6	**005729** ●
M12x1x28	ISK 6	**005730** ●
M12x1x30	ISK 6	**005731** ●
M12x1x36	ISK 6	**005732** ●



Cylindrical screws for screwed sets

Cylindrical screws with ISK 5 for clamping sleeves
TK 100-0

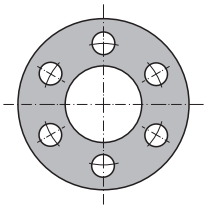
ABM mm	ID
M6x50	**005932** ●
M6x55	**005933** ●
M6x60	**005934** ●
M6x65	**005935** ●
M6x70	**005936** ●
M6x73	**007831** ●
M6x80	**005938** ●
M6x83	**007832** ●
M6x88	**007833** ●
M6x100	**005940** ●
M6x93	**007834** ●
M6x105	**007835** ●
M6x113	**007836** ●
M6x120	**005942** ●
M6x130	**006542** ●
M6x140	**006296** ●
M6x150	**006290** ●



Cylindrical screws with ISK 4 for cutter arbors
TK 100-0

ABM mm	ID	
M5x25	**007057**	●
M5x30	**007092**	●
M5x35	**007058**	●
M5x40	**007854**	●
M5x45	**007093**	●
M5x50	**007082**	●
M5x55	**007094**	●
M5x60	**007083**	●
M5x65	**007095**	●
M5x70	**007084**	●
M5x75	**007096**	●
M5x80	**007097**	●

● available ex stock
□ available at short notice
Instruction manual visit www.leitz.org



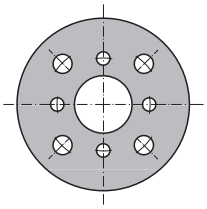
With pinholes

TR 100-0

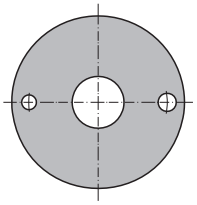
D mm	B mm	BO mm	NLA mm	ID	
45	3	20	4/6/32	**028088**	●
45	5	20	4/6/32	**028089**	●
45	10	20	4/6/32	**028090**	●
45	20	20	4/6/32	**028639**	●
45	0,1	20	4/6/32	**029208**	●
45	0,3	20	4/6/32	**029209**	●
45	0,5	20	4/6/32	**029210**	●
45	1	20	4/6/32	**029211**	●
60	0,1	30	6/7/48	**027914**	●
60	0,3	30	6/7/48	**027915**	●
60	0,5	30	6/7/48	**027916**	●
60	1	30	6/7/48	**027917**	●
60	3	30	6/7/48	**028580**	●
60	4	30	6/7/48	**028581**	●
60	5	30	6/7/48	**028582**	●
60	6	30	6/7/48	**028583**	●
60	7	30	6/7/48	**028584**	●
60	8	30	6/7/48	**028585**	●
60	10	30	6/7/48	**028586**	●
60	11	30	6/7/48	**028587**	●
60	12	30	6/7/48	**028588**	●
60	15	30	6/7/48	**028589**	●
60	17,5	30	6/7/48	**028590**	●
60	20	30	6/7/48	**028591**	●
70	0,1	30	6/7/58	**027952**	●
70	0,3	30	6/7/58	**027953**	●
70	0,5	30	6/7/58	**027954**	●
70	1	30	6/7/58	**027955**	●
70	3	30	6/7/58	**028599**	●
70	4	30	6/7/58	**028600**	●
70	5	30	6/7/58	**028601**	●
70	6	30	6/7/58	**028602**	●
70	7	30	6/7/58	**028603**	●
70	8	30	6/7/58	**028604**	●
70	10	30	6/7/58	**028605**	●
70	12	30	6/7/58	**028606**	●
70	15	30	6/7/58	**028607**	●
70	20	30	6/7/58	**028608**	●
60	0,1	35	6/7/48	**027930**	●
60	0,3	35	6/7/48	**027931**	●
60	0,5	35	6/7/48	**027932**	●
60	1	35	6/7/48	**027933**	●
60	3	35	6/7/48	**028592**	●
60	4	35	6/7/48	**028593**	●
60	5	35	6/7/48	**028594**	●
60	6	35	6/7/48	**028595**	●
60	7	35	6/7/48	**028596**	●
60	8	35	6/7/48	**028597**	●
60	10	35	6/7/48	**028598**	●
62	0,1	35	4/7/52	**028667**	●
62	0,3	35	4/7/52	**028668**	●
62	0,5	35	4/7/52	**028669**	●
62	1	35	4/7/52	**028670**	●
65	3	35	4/7/52	**028671**	●
65	4	35	4/7/52	**028672**	●
65	5	35	4/7/52	**028673**	●
70	0,1	35	6/7/58	**027966**	●

D mm	B mm	BO mm	NLA mm	ID	
70	0,3	35	6/7/58	**027967**	●
70	0,5	35	6/7/58	**027968**	●
70	1	35	6/7/58	**027969**	●
70	3	35	6/7/58	**028609**	●
70	4	35	6/7/58	**028610**	●
70	5	35	6/7/58	**028611**	●
70	6	35	6/7/58	**028612**	●
70	7	35	6/7/58	**028613**	●
70	8	35	6/7/58	**028614**	●
70	10	35	6/7/58	**028615**	●
70	20	35	6/7/58	**028616**	●
70	0,1	40	6/7/58	**027978**	●
70	0,3	40	6/7/58	**027979**	●
70	0,5	40	6/7/58	**027980**	●
70	1	40	6/7/58	**027981**	●
70	3	40	6/7/58	**028617**	●
70	4	40	6/7/58	**028618**	●
70	5	40	6/7/58	**028619**	●
70	6	40	6/7/58	**028620**	●
70	7	40	6/7/58	**028621**	●
70	8	40	6/7/58	**028622**	●
70	10	40	6/7/58	**028623**	●
70	12	40	6/7/58	**028624**	●
70	15	40	6/7/58	**028625**	●
70	20	40	6/7/58	**028626**	●
76,5	0,1	50	6/7/65	**028005**	●
76,5	0,3	50	6/7/65	**028006**	●
76,5	0,5	50	6/7/65	**028007**	●
76,5	1	50	6/7/65	**028008**	●
77	3	50	6/7/65	**028627**	●
77	4	50	6/7/65	**028628**	●
77	5	50	6/7/65	**028629**	●
77	6	50	6/7/65	**028630**	●
77	8	50	6/7/65	**028631**	●
77	10	50	6/7/65	**028632**	●
77	20	50	6/7/65	**028633**	●
90	0,1	60	6/7/75	**028020**	●
90	0,3	60	6/7/75	**028021**	●
90	0,5	60	6/7/75	**028022**	●
90	1	60	6/7/75	**028023**	●
90	3	60	6/7/75	**028634**	●
90	4	60	6/7/75	**028635**	●
90	5	60	6/7/75	**028636**	●
90	10	60	6/7/75	**028637**	●
90	20	60	6/7/75	**028638**	●

● available ex stock
□ available at short notice
Instruction manual visit www.leitz.org



Spacers with 4+4 pinholes

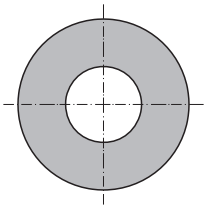


Spacers with 2 pinholes

With pinholes

TR 100-0

D mm	B mm	BO mm	NLA mm	ID	
90	0,1	30	4/7/48 4/10/60	**028422**	●
90	0,3	30	4/7/48 4/10/60	**028423**	●
90	0,5	30	4/7/48 4/10/60	**028424**	●
90	1	30	4/7/48 4/10/60	**028425**	●
90	3	30	4/7/48 4/10/60	**028426**	●
90	5	30	4/7/48 4/10/60	**028427**	●
90	10	30	4/7/48 4/10/60	**028428**	●
90	20	30	4/7/48 4/10/60	**028429**	●
100	0,1	30	1/8,5/80 1/10,5/80	**028029**	●
100	0,3	30	1/8,5/80 1/10,5/80	**028030**	●
100	0,5	30	1/8,5/80 1/10,5/80	**028031**	●
100	1	30	1/8,5/80 1/10,5/80	**028032**	●



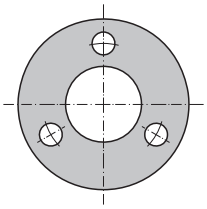
Without pinholes

TR 100-0

D mm	B mm	BO mm	ID	
34	0,1	20	**028400**	●
34	0,3	20	**028401**	●
34	0,5	20	**028402**	●
34	1	20	**028403**	●
34	3	20	**028404**	●
34	4	20	**028405**	●
34	5	20	**028406**	●
50	0,1	30	**027901**	●
50	0,3	30	**027902**	●
50	0,5	30	**027903**	●
50	1	30	**027904**	●
50	3	30	**027905**	●
50	4	30	**027906**	●
50	5	30	**027907**	●
50	6	30	**027908**	●
50	7	30	**027909**	●
50	8	30	**027910**	●
50	10	30	**027911**	●
50	14	30	**027912**	●
50	20	30	**027913**	●
60	3	30	**027918**	●
60	4	30	**027919**	●
60	5	30	**027920**	●
60	6	30	**027921**	●
60	7	30	**027922**	●
60	8	30	**027923**	●
60	10	30	**027924**	●
60	11	30	**027925**	●
60	12	30	**027926**	●
60	15	30	**027927**	●
60	17,5	30	**027928**	●
60	20	30	**027929**	●
60	1	31,75	**028661**	●
60	3	31,75	**028662**	●
60	5	31,75	**028663**	●
60	10	31,75	**028664**	●
60	15	31,75	**028665**	●
60	20	31,75	**028666**	●
60	3	35	**027934**	●
60	4	35	**027935**	●
60	5	35	**027936**	●
60	6	35	**027937**	●
60	7	35	**027938**	●
60	8	35	**027939**	●
60	10	35	**027940**	●
60	0,1	40	**027941**	●
60	0,3	40	**027942**	●
60	0,5	40	**027943**	●
60	1	40	**027944**	●
60	3	40	**027945**	●
60	4	40	**027946**	●
60	5	40	**027947**	●
60	6	40	**027948**	●
60	7	40	**027949**	●
60	8	40	**027950**	●
60	9	40	**028449**	●
60	10	40	**027951**	●

● available ex stock
□ available at short notice
Instruction manual visit www.leitz.org

D mm	B mm	BO mm	ID	
70	3	30	**027956**	●
70	4	30	**027957**	●
70	5	30	**027958**	●
70	6	30	**027959**	●
70	7	30	**027960**	●
70	8	30	**027961**	●
70	10	30	**027962**	●
70	12	30	**027963**	●
70	15	30	**027964**	●
70	20	30	**027965**	●
70	3	35	**027970**	●
70	4	35	**027971**	●
70	5	35	**027972**	●
70	6	35	**027973**	●
70	7	35	**027974**	●
70	8	35	**027975**	●
70	10	35	**027976**	●
70	20	35	**027977**	●
70	3	40	**027982**	●
70	4	40	**027983**	●
70	5	40	**027984**	●
70	6	40	**027985**	●
70	7	40	**027986**	●
70	8	40	**027987**	●
70	10	40	**027988**	●
70	12	40	**027989**	●
70	15	40	**027990**	●
70	20	40	**027991**	●
70	0,1	50	**027992**	●
70	0,3	50	**027993**	●
70	0,5	50	**027994**	●
70	1	50	**027995**	●
70	3	50	**027996**	●
70	4	50	**027997**	●
70	5	50	**027998**	●
70	6	50	**027999**	●
70	7	50	**028000**	●
70	8	50	**028001**	●
70	10	50	**028002**	●
70	15	50	**028003**	●
70	20	50	**028004**	●
77	3	50	**028009**	●
77	4	50	**028010**	●
77	5	50	**028011**	●
77	6	50	**028012**	●
77	8	50	**028013**	●
77	10	50	**028014**	●
77	20	50	**028015**	●
90	3	60	**028024**	●
90	4	60	**028025**	●
90	5	60	**028026**	●
90	10	60	**028027**	●
90	20	60	**028028**	●
100	4	30	**028033**	●

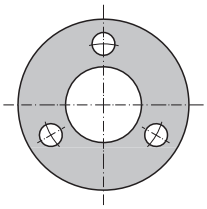


Spacers hardened and high precision for Hydro and Hydro-Duo clamping sleeves to fill the clamping length.

Spacers, hardened and high-precision for Hydro and Hydro-Duo clamping sleeves

TR 100-0

D mm	B mm	BO mm	NLA mm	ID	
70	3	40	2/7/58	**028500**	●
70	4	40	2/7/58	**028501**	●
70	5	40	2/7/58	**028502**	●
70	6	40	2/7/58	**028503**	●
70	8	40	2/7/58	**028504**	●
70	10	40	2/7/58	**028505**	●
70	15	40	2/7/58	**028506**	●
70	20	40	2/7/58	**028507**	●
77	3	50	2/9/65	**028508**	●
77	4	50	2/9/65	**028509**	●
77	5	50	2/9/65	**028510**	●
77	6	50	2/9/65	**028511**	●
77	8	50	2/9/65	**028512**	●
77	10	50	2/9/65	**028513**	●
77	15	50	2/9/65	**028514**	●
77	20	50	2/9/65	**028515**	●
90	10	50	2/9/65	**030681**	●
90	15	50	2/9/65	**030682**	●
90	20	50	2/9/65	**030683**	●
90	10	60	3/9/75	**030684**	●
90	15	60	3/9/75	**030685**	●
90	20	60	3/9/75	**030686**	●



High precision spacers for Hydro- and Hydro-Duo clamping sleeves

High-precision spacers for adjusting tongue and groove cuttersets

TR 100-0, AT 100-0

D mm	B mm	BO mm	NLA mm	BEM	ID	
90	3,1	60	3/9/75		**030687**	●
90	3,3	60	3/9/75		**030688**	●
90	3,5	60	3/9/75		**030689**	●
90	3,7	60	3/9/75		**030690**	●
90	3,9	60	3/9/75		**030691**	●
90	4,1	60	3/9/75		**030692**	●
90	4,3	60	3/9/75		**030693**	●
90	4,5	60	3/9/75		**030694**	●
90	4,7	60	3/9/75		**030695**	●
90	4,9	60	3/9/75		**030696**	●
90	5	60	3/9/75		**030697**	●
90	5,1	60	3/9/75		**030698**	●
				Set of spacers (13 pieces) 1x (3.3-5.1) 2x (3.1) each	**028454**	●

● available ex stock
□ available at short notice
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AT 100-0-01
8-part spacer set with total clamping length 125 mm, surface ground face parallel, spacers black-finished, to DIN 8837

Set consisting of:
2 pieces: B 5.0 mm
2 pieces: B 16.0 mm
1 piece: B 8.0 mm
1 piece: B 10.0 mm
1 piece: B 25.0 mm
1 piece: B 40.0 mm

AT 100-0-02
Total clamping length of 11 mm.
By adding additional spacers 10.0 mm and 20.0 mm, adjustment up to 41.0 mm is possible.

Set consisting of:
2 pieces: B 0.1 mm
1 piece: B 0.3 mm
1 piece: B 0.5 mm
2 pieces: B 1.0 mm
1 piece: B 3.0 mm
1 piece: B 5.0 mm

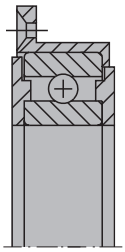
Spacer sets

Set of standard cutter spindle spacers
AT 100-0-01

D mm	BO mm	ID	
50	30	**028381**	●
60	40	**028382**	●

Set of standard spacers
AT 100-0-02

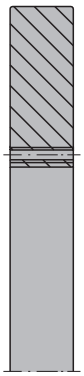
D mm	BO mm	ID	
60	30	**028451**	●
70	35	**028452**	●
70	40	**028453**	●



Ball bearings

TL 510-0

BEZ	D mm	BO mm/in	ID	
Ball bearing III	62	30	**027701**	●
Ball bearing III	62		**027704**	●
Ball bearing IV	72	40	**027702**	●
Ball bearing IV	84	50	**027703**	●

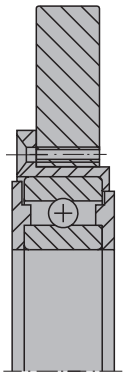


Guide rings

TR 500-0

BEZ	D mm	ID	
Guide ring III	75	**027751**	●
Guide ring III	80	**027752**	●
Guide ring III	85	**027753**	●
Guide ring III	90	**027754**	●
Guide ring III	95	**027755**	●
Guide ring III	100	**027756**	●
Guide ring III	105	**027757**	●
Guide ring III	110	**027758**	●
Guide ring III	112	**027797**	●
Guide ring III	115	**027759**	●
Guide ring III	120	**027760**	●
Guide ring III	125	**027761**	●
Guide ring III	130	**027762**	●
Guide ring III	135	**027763**	●
Guide ring III	140	**027764**	●
Guide ring III	145	**027765**	●
Guide ring III	150	**027766**	●
Guide ring IV	90	**027772**	●
Guide ring IV	95	**027773**	●
Guide ring IV	100	**027774**	●
Guide ring IV	105	**027775**	●
Guide ring IV	110	**027776**	●
Guide ring IV	112	**027798**	●
Guide ring IV	115	**027777**	●
Guide ring IV	120	**027778**	●
Guide ring IV	125	**027779**	●
Guide ring IV	130	**027780**	●
Guide ring IV	135	**027781**	●
Guide ring IV	140	**027782**	●
Guide ring IV	145	**027783**	●
Guide ring IV	150	**027784**	●
Guide ring VI	100	**027785**	●
Guide ring VI	105	**027786**	●
Guide ring VI	110	**027787**	●
Guide ring VI	115	**027788**	●
Guide ring VI	120	**027789**	●
Guide ring VI	125	**027790**	●
Guide ring VI	130	**027791**	●
Guide ring VI	135	**027792**	●
Guide ring VI	140	**027793**	●
Guide ring VI	145	**027794**	●
Guide ring VI	150	**027795**	●

● available ex stock
□ available at short notice
Instruction manual visit www.leitz.org

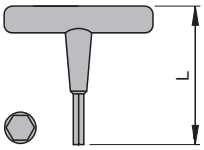


Ball bearing and guide ring set
consisting of:
Ball bearing size III with 9 or 12 guide rings in 5 mm diameter steps each.

Ball bearing guide set

AT 102-0

exist. of	ABM mm	ID	
TR 500-0 D mm 85-90-95-100-105-110-115-120-125-130-135-140 TL 500-0	13 pcs.,d30	**027851**	●
TR 500-0 D mm 85-90-95-100-105-110-115-120-125-130-135-140 TL 500-0	13 pcs.,d31.75	**027853**	●
TR 500-0 D mm 85-90-95-100-105-110-115-120-125 TL 500-0	10 pcs.,d30	**027852**	●
TR 500-0 D mm 85-90-95-100-105-110-115-120-125 TL 500-0	10 pcs.,d31.75	**027854**	●

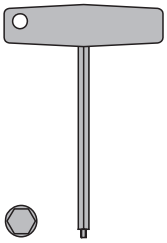


Hexagon key, L 75 - 100 mm

Hexagon allen keys

T-handle without tenon
TH 500-0

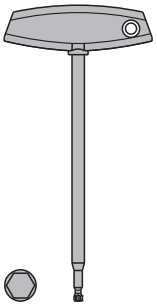
ABM mm	L mm	ID	
SW 2.5	100	**005472**	●
SW 3	75	**005444**	●
SW 4	75	**005445**	●
SW 6	75	**005447**	●



Hexagon key, with tenon

T-handle with tenon
TH 500-0

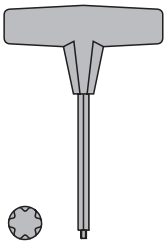
ABM mm	ID	
SW 5	**005452**	●
SW 6	**005494**	●



Hexagon key, for quick-change sleeve

For quick-change sleeve
TH 505-0

ABM mm	L mm	ID	
SW 6	240	**117516**	●

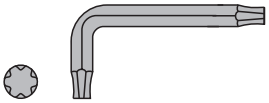


Torx® key with T-handle

Torx® keys

T-handle
TH 500-0

ABM mm	L mm	ID	
Torx® 8		**006093**	●
Torx® 9		**005463**	●
Torx® 15	100	**005466**	●
Torx® 15	130	**117507**	●
Torx® 20	100	**006091**	●
Torx® 20	130	**117503**	●
Torx® 25	100	**005502**	●
Torx® 25	130	**117504**	●

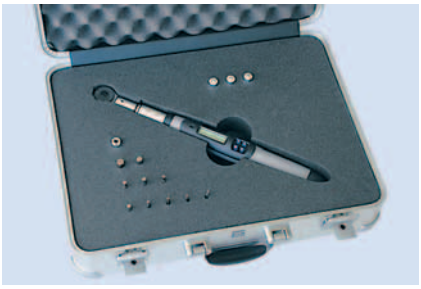


Torx® key, 90° angle

90° angle
TH 500-0

ABM mm	L mm	ID	
Torx® 20	140	**117511**	●

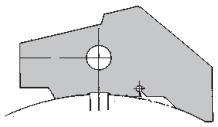
● available ex stock
□ available at short notice
Instruction manual visit www.leitz.org



Torque wrench in box

AT 199-0

BEZ	exist. of	ID
Torque wrench set in box	1 piece bit insert hex 4 mm 1 piece bit insert hex 5 mm 1 piece bit insert hex 6 mm 1 piece bit insert hex 8 mm 1 piece bit insert hex 10 mm 1 piece bit insert Torx® 8 1 piece bit insert Torx® 15 1 piece bit insert Torx® 20 1 piece bit insert Torx® 25 1 piece bit insert Torx® 40 1 piece bit holder 1/4“ - 1 1/4“ 1 torque wrench 1/4“ 3-30Nm Set in aluminium box	**009102** ●



Setting gauge for Hydro planerheads / planerhead wedge-type system

VN 265-0

ABM mm	ID
D143	**007988** ●
D163	**007989** ●
D203	**008002** ●
D125/140	**005361** ●

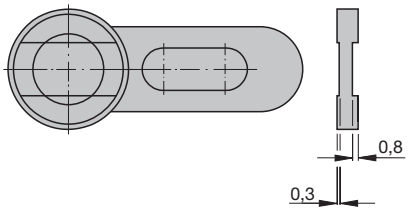
Setting gauge 0.3/0.8 mm

Setting gauge 1 mm

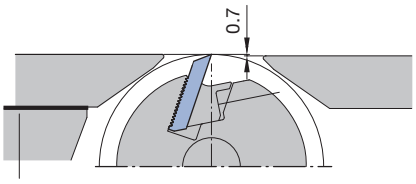
Setting gauges for turnblades

VN 230-0

BEZ	ABM mm	ID
Setting gauge	0,3/0,8	**005374** ●
Setting gauge for knives	1,0	**005350** ●
Magnetic setting gauge	0,3/0,8	**005376** ●



Magnetic setting gauge 0.3/0.8 mm



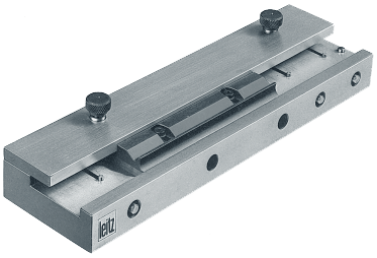
spacer inlay (0,7 mm)

Bed spacer plate for 4-side moulding machine

TF 200-0

BEZ	ABM mm	DIK mm	ID
Table spacer plate	235x100x0,7	0,7	**008352**

The spacer plate is required, in combination with the Leitz ripple technology, to adjust the work table after finish planing (chip removal 0.7 mm).



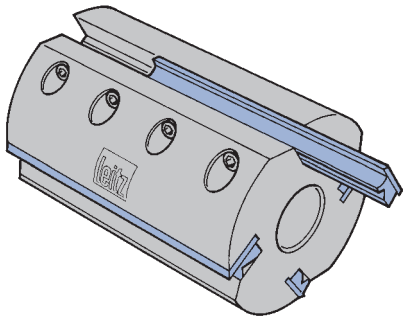
Setting device for planerhead cassette system

VN 265-0

BEZ	ID
Setting device for knives	**029755** ●

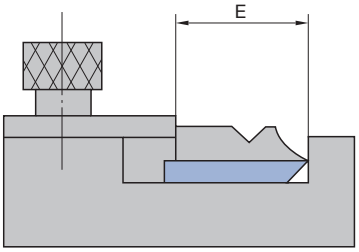
Application:
Adjustment of cassettes (knife and clamping wedge) for mounting in planerhead WM 200-2-03.

- Base plate with pressure elements including stop rail and insert device.
- All parts hardened and ground.
- Suitable for cutting widths up to 260 mm.

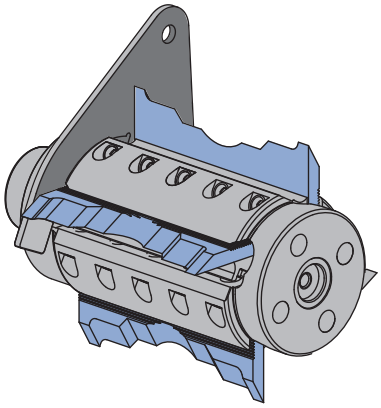


Planerhead cassette system

Setting device:



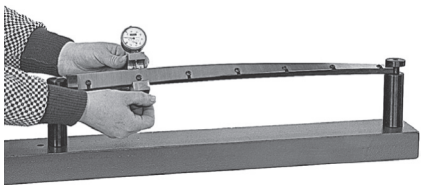
● available ex stock
□ available at short notice
Instruction manual visit www.leitz.org



Setting gauge for profile cutterhead with HSK-85 WS adaptor

VN 230-0

BEZ	ID	
Knife setting gauge for axial positioning of profile knives	**008353**	●



For long planerhead in spiral design

VN 265-0

BEZ	ID	
Setting gauge with dial gauge	**029780**	●
Base plate with holder	**029781**	●
Setting device	**029782**	●

Application:
Pre-adjustment of resharpened HS knives for long planerhead in spiral design.

- Precise setting of HS knives for easy and quick knife change.
- Suitable for cutting widths from 410 to 640 mm.

Mounting device

VN 799-0

BEZ	ID	
Mounting device for SK 30/BT30 with grooves and notches	**079000**	●
Mounting device for SK40	**079001**	●
Mounting device for HSK-F50	**079002**	●
Mounting device for HSK-E63 and HSK-F63	**079003**	●
Mounting device for SCM/Morbidelli ISO30	**079004**	●
Mounting device for CMS ISO30	**079005**	●
Mounting device for Alberti HSK-E 40	**079006**	●

Application:
For mounting shank tools in clamping chucks or tools with bores on arbors with adaptors for automatic tool change.

- Reduced risk of injury when mounting tools.
- Quick clamping levers and alignment pins secure the clamped taper axially as well as against twisting.

Application:
For mounting saws, cutting tools, cutting tool sets and cutterheads.

Mounting device

Mounting device for tools with HSK 85 / HSK-F 63 adaptor
VN 799-0

BEZ	Machine	l mm	d mm	ID	
Mounting device EASY-Hold HSK 85 WS	Weinig	30 - 310	20 - 50	**079010**	●
Mounting device EASY-Hold HSK-F 63				**079009**	●

For quick and easy mounting of knives or tools on cutting arbors

For clamping drills (10 mm shank with clamping flat) when altering the length adjusting screw.
Advantages:
- reduced risk of injury when adjusting the tools
- easy and stable tool clamping during mounting

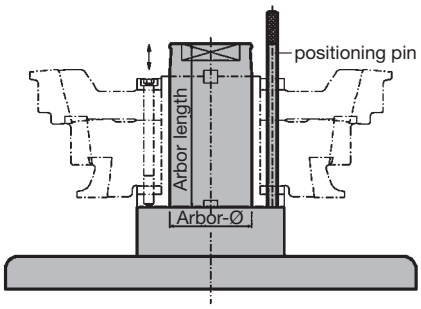
Mounting device

Clamping device for drills with 10 mm shank and clamping flat
VN 799-0

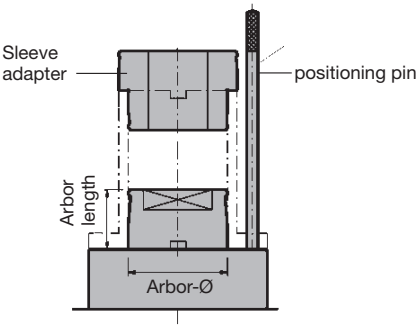
BEZ	ID	
Clamping device for drill 10 mm shank	**079020**	●

● available ex stock
□ available at short notice
Instruction manual visit www.leitz.org

Mounting device with large arbor



Mounting device with short arbor
with using a sleeve adapter



Application:
For assembly and de-assembly of tools with bore on clamping sleeves, or tools mounted together by spacers as tool set.

Mounting device for tool sets with and without clamping sleeve

XI 500 0

BEZ	D mm	NL mm	ID	
Mounting device without arbor			**079011**	●
Arbor long	30	100	**079012**	●
Arbor long	35	100	**079013**	●
Arbor long	40	100	**079014**	●
Arbor long	50	100	**079015**	●
Arbor short	30	30	**079016**	●
Arbor short	35	30	**079017**	●
Arbor short	40	30	**079018**	●
Arbor short	50	30	**079019**	●

Advantages:
- Reduced risk of injury when mounting tools.
- No twisting as the tool set is positioned on the mounting device.
- Easy mounting of tools and parts for a screwed tool set with position indicated by a centring pin.

Short arbor when using a sleeve adaptor (see following page).

Application:
The adaptors are placed on the spindle (thread) before the tools are mounted.
- Then the tools can be mounted on the spindle over this adaptor which prevents the tools from jamming on the spindle.
- Even if the tools are placed on the spindle crooked, the tools are automatically centralised by the collar.
- Remove the adaptor after completing the tool mounting process.

Spindle adaptor for mounting tools on machine spindle

Weinig machine
TH 599-0

Model	D mm	NL mm	ID	
Hydromat with counter bearing	50	50	**027879**	●
UC 10 spindle length 640 UC 10, UC 6 spindle length 320	50	110	**027880**	●

SCM machine
TH 599-0

Model	D mm	NL mm	ID	
Windor spindle length 320-660	50	45	**027882**	●

Gabbiani machine
TH 599-0

Model	D mm	NL mm	ID	
Spindle with counter bearing	50	80	**027886**	●

Beth machine
TH 599-0

Model	D mm	NL mm	ID	
Spindle length 320	50	40	**027887**	●

Sleeve adaptor for mounting tools on clamping sleeve

TH 599-0

d mm	Tool bore mm	D mm	NL mm	ID	
50	60	60/50	40	**027881**	●
40	50	50/40	40	**027889**	●
40	60	60/40	40	**027888**	●

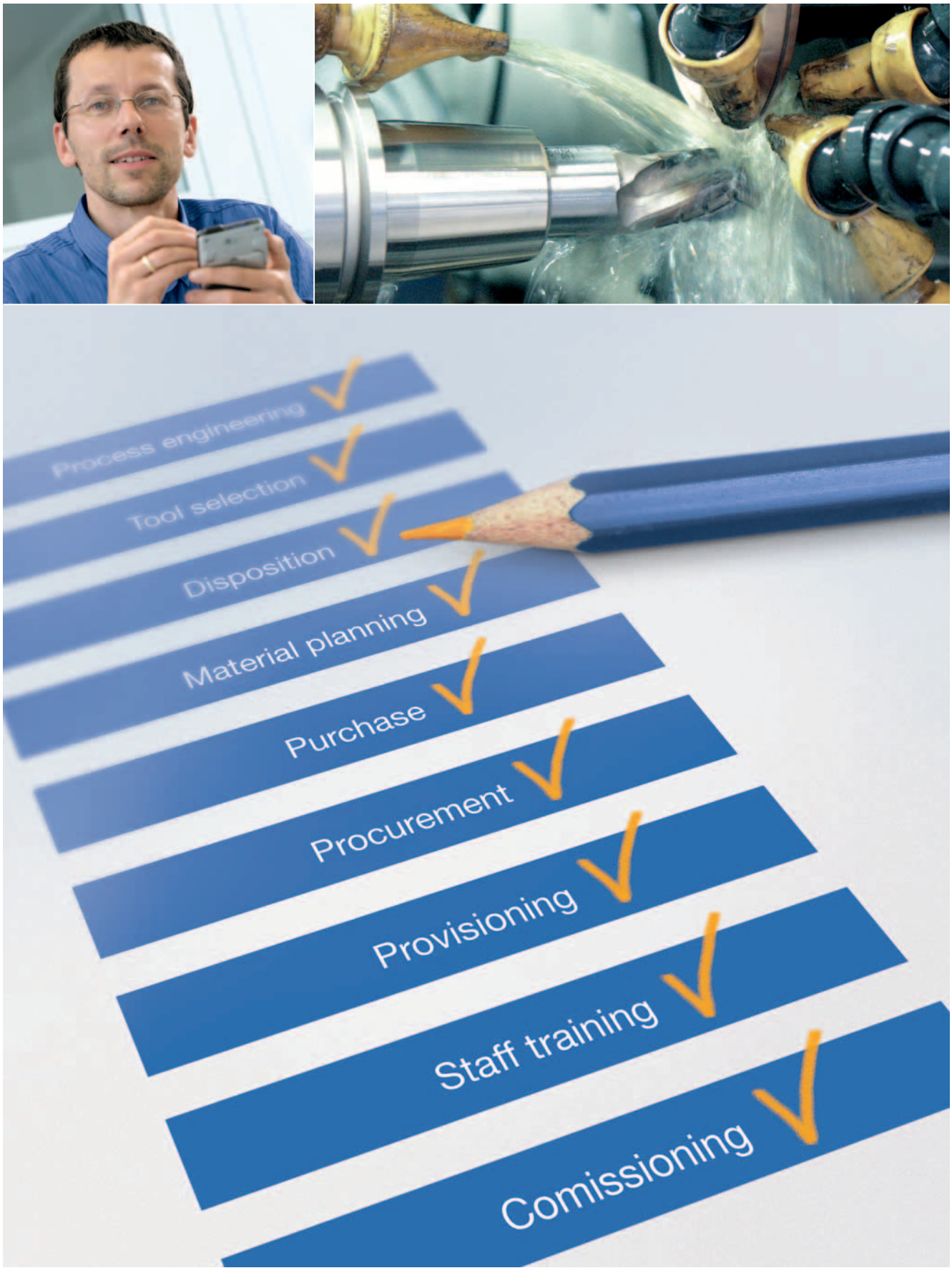
● available ex stock
□ available at short notice
Instruction manual visit www.leitz.org

Joint stones for Leitz Marathon planer knife

FS 100-0, FS 199-0

BEZ	Machine	BEM	ABM mm	ID	
Jointing stone (angular)	WACO	Colour: brown	20x15x60	**008238**	●
Jointing stone (round)	Weinig	Colour: grey	12x32	**008237**	●

Grinding wheels suitable for sharpening Marathon planer knives available on request.

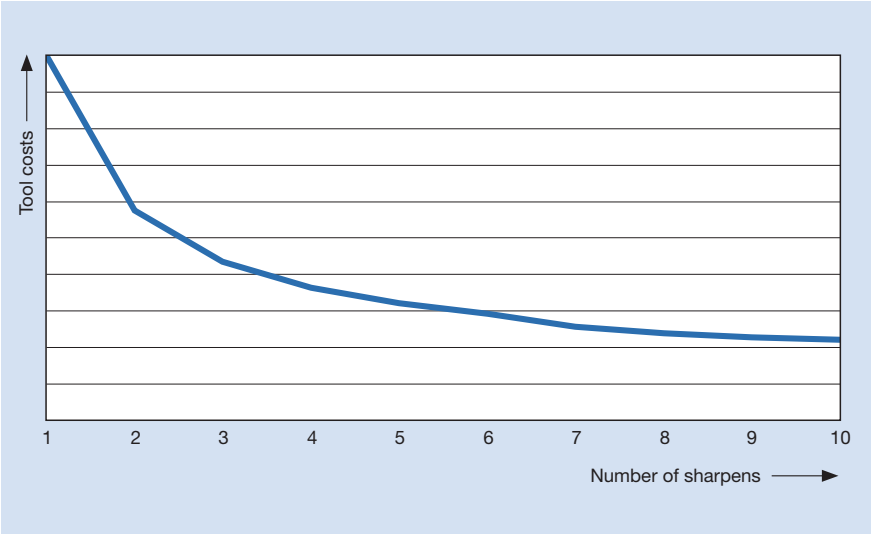

Process engineering
Tool selection
Disposition
Material planning
Purchase
Procurement
Provisioning
Staff training
Comissioning

10. Services

Leitz Service station

A top quality tool only performs at its best, if serviced regularly by experts. It needs to be sharpened, repaired and returned quickly to the customer. For years Leitz, with a worldwide network of over 180 service stations staffed with skilled personnel has provided such a tool collection/delivery service.

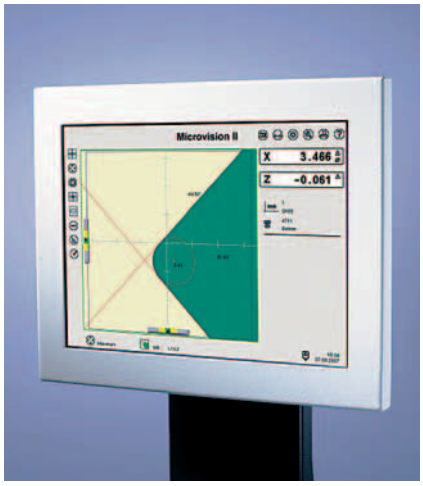
Costs per life time of resharpenable tools



Tool economics increases with the number of sharpens. Also it is more economic to sharpen a tool frequently than to overrun the tool. Excessive use and wear can destroy the tool resulting in the need for replacement with a new tool.

In principle, it is possible to sharpen all cutting materials assuming the tool or cutter was designed to be sharpened. Leitz's years of experience as a tool manufacturer is evident in the quality of its sharpening, a sharpening quality which gives you a tool with "as new" quality and performance.

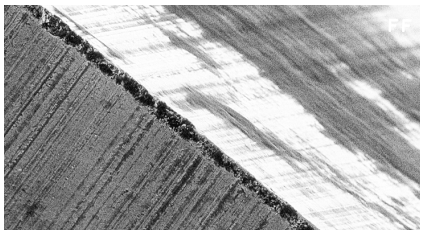
Quality assurance



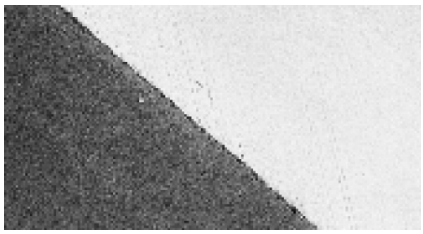
Quality is the focus of every Leitz service station. The DIN ISO 9000 certified quality system ensures one quality standard worldwide giving consistency aiding your profitability.

Leitz service stations, as well as sharpening your tools, make minor repairs to the tools such as replacing damaged teeth.

Premium Service



HW-cutting edge
standard cutting quality.

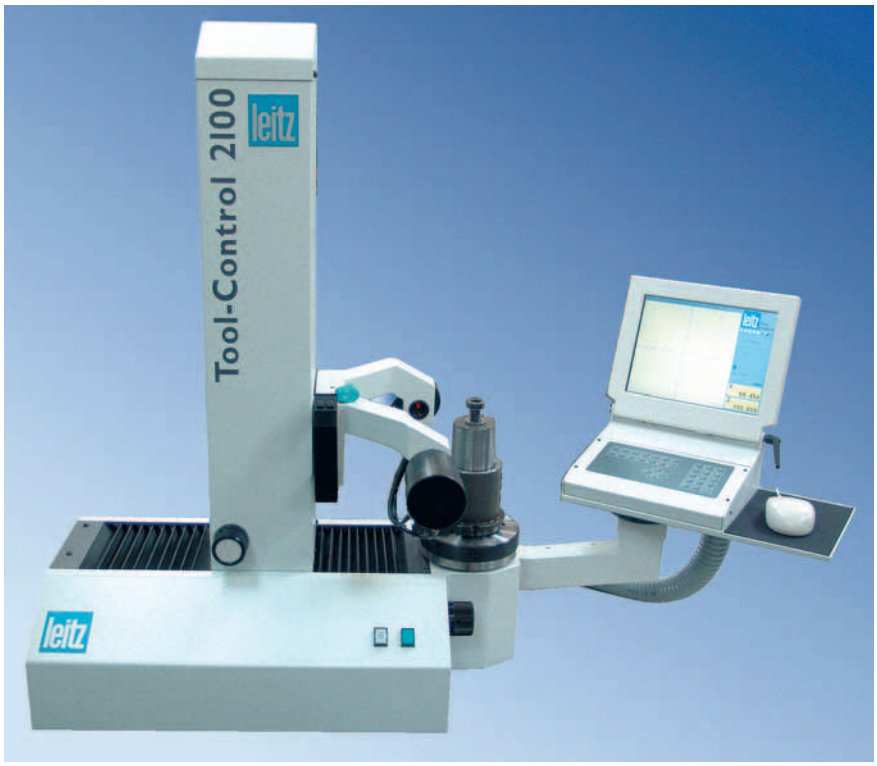


HW-cutting edge
Leitz micro-finish.

Some Leitz service stations offer a premium service making handling your tools easier, raising productivity and efficiency and giving you cost benefits. For example, tools can be mounted on their machine interfaces (e.g. an HSK 63 F chuck for a CNC-router) and sharpened on the interface. This significantly improves the concentricity giving a higher machined quality and longer tool life.

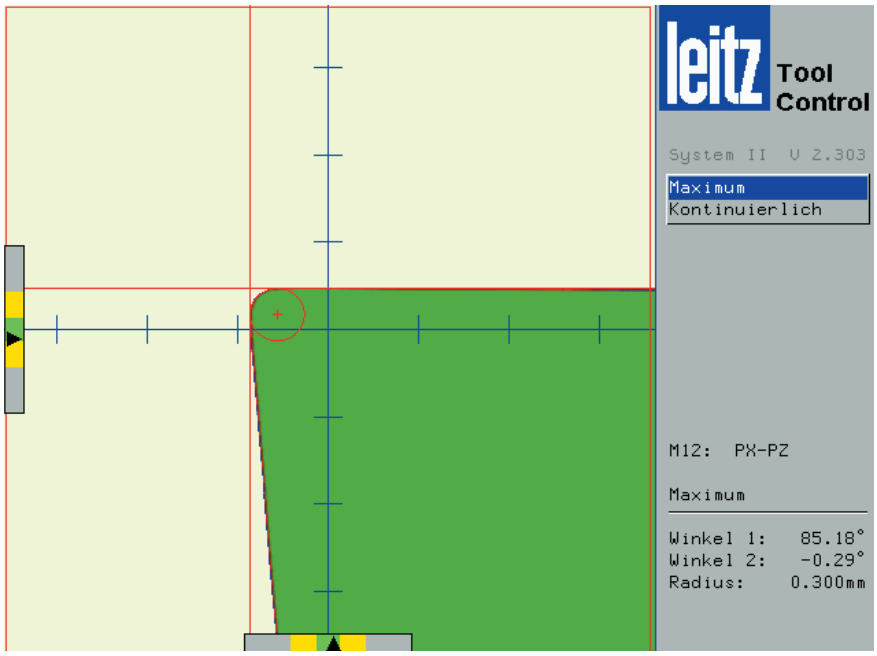
A polished finish is possible when sharpening sawblades or cutters, again improving the cut quality and tool life. However, polished edges are only beneficial when machining homogenous materials as contaminations can damage the cutting edge.

Measuring stand



Costs – time and money – from test pieces and data input on CNC-machines are no longer a problem when the tools are measured prior to use and the setting data downloaded automatically to the NC-control. This saves up to 70 % of the set-up costs. Leitz-service is equipped with all necessary measuring and set-up equipment to give you this service, a service to increase your efficiency.

Measurement by projector



All machines, not only CNC's, benefit from pre-measured tools. Measuring, adjusting and pre-setting tooling sets quickly pays for itself. To rely on making test cuts, demount, clean, adjust and remount a tool involves significant set-up costs. Specific points are measured with a profile projector.

Optical measuring and setting unit

Tool-Control

Type	Version	Spindle-clamping	D max.	L max.	ID	
1100	Projector Ø 100	none	230	370	**081420**	□
2100	Camera	pneumatic	420	465	**081419**	□

Accessories

Tables and label printers

Description	ID	
Metal table for Tool-Control equipment	**081489**	□
Stylus label printer, serial, for direct connection to all Tool-Control equipment	**081480**	□
Labels for stylus printer	**081327**	●
USB thermo label printer for connection to Tool-Control equipment ID No. 81419	**081325**	□
Labels for thermo-printer	**081326**	●

Adaptors

Description	ID	
Adaptor SK 50/SK 40	**081030**	●
Adaptor SK 50/SK 30	**081031**	●
Adaptor SK 50/HSK 63 F	**081040**	●
Adaptor SK 50/HSK 50 F	**081045**	●
Adaptor SK 50/HSK 85 WS	**081052**	●

Clamping arbors

Description	NL	ID	
Clamping SK50/Ø16	30	**081126**	
Clamping SK50/Ø30	50	**081038**	●
Clamping SK50/Ø35	50	**081047**	
Clamping SK50/Ø40	50	**081048**	●
Clamping SK50/Ø50	50	**081127**	●

Reducing sleeves

Description	NL	ID	
Reducing sleeve Ø20 to Ø16	20	**028314**	●
Reducing sleeve Ø35 to Ø30	20	**028291**	●
Reducing sleeve Ø60 to Ø50	20	**028315**	●
Reducing sleeve Ø80 to Ø50	20	**028316**	

Collet chuck

DL mm	Clamping range mm	ID	
Collet chuck SK50 with setting screw	2 – 25	**081033**	●
Sickle spanner for collet nut		**005458**	●

Collets see collet chucks PM 350-0-05

● available ex stock
□ available at short notice
Instruction manual visit www.leitz.org

Leitz Tool Control devices allow for tools to be
– measured – without contact
– default set – without contact
– monitored – without contact
– determine tool data such as radius, angle, distances etc.
– Wrong tool settings which might lead to machine damage can be avoided with the set–up device.
– The machine is not used as a set-up device.
– Sample workpieces no longer necessary.

The following designs are available:

Tool Control 1100 with projector
ID 081420

– Projector diameter 100 mm
– 20:1 maginfication
– Radius template
– 1 fixed and 1 pivotable cross-line
– 15 mm high LED displays
– zero point memory
– interface RS 232
– display accuracy 0.001 mm
– extensive measurements

Tool Control 2100 with camera
ID 081419

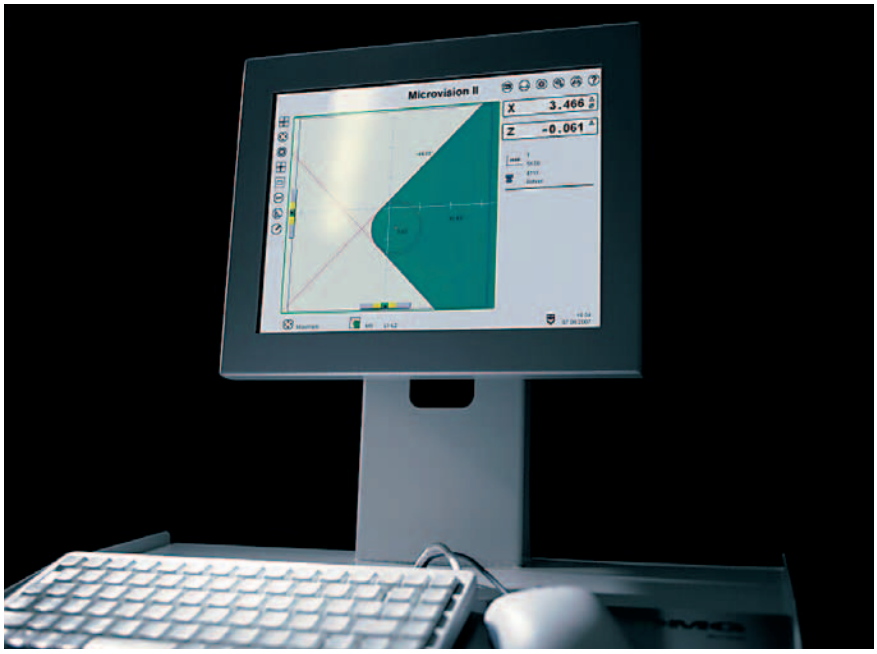


Image processing Microvision II

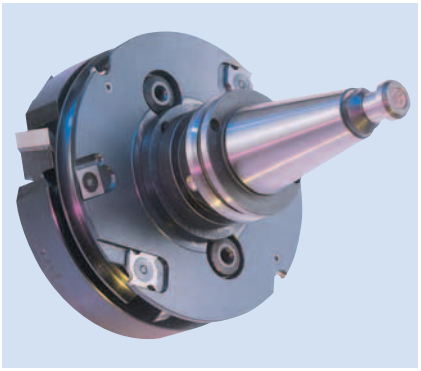
Image processing Microvision II
– 10.4" colour TFT monitor
– camera with telecentric objective
– measurements with fixed and overhung cross-line
– display accuracy 0.001 mm
– automatic recognition of the measurement process by contour recognition
– quality control of cutting edges by live images
– password protection
– tool memory for 1,000 tools
– reference point memory for 99 reference points
– absolute/difference/chain measure display
– radius/diameter switch
– Ethernet hardware interface
– USB interface for thermo-printer
– serial interface for data output to line printer or PC work station
– membrane keypad suitable for shop floor use

Technical data

	Unit	Tool Control 1100	Tool Control 2100
Length X	mm	115	210
Length Z	mm	370	465
Max. tool diameter	mm	230	420
Adjusting spindle steep taper SK50		●	●
Manual operation		●	●
Profile projector 100 mm		●	
Camery with Microvision II image processing			●
Display accuracy	mm	0.001	0.001
Concentricity	mm	0.002	0.002

	Tool Control 2100 with Microvision II
Measurements	
Radii	●
Angles	●
Distances	●
Tool memory	1000
Absolute/difference/chain measures	●
Radius/diameter switch	●
mm/inch switch	●
Hold function	●
Contour measurement	●
Live images cutting edge control	●
Cross-line fixed/overhung	●
Measuring window freely definable	●
Adaptors	
Zero point monitoring	●
No. of adaptors	99
Data output	
Label printer	optional
Line printer	optional
Output to RS 232	optional
Output to USB	optional
Output to Ethernet	optional

Chip coding



A microchip in the tool or clamping interface is coded with all the relevant tool geometry and safety data. The microchip is identified and read by the machine without contact. Besides reducing set-up time, this technology also improves operating safety.

Chip-coding-hardware
Chip-coding-software and a PC work station are necessary for operation.

Description	ID
Data-transmission-package for Balluff Data chip, consisting of: Read-/write head, power pack and PC-connecting cablel	**081305** □
Balluff writing and reading head casing for HSK 63 F interfaces	**081324** □

Chip-coding-software
For coding and decoding data chips

Description	ID
Chip-coding-software	**081351** □

Connecting-cable
For direct transmission of measurements from Tool-Control to PC work station

Description	ID
PC-connecting cable for Tool-Control ID No. 81401, 81420 and previous designs Tool-Control ID No. 81421, 81403, 81402, 81410, 81404, 81411	**081306** □
PC-connecting cable for ID No. 81419 as well as 81425	**081328** □

Data-chip-conversion

Description	ID
SK 40 draw bolt with data chip Balluff	**081601** □
Chip-mounting-unit Balluff for bores Ø 12 x 6 for HSK interfaces, 511 Bytes	**081309** □
for HSK interfaces, 2047 Bytes	**081330** □

Data chips mounted by Leitz.

The right tool, the right quantity, the correct quality on time and on site – tasks to be monitored to keep your production running. These non-value-adding activities absorb time and resources, both would be better used on other activities.

When it comes to supplying tools, Leitz has international experience and can give you a customised system. Whether a Kanbansystem, consignment stocks or complete care – our specialists can suggest a concept to meet your needs.

Leitz studies your current processes to quantify the demand, both type and quantity of tools. Our specialists use this data to create a customised, technical and economic logistic concept. Leitz can also advise on storage systems, stock control systems and access authorisation.

Such systems have the following advantages, all can be measured financially:

- Stock reduction.
- Guaranteed tool availability.
- Correct tool for your requirements.
- Reduced downtime arising from missing tools.
- Payment related to tool usage.

Tool Management Systems are complex and require professional control supported by special software. The Tool Information Management (TIM), software developed by Leitz, is an integrated component of any tool control system. TIM controls the tool database, records the condition and location of tools, checks tool availability, generates orders for sharpening and replacement, and can be used to relate the tooling costs to a product and/or machine. New dimensions can be transmitted by the interfaces directly to the CNC-machines and data can be exchanged with the ERP-system.

Demand for tools and the money spend on tools are reduced as the tools are easy to locate and replacement tools ordered on time through the automated systems.

Controlling the tool life and run time aids tool cost control and process cost calculations. TIM is the central link and database for all the items in the Tool Management System. Measurement equipment linked to TIM can supply the tool geometry data online and TIM can program a microchip embedded in the tool with its geometry and technical data. TIM can transmit the tool data directly to the machine control systems online by interfacing with a company's PPS system or via a pocket-PC of one of our service staff ensuring up to date service and product data.

Controlling your tools with TIM helps you meet all the demands of a modern production plant.

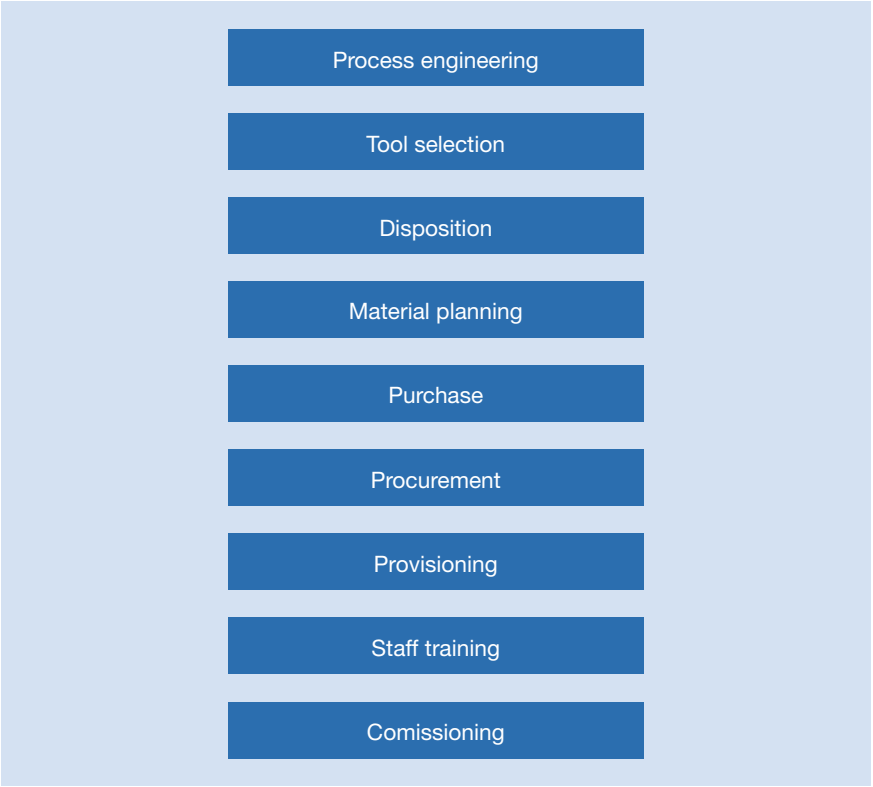
Functions

- Administration of tool data (description, drawings, characteristics).
- Condition of the tool, regrinding cycles, tool reference measurements.
- Tooling costs for products/machines.
- Disposition and ordering.
- Tool availability.
- Installation plans for machines, tooling lists.
- CNC-interfaces with correction-data transmission.
- ERP-system interfaces.

Advantages

- Easy location of tools.
- Automated ordering of tools.
- On time disposition of required tools.
- Reduced tool stock.
- Control over tool run time.
- Information on tool condition.
- Control of tool costs.
- Support for activity-based accounting.

Description	ID
Master database	**82000**
Ordering module	**82004**
Accounting module	**82003**
Service module	**82001**
Tool assembly	**82002**
Measuring equipment administration	**82005**
Stock module	**82006**
ORACLE Workgroup Server	**82007**
Initial installation	**82009**
Complete software package	**82011**
TIM Compact	On request
Standard module for SAP R3 connection	On request
Configuration for SAP R3 on site	On request
Additional licenses	**82008**



Complete Care – a package with precise costs so you can concentrate on your core business. Leitz would like to show you our skill in optimising your prcesses.

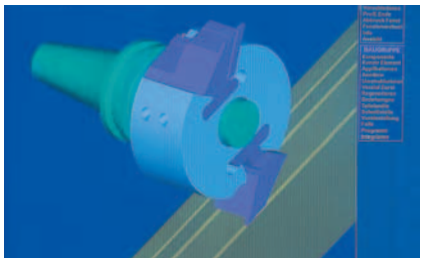
It's a fact, tooling costs account for less than 1% of your total costs, but not having the tools available can have a dramatic impact on costs, and these costs are much higher than those of the tools.

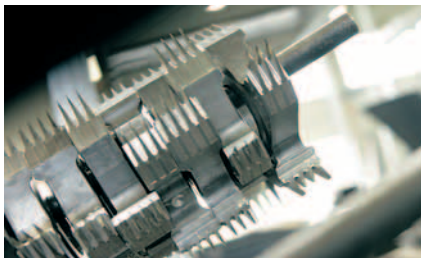
Leitz works with you developing a suitable Complete Care package. We take care of all your tooling needs; invoicing on the basis of a product-specific, agreed-upon value. At the start of the program, process and costs analyses establish the starting point and current situation. From here we develop a customised concept outlining the potential for rationalisation, with payment related to the results.

Once the logistics are established, secure supply is established. Existing tools can be included in the overall concept.

Customer Care is not a short term project but a long-term partnership offering mutual benefits. Within the contract period a rationalisation program can be set up for an agreed price, so that you can calculate and plan for the future not only with fixed but with optimised costs.

Many customers worldwide already have positive experience with Complete Care, including some of the industry's leading companies.



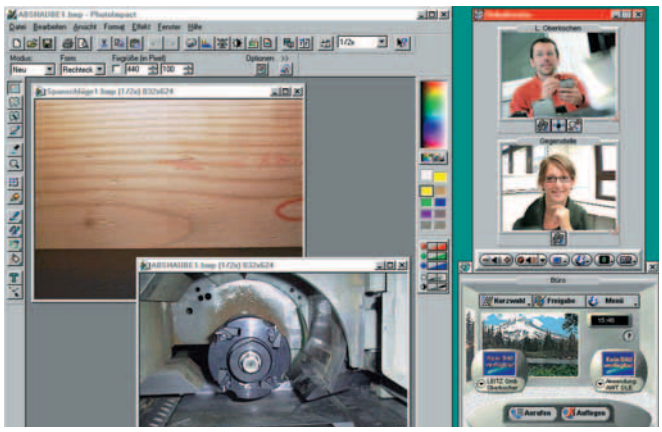


Every day our engineers and technicians are faced with varying production challenges. To help you meet these and be competitive in the future, we can show you how to optimise and achieve economic processing solutions. We offer you this service either on projects, specific applications or complete production processes. Of course at all times confidentiality is guaranteed, and the solutions are designed to meet your needs and requirements.

Leitz has the know-how. Our engineers' proposals can be charged on a time basis, or based on the cost and quality improvements.

We will also help raise your employees level of knowledge. Training and training workshops give you and your employees information on the latest developments in woodworking technology.

Ask us for our support!



Introduction of innovative methods and tools.

Description	ID
Product workshop – window manufacturing	**82200**
Product workshop – parquet manufacturing	**82201**
Product workshop – furniture manufacturing	**82202**
Product workshop – woodworking	**82203**
Process workshop – window manufacturing	**82204**
Process workshop – parquet manufacturing	**82205**
Process workshop – furniture manufacturing	**82206**
Process workshop – woodworking	**82207**
Process optimisation – window manufacturing	**82208**
Process optimisation – parquet manufacturing	**82209**
Process optimisation – furniture manufacturing	**82210**
Extraction systems optimisation	**82211**

Charges exclude travelling and consultancy costs.

Products and technologies are becoming ever more alike because of the nature of work. Developing competitive advantages today depends more and more on knowledge and motivated employees.

Even so high-tech tools will only perform at their best if used and set up correctly. Part of the Leitz-service program is educating and training customers and their employees in tooling and tooling applications. Training can either be at Leitz or in-house.

In addition to basic information on the technical, design and metallurgical characteristics of tools, advice is given on their suitability for specific applications. Information is also given on expected performance, comparison with other types of tools and cutting materials plus instruction on how to handle and maintain tools.

Many benefits come from the operator training program. It helps them control and monitor the process conditions and parameters, identify factors detrimental to performance and faults that may arise in the process.

Description	ID
Tool application – windows	**82100**
Tool application – parquet flooring	**82101**
Tool application – furniture	**82102**
Tool application – woodworking	**82103**
Tool handling – window	**82104**
Tool handling – parquet flooring	**82105**
Tool handling – furniturel	**82106**
Tool handling – woodworking	**82107**

Charges exclude travelling and consultancy costs.

There's much work in commissioning a new production line – the investment has been made and you want the return on that investment as quickly as possible.

Tools play a significant part in the success of the project.

Here Leitz-service can play its part. We will have already supported you when we designed the tools and when the product or production line was run for the first time. This way we ensure you achieve your performance expectations.

You deserve only the best.

Name	ID
Mounting and putting into operation	**82400**

Excluding travel expenses and charges.

11. Profile tool systems

Profiling with Leitz: The perfect solution for every application

The market requirements for profile tool systems are diverse. On one hand, high numbers of the same parts, on the other small batches of customised products. A company cannot be expected to have a complete tool set for each profile, even less if the tool service life exceeds the life of the profile. There is the need for the right tools for efficient production. Whether windows, doors, furniture boards or panels – Leitz provides you with the perfect solution for every application.

Field of application and features	ProFix-Plus	ProFlex	ProFix C	ProfilCut	ProfilCut-Plus	Vari-Form	PowerKnife System PKS®
Preferred applications	Furniture, windows, doors, panels, glue-joint profiles	Furniture, panels	Windows, doors	Furniture, windows, doors, panels	Furniture, windows, doors, panels	Furniture, panels	Panels, mouldings
Prototypes, samples, small series		●				●	●
Small and medium series		●		●	●	●	●
Medium and large series	●		●	●	●		●
MAN feed for spindle moulders				●	●	●	
MEC feed for continuous feed and machining centres	●	●	●	●	●	●	●
Multi-purpose profiles	●	●				●	●
High-speed delivery programme for customised profiles		●				●	
Sharpenable	●	●	●		●	●	●
Diameter and constant profile	●	●	●	●			
Set tools with staggered cut for processing suitable material	●		●	●	●		
Aluminium design	●	●	●	●	●		

ProFix-Plus

The high-performance profile tool system for industrial applications. Lowest operating costs for high volumes. Can be resharpened with constant profile and constant diameter. Highly precise repeatable process, hence no adjustment after knife replacement.

ProFlex

Knife system compatible with ProFix, designed for wide range of products and medium processing quantities. High-speed spare knife delivery service.

ProFix C

Complementing the resharpenable ProFix-Plus constant tool system for slot and tenon joints and as counter profiles.

ProfilCut

Multi-functional profile tool system for a perfect finish. Standardised clamping system for profile and turnblade knives. For small and medium series production.

ProfilCut-Plus

Sharpenable version of ProfilCut, but not constant in profile or diameter.

VariForm

Modular profile tool system for all applications with excellent value-for-money-ratio. For prototype, individual or small series production.

PowerKnife System (PKS®)

The compatible tungsten carbide knife system for multi-purpose cutterheads with serrated back knives.

More efficient, more powerful, more multi-purpose

ProFix-Plus is unique worldwide. A system leaving nothing to be desired.

Using the same knives in several tool bodies allows production of exactly the same profile on continuous and stationary machines. The possibility to quickly change any profile in one body enables production of repeat profiles on the same line efficiently.

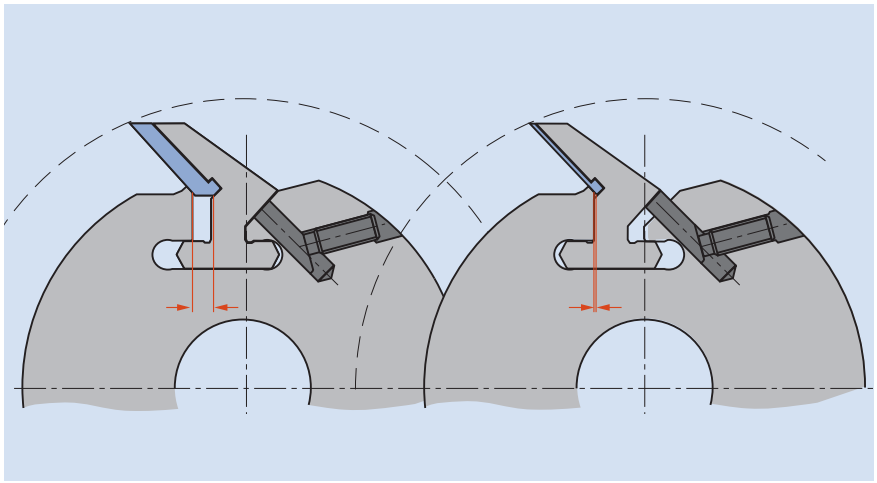
The construction design principle – resharpenable knives yet with the same profile – make tool dimension measurements and machine setting adjustments unnecessary. Production instead of proving.

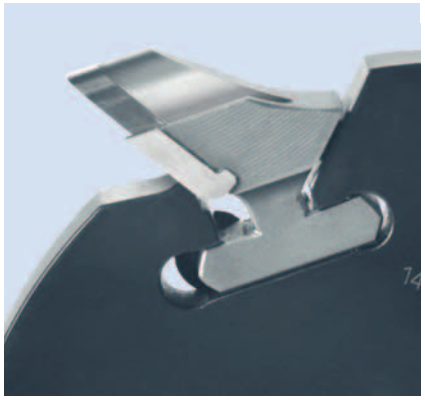
ProFix-Plus is a pace-setting solution of the future. Its system variability offers technical, quality and economic advantages in production of panels, doors, windows, staircases and furniture, and interior and external construction.

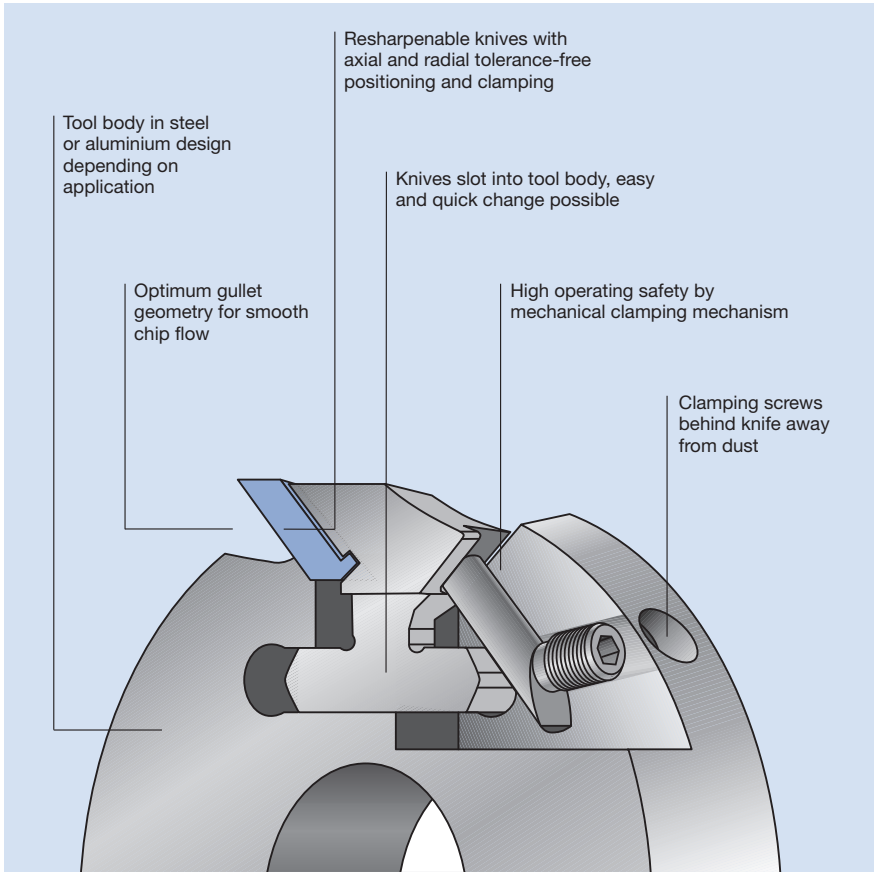
The unique construction design principle

ProFix is different from all other multi-purpose profile tools. Its unique profile and diameter precision are guaranteed, despite repeated sharpening and varying knife thicknesses from the beginning to the end of its life. The patented slot guides the knife to the face stop and is clamped in place when the sharpened knife is inserted into the tool body.

The knives are securely fixed in the tool body T-slot and clamped radially by the centrifugal force.



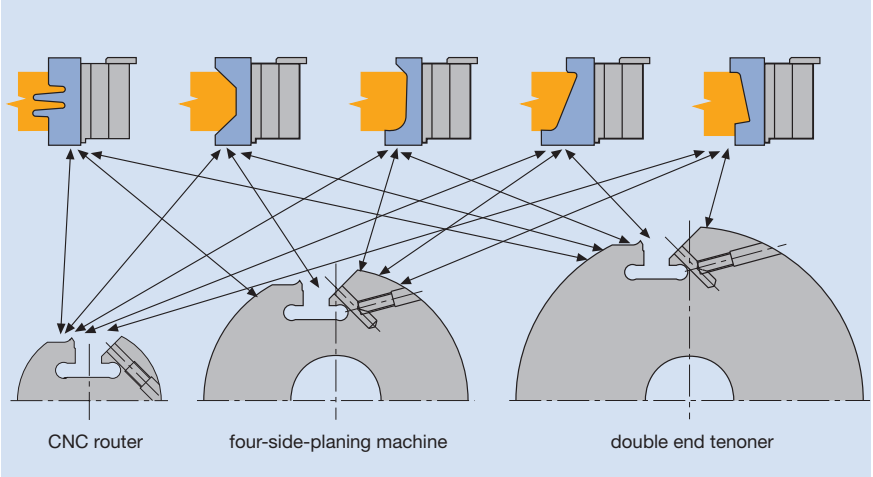




The modular manufacturing system

ProFix tools use tool bodies of different sizes depending on the machines in use. The tool bodies can have between two and six profile knives depending on the manufacturing process and finished product. One single tool body can have profile knives of different shapes. In turn, the same profile knives can be used in the tool bodies of different sizes. This modular construction and choice of combinations make ProFix an unbeatable multi-purpose system tool for unlimited profile applications both on stationary and continuous machines.

The modular ProFix system: Flexible manufacturing of profiles. Multi-purpose application on several machines.



Tool bodies of different sizes for stationary and continuous machines.

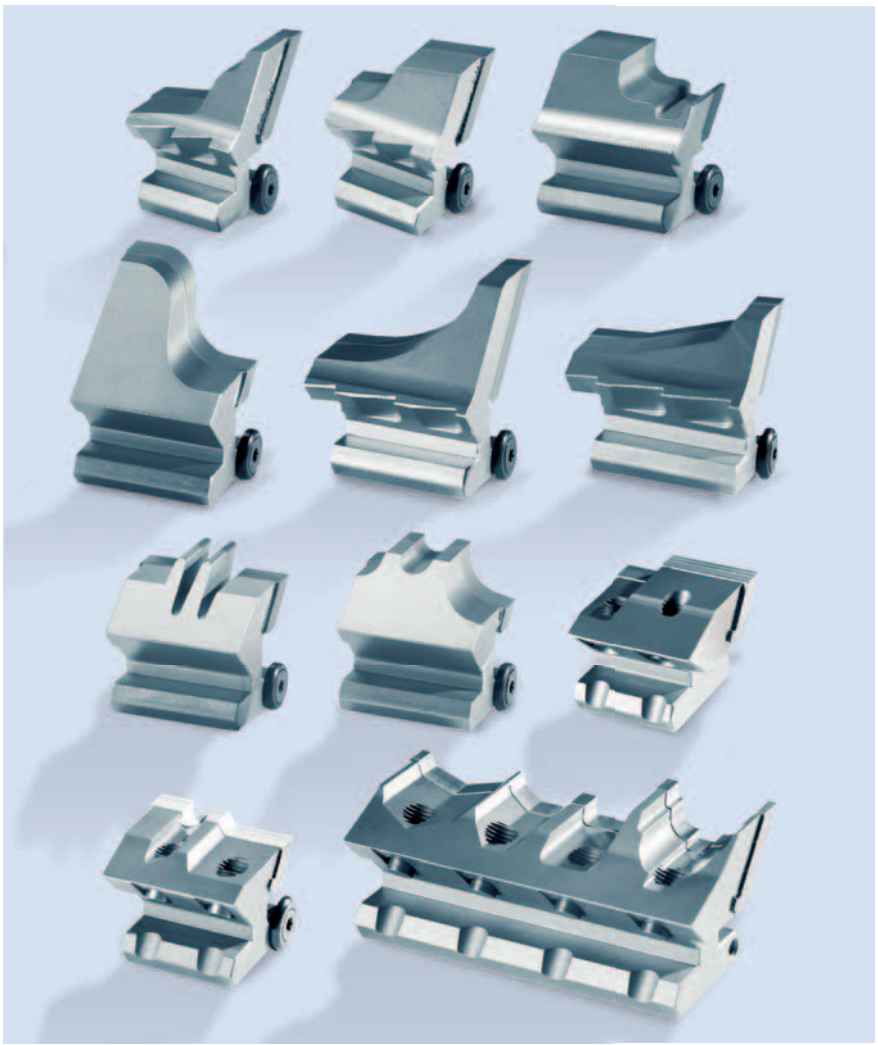
The exemplary variability…

Only a small selection from the wide range of products possible with the modular Profix-Plus system. Same knives with different cutting geometries, used in several tool bodies depending on the type of machine allow for a diversity; no other tool system can offer such high efficiency. The basic principle of technology and multi-purpose and the design spectrum fulfil the customer requirements for cutting geometries and cutting materials matched to the needs of shape and specific materials.

ProFix-Plus enhances the manufacturing options and, at the same time, reduces production processes and set-up times. Last but not least, ProFix-Plus improves the processing quality and increases the overall efficiency.

ProFix knives are available as PF 20 profile depths up to 20 mm, and as PF 25 profile depths up to 25 mm. The cutting widths range from 12 mm to 120 mm. Depending on the application different cutting angles are available:

25° for softwood and cross grain processing
20° for hardwood and mixed wood processing
15° for panel materials and for splintery wood.



…and easy handling

The ProFix-Plus system is characterised by ease of use and product quality! The advanced ProFix-Plus profile knives give excellent cutting quality. The special Leitz reptile ground finish, with the polished finish cutting face, produces razor-sharp cutting edges.

The knives can be resharpened. No setting gauges or special tools are required to change the knives. Machine corrections, usually necessary after resharpening, are a thing of the past. ProFix operators do not need a projector to measure the tools. Test pieces to check the workpiece dimensions are no longer necessary. Production instead of proving.

Loosen the clamping screw, remove and re-insert the knife. Tighten the clamping screw – the knife change is completed quickly and precisely.

The ProFix-Plus knife for profile depths of 20 and 25 mm. Reptile ground finish and mirror finish cutting face result in razor-sharp cutting edges.

ProFix and the innovative advancements ...

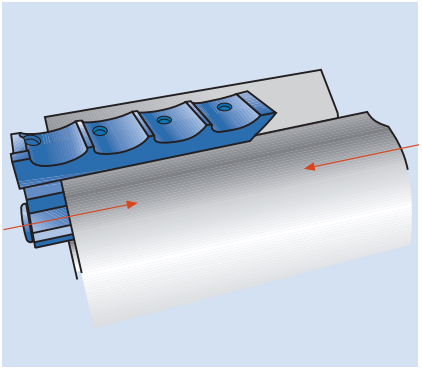
Only the finished product, but also the machine line desgin – the ProFix-Plus family proves its superiority by extending the ProFix basic range, by introducing new system components. This tool system uniquely allows for comparable modular variability and compatibility.

The advantages and diversity make the ProFix system the ideal tool basis, regardless if the machinery is for a wide range of products or for specific products.

ProFix F – for higher flexibility

The supplement F means increased flexibility. New ProFix profile knives in different tungsten carbide qualities allow for varying cutting widths up to 100 mm in one tool body. Moreover, the profile knives can be positioned any place on the tool body. The profile construction based on a constant zero diameter reduces machine set-up after profile change.

ProFix F is the perfect solution for any four-sided moulder applications, double-ending tenoner or stationary overhead routers with frequently profile changes.

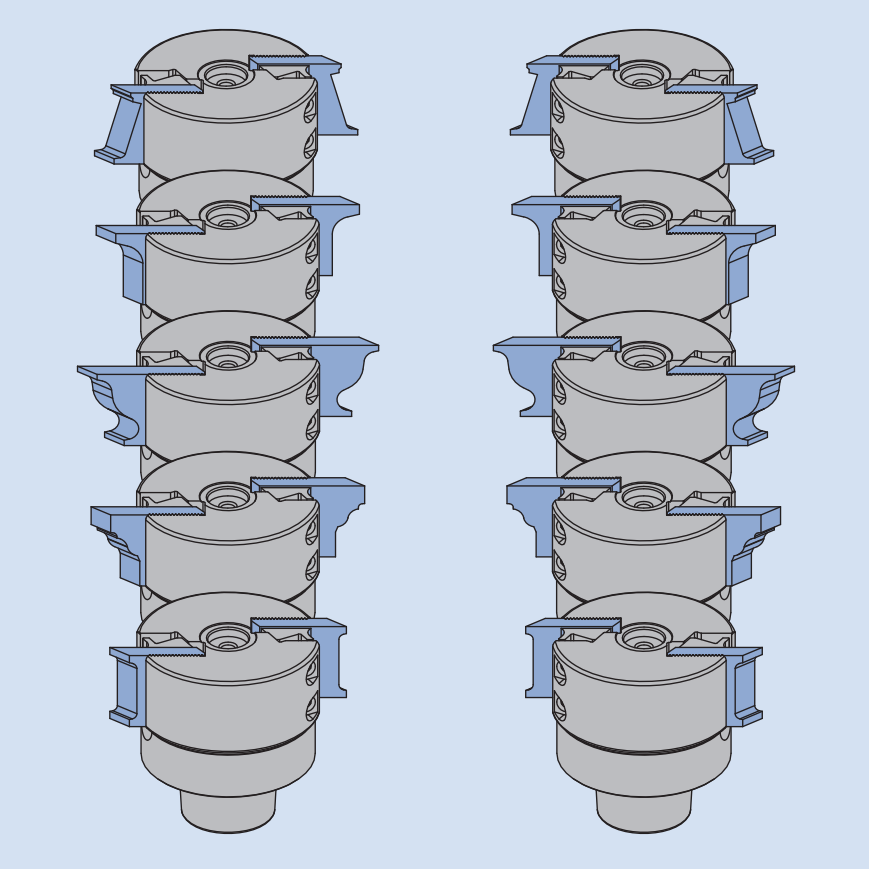


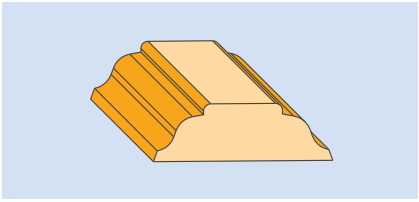
Knife insertion in the machine possible from left or right.

ProFix F incorporates a VariPlan moulding cutterhead, e.g. of manufacturing door frames of different widths etc.

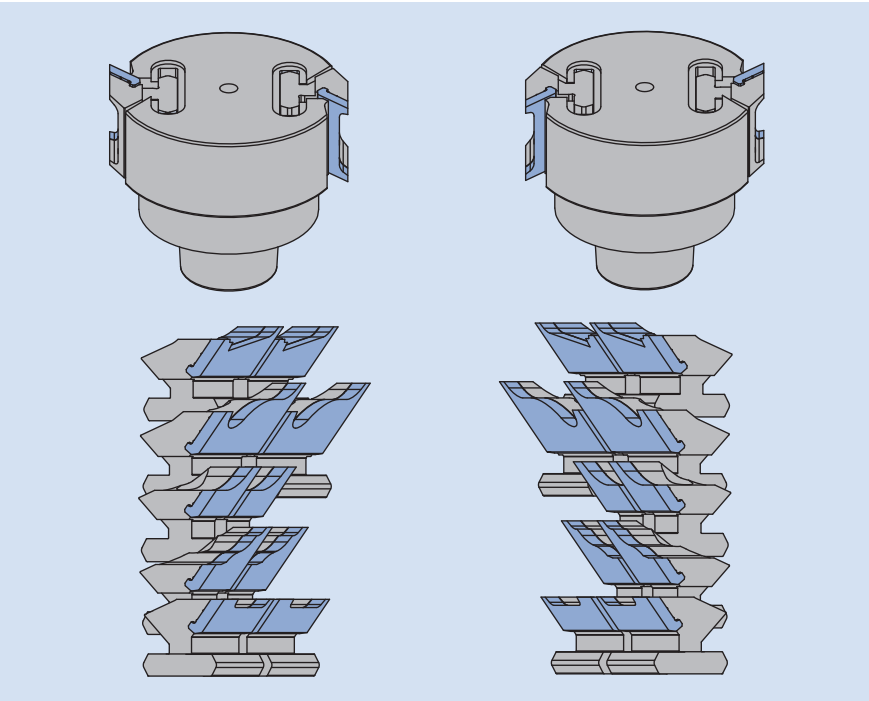
ProFix reduces the tool changer

Compared to conventional profile cutterheads made to a unique profile, ProFix reduces the number of tools in the magazine. Only profile knives instead of complete tools are required. The design allows for precise profile replacement in the tool without set-up or measuring.





Example strip production:
Stockage of ProFix profile knives instead of complete profile tools.

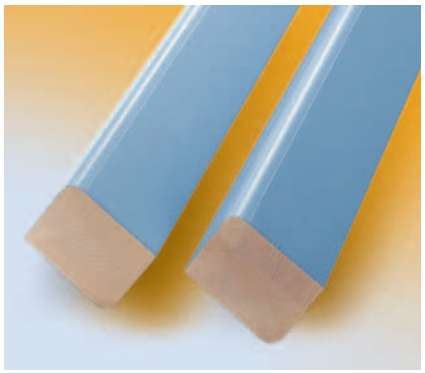


ProFix S – for higher speed and high precision

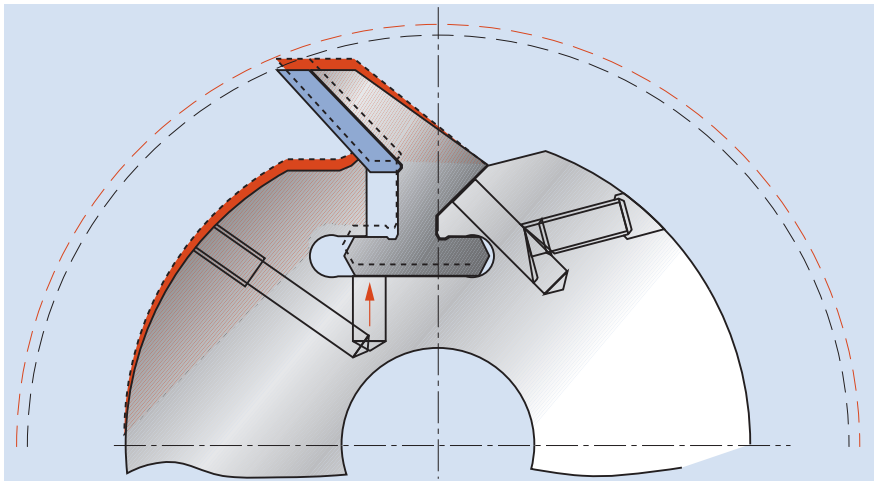
Combined tools with axial run-outs tolerance at the cutting edges of between 0.02 to 0.07 mm. That means the surface finish is made by a single knife, limiting the feed speeds for a high profile quality, e.g. to 12 m/min at a tool rotation of 6,000 min^{-1}. ProFix S offers a completely new dimension to concentricity and run-out accuray, crossing these limites on existing production lines.

ProFix S precisely positions the knife run-out accuracy of < 5 µm (with hydro clamping) by changing the knife position through a patented hydrostatic system in the tool body.

ProFix S = High Performance Cutting (HPC)

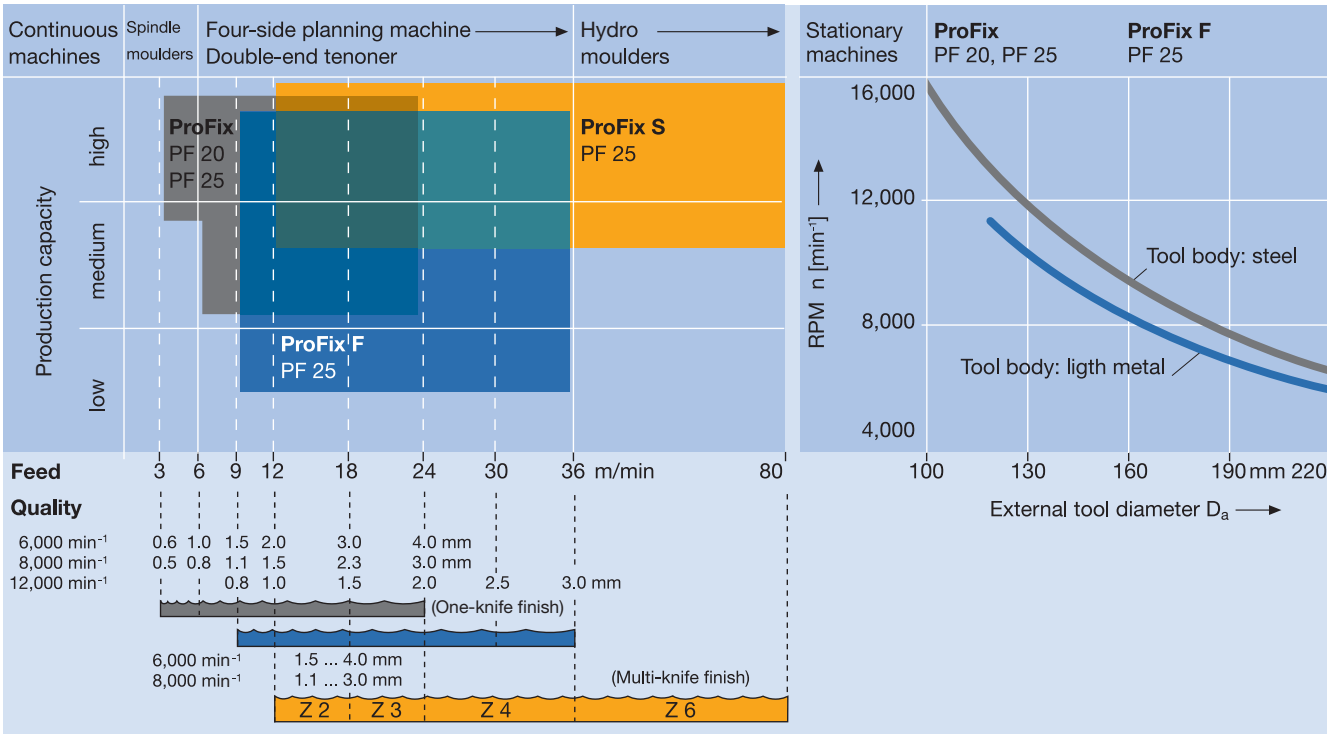


Two profiles manufactured at 36 m/min feed speed (n = 6,000 min^{-1}, Z = 4) on the left with a conventional tool on the right ProFix S (without profile jointing).



Radial adjustment of the knife position by a hydrostatic system, the run-out tolerance is corrected to less 0.005 mm.

ProFix-Plus Overview



Performance data		ProFix PF 20		ProFix PF 25	ProFix F	ProFix S
	Unit	Tools with shank	Tools with bore	Tools with bore	Tools with bore	Tools with bore
Profile depth max	mm	20	20	25	25	15
Cutting width min/max	mm	12-45	12-80	12-100	20-100	20-60
Sharpening range	mm	4	4	5	5	5
Cutting speed max						
– steel tool body	m/s	80	80	80	80	100
– aluminium tool body	m/s	–	70	70	70	–
Concentricity	mm	0.05	0.05	0.05	0.05	0.005*
Cutting angle min/max		15°-25°	15°-25°	15°-25°	15°-25°	15°-25°
Shear angle from/to		0°	0°-20°	0°-25°	0°	0°-25°
Side relief angle		0°	0°	0°	0°	0°
Angular knife seating		–	8°	8°	–	–

* fine adjustment in connection with hydro clamping

Applications

For processing all common materials, including solid wood, panels and compound materials, as well as complete synthetic materials.

For producing panels, furniture, doors, windows and staircases interior and external construction.

On all machines, CNC overhead routers and machining centres, four-side moulders, Unimat 2000/3000, hydro moulders, double-end tenoners.

Special features

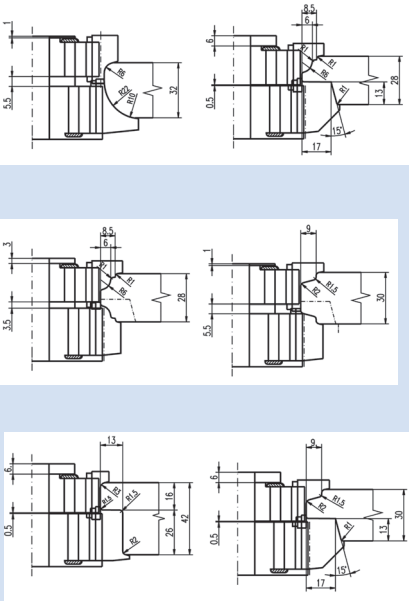
Only multi-purpose tool system with resharpenable profile knives and guaranteed profile and diameter constancy.

Repeatable profile manufacture without tool measurement, test cutting or machine adjustment.

High overall efficiency.

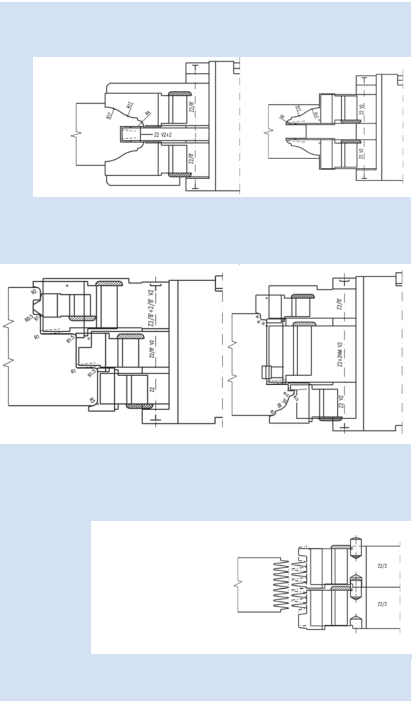
Further system examples …

As an example of this specially designed ProFix system for manufacturing high-quality door and furniture profiles, the variability of the system is evident. By only changing the knives in the same tools, almost unlimited combinations of profiles can be produced. This meets the customers' requirements quickly and efficiently and matches the changing trends in interior and furniture design.



… optimum universal, but yet special

ProFix not only has advantages in applications where flexibility is in demand. When high running metre performance is required, ProFix special solutions prove unbeatable, as they offer the opportunity of resharpening – for example in window manufacturing, for glue joints, or even on manual feed spindle moulders.



The conclusive efficiency …

The diagram shows the efficiency of the ProFix-Plus system compared with conventional profile tools without resharpening. Basic features of both tool system are a diameter of 180 mm, a cutting width of 40 mm and 4 knives.

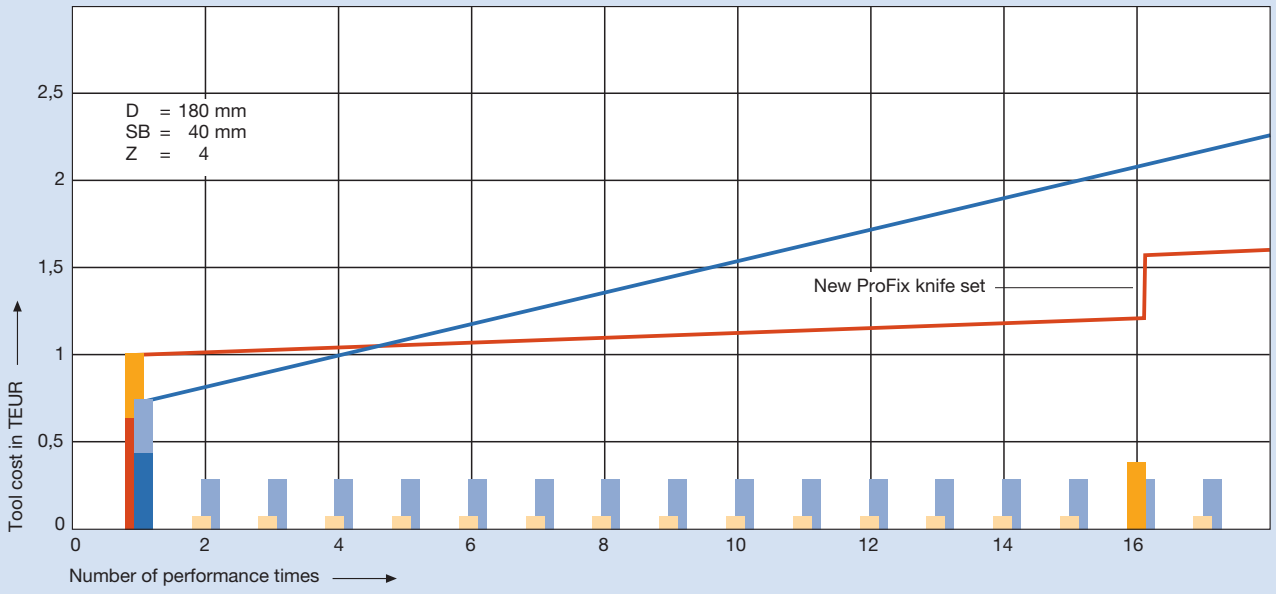
Whilst the conventional profile tools requires 15 replacement tips, ProFix can sharpen fifteen times in the same period. The minimum thickness of the ProFix-Plus knives is generally reached only after the fifteenth sharpening when a new set of knives are required.

The comparison confirmed in practice, shows a cost reduction of 30 %. Given the increasing competition and pressure on costs, this represents an economic advantage clearly attributed to ProFix-Plus.

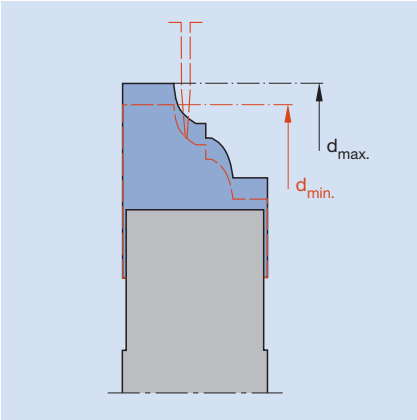
ProFix-Plus tool body
ProFix-Plus Sharpened knives
ProFix-Plus sharpening

Profile cutterhead
Replacement profile tips

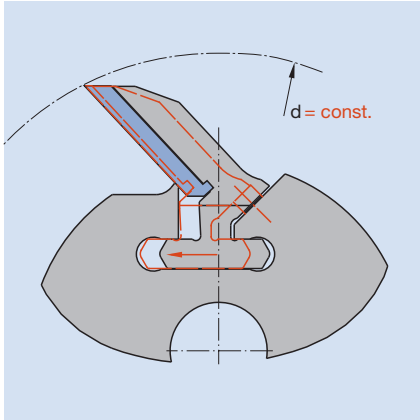
Development of tool costs by time



Reduction in set-up time with ProFix-Plus by measurement constancy



Conventional profile cutterheads change in profile and diameter after every resharpening
– unproductive set-up time
– Adjustment of spindles
– Test pieces



ProFix-Plus constant tools with memo function for profile and diameter
– measurement constancy for entire service life
– no tool measurement
– production without test pieces

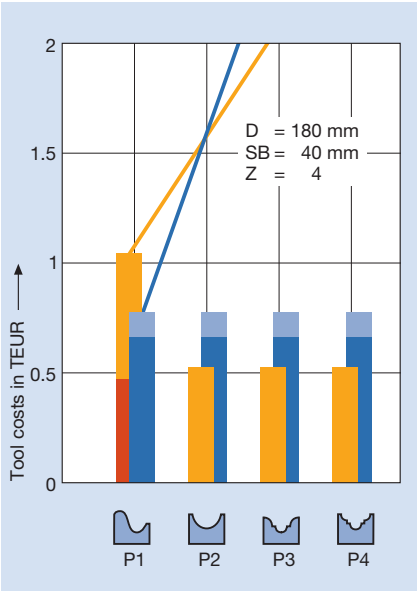
… and improved environmental compatibility

The same efficiency is achieved by comparing the cost subject to increasing profile diversity. If different profiles are manufactured frequently, not only different knives, but different tool bodies are required for conventional profile tools. This results in significantly higher costs of conventional systems. Already after three different profiles, the investment savings clearly speak in favour of ProFix-Plus and against conventional tools.

Relation of the profile diversity to the tool costs

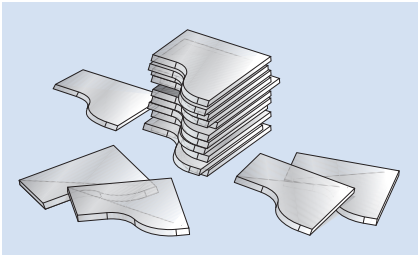
Last but not least, a comment on the enivronmental impact. The consumption of high-quality cutting material used in conventional, non-resharpenable tool systems is seven times higher than ProFix-Plus.

And, moreover, if a new tool body is required for each new, non-resharpenable profile, demand for steel or aluminium material increases.

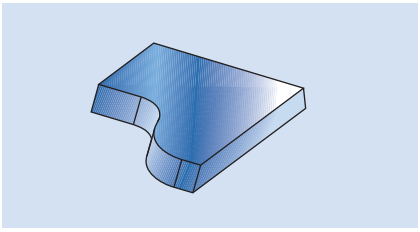


ProFix-Plus tool body
ProFix-Plus resharpenable knives

Profle cutterhead
Throw-away profile knife



16 conventional knife sets
(Z 4) = 3.6 kg



1 ProFix-Plus knife set (Z 4) = 0.54 kg

All-out efficient!

ProFix is combinable with the throw-away knife system ProfilCut. From this result unbeatable advantages e.g. in the window production:
Main profiles with high production quantity or profile areas within a tool which require design freedom, are designed in ProFix. Low-importance profiles with low production quantity are designed in ProfilCut. Thus you don't have to make any compromises regarding to the efficiency.

Increased cost effectiveness for flexible production of small batch quantities

The ProFlex knife system is compatible with ProFix F and was developed for industrial production companies whose customer-oriented strengths include an above-average range of profiles and quick delivery of medium batch quantities.

Here, ProFlex offers significant advantages over other systems, not least cost effectiveness: ProFlex guarantees the constant profile and diameter you expect from ProFix. Usually the knives can be resharpened three times. The spare knife costs are low as only the tip has to be replaced, not the knife body. The replacement tips are profiled by Leitz service as part of the quick delivery program.

Systematic profile and cutting material variety

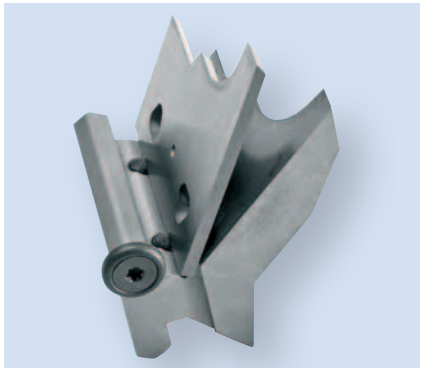
Together, ProFlex and ProFix make a unique system with qualitative and economic superiority. As system tools, the same knives can be used on different ProFix heads for different requirements.

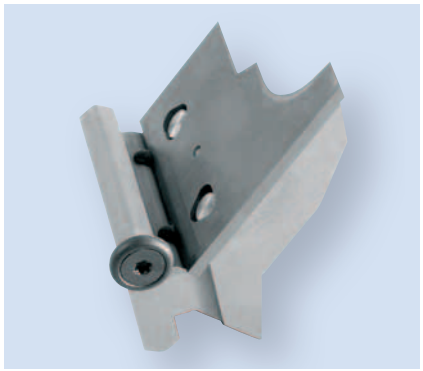
ProFlex knives have cutting widths of 30, 40, 45, 50 and 60 mm and profile depths up to 20 mm and cutting angles of 15, 20 and 25 degrees. Also, ProFix can have cutting widths up to 120 mm and profile depths up to 30 mm.

With ProFlex, we recommend tungsten carbide quality grade TC 30 cutting material for machining softwood and hardwood and the grade TC 10 F for machining hardwood, MDF and plastics. ProFix knives with HSS, HSS Marathon and PKD tipping are available for special requirements.

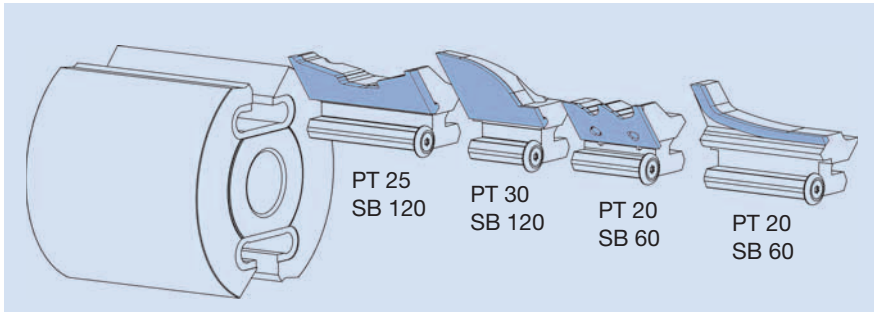
Typical applications

Mouldings, glue-joint profiles, dowels, planed timber with rounds, bevels and other edge profiles.



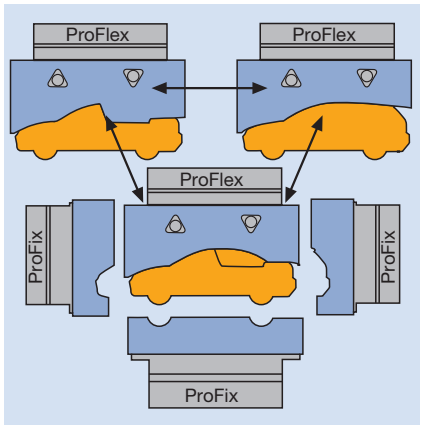


Variety of cutting materials
– HS
– TC
– DP



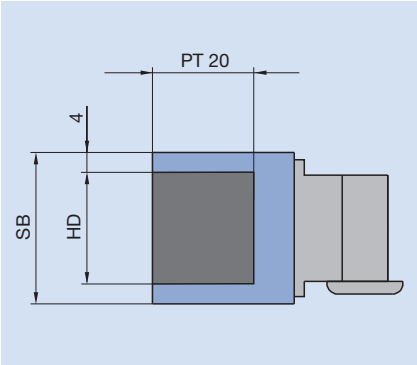
The ideal combination: ProFlex and ProFix

Different types of one and the same car model, such as a saloon estate or convertible! The chassis remains the same. This example illustrates the advantages of ProFix and ProFlex: ProFix is used for standard profiles with profile depths of 25 mm and high running performance (the common chassis). ProFlex is more economical for the profiled parts with low running metre requirements (saloon car estate or convertible).



Application information

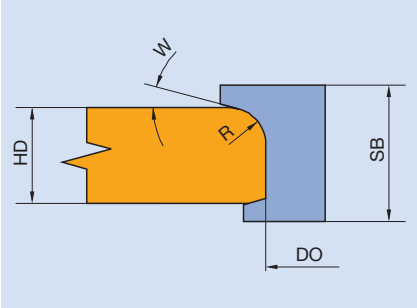
Example: Usable profile area of ProFix PF 20

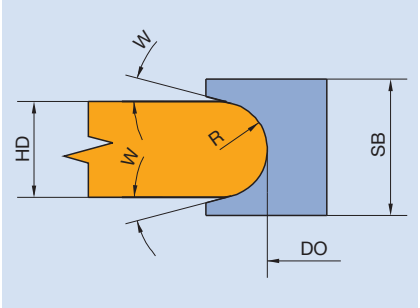


Cutting angle

The cutting angle is chosen depending on the machining requirements and the material to be processed.
Cutting angle 25° for softwood.
Cutting angle 20° for hardwood.
Cutting angle 15° for panel materials.

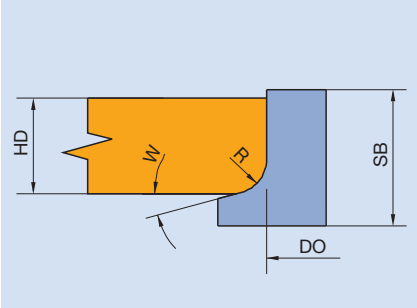
Shear angle (chip clearance relief)

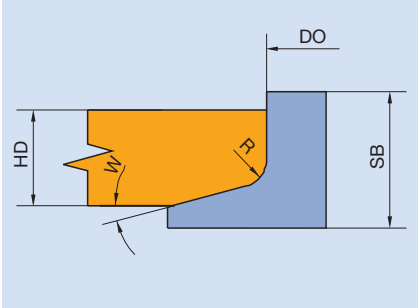




0° shear angle for all closed profiles such as e.g. round profiles, profile relief at least 10°.

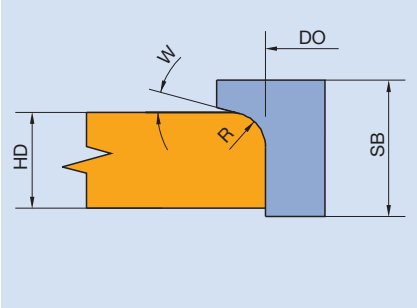
With shear angle top cutting first

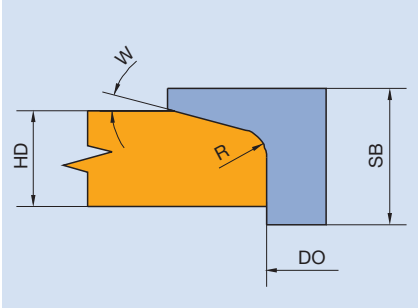




Shear angle top or bottom cutting first for all profiles open on one side with straight jointing edge and profile relief of at least 10°.

With shear angle bottom cutting first



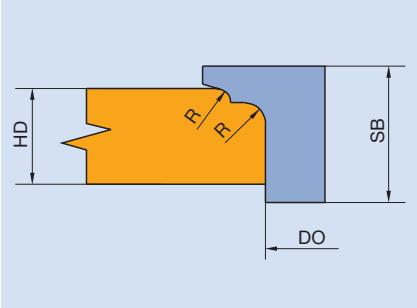


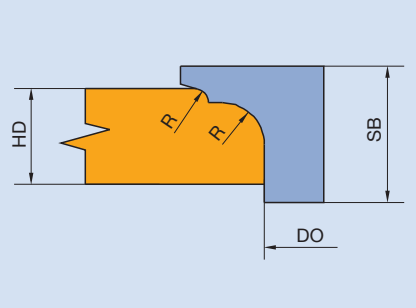
Knife seating 8° inclined, bottom cutting

Shear angle and knife seating 8° inclined for all profiles without profile relief.

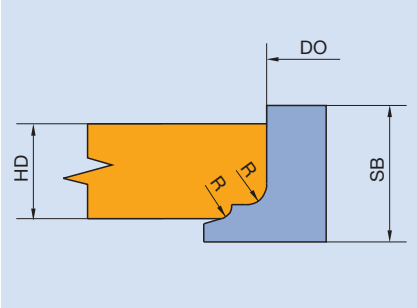
Please note:
ProFix knives do not have a radial lateral clearance angle! The knives must be mounted in an inclined position for profiles without lateral profile relief. For closed profiles without profile relief the knives must be mounted inclined alternately at the top and at the bottom.

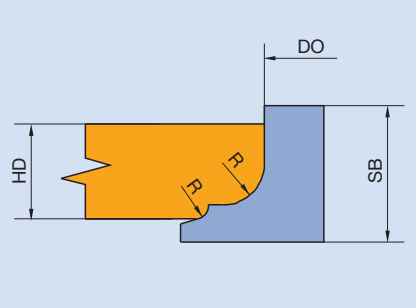
One tool in Z2 has Z 2 + 2, i.e. 4 knives on the tool periphery.





Knife seating 8° inclined, top cutting





Minimum zero diameter depending on Z 2 – Z 10

number of teeth	PF 20 with shank	PF 20	PF 25	ProFix S	ProFix F
Z2	56 mm	80 mm	116 mm	160 mm	100 mm
Z3		80 mm	116 mm	160 mm	100 mm
Z4		95 mm	128 mm	160 mm	125 mm
Z6		150 mm	180 mm	180 mm	170 mm
Z8		240 mm	300 mm	300 mm	210 mm
Z10		–	–	–	245 mm

The table applies for one-part tools.
The number of teeth corresponds to the cutting edges mounted in the tool.

Minimum zero diameter depending on the tool body bore

bore BO	PF 20	PF 25	ProFix S	ProFix F
20	80 mm	116 mm	160 mm	100 mm
25	90 mm	116 mm	160 mm	105 mm
30	95 mm	116 mm	160 mm	110 mm
40	105 mm	116 mm	160 mm	116 mm
50	120 mm	128 mm	160 mm	128 mm
60	130 mm	140 mm	160 mm	140 mm

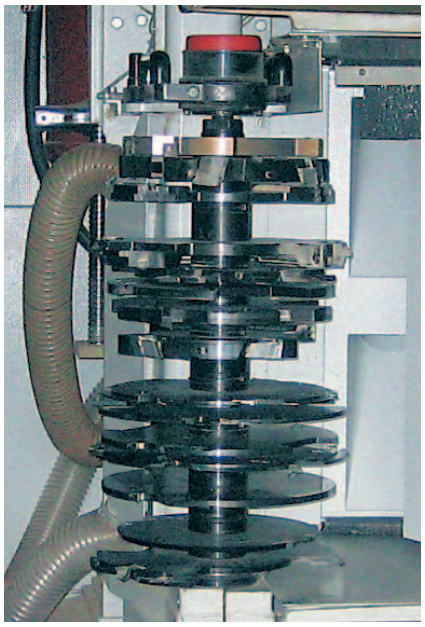
Note: The larger of the two diameters indicated in the two tables must be used.

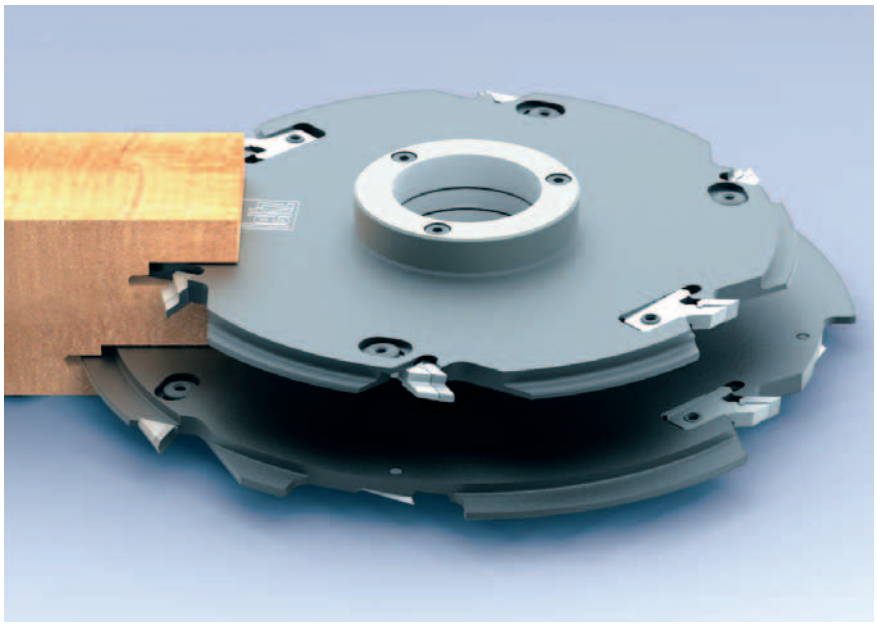
ProFix C for counter and slot/tenon profiling

An extension to the ProFix constant tool system specially for window construction for slot : tenon and profile : counter profile joints.

The increasing popularity of profile splitting in modern window construction requires tools with constant diameters and constant profiles. As one tool is not used as frequently as another, the tools need to be refurbished at different times. In conventional window constructions with fixed tool sets, a constant slot width helps to ensure a durable long-term joint. Conventional resharpenable tools have the downside of changing diameters and profile widths. This means the machines need to be reprogrammed.

Throwaway knives are often seen as the way out of this dilemma. The new Leitz ProFix C tool system for making slot-tenon and counter profile joints is more beneficial to the resources and budget. ProFix C is resharpenable without any change in dimensions. It offers the trusted advantages of the ProFix-Plus constant tool and completes the system for all steps to profiling in wooden windows and doors.



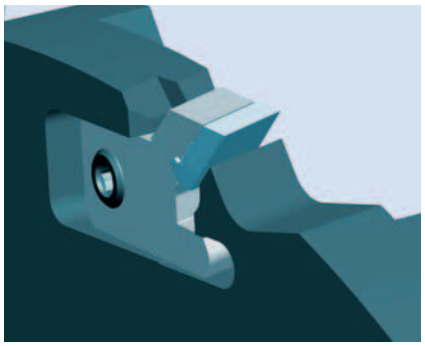


ProFix C System benefits

– Constant cutting diameter and constant profile after resharpening
– Large hook and shear angles – ideal for cross grain
– Optimised gullets for large slotting depths
– Knife cutting widths 8 to 20 mm
– Slotting width ≥ 10 mm without spurs
– Other slotting widths possible by exchanging the knives
– Knives can be profiled – profile depth up to 12 mm
– All knife types can be supplied in RipTec design
– HW qualities for all wood types
– HW edge can be resharpened 10 to 12 times
– Used knives can be re-tipped
– Tool body can be supplied in steel or optionally in aluminium
– High rotational speeds for high production

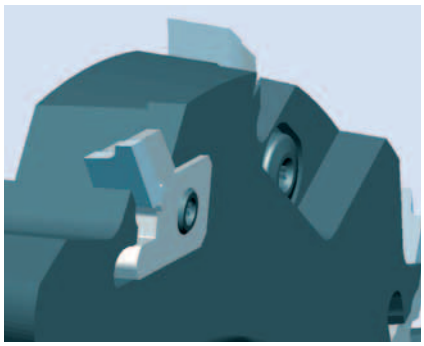
ProFix C Standardisation

– 3 basic types of knife seatings cover all application cases
– Modular structure with standardised knife types enables a tool structure matching the profile and direction of wood fibre

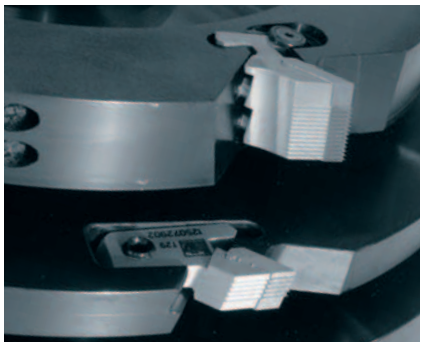


With shear angle and lateral clearance angle.

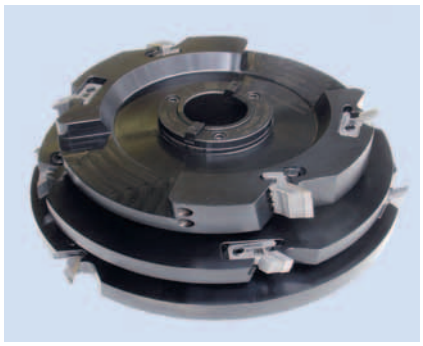
With advanced shear angle outside.

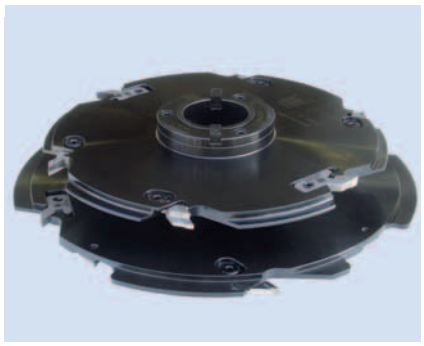


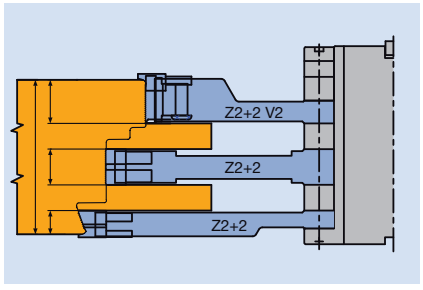
Profile knife with advanced shear angle inside.



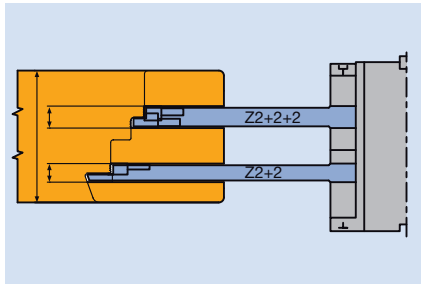
Combination of ProFix and ProFix C knives in the same tool.
Example: Knives with RipTec profile for improved joints.







Application example ProFix C “frame tenon for top of jambs”: Cutting edges in RipTec design for improved quality of cut in cross grain.
Combination of ProFix knives for large cutting widths in the rail area.



Application example ProFix C “frame slot-cross”: Slot widths from 8 to 20 mm. No spurs are required for slot widths of 10 mm.

For various application areas for your benefit

One system, many application alternatives, convincing advantages

Cutterhead systems must be versatile and earn money over a wide range of applications. Leitz ProfilCut covers the diameter range of 0 to 650 mm and uses the same clamping system for throw-away profile knives and straight turnblade knives.

The tongue and groove joint clamps the wedges and knives over the full cutting width guarantees safe and positive clamping. When tightened, the knives are automatically centred axially and radially.

Knives can be changed on the machine – true even for stacked spindle tool sets – so saving time. The clamping wedges are adapted to the profile also act as a chip breaker. Chip production is without failures and results in a perfect finish. The profile matched tool body helps reducing noise. All wear parts are made of steel. The high balance quality gives vibration-free operation preserving the spindle bearings.

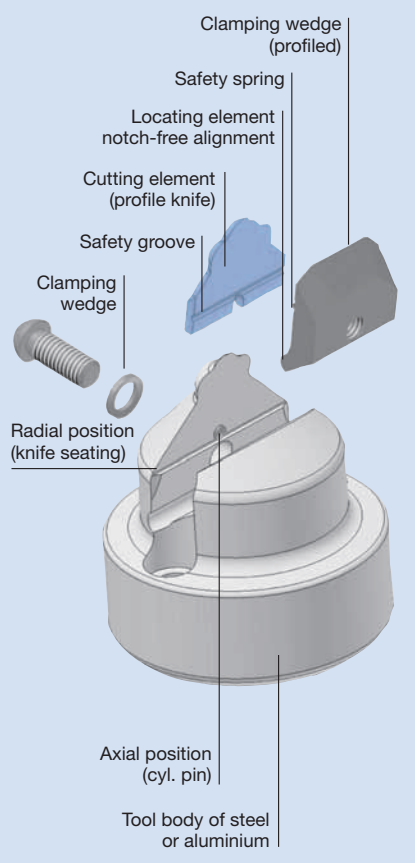
Perfect clamping with utmost precision

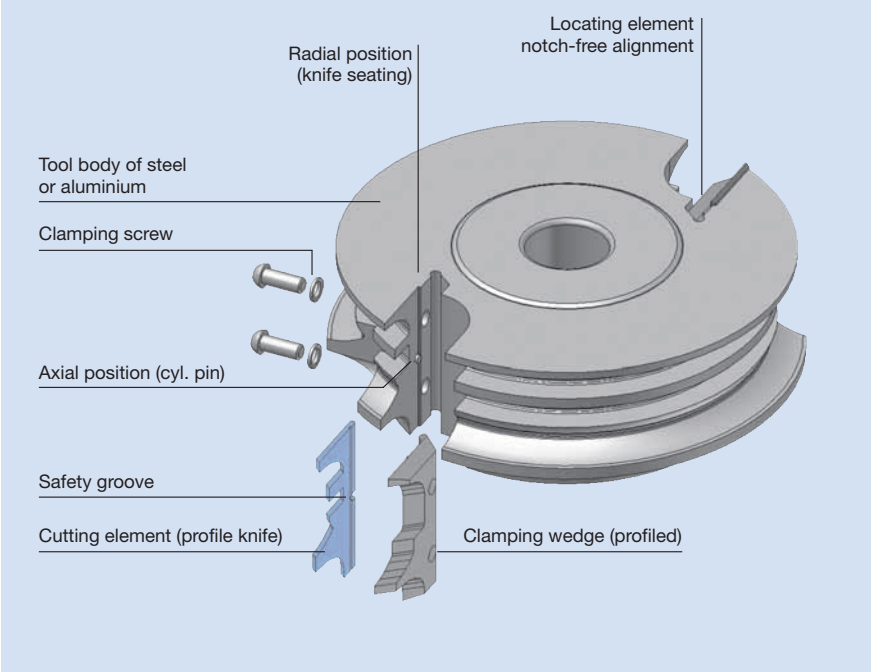
The unique clamping mechanism is absolutely reliable even in an aluminium tool body.

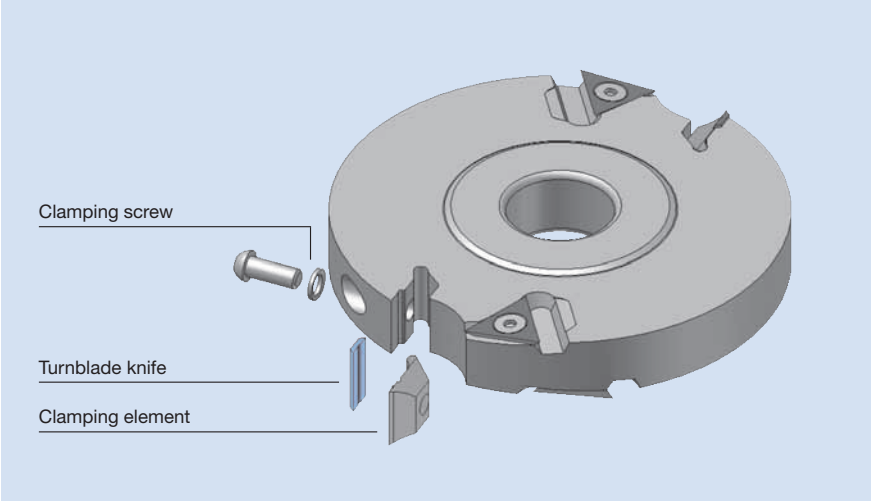
The clamping wedge (straight or profiled) is centered in the tool body by a recess in the form of a half cylinder and is secured against the centrifugal force and dislocation. The screw through the tool body into the clamping wedge is also the clamping screw. When tightened, the rotational movement generated by the eccentric position of the contact area, resulting in the correct clamping of the cutting element. The clamping screws are protected from dust and resin, reducing maintenance time.

The low weight of the aluminium tool body generates more dynamics and low vibration frequencies and faster travel movements. Spindle deceleration load is reduced.

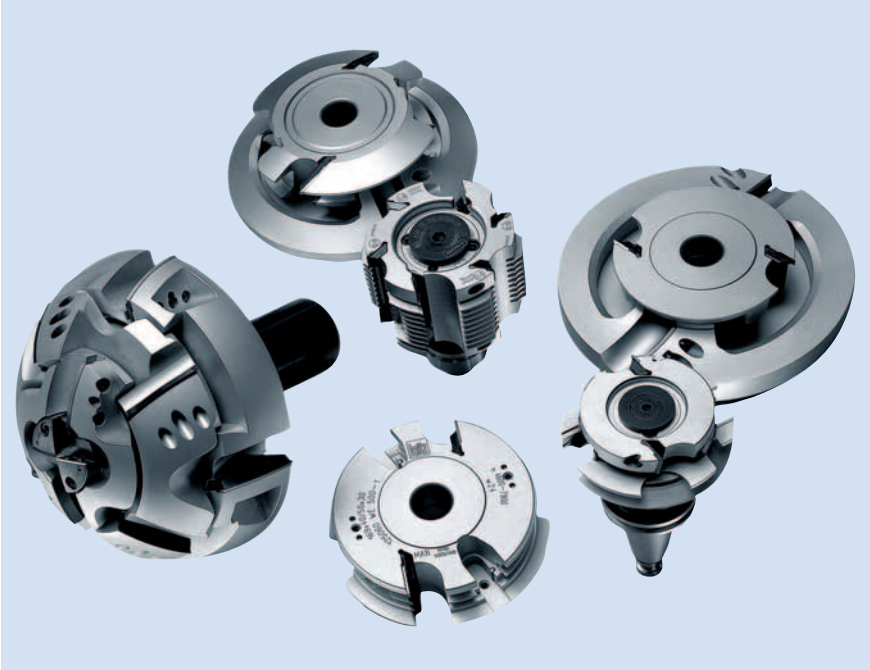
The high quality knives in the grades of tungsten carbide (also fine grade) plus improved chip clearance from the polished faces give high quality surface finish and increased performance time. The machined finish does not require any additional work.



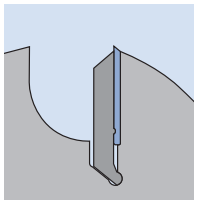




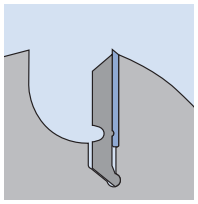
ProfilCut applications	– Glue-joint profiles – Window profiles – Panel raising profiles – Tongue and groove profiles – Interior and exterior profiles – Post and soft forming profiles
ProfilCut-Plus applications	– Interior and exterior profiles – Window profiles – Post and soft forming profiles
Machining operations	For all profiling operations in craft and industry in small, medium and large batches. Also suitable for HSC (high-speed cutting) with cutting speeds of more than 100 m/s.
Materials	The following materials can be machined using ProfilCut and ProfilCut Plus: – Softwood and hardwood – Wood derived materials such as plywood, fibre boards, coreboards or chipboards – Plastics such as thermoset materials, plastomers, laminated plastic boards or composite materials
Cutting materials	Knives of different tungsten quality including ultra-fine quality available for the different materials and machining operations. The wide range of cutting materials includes diamond-coated knives.
Machine types	For all conventional moulding machines with manual feed (MAN) and mechanical feed (MEC) such as – spindle moulders/shapers and moulders – four-side moulders – double-end tenoners – edging machines – overhead routers – window production machines – stacked spindle machines
Finished products	Profiles for windows and doors, furniture, floors and various custom-made products for both internal and external applications.



**ProfilCut-Plus –
innovative further development**



ProfilCut



ProfilCut-Plus

Nothing is good enough - you can always make improvements! So, ProfilCut is now available as ProfilCut-Plus with resharpenable knives.

With innovations to the clamping system and the profiled knives, the successful ProfilCut system was expanded with a variant with resharpenable knives for certain profiling tasks.

The clamping wedge has a new design. Because of elastic deformation, even resharpenable knives cannot be used in standard ProfilCut cutterheads.

ProfilCut-Plus is particularly suited for:
– common profiles
– interior and exterior window profiles
– post and soft forming profiles
– specific applications.

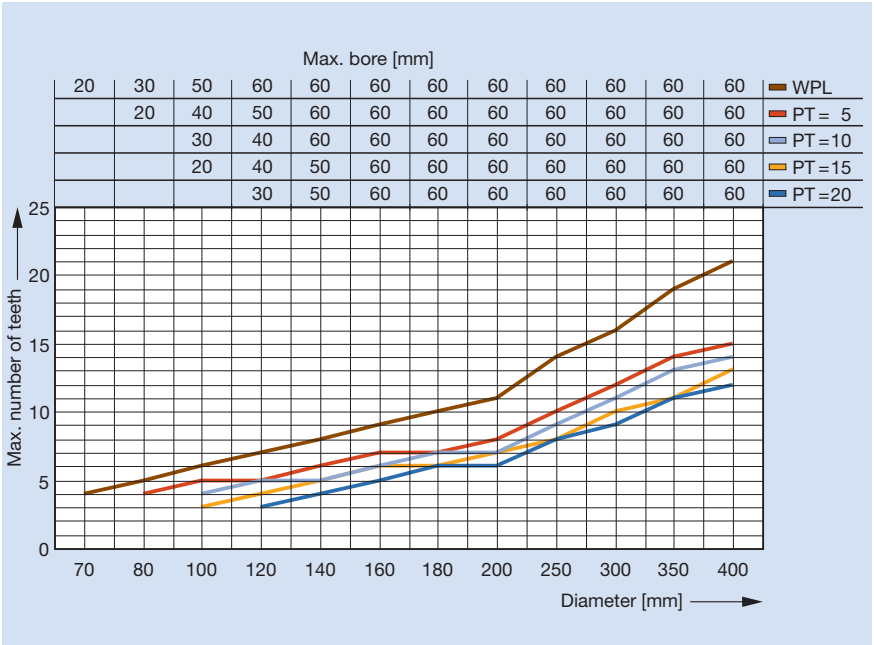
The resharpening area of 0.3 mm allows for multiple sharpenings. In suitable applications, efficiency increases considerably compared with throw-away knife systems.

Technical data

Variability from a diameter range of 0 to 650 mm

	Shank tool	Tool with bore
Diameter	0 – 400 mm	70 – 650 mm
Cutting width	8 – 80 mm ProfilCut	8 – 80 mm ProfilCut
(Single head)	8 – 120 mm WPL	8 – 120 mm WPL
Tool body	Steel or aluminium alloy	Steel or aluminium alloy
Number of teeth	Single-sided profiles: Z1 – to a zero diameter of 40 mm Z1/1 – from a zero diameter of 40 mm Z2 – from a zero diameter of 50 mm Closed profiles: Z2 – zero diameter from 60 mm Max. number of teeth depending on diameter, see diagram	See diagram
Profile depth	PD: max. 20 mm (straight tool body) PT >20 mm (cranked tool body)	PD: max. 20 mm (straight tool body) PT >20 mm (cranked tool body)

We recommend designs with staggered cutting edges and shear angle for better surface finish (two-part design instead of one-part design – irrespective of cutting width).



A system which is both simple and versatile

VariForm – variable and multi-functional

For industrial or manual production: the VariForm tool system offers unique advantages to businesses of all sizes and gives a clear competitive edge to production and quality. Its concept is simple: a flexible tool body design, cost effective as the tools can be resharpened several times and versatile through numerous knife profiles.

VariForm provides unlimited design opportunities with regard to profile and product form. At the same time it improves your production cost effectiveness.

Workpiece materials

Hardwood and softwood, laminated wood, chipboard and fibre material, plastics

Machines

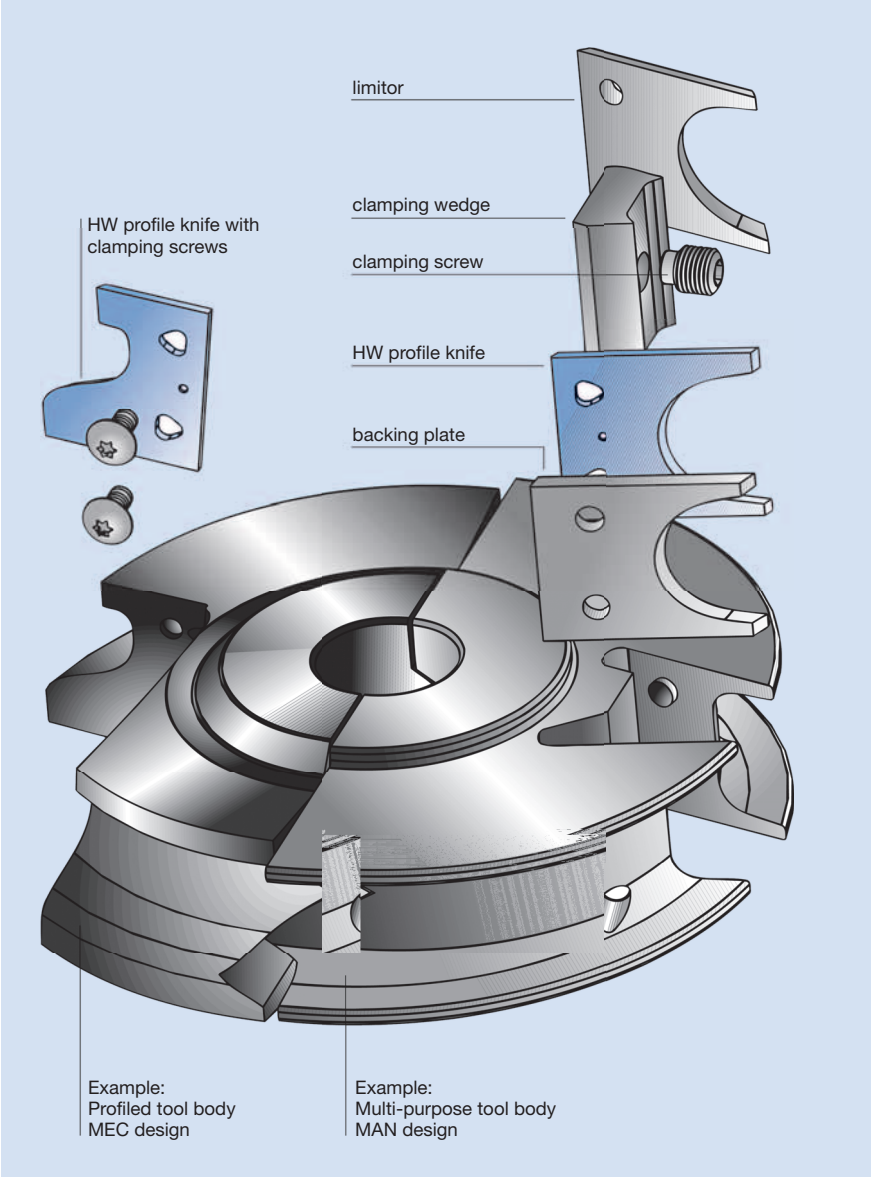
- spindle moulders,
- four-side moulders,
- edge-banding and sizing machines,
- CNC router cutters and CNC machining centres.

Applications

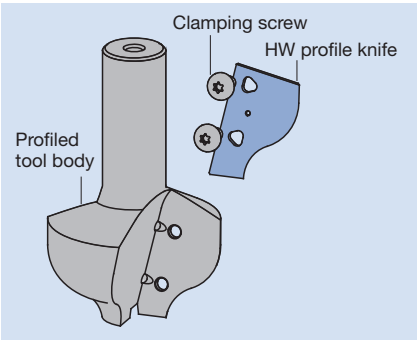
- furniture, mouldings
- prototypes, single pieces
- small and medium series.

Easy handling

The VariForm knife clamping “overrides centrifugal force”.
3-point support, the knives are centered, clamped and positioned radially by the centrifugal force.
That means no movement at high speeds and precise and safe working at the optimum cutting speed range of 70 to 80 m/s.
Another advantage: As there are no side stops, you can profile the blank knives around the entire periphery.



Note:
Small tool diameters or profile depths exceeding 20 mm require profiled tool bodies.



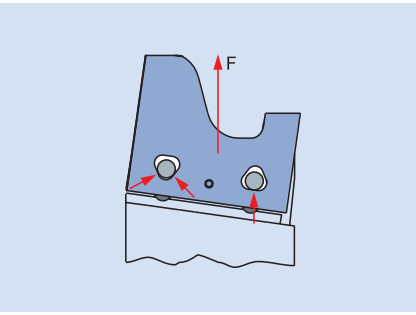


Diagram of the knife clamping.

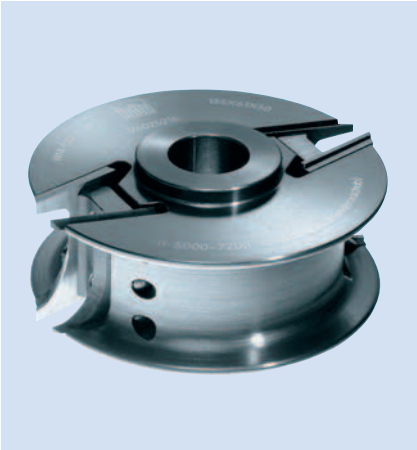
VariForm – a first-rate tool system – made by Leitz

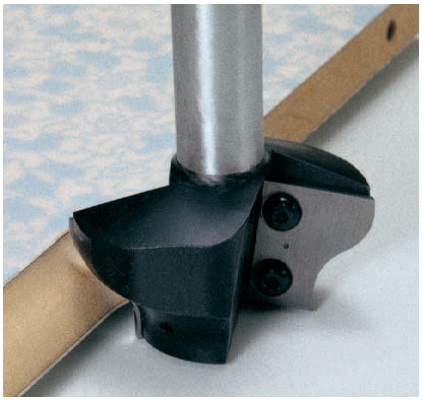
All advantages at a glance

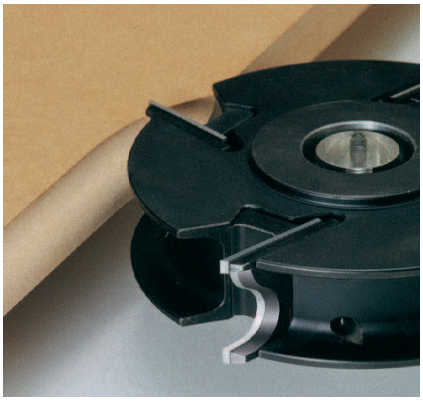
- Resharpenable three to four times.
- The right cutting material for every application.
- Different HW qualities for solid wood and panel materials.
- Modular system: Use the same profile knife in different tool bodies for different machines, suitable for all popular spindle diameters and for quick-clamping systems.
- Tool body designs adapted to the profile depth for a high degree of design freedom.
- Maximum precision and safety by three-point knife clamping.

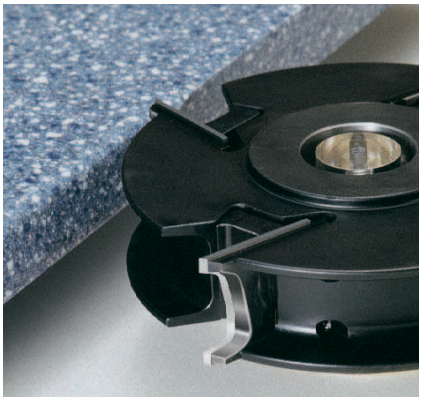
And unique customer service as well

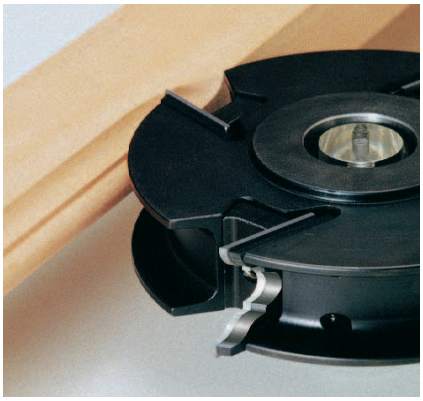
Over 200 Leitz service stations respond quickly, expertly and reliably to customer requests. Based on profile drawings or wood samples special profile knives are produced accurately, quality tested and delivered at short notice to meet the customer deadlines – as usual with Leitz. As we archive the templates, resharpening and replacement are both quick and easy.



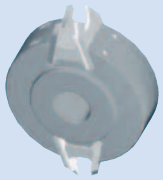
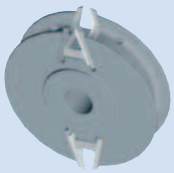
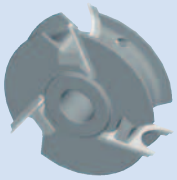
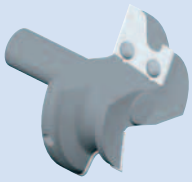


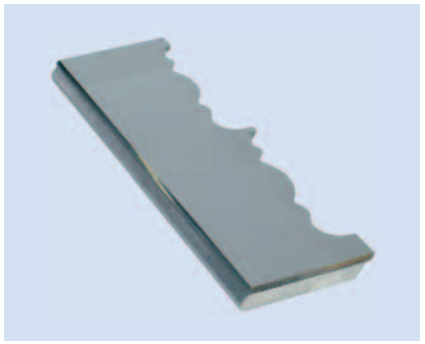




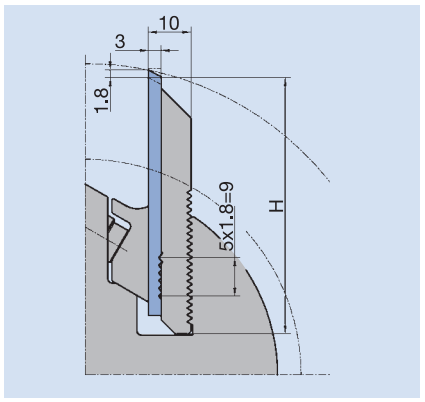


VariForm –
main designs and data at a glance

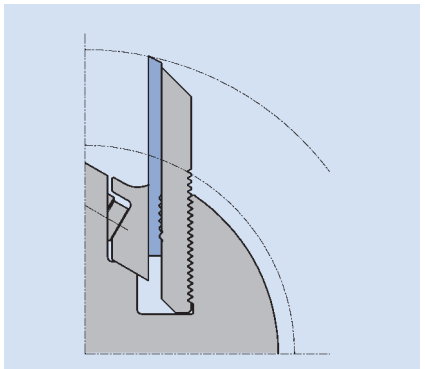
Design variants	Profile depth up to 15/19 mm	Profile depth up to 20 mm	Profile depth up to 35 mm
MAN feed for spindle moulders	 multi-purpose tool body	 partially profiled tool body, channel	 profiled tool body, cranked ri./le.
Cutting width:	40/45 mm and 50/60 mm	40 mm to 60 mm	40 mm to 60 mm
MEC feed for four-side planing machines, -edge-banding and sizing machines (suitable for quick-clamping systems)		 partially profiled tool body, channel, L profile, I profile	 profiled tool body, cranked ri./le.
Cutting width:		40 mm: L-, I-Profil 40/60 mm: U-Profil	40 mm to 60 mm
MEC feed (CNC) for CNC router cutters and CNC machining centres	 multi-purpose tool body		 profiled tool body, cranked ri./le.
Cutting width:	40/45 mm and 50/60 mm		30 mm to 50 mm



PowerKnife System PKS® Tungsten carbide blank knife with backing plate for serrated back profile cutterheads



PKS®: New condition



PKS®: Resharpen several times, in end position

Manufacturing profiled mouldings is important. Profiled mouldings are used, for example at floor level as skirting boards, around doors as frame profiles, and in cabinetry as decorative mouldings. Such products are usually manufactured on four-sided moulders on through-feed machines and pose specific requirements on the tool system.

- Profile changes need to be actioned quickly by suppliers. This means the user must be able to profile and resharpen the tool system.
- The increase in MDF lining profiles requires wear-resistant tungsten carbide.
- For high productiion volumes, the tool system needs to be either jointable or, in the case of new machine generations, be HSC-suitable, i. e. suited to high rotation speeds up to n = 12,000 min^{-1}.
- Furthermore, the number of staff required for tool preparation must not be too high, as the staff is needed to produce the mouldings.

Leitz has developed a user-friendly and highly efficient knife system called Power-Knife System, or simply PKS®, specifically for the high requirements of profile moulding production.

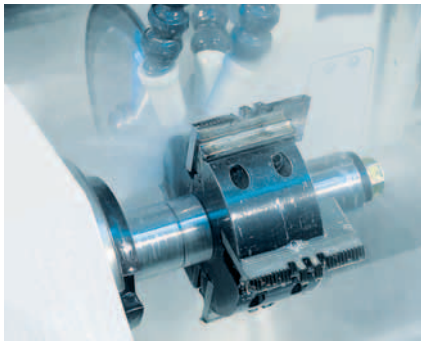
PKS® is a development of the Leitz MicroSystem, which has provided valuable service over the years. It is compatible with all serrated back profile cutterheads with 60° serration, either with bore or HSK. The system consists of a tungsten carbide blank knife and a hardened steel backing plate. Both parts are form-fitting via a serration, but can be separated from each other. The backing plate is secured in the serration of the cutterhead by its serrated back.

This system offers major advantages compared to tipped knives with brazed-on tungsten carbide, and other two-part knife designs:

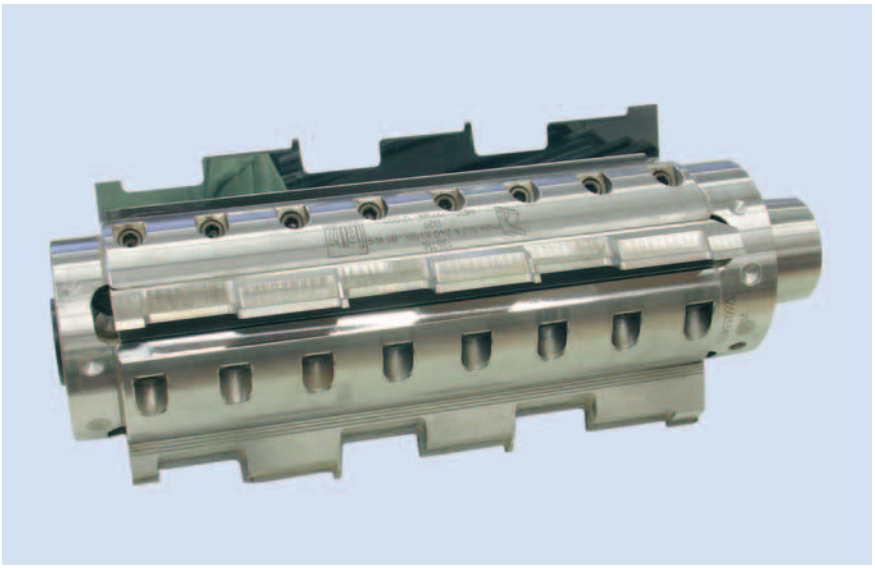
- For the maximum concentric running, the knives are profiled or resharpened when installed in the cutterhead, machining the tungsten carbide edges and the steel backing plate separately with the appropriate grinding wheel. The backing plate is profiled only once, while the tungsten carbide edge is resharpened several times and can be replaced separately. Thanks to the single-material machining of tungsten carbide or steel, grinding wheel consumption, processing time and tool cost are reduced.
- The resharpening depth of the tungsten carbide knife is 10.8 mm, approx. 40 single average performance times.
- The adjustment area of the knife system is defined by the design. It is not possible to project the knife too far out of the tool. This ensures safe operation of the system at all settings.
- The form-fitting connection between the tungsten carbide knife and the backing plate by just one serration ensures the parts are in contact over the whole surface, enabling maximum positioning accuracy, as one serration by definition does not lead to pitch errors.
- The comparatively large increments of 1.8 mm when adjusting the tungsten carbide knife enable 6 to 8 resharpening processes in one installed position. In relation to the overall single performance time of one knife, this reduces knife mounting and setting time.
- The two-part design allows use of more wear-resistant tungsten carbide grades compared to brazed tungsten carbide knives and significantly increased performance times.
- Only ultra-fine tungsten carbide grain grades are used. And the cutting face has a mirror finish. Combined, these give extremely sharp cutting edges and a perfect surface finish.

The PowerKnife System PKS® is available as
– non-profiled blank knives with the heights 50, 60 and 70 mm for profiles to a profile depth of 33 mm
– knives with a height of 40 mm for planing or jointing. This knife height matches the tool diameters for jointing in the moulder.

Only ultra-fine grain tungsten carbide qualities are used as:
– HW-30F for solid wood, preferable hardwood
– HW-10F for wood materials such as MDF, WPC.



Tool example for PKS®:
Multi-profiling of MDF mouldings



The knives can be jointed in the moulder. When used with HSK tools, experience has shown that the ground accuracy is sufficient to allow a Z2 tool at 12,000 min^{-1}, e. g. in MDF to run at a feed speed of 50 m/min, and give a finish quality even without jointing. Productivity can be increased still further through parallel profiling of several mouldings and subsequent splitting. PKS® with cutting widths of up to 250 mm are available.

Even if profiled by the user, it is sometimes necessary to use the competence and equipment of a specialist to prepare the tools. Leitz, with its service centres around the world, offers this service. The tools are mounted, ground and measured. The profile-specific measuring points are defined as specified by the user and the measured data documented on the accompanying tool card. The tools are returned in a re-usable transport container. Your production staff can concentrate more efficiently on their actual task – producing mouldings. This service package is extended still further by integrating the user's CAD profile data in the service centre grinding programs, as well as a telephone hotline for urgent cases.

Leitz-Lexikon
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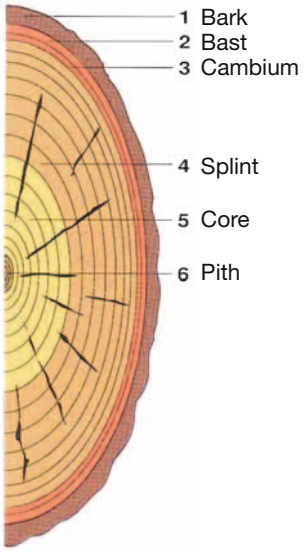
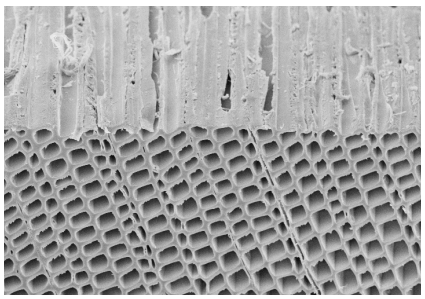
12. User encyclopedia

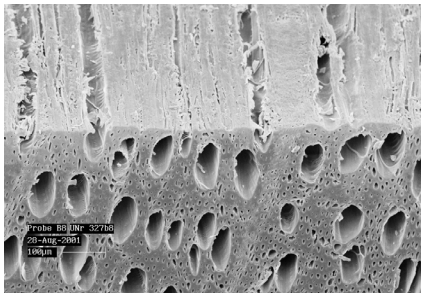
Tree



Structure of a log



Cross section of softwood (spruce)



Cross section of hardwood (beech)

As a renewable material, wood is a raw material which is important because of its strength and low density and because it is found all over the world. As a result, wood is used widely in support structures in timber construction and in non load-bearing areas such as building components, furniture or interior fittings. In its dry state, wood possesses low thermal conductivity properties due to its porous cell structure which means it has a certain level of heat insulation. Wood is therefore a good raw material from an energy point of view and is, for this reason, used in window frame elements or insulation panels. Wood is also used in its natural form (solid wood) or converted into wood materials.

There are several specific properties which must be considered in the selection, application and processing of solid wood. The **most important properties** are: **inhomogeneity, anisotropicity, porosity, hygroscopicity and biodegradability**. The structure of wood consists of fibres stronger in a longitudinal than in a lateral direction. The fibres consist of cell walls which form the actual wood substance and of vessels (also known as „pores“). The relationship between the volume of the pores and the mass of the wood substance determines the bulk density and varies from one wood type to the next. Depending on the time of year, the pores become larger (spring, summer → **earlywood,** lower density) or smaller (autumn, winter → **latewood**, higher density). This phenomenon can be seen by taking a cross section of the wood and observing the growth rings from successive earlywood and latewood periods. With slow growing wood in cold regions, these growth rings are tight together, whereas with quick growing wood from warmer regions, the growth rings are spread out. In contrast, these differences are barely noticeable in tropical woods.

Wood develops by a process of cell growth and cell multiplication within the growth ring, or cambium. Most cells develop inwards to form the wood structure, while some grow outward, forming the bark and phloem, or inner bark. Thus all wood is layed down in progressive layers from the outer surface to the centre; bark, phloem, cambium, sapwood (medullary rays, annual rings, spring growth and summer growth, resin ducts), heartwood (without sap capillaries: this is purely structural in function) and pith.

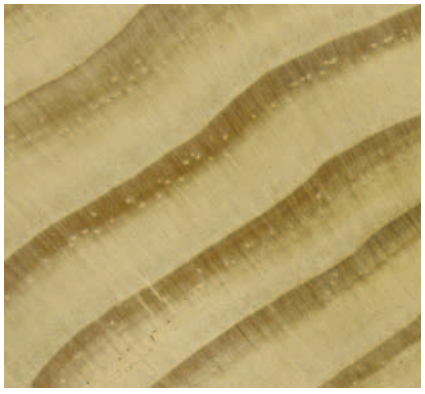
There are two main wood types: **hardwoods and coniferous woods**. Coniferous woods are older in evolutionary terms and therefore have less complex cell structures involving two cell types. The tracheids (elongated, tapered) are strong and act as conductors. Water is exchanged between the cells through so called pits or bordered pits. The parenchyma cells (rectangular) are responsible for transporting the nutrients and storaging starch and fats.

In contrast, functions are divided between the cells in hardwoods. The cells are divided into vascular tissue, ground tissue and seed tissue. The main feature which differentiates hardwoods from coniferous woods is the vessel elements (tracheids) in the vascular tissue. These can be seen as pores in a cross sectional view, and as striations in a longitudinal view. The arrangement of these wood vessels determines whether the wood is ring porous (e.g. oak, ash), semi ring porous (e.g. cherry, walnut) or diffuse porous (e.g. birch, beech, poplar).

While there is a general similarity between softwood and conifer, hardwood and broadleaf, there are exceptions such as yew – which is a hardwood – and alder, birch, lime, poplar and willow – which are softwoods. For processing and tool selection, factors such as density, strength, elasticity and hardness are important considerations. Accordingly, the categorisation of **hardwood and softwood** is important insofar as it provides a broad guide to these properties.

Sapwood (bright) and heartwood (dark) (example pine)

Merely the „appearance“ of the timber, lumber or planed timber can give information on the properties and on the potential level of difficulty during the woodworking process. **Sapwood and heartwood** from a tree have different properties, for example. The sap flows in the outer layers of the trunk. This leads to an outer area of sapwood with a higher level of moisture and inner areas of less moist heartwood. Sapwood and heartwood are always of varying quality. With increasing trunk diameter, the relative size of the heartwood becomes greater as the sapwood or ripewood progressively converts to heartwood. Once converted to heartwood, the material ceases further structural change. Both sapwood and heartwood are present in all types of tree, although they are more easily distinguished in the so called “heartwood trees” – such as oak, larch, pine, cherry and ash – than in “sapwood trees” – such as beech, fir and spruce; these may very little in colour.



Earlywood (bright) and latewood (dark) (example Pinus Radiata)

During wood processing and woodworking procedures it must be remembered that wood is a material with varying structures and properties. The growth rings are particularly indicative of this fact in coniferous woods. The are significant differences in hardness between the marked areas of **earlywood and latewood**. During woodworking process, these circumstances must be taken into consideration and cutting materials, cutting material geometries and process parameters must be adapted correspondingly. When processing various types of wood often a compromise for various types of wood is required.

Bulk density is the decisive factor for most technical properties. Bulk density is the ratio of the mass and volume (including all vessels). Depending on the type of wood, bulk density is usually between 100 kg/m^3 and 1200 kg/m^3. Higher bulk density means that the wood is harder, firmer, tougher to process and treat and also harder to dry. Tool wear also increases in direct proportion to the bulk density of the wood. Other factors which influence cutting edge wear are wood components such as tannic acid or silicate inclusions. Natural tannic acids, such as those present in oak, lead to the chemical wear of tool cutting edges, particularly if the wood has a higher moisture content. Silicate inclusions, such as those present in tropical woods of Meranti, Teak or Mahogany, are absorbed from the ground along with nutrients and then crystallise in the vessels. They cause increased abrasive wear to the cutting edges.
Large density differences between earlywood and latewood normally are a sign of strong presplitting and a tendency to splinter during processing (example: Pinus Radiata)

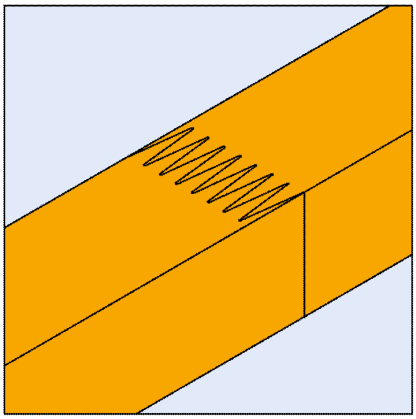
Type of wood	Bulk density [kg/m³]	Strength [N/mm²]		
		Compressive	Bending	Shearing
Hardwoods				
Afzelia	750 - 950	65 - 79	90 - 120	7,5 - 15,0
Maple	530 - 790	29 - 72	50 - 72	9,0 - 15,0
Balsa	90 - 260	5 - 15	12 - 23	1,1 - 2,0
Bangkirai	900 - 1100	68 - 80	125 - 140	10,0 - 15,0
Birch	510 - 830	38 - 100	147 - 155	12,0 - 14,5
Beech (Red Beech)	540 - 910	41 - 99	74 - 210	6,5 - 19,0
American Oak	550 - 980	39 - 61	89 - 130	9,0 - 14,6
European Oak	430 - 960	54 - 67	74 - 105	12,0
Alder	490 - 640	31 - 77	44 - 172	3,0 - 6,5
Ash	450 - 860	23 - 80	58 - 210	9,0 - 14,6
Eucalyptus	720 - 790	37 - 51	75 - 104	9,5
Iroko	550 - 850	52 - 81	70 - 158	9,5 - 12,5
American Cherry	525 - 615	33 - 59	59 - 98	15,0
Mahogany	450 - 620	36 - 70	50 - 130	6,0 - 9,5
Meranti, Dark Red	550 - 890	53 - 74	66 - 222	7,1 - 10,6
Meranti, Light Red	390 - 760	21 - 50	32 - 80	4,0 - 8,0
Merbau	760 - 830	60 - 85	140	13 - 17,5
Populus	410 - 560	26 - 56	43 - 94	4,0 - 8,0
Sipo	550 - 750	43 - 73	47 - 155	5,5 - 15
Teak	520 - 700	42 - 59	58 - 109	8,3 - 9,5
Coniferous woods				
Douglas-fir	640 - 800	43 - 68	68 - 89	7,8 - 10,2
Spruce	330 - 680	33 - 79	49 - 172	3,0 - 6,5
Pine	330 - 890	35 - 94	59 - 98	6,1 - 14,6
Larch	440 - 850	64 - 132	107	4,5 - 10,9
Radiata pine	450 - 580	36 - 65	60 - 91	6,8 - 7,6
Fir	350 - 750	31 - 59	47 - 118	3,7 - 6,3

Table: Bulk densities and strength values (moisture content: 12%) for established wood types (source: Holzatlas, Wagenführ, 2007)

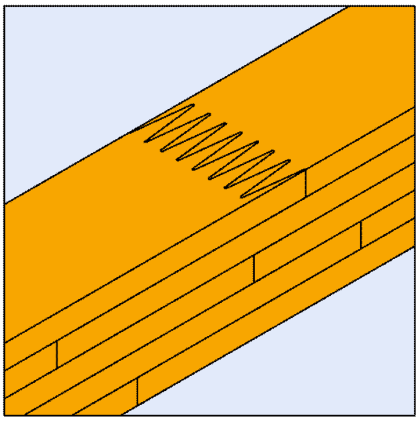
The Brunell **hardness** of woods is tested at 12% moisture content. The hardness parallel to the fibres will be approximately double that perpendicular to the fibres. Because of the differing cell forms and varying structures within the wood, hardness figures can only be quoted as guidelines. They are, as for density values, highly dependent upon the moisture content of the wood.

Other physical properties which are of importance when working with wood are its **elasticity and strength**. Elasticity is a measure of the ability of a solid material to return to its original configuration from a distorted state (unit: E-modulus, N/mm²). When judging the strength of timber, it should be remembered that knots, splits, spiral grain and other structural idiosyncrasies have a significant effect on this property.

Moisture content plays an essential role in terms of how the wood is processed and the quality of the end product. Moisture content is the percentage of water in relation to the dry mass of the wood. In freshly harvested wood, water is both bound in the cell walls as well as contained in the vessels. Moisture content can be over 100% in this case. If the water has escaped from the cell vessels and is only present in the cell walls, then the term „fibre saturation point“ is used. This varies from wood type to wood type and is usually at around 30% moisture content. Below this saturation point, the wood shrinks and swells when moisture is released or added. With kiln dried wood, moisture content is 0. In order to achieve sufficient dimensional stability, the wood should therefore be dried before the finishing process so that the moisture content corresponds with the moisture content of the environment in which it will be used. This is known as the equilibrium moisture content. Indoors, this value is somewhere in the range of 6% to 12%, and is somewhere between 8% and 16% outdoors (without direct exposure to the elements). Moisture content needs to be between 12% and 14% for the best possible woodworking conditions. Below this value, the wood has a greater tendency to split, and above this the surface roughness is increased through shrinkage during final drying.



Structural solid wood (KVH)



Laminated timber (BSH)

Due to its limited dimensions, its swelling/shrinkage and its inhomogeneity from knots and branches, solid wood is usually further refined into **semi finished products**. With structural woods, weak points such as branches or cracks are cut out. Through finger jointing on the end grain edges, components can be manufactured to be any required length. By laminating planks or boards parallel to the wood fibres, larger component cross sections can be created and strength increased. Products in this area include solid structural timber and glue laminated timber. For window frames, for example, the laminated strips can be manufactured using a wide range of wood types with a variety of properties.

Modified woods

A large number of modification techniques have been developed and tested over the past few years in an attempt to identify suitable methods for making woods which are available in sufficient quantities dimensionally stable and weatherproof for use outdoors. Pinus Radiata, for example, is stabilised through an acetylation process (Accoya®). Pine is treated with a pressure impregnation process (Belmadur®). Dimensional stability and weatherproofing of thermotreated wood is generated through a pyrolysis process.

Modified wood (examples)
Accoya®, thermal beech, Belmadur®

One common factor in all of these techniques is that they do not just have an effect on areas near the surface of the wood, but on the material as a whole. These techniques have created „new types of wood“ with minimal swell/shrink behaviour, increased hardness and modified woodworking properties. Cutting forces and wear are lower than with natural woods. Brittleness and dust formation during processing are higher, but these factors do not cause any fundamental limitations.

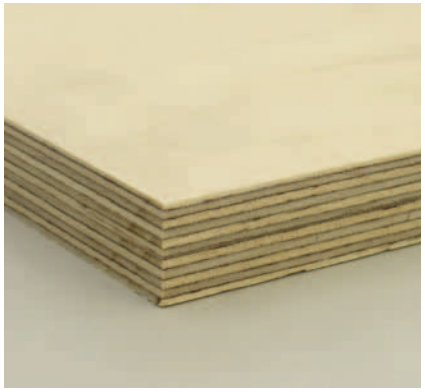
All materials which are manufactured from wooden structural elements, such as veneer, chippings or wood fibres, are known as wood derived materials in both lay and specialist terminology. Wood derived materials started being developed in the 1920s. Then, large, flat pieces of wood with different thicknesses were bonded and pressed together with the fibres running in different directions. Plywood panels and multiple layer panels opened the way for new designs and construction opportunities.

After 1950, an independent woodchip material industry developed on a global scale from the beginnings of chipboard manufacture in the 1930s. This industry concentrated on panels or moulded parts made from the chips or fibres of hardwoods and coniferous woods, and also of lignified annual plants (such as straw or flax). In the DIN 4076 standard, wood based panels are classified by type, structure and bulk density. The manufacture of wood based panels allowed the development of furniture manufacture on an industrial scale.

Today, wood materials are roughly divided into:

- **Solid wood and veneer materials:**
  such as laminated timber, plywood, veneer plywood or multiplex boards
- **Woodchip materials:**
  such as flat-pressed panels (chipboard), particle boards, oriented strand boards (OSB)
- **Wood fibre materials:**
  Medium-density fibreboard (MDF), high-density fibreboard (HDF), hard fibreboard or wood fibre insulation boards
- **Wood composites:**
  such as wood plastic composites (WPCs); light weight building slabs – high-strength surface layers with a soft core of foam, balsa wood or honeycombs of cardboard or plastic; synthetic resin compressed wood (armourply) – compressed materials made from beechwood veneer and synthetic resin (bulk density: 900 – 1400 kg/m³)

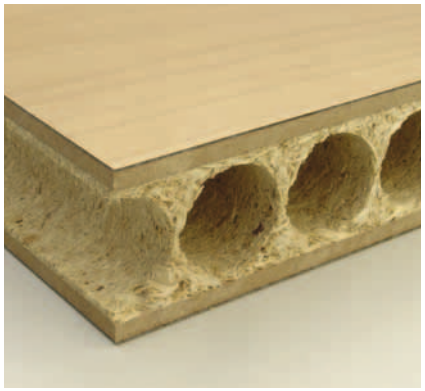
Particle board



Veneered plywood

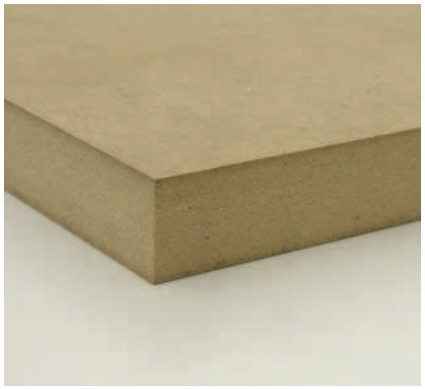
The objective with all these wood materials is to generate a material which is isotropic in at least two dimensions, despite the anisotropic properties of wood. A layer structure which is symmetrical with the midplane of the board is an important pre-requirement to guarantee warp free boards.

With **solid wood and veneer materials**, quasi-isotropic properties are obtained through the individual layers being bonded together parallel to their fibres. During the woodworking process with such materials, the tools must be configured for simultaneous processing both parallel and perpendicular to the fibre direction. The glued joints usually generate the highest tool cutting edge wear.



Extruded chipboard as heart of a composite material

Chipboard, plastic coated



MDF board

Chipboards are divided into two different categories, flat pressed panels or particle boards, depending on the pressing method used. With flat pressed panels, the woodchips are primarily oriented in the direction of the panel. A variety of layers with a variety of properties can be manufactured by changing the size of the woodchips. Usually, panels are manufactured as three layer panels. The middle layer has large woodchips whereas the two outer layers have finer woodchips giving a smooth surface. In contrast, woodchips in particle boards lie predominantly perpendicular to the direction of the panel. They have the same structure through the entire cross section.

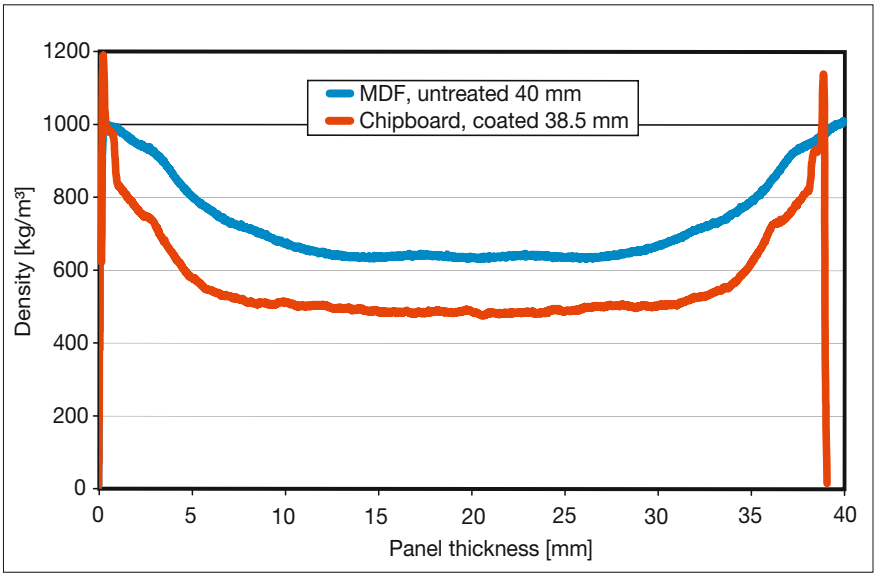
Chipboards are classified by strength and moisture resistance to DIN EN 312-1.

General use (non load -bearing function)	General use, also for load-bearing components	Heavy duty for load-bearing components
P1 for light panelling in dry areas	P4 dry areas	P6 dry areas
P2 for furniture and interior fittings in dry areas		
P3 in moist areas	P5 moist areas	P7 moist areas

Fungicides and flame retardants can also be added to the boards during the manufacturing process.

The most important features of chipboards are, however, their bulk density and their strength. Heavy chipboards (such as flat pressed panels), widely used in furniture and interior fittings, have a bulk density of between 450 and 750 kg/m^3. During storage of the wood, non wood materials such as sand and small stones enter the manufacturing process, meaning that chipboards have a certain level of sand content. Sand content and particle size play a vital role in tool wear, which is why diamond tools are predominantly used in industrial processing. The shortage of raw materials has resulted in waste wood increasingly being processed into chipboard which means that the proportion of impurities in the wood is increasing.

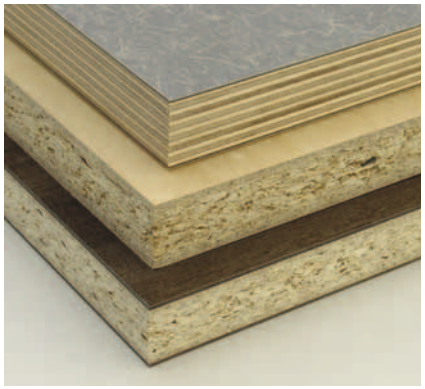
Alongside woodchip materials, **wood fibre materials** are also classified according to their composition and method of manufacture. Porous fibreboards with a bulk density above 230 kg/m^3 as well as medium hard, hard and extra hard fibreboards with a bulk density up to 800 kg/m^3 are manufactured from wood or other lignocellulose fibrous raw materials. The range of board variations, regarding their composition and properties achieved as a result, their low warping properties and decorative layering, are the reasons why they are so widely used and in such a diverse manner in furniture construction and interior fittings.



Density profiles of chipboard and MDF

„Medium-density fibreboard“ (MDF) became more and more important in furniture and interior fittings constructions in the 1980s as a further development of woodchip and wood fibre materials. Just like solid wood, the surfaces and edges of MDF panels can be profiled and finished as a result of their homogenous structure. They are predominantly manufactured from bark free coniferous wood which undergoes several phases of preparation to turn it into dry ultra fine fibres.

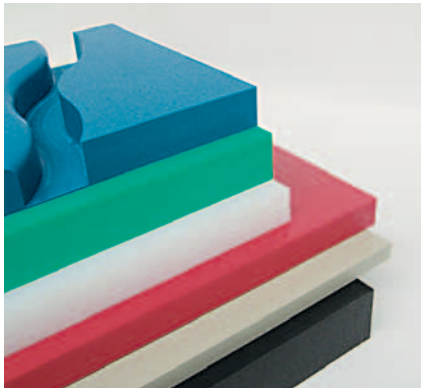
This substance is then pressed together with glues which are low in harmful substances to create a panel with a roughly constant density. Bulk density is usually somewhere between 600 kg/m^3 and 1000kg/m^3. According DIN EN 316 there are three different types: HDF (≥ 800 kg/m^3), light MDF (≤ 650 kg/m^3) and ultra-light MDF (≤ 550 kg/m^3).



Coated panel material

When processing with machine tools, the **type of coating** must also be kept in mind alongside the physical and chemical properties of the materials. All types of wood materials are usually delivered as a finished product with some kind of coating. Surface finishes range from veneer and paint to paper and plastic of various thickness and hardness. Typical examples of the latter category are melamine resin or HPL (high-pressure laminate) coatings. The hardness and structure of the coatings mean that cutting geometries need to be adapted to ensure tear free processing. Overlays of laminate panels, which contain corundum particles to increase abrasion resistance, generate the highest levels of cutting edge wear.

Wood materials, with their wide range of specifications, have, like no other material, changed the way products are designed and the way materials are processed. Every new type of material brings with it new demands in terms of machinery and tools. Tear free cutting edges and precise profiling must be achieved with efficient manufacturing methods. Every further development with wood materials therefore leads to new and specially adapted tool designs and, if necessary, new processing methods.



Thermoplastic plastics
(solid material)

Extruded plastic profiles

Polymer clumping in the case of
thermoplastics (schematic diagram)

Gloss cut section on PMMA workpiece

Plastics consist of interwoven molecule chains, polymers, which in turn are composed of repeating structural units called monomers. The type of polymer bond determines the plastics properties. There are three main groups: thermoplastics, thermosets and elastomers.

Two common factors for all plastics are a low density and low thermal conductivity. The different properties of different types of plastics must be taken into account in machining work. High quality, efficiency and production security can only be achieved with tools and machining parameters specially customised to the material.

Thermoplastics

In thermoplastics, the molecule chains are crosslinked. A typical characteristic of thermoplastics is that they have a **temperature at which they soften**. Once a thermoplastic is heated above this temperature, it is soft and can be formed and shaped. Below this temperature (specific to a particular thermoplastic) thermoplastics retain their original shape. Thermoplastics can be used in a number of processes – injection moulding, extrusion and press forming.

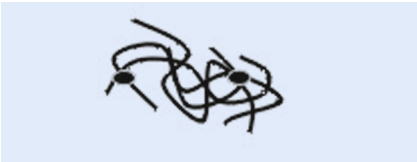
Thermoplastic plastics also can be strengthened by fibres in order to increase density. Normally this involves short fibres so that the extrudability is continued. This technology for example is used for window profiles so that a reinforcement with steel inserts can be renounced.

The temperature at which thermoplastic starts to soften is around 60 °C (depending on the specific plastic), a temperature relevant to the machining process. Exceeding the softening temperature during machining is detrimental to the machined quality. The chips melt, the tools become sticky, and both quality and production are no longer consistent. As well as specific tooth geometries and tool chip gullets, selecting the machining parameters is of upmost importance. Permitted cutting speeds are usually lower than those permitted with woodworking.

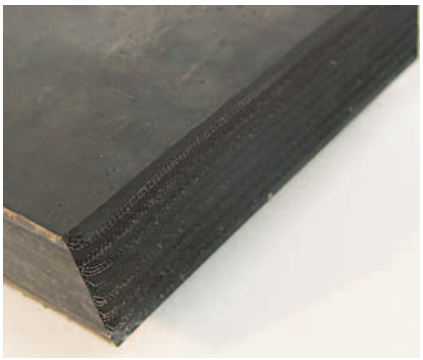
Transparent thermoplastics such as PC and PMMA require special processes. A transparent cutting surface is often required. This means having a totally smooth cutting edge with no visible cutter marks, a special cutting geometry and, of course, stable machinery with good clamping. A high quality cut can be achieved with polished tungsten carbide cutting tools. Monocrystalline diamond is the preferred choice for completely glossy surfaces. If these measures are not taken, the result is a matt cutting surface.

Structure of thermosets
(schematic diagram)

Compact laminate panel



Structure of elastomers
(schematic diagram)



Elastomer with fabric insert

Thermosets
In thermosets, the molecule chains are irreversibly cured at cross linking sites, or nodes, through chemical bonds.
When a thermoset is heated up, the monomers begin to move. The intensity of these oscillations increases as the temperature rises. When the temperature rises above a critical point, the nodes are irreversibly broken. As a consequence, thermosets are destroyed at a temperature specific to the material – the pyrolysis temperature – which is above 150°C. Thermoset materials are usually moulded or, in the case of composites, pressed. They are usually hard and brittle.

To improve the properties of thermosets, **reinforcement materials** in the form of laminated paper, fibreglass, carbon fibre or aramid fibre are incorporated into the thermoset mass. The different combinations of these materials have been given new grade designations such as FR-2, FR-3, FR-4, CEM-1, CEM-3, etc. (for example, FR-4 is glass reinforced epoxy laminate).

Typical examples for duroplastic working materials are for example compact laminate panels or high pressure laminates (HPL laminates) of melamine - or phenolic papers, printed circuit boards (PCB) or PU-foam.

The focus is not on the temperature during the machining process. The cutting speeds are higher than those for thermoplastics. Due to the hard brittle material properties and the abrasive effect of the embedded fibres, tools used in conjunction with thermosets require different geometries and cutting materials than those used to process thermoplastics.

Elastomers
Elastomers are soft plastics, more commonly known as „rubber“, which can be shaped and then go back their original form when released. This particular property is due to the wide meshed structure of the molecule chains. They do not soften when heated. Machining is possible, but rare. The main difficulty is clamping the workpieces.

Mineral constituents are attached to board materials using a bonding agent. The materials have specific properties depending on the proportion and type of bonding agent and mineral constituents.

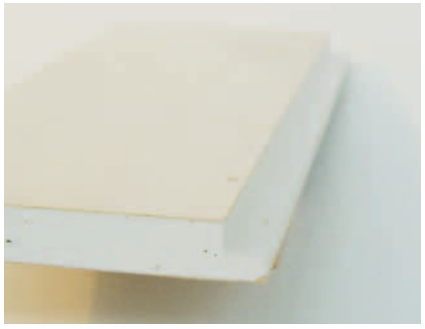
Mineral working material

Polymer bonded mineral materials
(e.g. Corian, Hi-Macs, Kerrock, Noblan, Surell, Varicor, Velstone)
Two thirds of these materials consist of natural minerals (e.g. aluminium hydroxide, feldspar) which are bonded in an acrylic polymer (PC) matrix. The material can be shaped at high temperature due to its high proportion of acrylic. The proportion of mineral materials raises the softening temperature of the plastic, which makes machining easier. These materials are mainly machined using tungsten carbide or polycrystalline diamond cutting tools. Very large mineral particles can damage diamond cutting edges so, as a result, tungsten carbide cutting edges are recommended in this case.

Polymer bonded mineral materials are available as panels with a thickness between 4 mm and 20 mm, and as moulded parts (e.g. wash basins). They are usually applied to wood based panels and can be joined by adhesion and flush trimming. Large scale components can be manufactured using this process. To obtain straight and scratch-free saw cuts, AS foil vibration damped sawblades are recommended.

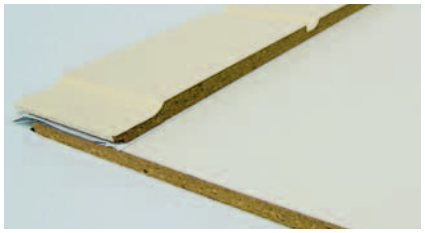
Perlite panel

Perlite-based fire protection board
A characteristic of this material is that it has a highly abrasive action on the tool body. Circular sawblades with thin bodies are particularly vulnerable to this problem. The gullet is eroded and weakened such that the cutting forces cannot be absorbed. As a result, the tooth breaks away although the carbide tip has not reached the wear limit. This increases the accident risk and has an adverse effect on production reliability. Tools with gullet protection and designs to suit the material help counteract these problems.



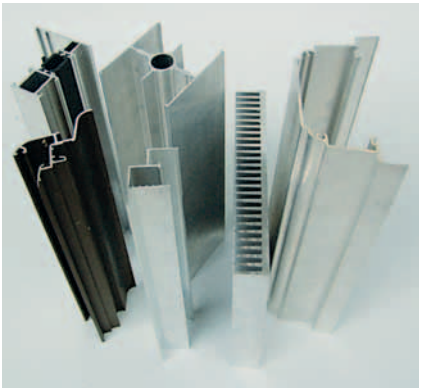
Plaster board / gypsum board

Regular and fibre reinforced plaster board
These materials are machined in dry and “wet” condition. In the wet condition, tungsten carbide is recommended as a cutting material. Sawblades with special symmetrical tooth patterns give good results. Diamond is suitable as a cutting material for dry but not wet machining. As with many mineral materials, low cutting speeds and relatively high feed speeds are preferable.



Cement fibre board

Fibre reinforced cement slabs
High density is a typical characteristic of fibre reinforced cement panels. If unsuitable machine parameters are chosen, sparks may occur during machining. Tungsten carbide has only a short run time, if cutting material diamond is preferred for high-volume work.



Aluminium extruded sections

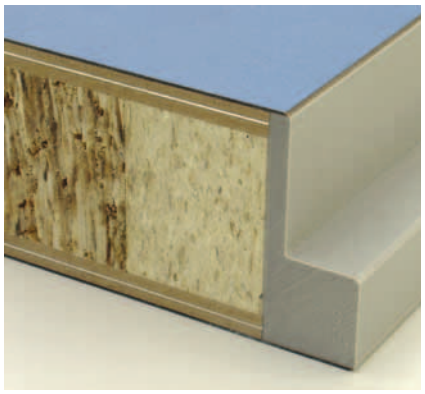
Typical examples of **non-ferrous metals** are aluminium, copper, brass and zinc. They are divided into cast alloys and wrought alloys. Wrought alloys are more ductile than cast alloys and are easier to machine. These can be machined with tools similar to those used in woodworking.

Wrought aluminium alloys are the most common examples of non-ferrous metals. They exist as hollow or full profiles, as sheets or as surface layers or intermediate layers in wood materials. Silicon is added to increase machinability. Si content ≥ 12% leads to increased cutting edge wear which is why diamond cutting edges are recommended. If the Si content ≥ 12%, the aluminium tends to „fuse“ to the cutting edge during machining and this quickly leads to build up on the edges. Tungsten carbide should be used, if possible, together with coolants. Tools with diamond cutting edges (PCD) are particularly suitable for dry machining. Build up on edges are avoided and better machining quality is achieved due to the extremely high thermal conductivity and low friction values of diamond. Sawblades with specially shaped teeth and small cutting angles (some negative) are employed in cutting hollow profiles to avoid the teeth hooking the thin web. Foil saws are particularly suited for scratch-free trim and mitre cuts due to their good vibration damping properties.

A **composite** consists of two or more materials which are combined to produce different material properties. Composites have different properties to the materials with which they are combined.

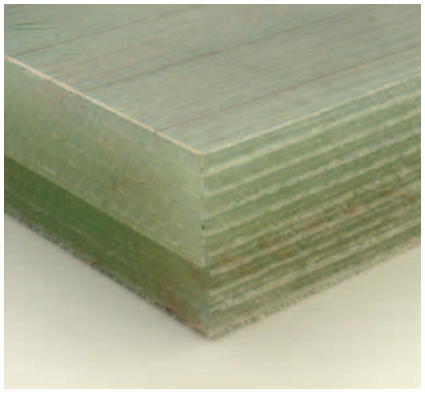
Essentially, there are two groups:

Composite layered materials, such as:
- Composite panels (e.g. plywood or wood core boards)
- Sandwich panels (stable outer layers with a soft core)
- Honeycomb panels
- Chipboards with aluminium barrier layers (vapour barrier)
- Window frames with insulation material as a middle layer
- Floor panels with a HDF core and a variety of surfaces (PVC, cork, felt®)



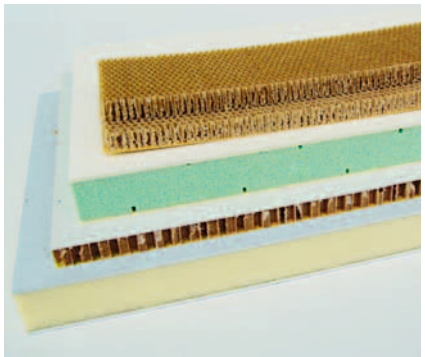
Layer composite working material

Composite fibre materials, such as:
- Carbon fibre reinforced plastic (CFRP)
- Glass reinforced plastic (GRP)
- Aramid fibre reinforced plastic
- Natural fibre reinforced plastic
- Wood plastic composites (WPC)
- Fibre cement boards



Fibre composite working material

The difficulty in terms of machining is a result of the often conflicting requirements of the individual material components concerning the cutting edges, meaning the tools usually have to be specially designed for particular composites. In the case of composite layered materials, a variety of cutting materials can be employed at the same time to machine the different layers. Because of the different strengths of the individual components, there is often the risk of delamination from the cutting forces.



Lightweight working material with honeycomb- or foam core

Profit is made at the cutting edge! Wear resistant cutting materials with sharp cutting edges guarantee long tool life and high surface quality. But the full potential of a cutting material needs the correct cutting edge geometry, and in turn, is dependent on the machining process and the properties of the material being shaped.

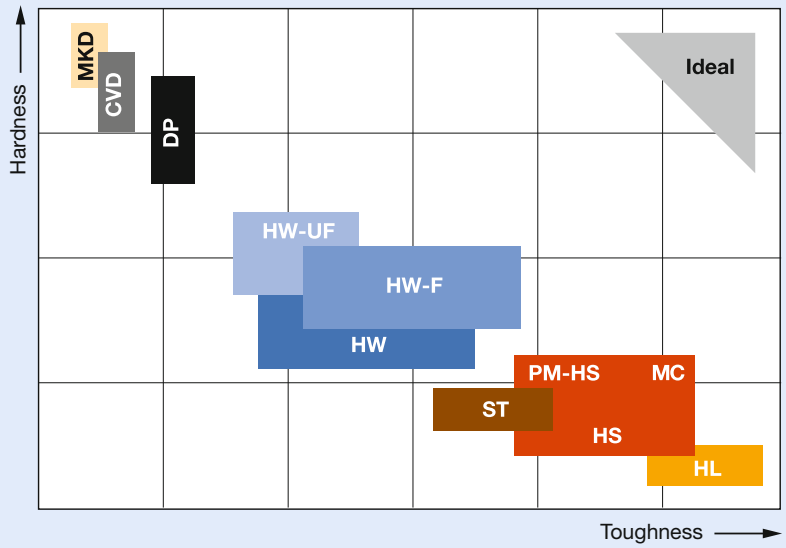
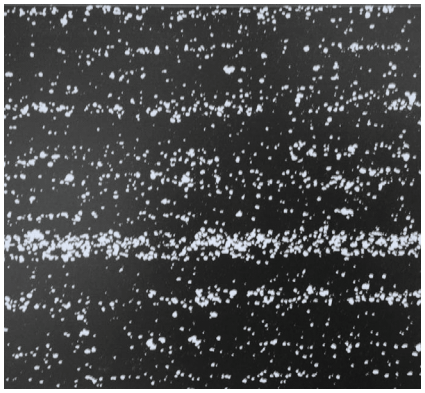


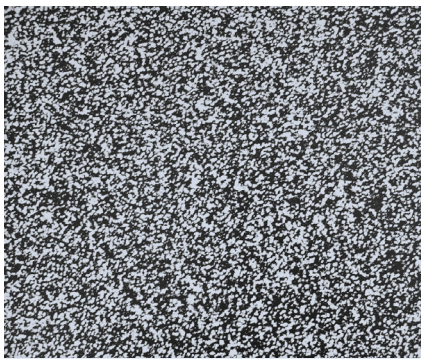
Diagram: Classification of the tungsten carbides in cutting groups as per ISO 513
K-grade: WC + binders
P- and M-grade: Additionally with WC-TiC and WC-TaC mixed crystals for higher temperature strength

Cutting materials for processing wood and plastics
The ideal cutting material should be hard and tough at the same time, but an "all-purpose material" of this kind simply does not exist. Today the choice of woodworking cutting materials ranges from tough tool steel to the hardest material in the world, diamond. The wide variety of workpiece materials and tool designs need all these cutting materials:

Group	Application / working material	Code	Hardness	Viscosity
P	Steel, steel casting, long-chipping, malleable iron	P01	↑	↓
		P10		
		P20		
		P30		
		P40		
M	Steel, steel casting, austenitic manganese steel, austenitic steel, free cutting steel, alloyed grey iron	M10	↑	↓
		M20		
		M30		
		M40		
K	grey iron, chilled iron, short-chipping malleable iron, hardened steel, **non-ferrous metals, plastics, wood, wood-derived materials**	K01	↑	↓
		K05		
		K10		
		K20		
		K30		
		K40		

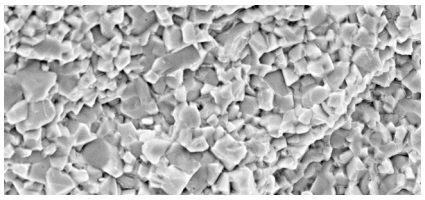


Roco-shaped structure for melting made HS steel

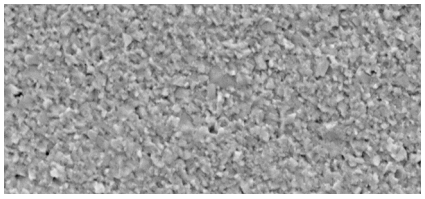


Homogenous structure for PM-HS Steel

Cutting material with abbreviation	Composition, manufacture	Characteristics and possible use
SP Alloy tool steel	alloy content < 5% (C > 0.6%). Few carbides, therefore only low hardness and heat resistance. Manufactured in a molten-metallurgical process.	Hardenable up to 60 HRC. For solid wood processing in the craft sector, e.g. as a profile knife for universal cutterheads.
HL High-alloy tool steel	alloy content > 5% Alloy elements Cr, Mo, W and carbon form carbides which allow for hardness and wear resistance. At least 1 alloy element > 5% e.g. B. 12% Cr and 2% C. Manufactured in a molten-metallurgical process.	Hardenable up to 63 HRC. Very corrosion resistant from high Cr content. Preferably used in planing mills for soft woods, e.g. solid cutter for manufacturing tongue and groove boards at high feed speed.
HS High performance high speed steel (HSS)	alloy content > 12% Alloy elements W, Mo, V, Co and carbon form carbides which allow for hardness and wear resistance. Manufactured in a molten-metallurgical process, followed by machining processes - linear distribution of the carbides manufactured in a powder-metallurgical process (PM-HS) - higher alloy contents possible, homogen distribution of carbides.	Hardenable up to 65 HRC. Preferably used for solid wood processing, mainly soft woods, e.g. planers, jointing cutters, profile blanks or tipped profile cutters. Considerably longer tool life compared to HL steel. The best relation between toughness and hardness is achieved with HS steel manufactured in a power-metallurgical process (PM HS).
ST Cobalt-based cast alloys	Almost completely non-ferrous alloys of: Co, W, Cr. Manufactured in a melting process.	Hardness 40 to 58 HRC. Particularly corrosion and temperature resistant, tough (small cutting angles possible). Typical applications: Processing of fibrous or damp, acidic woods in sawmills or planing mills, and machining oak, Meranti or poplar.

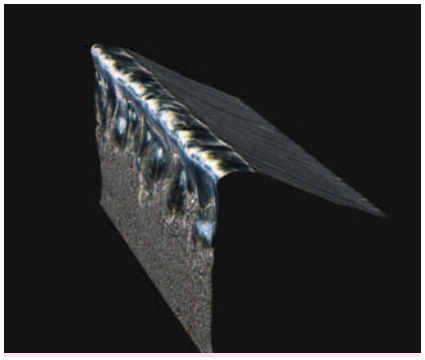


Fracture of a standard tungsten carbide.



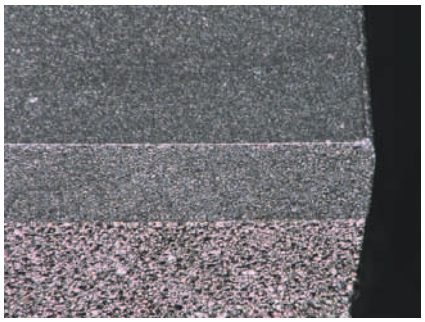
Fracture of an UF-tungsten carbide.

Sharp-edged wear on a coated HS edge.

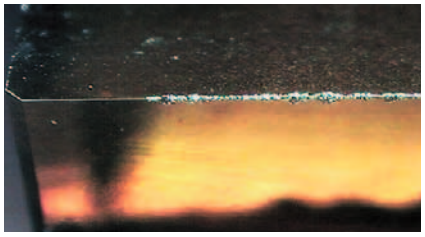


Rounding- and erosion wear on an uncoated HS edge.

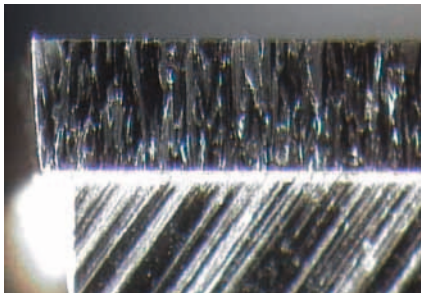
Cutting material with abbreviation	Composition, manufacture	Characteristics and possible use
HW Carbide metals	Sintered materials composed of metal carbides and metallic binders (mainly WC + Co). Manufactured in a powder-metallurgical process by mixing and pressing the basic powder materials, followed by sintering at high pressures and temperatures.	Hardness between HV 1300 and 2500. Hardness and toughness can be varied over a wide range by altering the grain size and quantity of the binder in the mix. Universal cutting material for wood processing with wide range of application from knotty softwood with glued joints to panel materials and solid plastics. Ultra fine carbide metals allow for very sharp cutting edges as a prerequisite for paintable surfaces.
MC Multi purpose steel, coated **HC** Tungsten carbides, coated	2 – 3 µm thick hard material coating on the blade. Coating materials: Nitrides, carbides, carbon nitrides or oxygen nitrides from the elements Ti, Al, Cr, Zr. Manufactured in a vacuum coating process. A new cutting material is created by the coating. The substrate is no longer solely responsible for the wear resistance but assumes a supporting function for the coating.	Surface hardness between HV 1600 and 3500. The chemical and abrasive wear resistance of the substrate at the surface of the blade is significantly increased. The edges remain sharp longer and friction is reduced. Performance times can be improved five fold compared with uncoated tools. This performance is retained even after sharpening. Preferred applications: solid wood, thermoplastics, non-ferrous metals



DP edge polycrystalline diamond layer (on top) sintered on tungsten carbide substrate (on bottom)

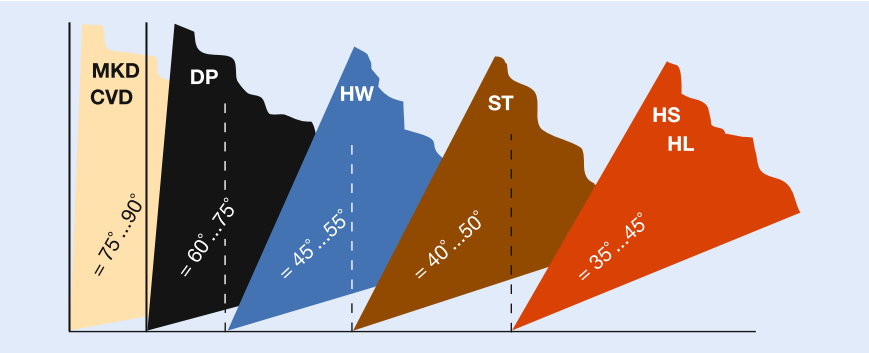


DM edge - monocrystalline synthetic diamond

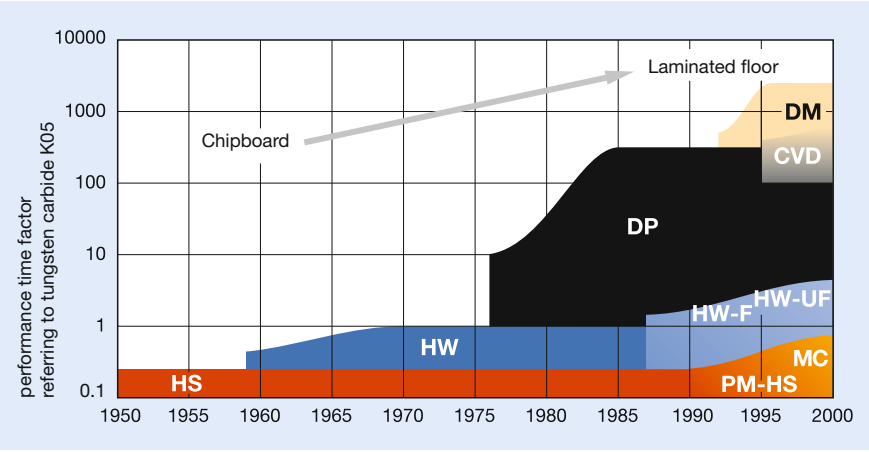


CVD diamond layer of columnar diamond crystalls, soldered on tungsten carbide

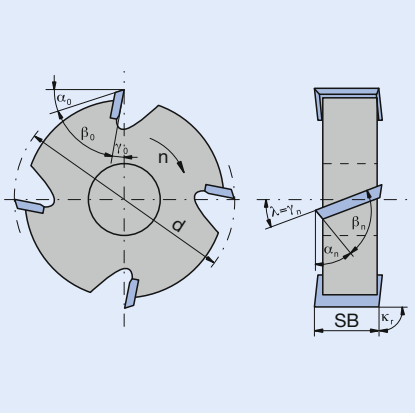
Cutting material with abbreviation	Composition, manufacture	Characteristics and possible use
DP Polycrystalline diamond (PCD)	Sintered layer (0.3 – 0.6 mm) composed of diamond crystals on tungsten metal surface. Diamond grain size: 1 – 30 µm. Manufactured in high-pressure synthesis process. Diamond grains sinter among each other forming a layer and are combined with a tungsten carbide substrate. Due to the diffusion of Co from the tungsten carbide between the diamond grains, the diamond becomes conductive and may be processed by spark erosion.	Composed of the hardest material, wear starts at grain boundaries, very good thermal conductivity. Hardness and toughness can be varied within certain ranges by altering the grain size. The field of application of DP cutting materials ranges from solid woods, chipboards and fibre boards to very abrasive materials such as fibre cement boards, laminate floors or fibre reinforced plastics (composites). Excellent suitability for dry processing of non-ferrous metals.
DM Monocrystalline diamond	Diamond monocrystal (structure with grain boundaries). Manufactured in a high pressure synthesis process. Only available in dimensions of a few millimeters. Processing only possible by grinding with diamond.	Harder than DP. Very smooth cutting edges can be produced as there are no grain boundaries. Can be used for very abrasive laminate overlays or for a polished finish on plastics and non-ferrous metals.
CVD Polycrystalline diamond layer	0.5 mm thick diamond layer composed of columnar diamond crystals grown together, brazed on a tungsten metal support. Manufactured in a plasma CVD coating process. Due to doping with boron, conductible and erodable.	Harder than DP and DM as there is no metallic binder phase and the diamond grains with their crystal grid layer levels are positioned randomly. Used for particular laminate's overlays.



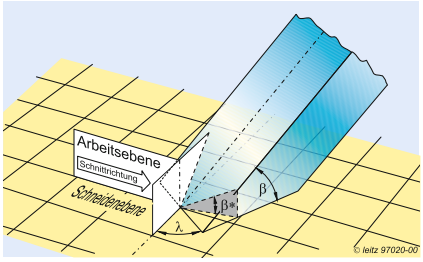
Specific cutting material geometries
Due to the relation between hardness and toughness, there is a specific angle geometry for every cutting material to achieve optimum cutting performance. Hard, brittle cutting materials require a stable wedge angle so the edges cannot break off. Less hard, but tougher cutting materials require larger cutting angles to maintain a cutting edge. Tungsten carbides offer the highest degree of design freedom and can be used for almost every application.



Progress in tool life by different cutting materials
All cutting material developments are aimed at longer tool life. New materials often call for new cutting materials. Chipboard led to the use of tungsten carbide and later to polycrystalline diamond, laminate flooring to monocrystalline and CVD diamond and plywoods to fine grain tungsten. In the 50 years of panel material development, tool life has increased a thousand fold.

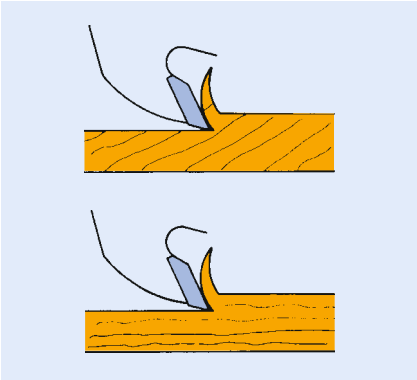


Cutting geometry and description of angles

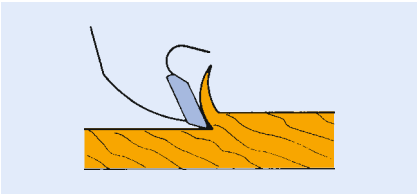


„Shear cut“ - the shear angle effectuates a reduction of the medge angle in cutting direction

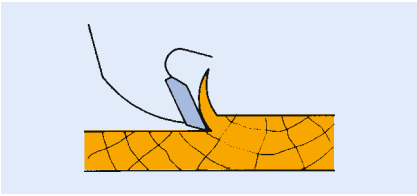
Größe	Symbol	Bedeutung
Cutting angle (Gamma)	γ	Influences cutting force and pre-splitting. For cross grain and tough materials rather large cutting angles, for hard, brittle materials rather small cutting angles.
Wedge angle (Beta)	β	Important for cutting edge stability. Cutting material specific minimum wedge angle required, so that cutting edge does not break off.
Clearance angle (Alpha)	α	Reduces friction between blade and workpiece and resin build up.
Shear angle (Lambda)	λ	Creates a „pulling cut“. Acts as cutting angle for the leading secondary cutting edge (cutting flange). Influences the chip flow in axial direction.
Edge setting angle (Kappa)	κ_r	Enlarges the start of the cutting angle of the blade. For edge setting angles < 10°, almost no cutting actions can be seen (e.g. edging tools).
Secondary cutting edge angle	γ_N	Corresponds to the shear angle of the main cutting edge.
Leading edge angle	β_N	Important for the stability of the secondary cutting edge. Normally larger than the secondary wedge angle of the main cutting edge.
Secondary cutting edge clearance angle	α_N	Reduces friction between secondary cutting edge and workpiece and resin build up.
Diameter	d	Regarding profile tools, the zero diameter (mostly the smallest diameter) sets the processing position of the tool. The maximum diameter is set by the permissible rotational speed n_{max} and for collision factors.
Cutting width	SB	Determines the maximum processing width of the tool.



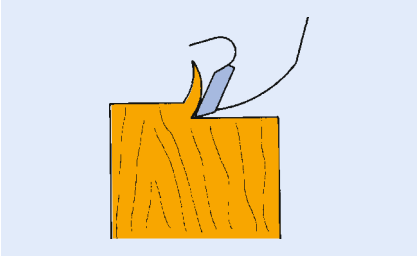
Longitudinal cut with the grain



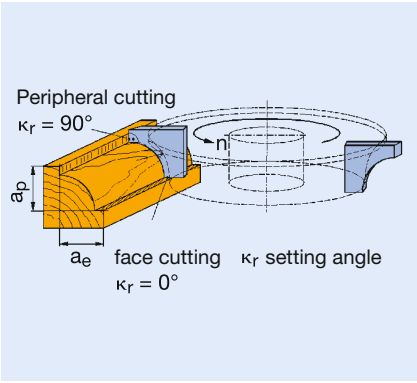
Longitudinal cut against the grain



Cross-cut



Cutting in end grain



Cutting procedure on the example of „profile cutting“

Due to the anisotropy of the wood as a naturally grown material, it can basically be divided into **3 cutting** directions:

a) Cutting along the grain
1) With the fibres
Easy to cut. Excellent surface quality and high feed rates possible.

2) Against the fibres
Difficult to cut, as the fibres tend to lift. If possible this cutting direction should be avoided by using alternatives, for example changing the direction of rotation (against feed/with feed).

b) Cutting across the grain
Low cutting forces, but the surface finish is slightly rough surface as wood fibres are “peeled off”.

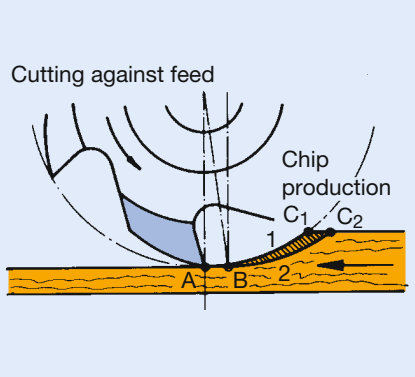
c) Cutting the end grain
The fibres are cut vertically to the fibre direction. The result are high cutting forces and slightly rough surface finishes. When the cut is completed, fibres may be torn out which is why it is cut with smaller tooth advances and using against a wood backing piece.

In the case of knotty wood and around branches, all cutting directions may occur at the same time. Due to specific cutting techniques and tool designs for pre- and finish-cutting, a continuosly good processing quality is achieved.

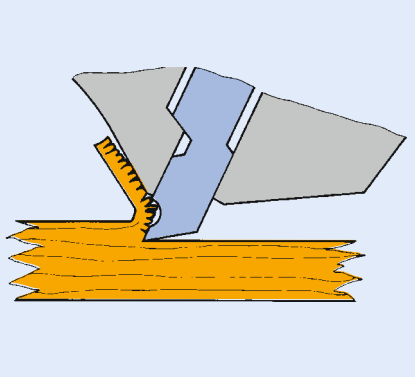
a) Peripheral cutting
The circumference of the cutting tool machines the workpiece. The circumference of the tool is surface determining. The tool’s axis of rotation and the surface of the workpiece are vertical to each other. The enclosed angle, $\kappa_r = 90°$, is called the setting angle.
Examples: planing, jointing.

b) Surface planing
The face of the cutting tool machines the workpiece surface. The front face of the tool is surface determining. The tool’s axis of rotation and the workpiece surface are parallel to each other. The enclosed angle (setting angle) is $\kappa_r = 0°$.
Examples: cutting, circular saws, edging.

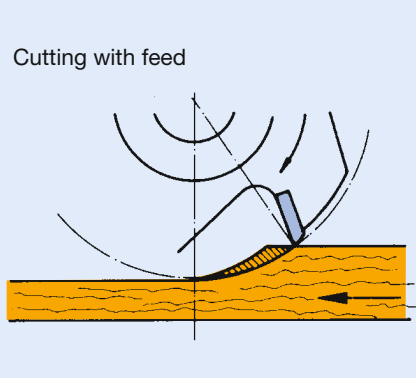
c) Profile cutting
Profiling is a combination of peripheral and face cutting, irrespective of whether the tools have shanks or bores. In general, there is a smooth transition from peripheral to face cutting in profiling. Any setting angle between ($0° \leq \kappa_r \leq 90°$) can occur.
Examples: round profiles, finger profiles or any decorative profiles - but also bevelling, rebating, grooving or slotting.



Chip formation when running against feed



Effect of a chip breaker



Chip formation when running with feed

a) Cutting against the feed
The direction of the tool cut is opposite to the direction of workpiece feed. Initially the cut has zero thickness. Before a chip can form and move across the cutting surface, the cutting edge presses against the workpiece at the start of the cutting angle. The final workpiece surface is created during this initial phase. As the cutting action increases, the cut becomes more stable with the increasing cut thickness. The final stage of the cutting process is when the chip breaks away; this is known as pre splitting.

AB: friction zone.
B, C1, C2: elongated chip.

Advantages:
Pre-splitting can help reduce cutting forces, the required motor power, and increase tool life. A lower drive output is required.

Disadvantages:
If the direction of the fibres and the pre splitting direction runs from the cutting edge toward the “go” side of the workpiece, pre-splitting creates a rough surface with torn fibres.

A chip breaker ahead of the cutting edge helps form the chip earlier and reduce pre splitting.

Since there are constantly changing fibre and feed directions during stationary machining on CNC machining centres, special cutting techniques are necessary to avoid unfavourable fibre cutting angles.

b) Cutting with the feed
For mechanical feed only.

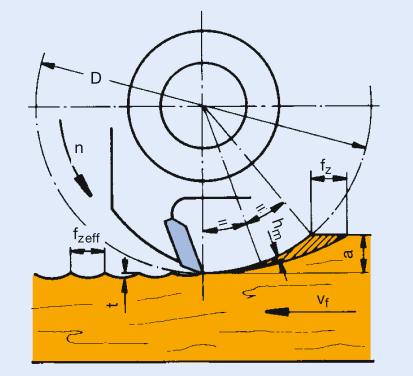
The tool cutting direction is the same as the direction of workpiece feed. Cutting starts at the maximum chip thickness, falling to zero by the time the cut is completed. With increasing cutting action, the chip becomes thinner and finer and with less risk of pre splitting.

Advantages:
Comparatively good surfaces are obtained when there is an unfavourable fibre direction. Lower feed forces required, allowing an increase in the feed speed.

Disadvantages:
The cutters are subject to more severe loads and wear quicker because of the reduced pre splitting. The tool life is approx. 30% shorter compared to cutting against the feed.

There is the danger of tool kick back i.e. hooking of the cutting edges and acceleration of the workpiece to cutting speed. Cutting against the feed is recommended for manual feed to prevent accidents.

During the peripheral cutting process (e.g. planing, jointing, profiling), the workpieces's surface finish is produced by the peripheral blades. By superimposing tool rotation on the linear feed movement of the workpiece, a succession of cutting actions produce a wave effect on the surface of the workpiece. The pitch, depth and uniformity of these planing or cutter marks determine the machined surface quality. The dimensions of the cutter marks are a combination of the cutting radius, the effective number of teeth, spindle rotating speed and feed rate.



Finish formation and cutting sizes on the example of „Chamfering“

These considerations also apply to face cutting tools such as cutters or circular saw blades. The concentric run-out is replaced by the axial run-out.

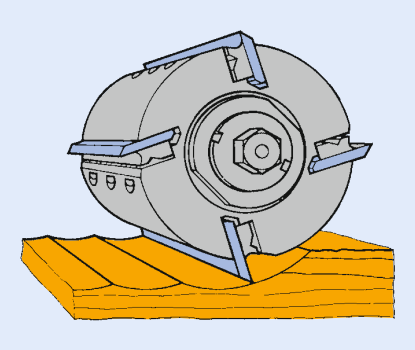
Terms and formulae relations:

v_c	=	$\pi \cdot D \cdot n / (1000 \cdot 60)$	Cutting speed [m s^{-1}]
n	=	$v_c / (\pi \cdot D) \cdot (1000 \cdot 60)$	Speed of rotation [min^{-1}]
v_f	=	$f_z \cdot n \cdot z / 1000$	Feed rate [m min^{-1}]
f_z	=	$v_f / (n \cdot z) \cdot 1000$	Tooth advance [mm]
f	=	$f_z \cdot z = v_f / n \cdot 1000$	Feed per rotation [mm] cutter mark length of jointed tools
f_{zeff}	=	$f_z \cdot 1 = v_f / n \cdot 1000$	Effective tooth feed visible on the workpiece [mm] (cutter mark length) [mm]
t	=	$f_z^2 / (4 \cdot D)$	Depth of knife marks [mm]
h_m	=	$f_z \sqrt{(a_e / D)}$	Mean cutting thickness [mm]
a_e	=		Radial cutting action, cutting depth [mm]
a_p	=		Axial cutting action, cutting width

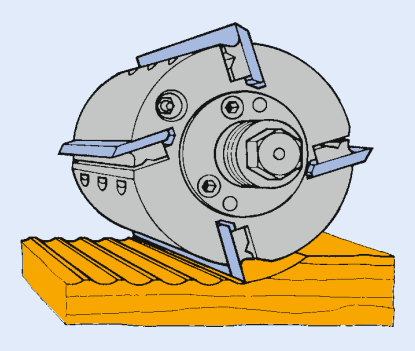
These formulae have numerical values.
All values must be entered using the units of measurement shown in the square brackets [ ].

Top quality surfaces have cutter marks at a regular pitch between 1.3 and 1.7 mm. As the cutter mark length increases, surface finish quality deteriorates but tool life increases. As the cutter mark length decreases, the mean cutting thickness h_m decreases as well. As a result, friction and wear increase and tool life decreases.

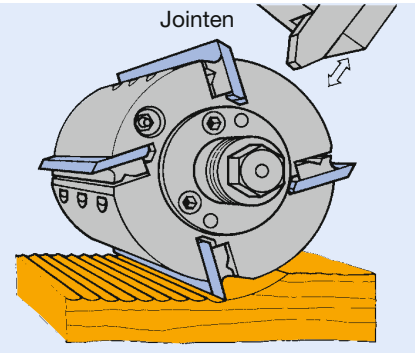
Single knife finish
Due to the production tolerances, the cutting edges on a multi-knife tool do not all have the same cutting radius. With conventional tool clamping (clearance fit between spindle and tool), only one cutter normally creates the workpiece surface. This is known as a single knife finish. The other cutting knives contribute to the cutting process, but do not determine the finish surface quality of the workpiece. The cutter that projects farthest removes traces of the cutting action of the other cutters.



Finish formation for conventionally clamped tools



Finish formation for high precision tools with centering adaptor



Finish formation for jointed tools with centering adaptor

Quality criteria „waviness“

The visible cutter marks on the workpiece f_{zeff} correspond to a single knife finish (z = 1). As the cutter mark pitch determines the quality of the workpiece's surface, the feed rate is equivalent to z = 1 in these conditions.

-> $f_{zeff} = v_f / (n \times 1) \times 1000 = f$

(f = feed per tool revolution)

Multi knife finish

Tool concentric run-out tolerance is significantly reduced by a clamping system that centres the tool on the spindle, such as a hydro clamping system, shrink-fit clamping or HSK. Hydro clamping makes the cutting action of several cutters visible on the workpiece surface. The number and spacing of these is undefined (not regular) because of the remaining run-out tolerance. If the tool is carefully balanced (G 6.3 or better), an adequate finish can be obtained for many applications from this multi knife machining process if the feed rate is high, for example for tongue and groove panel processing or the production of linear mouldings.

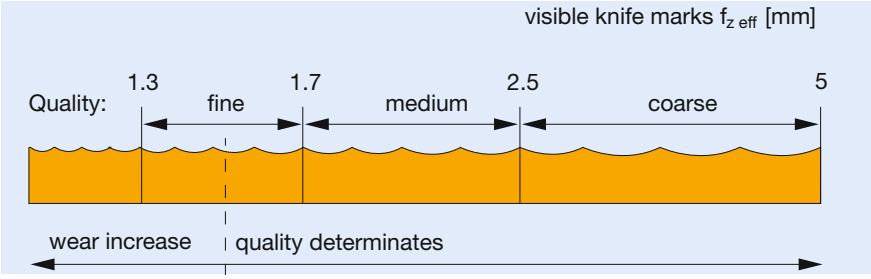
A run-out tolerance of zero can be achieved by subsequently dressing the cutting edges within the µm range known as jointing which is performed at full operational speed on the machine spindle. The knife marks are then at uniform intervals on the workpiece surface. This technology enables the feed rate to be multiplied by the number of cutters, with the quality is equivalent to a single knife finish.

-> $f_{zeff} = v_f / (n \times z) \times 1000 = f_z$

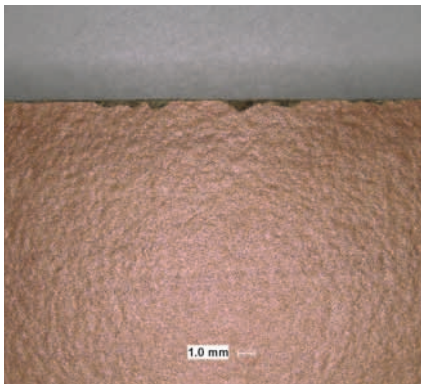
(f_z = feed per tool revolution)

Criteria for the processing quality

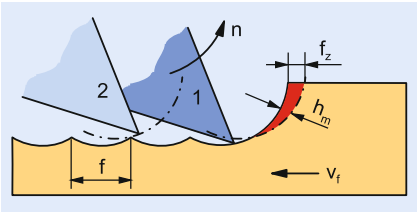
Tool parameters and tool life are measured by the processing quality. For judging surfaces, e.g. during planing, the distance and the depth of the visible cutting actions are decisive. Regarding coated panels, workpiece edges without break outs are important.



The cutting action of the highest protruding edge is responsible for the **distance of the visible cutting actions** (knife marks). The remaining blades produce chips; their start of the cutting angle does not reach the machined surface. Therefore, the jointing technique is in particular used for planing so that all edges process the planed surface to the same extent.

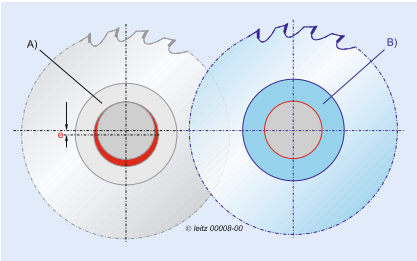


Quality criterion of „break outs“



The tooth feed rate f_z defines the medium chip thickness h_m

$$f_z = \frac{V_f}{n \times Z}$$



Centering tool interface
A) conventional interface with fitting tolerance „e“
B) Centering interface without fitting tolerance
Balancing quality: G = e · w

The **depth of the start of the cutting angle** is determined by the tool diameter and by imbalances and vibrations.

For the quality criteria **tear outs or edge break outs**, the mean cutting thickness h_m is of particular importance. As the mean cutting thickness increases, the woodchips become more stable and tend to break and pre-split. A result is damage to the machined workpiece, i.e. tear outs or splinters in solid wood and edge break outs in panel materials. Therefore, tooth advance may not be increased arbitrarily. The possible tooth advance depends on the tool diameter and the start of the cutting angle of the tool cutting edges. There are specific guide values for the tooth advance f_z for each workpiece depending on the processing method such as sawing, cutting, planing, finish milling, drilling.

Imbalance and run out tolerances result in different mean cutting thicknesses on the cutting edges of a tool. The thickest woodchips limit the cutting performance. The better the concentric and the axial run-out of the tool cutting edges, the more even the mean cutting thickness of each edge and the higher the possible tooth advance f_z is. With a constant spindle speed n and tooth number Z, this means: Tools with a high imbalance and a small run-out tolerance allow for higher feed rates. At the same time, the higher feed speed is connected with enlargement of the start of the cutting angles with the side effect that further edges (even if with irregular distances) are involved in creating the surface finish. The law of the “single knife finish” no longer applies.

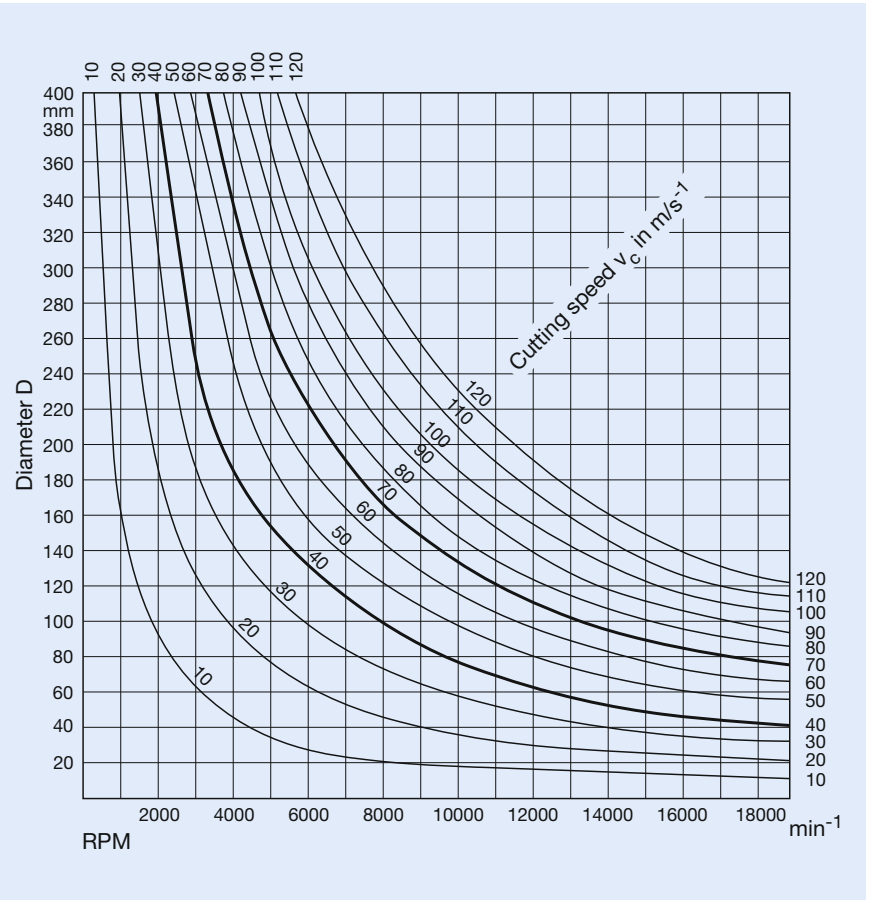
Centred mounting sleeves such as a hydro clamping system, shrink-fit clamping or HSK eliminate the tolerance between the tool and the machine spindle and are required for low imbalance (G 6.3 mm/s or better) and for accurate concentric and axial run-out of the edges (0.02 mm or better). The tools must be sharpened mounted on this centred mounting sleeve.

If surfaces without tear outs and edges without break outs are a quality criteria and the processed surfaces are flat, then tools manufactured this way may be used for much higher feed speeds compared to a single knife finish. Examples for this include high toothed profile cutters for panel manufacture (laminate panels, tongue and groove boards) which are machined without jointing at feed speeds above 200 m/min^{-1} or cutter tools for forming furniture panels which achieve speeds up to 100 m/min^{-1}.

When choosing the appropriate machine tool, many interdependent factors must be considered. The goal to achieve a first-class wood surface finish, a saw cut surface without tear outs and an accurate drilling result requires that the cutting material, tool and machine operating data have been adapted to the material characteristics and to each other. Thus, the finished machine tool is the result of analysis and evaluations before the machine is built.

Determination of cutting speed in relation to speed of rotation and tool diameter

The graph shows the cutting speed in m/s^{-1} in relation to the speed of rotation and tool diameter. The speed required can be determined if the tool diameter and cutting speed are known. Similarly, the tool diameter can be determined if the speed of rotation and cutting speed are given.



Reading examples:

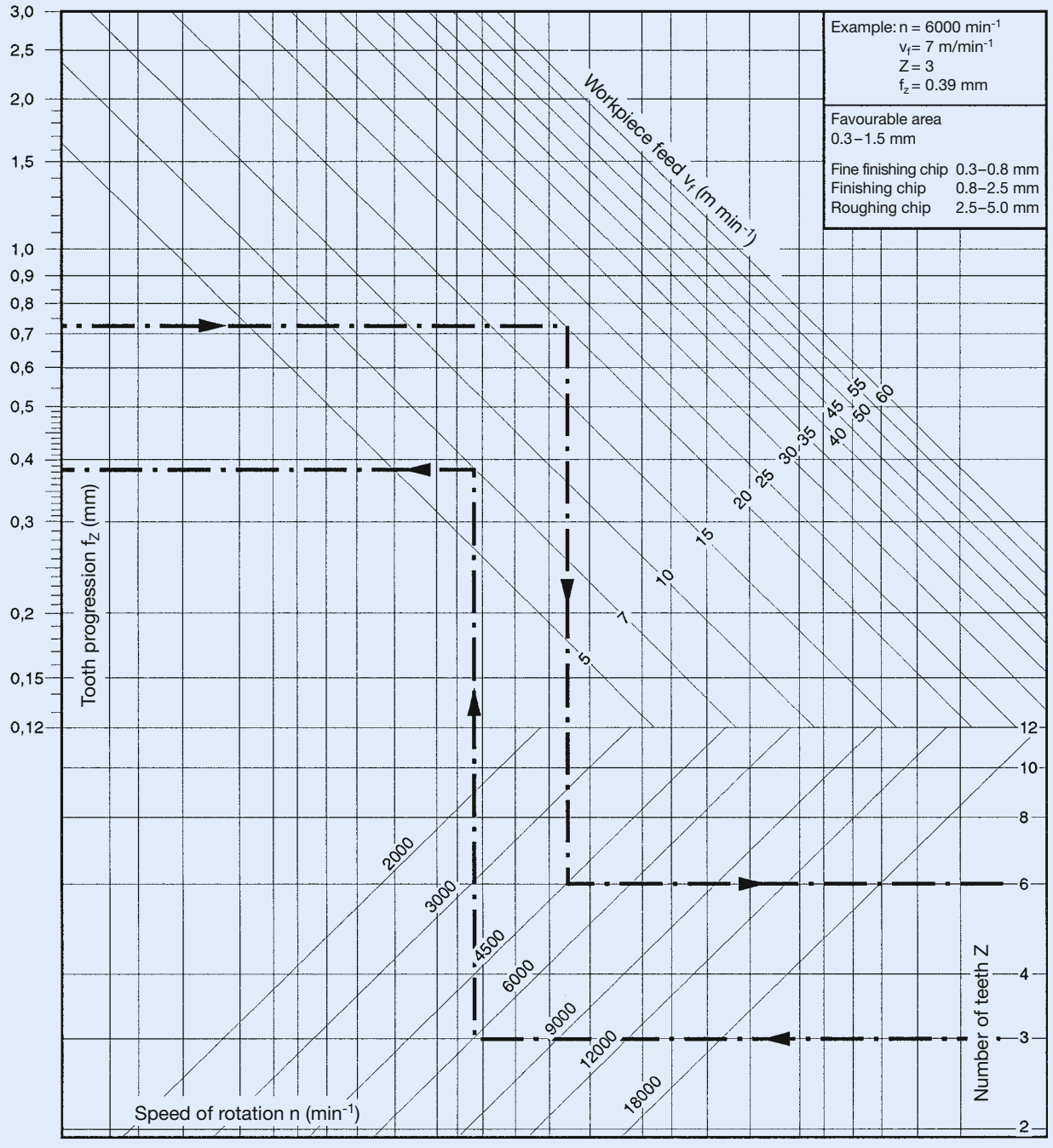
	D mm	n min^{-1}	v_c m s^{-1}
Circular sawblades	350	6000	110
Cutting tools	160	9000	76
Shank router cutters	52	18000	50

Cutting speed guide values v_c

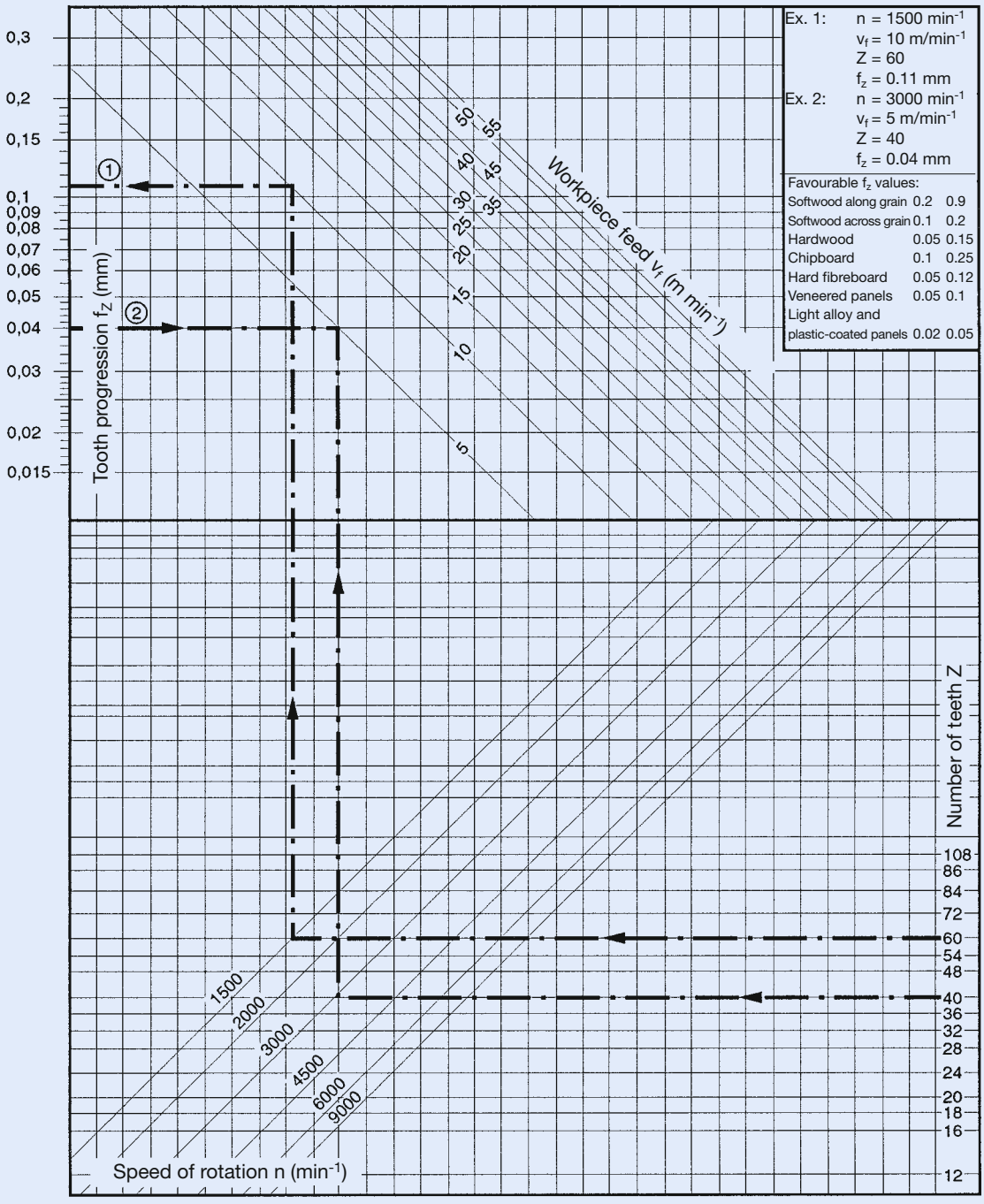
Material	Cutting v_c [m s^{-1}]	Sawing v_c [m s^{-1}]
Softwoods	50-90	60-100
Hardwoods	50-80	60-100
Coreboards	60-90	60-100
Chipboards and fibreboards	60-90	60-90
MDF	60-90	60-90
Panel materials, coated	60-90	60-90
Thermoplastics	40-60	40-70
Thermosets	30-50	40-60
Aluminium	30-60	60-90

The guide values given here apply to tools with a diameter > 100 mm. Regarding shank tools, the recommended cutting speeds are considerably lower due to the small tool diameter and the higher friction -> router cutter 10 – 40 m s^{-1}, drill 5 – 10 m s^{-1}.

Parameters for cutting tools
Tooth progression, feed rate, speed of rotation, number of teeth

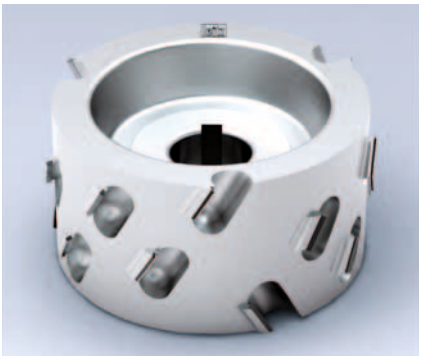


Parameters for circular sawblades
Tooth progression, feed rate, speed of rotation, number of teeth



Solid tool
Example: HL profile cutter

Solid tool
Example: HW shank router cutter



Tipped tool
Example: DP grooving cutter

Tipped tool
Example: HS minifinger cutter

Regarding tool types, the machine tools are distinguished by design and construction design.

Single part tools / solid tools
Solid tools are made from one piece. The basic body and the edges are of the same material. Typical examples of this tool type are profile cutters of HL steel, routers and drills of HS steel or solid tungsten carbide. All have been designed as resharpenable tools.

Profile cutters of HL steel are mainly used for profiling tongue and groove boards in the primary industries. They have a high number of teeth and a very large resharpening area so economical when it comes to high running performance. The one piece design allows for a high precision concentric and axial run-out which is why they can be used for feed speeds up to 200 m min^{-1} without jointing. A key feature of these cutters is the spiral relief in the profile. The free area of the edges is convex and follows a spiral form. The cutting edges are resharpened by turning the tools around its rotational axis. This ensures the wedge angle and cutting profile remain constant.

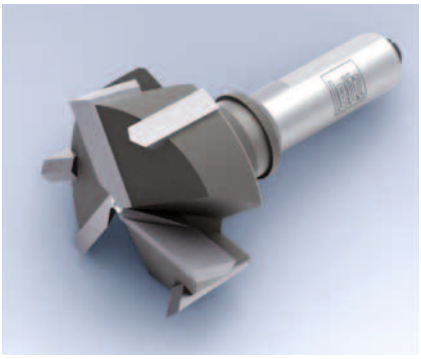
The reasons for a one piece design of routers and drills are different. Because of the small diameters, the most important factor is stiffness which is higher with a body made of HS steel or tungsten carbide compared to tempering steel. More efficient production is also very important.

Tipped tools / progression tools
Regarding composite tools, the edges and basic tool body are made of different materials. They are jointed to each other by brazing or adhesive. Typical examples of this tool type are circular sawblades with tungsten carbide or diamond tips and HS, HW or DP tipped cutters as well as HW tipped drills.

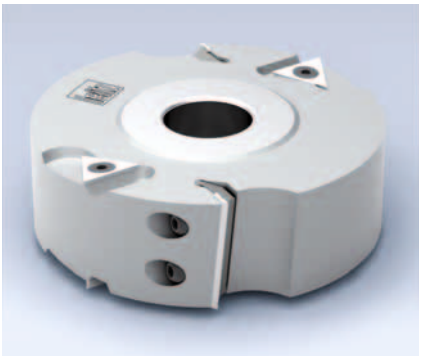
Brazing is at high temperatures between 650°C and 700°C. Due to the tensions occurring when the material is cooling down, the cutting material must have a particular toughness and may not exceed a certain thickness. An adhesive joint has the advantage that it can be done at lower temperatures. In doing so, the joint has less tensions so harder and more wear resistant materials can be used, in particular for tungsten carbide tools.

Tools tipped with HS or HW edges are mostly resharpened on the cutting face. Regarding circular sawblades and grooving cutters, it is recommended to also sharpen on the top surface (relation between face and top approx. 2:1) to maximise the use of the cutting material and to achieve longer tool life. As the free surface has a straight or convex relief, the profile changes slightly when sharpening the cutting face. Regarding glue joint profiles or finger joint profiles, both tools of a pair are always resharpened to the same extent to make sure the joint profiles match each other.

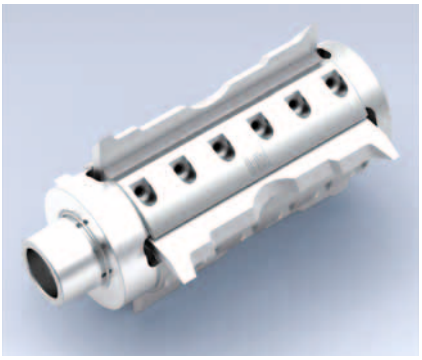
This is not the case with diamond tools. Here, the DP edges with the tungsten carbide support are brazed to the panel seatings so that the thin diamond layer forms the cutting surface.



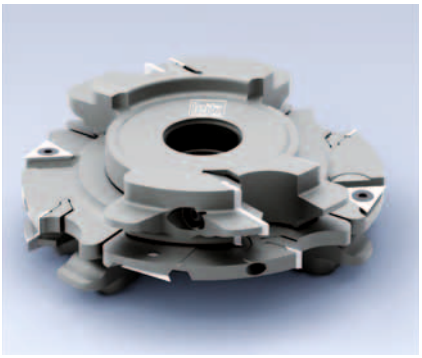
Tipped tool
Example: HW hinge boring bit



Turnblade tool for jointing and rebating



Profile cutterhead for backserrated blank knives



Profile cutterhead with throwaway knives and turnblade spurs

Resharpening may only be done on the top. As the edges always require a certain projection from the body of the tool, this must be adjusted during sharpening. When sharpening the top, the original profile may be kept. Only the cutting angle is increased.

Closed profiles with a steep run out angle must have a lateral free angle in addition to the radial free angle so that the tool does not “burn”. Such tools change their width when being sharpened. So, two piece tool designs are practicable to compensate for the change in profile width.

Cutterheads / assembled tools
Assembled tools are also known as cutterheads since the cutting edges are inserted as detachable knifes. It is distinguished between turnblade knives or throwaway system where the knives cannot be resharpened, and resharpenable knife head systems. All cutting materials may be used. Knife head systems with tungsten carbide cutters are most common.

The advantage of knife head systems is that the tool body design can be reused and only worn knives must be replaced. Assembly and disassembly must be done carefully and under clean conditions to ensure accurate and safe positioning of the knives in the tool. The replacement of the knives is normally by the user, who is responsible for the accuracy and safety of his tools.

The simplest form of assembled tools are the turnblade tools. Standardised tungsten carbide knifes with 2 to 4 cutting edges are used as cutters. When worn, they may be turned 1 to 3 times. The main cutters are normally straight turnblades. For edge processing of rebates or grooves, spur cutters are used and for profile edges, radius or bevelling knives are used. Typical applications are jointing, rebating and grooving tools, but also simple window tools. By separating the profile into many standardised individual blades not adapted to the respective processing situation in respect to their geometry, only a medium processing quality can be achieved, in particular on rounds and profile edges.

Tools with resharpenable knives are, for example, profile cutterheads with serrated back HS or HW knives. These can be resharpened more than 30 times in the profile, keep their profile and are very economical. Furthermore, such systems are very flexible as knives with different profiles can be mounted in one basic body. A disadvantage is the change in diameter so the position of the machine spindles must be adjusted after every sharpening.

Cutterhead systems with throwaway knives do not have this disadvantage. These are normally HW blades. After changing the knives, all tool dimensions stay the same. However, this advantage is gained at the cost of a high consumption of expensive tungsten carbide so such tool systems have high operational costs. In addition, the knife profile is related to the profile of the tool body design. So as is the case with tipped tools, every profile requires a complete tool.

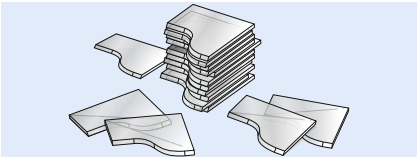
Multi purpose cutterhead with backing plates „VariForm“

A compromise are universal profile cutterheads in which the cutting plates are not support by the tool body design, but by profileable and replaceable supporting plates (example: VariForm). Such systems may be resharpened 2 to 3 times on the cutting surface if a minor change to profile and diameter is acceptable.

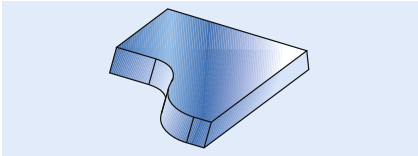
Resharpenable tools

It doesn`t matter if cutters or cutterhead systems, resharpenable tools use the expensive and valuable cutting materials in a more efficient way as throwaway tool systems.

For example a throwaway tool system with 2 mm tungsten carbide cutting edges waste 8 to 10 times more tungsten carbide material in tool life compared to a resharpenable tool system with a 5 mm tip hight. But after every resharpening the dimensions of the tool are changing and a new set up at tools and machines is necessary.



Throwaway tool System (2 mm)
Tungsten carbide consumption by 16 tool lives.



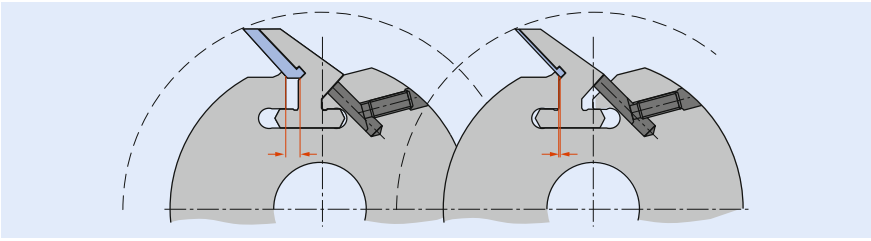
Resharpenable tool (5 mm)

Constant tools

Constant tools combine cost effectiveness of resharpenable systems with the handling advantages of throwaway systems. They are always designed as a cutterhead. A slot guides the knife position parallel to the clearance angle of the profile, so the knife always comes back to the same reference point after sharpening on the cutting face. This ensures that the profile and the diameter of the tool remain constant after sharpening. Adjustment of the spindle position is not required.

Examples for such self adjusting constant tools are the Leitz systems „Pro-Fix“ for profile processing and “VariPlan” for planing.

Constant diameter tool
Example: Planerhead „VariPlan“



Functional principle: ProFix Constant diameter tool

Constant diameter tool
Example: Profile cutterhead „ProFix“

Another form of the constant tool are tools with adjustable knives. They are either adjusted to the diameter when installed (example: planing cutterhead with planer knives) or are moved to the extent of their wear before the sharpening process and then ground back to the nominal diameter (example: Jointing cutterhead with cylindrical DP knife insertion).

Typical tooth shapes and applications

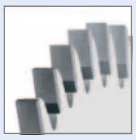
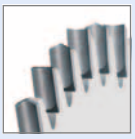
For special applications also sequences of various teeth can be used, combining several types of teeth (e.g. WZ/WZ/FZ). To protect the knife points against breakouts, al tooth shapes slightly can be bevelled (protecting bevel).

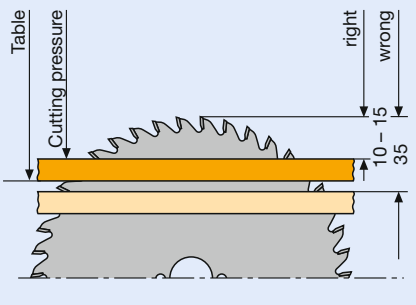
Circular sawblades

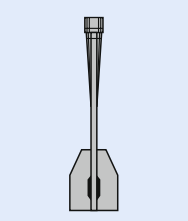
Circular sawblades for processing wood and plastics are progression tools. They consist of a saw plate with tungsten carbide or polycrystalline diamond teeth brazed to its circumference. They are used to separate workpieces. To keep the cutting loss and the cutting forces small, the aim is to keep the cutting width as small as possible. On the other hand, straight cuts free from scores require a certain blade stability; this invariably means a compromise between cutting width and saw diameter.

Depending on the material and geometry of the workpiece, the saw teeth differ in shape and geometry. Generally, positive cutting angles are used to keep the cutting forces low. For thin walled workpieces such as e.g. hollow profiles, negative cutting angles are required to prevent the saw from catching. The number of teeth depends on the requirements for cut quality. The rule of thumb is: the higher the number of teeth, the better the cut quality to be expected, and the lower the number of teeth, the smoother the saw cut.

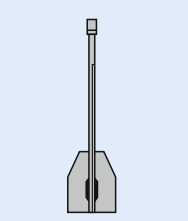
Classification of typical teeth forms and applications:

	Tooth shape	Application
	Flat FZ	Solid wood, along and across grain.
	Alternate, positive WZ	Solid wood along and across grain as well as glued, wood products uncoated, plastic coated or veneered, plywood, multiplex, composite materials, laminated material.
	Alternate, negative WZ	Solid wood across grain, hollow plastic profiles, non-ferrous metal extruded profiles and tubes.
	Square/trapezoidal, positive FZ/TR	Wood products, uncoated, plastic coated or veneered, non-ferrous metal extruded profiles and tubes, non-ferrous metals, Al-PU sandwich panels, hollow plastic profiles, polymer plastics (Corian, Varicor etc.)
	Square/trapezoidal, negative FZ/TR	Non-ferrous metal extruded profiles and pipes, hollow plastic profiles, Al-PU sandwich panels.
	Inverted V/hollow ground HZ/DZ	Wood products, plastic-coated and veneered, coated profile strips (skirting boards).
	Flat, bevelled ES	Construction industry machine saws.



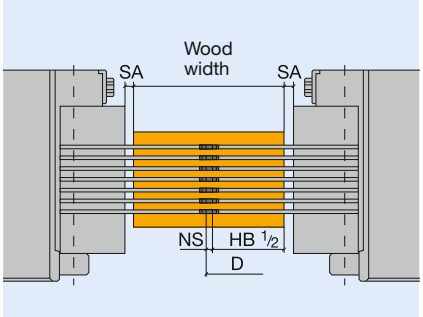


Sawblade without damping

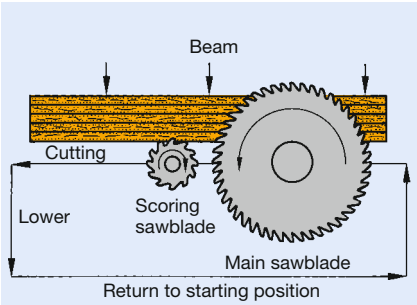


„Foil saw“ with good noise- and vibration damping

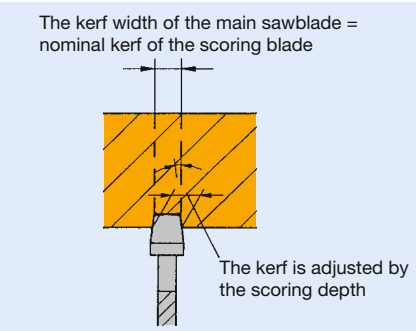
Thin kerf sawblade set to produce parquetry laminates



Inherent to the functional principle, the cutting edges on the tooth entry side are a better quality than the ones at the tooth exit side. By setting the projection of the teeth above the workpiece it is possible to influence the cut quality in certain areas. The point of reference here is a value of 10 - 15 mm. With a greater projection of the teeth, the quality at the exit side suffers, with a smaller projection quality at the entry side suffers. To achieve a cut edge without tear outs on both sides it is required to use scoring saws at the exit side of the main saw. These are sawblades with a small diameter but a greater cutting width than the main saw by 0.1 - 0.2 mm, scoring the workpieces with feed to a depth of 1 - 2 mm. To adjust the cutting width to that of the main sawblade, scoring saws are designed either in two parts or with a tapered tooth shape. Special concave tooth saws have been developed for panel saws without scoring saws; these saws enable cuts without tear outs to both sides when set correctly but have a comparatively short tool life.



Panel sizing machine with scoring unit and pressure equipment

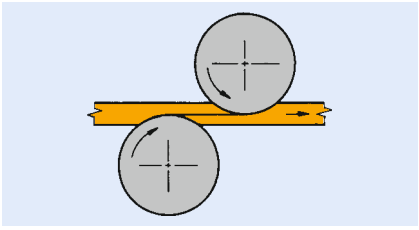


Application scheme of a conical scoring sawblade. Servicing the tools (always in sets), the cutting widthes have to be machted to each other.

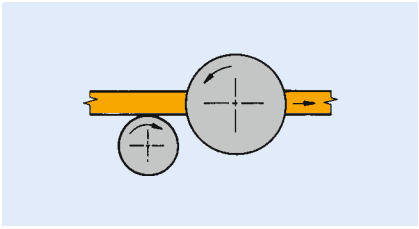
A basic prerequisite to achieve cut surfaces without scoring is a good axial saw run-out but also low vibration. For this, the sawblades are pre tensioned by roll rings so they run stead even when subject to centrifugal forces. Additionally inserted laser ornaments and applied films absorb vibration and at the same time reduce noise. The biggest effect is achieved with foil laminated saws. The noise reduction here is up to 10 dB(A), a noise reduction of half.

Special thin cut saws were developed for separating high quality wood, e.g. when manufacturing parqueting blocks. Depending on the diameter, the cutting width is within a range of 1.0 mm to 1.6 mm. The teeth protude little laterally compared to the saw plate. Their application makes special demands on the woods‘ drying and the workpiece guidance in the machine, in particular the separated segments.

Ideally, circular sawblades should be sharpened on face and top to maximise tool life. For this reason the saw plate must be relieved at the back. As the teeth becoming smaller, the cutting quality improves since the protrusion of the teeth becomes smaller and the tooth vibrates less. However, the gullet also becomes smaller which is why the feed speed must be adjusted.



Double-hogging



Scoring/hogging

Compact hogger
Example: Diamaster DT

Sawblade hogger

In many countries circular sawblades are resharpened only at the face due to sharpening machine limitations. To remove the wear zone, a significantly more sharpening than when sharpening on face and top is required. So, the sawblade may not be resharpened as often.

Hoggers
Hogger means tools that are processing the narrow sides of panel materials with their frontal cutting edges. They are face plain cutters and are used to format panels in through feed machines. To achieve cutting edges without tears you need two tools. There are two different types: “double hogging“ and “scoring/hogging”.

In case of **“double hogging“** a tool cuts with the feed both at the top and bottom of the panel, overlapping in the panel centre. Both tools are aligned accurately at one level and produce a smooth cutting area which may be edged later.

In case of **“scoring/hogging“** the underside of the panel is scored 1 - 2 mm deep (depending on the decorative coating’s thickness) by a scoring hogger with feed and subsequently finished by a hogger from the top against the feed. To avoid edges tearing at the hogger’s blades exiting the wood, the hogger is angled by 0.1 - 0.2 mm axially so that a small step appears on the cutting surface.

In addition to processing narrow edges, the hoggers also have to completely hog the material overhang. For this, the circumference must have a certain hogging width, between 5 - 10 mm for most applications. Regarding the tool design, a distinction is made between “compact hoggers” and “saw hoggers”. In case of compact hoggers all edges are mounted on a basic tool body. Usually diamond tipped tools. In case of saw hoggers a sawblade is screwed to the basic body process the narrow edge while flange-mounted cutters or saw segments hog the remaining material overhang. Usually diamond cutters are used for the sawblade while in most cases tungsten carbide knives are sufficient remove the material overhang.

Depending on the type of decorative coating, a distinction is made between different profile types of the hogger knives, such as e.g. radius or bevel knives or knives with a one sided tip. In recent years, a step profile has been developed (e.g. Leitz DT hogger), significantly lowering the risk of damage to the knife from foreign matter in the chipboard. There are special shredder knives for processing veneered boards, breaking up the free veneer overhang so that the extraction is not blocked by veneer strips.

Cutter spindles

Cutter spindles are tools permanently installed in the machine. They are found mainly in thicknessing and planing machines. They are composite tools with knife replacement always in the machine to reduce down time and ease work on the machine, centrifugal force clamping systems automatically clamp and position the knives when the spindle is run up (e.g. Leitz CentroFix).
Spiral cutter spindles with smooth knives have proven to be particularly quiet. However, such technique can only be used for HS steel knives and not tungsten carbide.

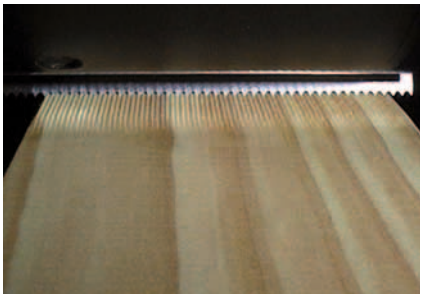
Cutter spindle „CentroStar“

Planing tools

Planing tools are peripheral cutting tools with continuous straight knives. Usually they are designed as planerheads. They are used for smooth surfaces, primarily in processing solid wood. HL, HS and tungsten carbide knives are used as cutting material. The number of blades is between Z 2 and Z 36. The cutting width ranges up to a few hundred millimeters.
For precutting, planing tools with segmented edges (HeliPlan) or with ripple profile (NariPlanPlus/RipTec) are advantageous. They reduce the presplitting and prevent the wood from an early damage, so that considerably more even surfaces are produced during the enclosed finish planing.

Finish planed surface after conventional preplaning.

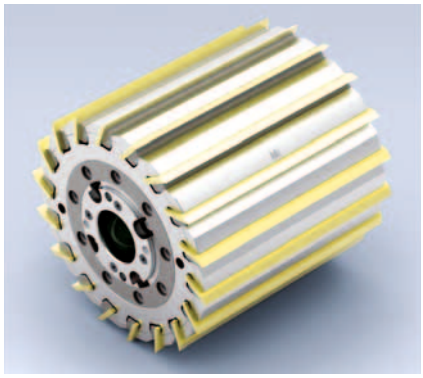
Finish planed surface after preplaning with RipTec.



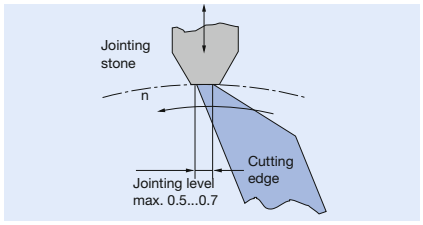
RipTec - preplaning tool

Conventional planerheads have 2 or 4 knives and are connected to the machine spindle via a drilling fit. Due to tolerance one knife is decisive for the surface. The feed rates achieved range from 9 to 36 m/min, depending on R.P.M. and required surface quality. Planerheads for higher feed rates have a hydraulic clamping or a HSK interface to guarantee a centering of the tool with the machine spindle free of play. For the hydraulic clamping grease-filled chambers in the wall of the tool are pressurized by a grease gun. By expanding the tool chambers, the bore shrinks, and the tool is locked on the spindle. In case of the HSK interface the centring is made by a positive taper lock axially pulled and positioned against a locating face.

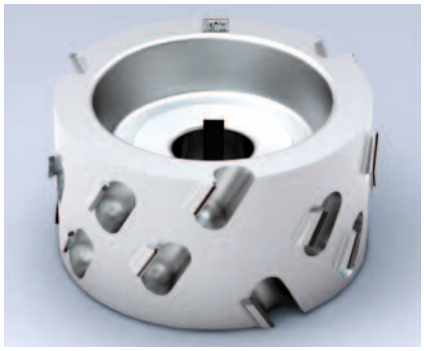
Preplaning tool „HeliPlan“ with HSK



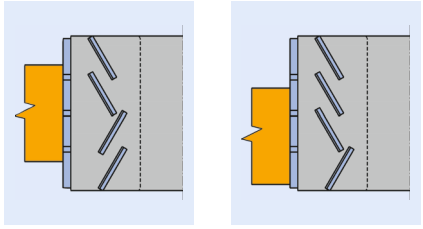
High performance planerhead „Turbo-Plan“



Jointing of a planerhead



DP jointing cutter



Symmetrical/asymmetrical edge arrangement

By centring a high balancing quality and best possible true knife running is achieved by truing the knives in the machine, **“jointing”**. After jointing, all knives have the same cutting circle and are equally responsible for the surface finish. Feed rates of over 400 m/min are possible.

There are other differences in the way of knife clamping. It is becoming more common for conventional planerheads to use cutting edge systems (e.g. CentroStar or VariPlan) enabling a swift replacement of knives with minimum setup, the hydro planerheads predominantly use systems with planing knives that can be adjusted and resharpened, (e.g. Leitz RotaPlan). There are also tool systems that drastically reduce the high setup effort when replacing the knives. Those include, among others, the Leitz system “Turbo Plan” in which all knives are positioned by a positive fit and are clamped simultaneously by hydraulic clamping.

Jointing, grooving and rebating tools

Like planing tools, **jointing tools** cut on the periphery; however, the cutting width is significantly smaller and usually under 100 mm. Jointing tools are designed as turnblade tools or milling tools and are used predominantly in panel processing. The cutting material ranges from tungsten carbide to polycrystalline diamond for industrial use. To protect the edges of the workpiece from tear outs during processing, the knives have shear angles for an angled cut usually the surface. There are **symmetrical and asymmetrical tool designs**. Asymmetrical means that the lower knife row is aligned upwards and all knife rows above it are aligned downwards. These tools are set up with the lower row of knives aligned with the bottom of the workpiece and can process variable workpiece thicknesses within their cutting width in this position. If the angles of the knife rows are aligned symmetrically to the tool’s midplane, the tool must always be aligned with the workpiece centre. When changing the thickness of a workpiece, the tool position must also be adjusted. The advantage of the symmetrical design is that the jointing knives have a slightly convex design and thereby generate a defined concave cut of a few hundredth millimetres on the workpiece. This guarantees a tight glued joint on edge banding machines.

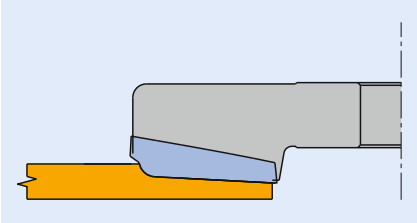
In addition to the peripheral knives, **grooving and rebating tools** have lateral knives, e.g. spurs, or the knives’ sides have a clearance angle. On both sides for grooving tools, on one side for rebating tools. For grooving tools, there are two different types: one part tools (similar to circular sawblades) and two-part adjustable tools for variable groove widths and for correcting the cutting width after sharpening.

Grooving cutterhead, width adjustable

Multi purpose cutterhead „VariForm“

Multi-part ProFix tool set for window profiles

Panel raising tool



Profile tool systems
Profiles range from simple profiles like bevels or radii to decorative profiles to highly complex jointing profiles, such as finger jointing, slot and tenon or counter profiles. Its application is a common across wood processing field. The range of cutting materials is extensive, from HL steel to polycrystalline diamond (DP). The tool types range from solid cutters to brazed tools and profile cutterheads to constant profile tools that can be resharpened (see chapter 11).

Multi purpose cutterheads play a special role. Knives moulded in any way may be inserted in a tool body. The blanks may be profiled by a sharpening service or by the user, enabling a quick production of the required plus low tool costs for small production volumes.

For profiles, a distinction must be made between one-sided or open profiles and closed profiles with radial profile shoulders on both sides. While 1 clearance angle on the profile is sufficient for one-sided or open profiles, the knives must have 2 clearance angles on the sides for closed profiles. This has consequences in the tool design: such profile cutters must be designed in two parts so that profile changes resulting from resharpening can be compensated. However, turnblade tools that are not resharpened can be designed in one part.

To enable great profile depth it is of advantage to assemble tool sets from several different individual tools of varying diameter. Hence you can use smaller discs and achieve higher speeds. Additionally, the cut distribution can be better adjusted to the workpiece and profile. A classic example is window tools.

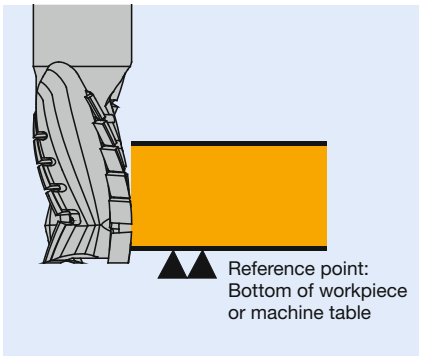
Panel raising tools are a special form of profile tools with profile knives arranged on the face of the tool. They are used to profile the infill panel for doors. Due to the small setting angle κ_r they produce a surface almost without any plane knocks.

Shank tools
Principle, these are the same tool types as for jointing, folding, bevelling, panel raising and profiling cutters but with shank as for drills; they only have a smaller diameter and can be used for higher speeds.

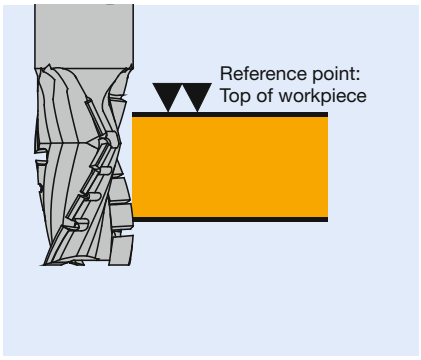
The routers are a special case. Usually they have a high **slenderness ratio**, e.g. they are much longer than they are wide. They are mounted in a chuck by their shaft, and the cutting part is outside the chuck. So, the tool is subject to a high bending stress and the breakage due to overstress is high. This is the reason why the **cutter marks f_z** are also significantly smaller than for drilling tools. They are less oriented towards hogging relevant values such as the mean cutting depth h_m but towards the tool's load capacity. This depends on the unsupported length and diameter. This is why, for example, the admissible feed rates for splitting or grooving are usually lower than for jointing.

Spiral finishing router in solid tungsten carbide

DP router with end grain plunging edge up to the centre of the tool

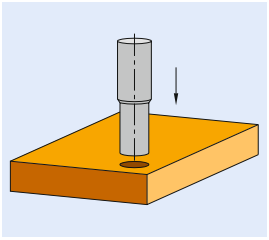


DP-shank cutter with mainly negative twist

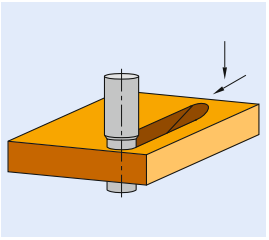


DP-shank cutter with mainly positive twist

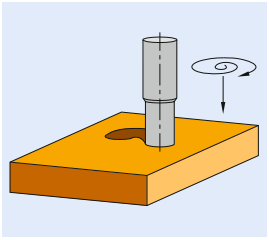
Important design features for routers are the design of the knives and the helix or shear angle. The tool is suitable for axial drilling when it has a basic knife extending to the central axis and if it is designed with a positive helix angle. **Axial drilling** should only be the exception for quality and tool stationary time reasons. It is more gentle for the tool to enter the material by **helical drilling or ramping in** at angle. In such case the requirement for the tool is only a knife front clearance angle, usually the case for routers.



Axial plunging



Plunging



Spiral shaped plunging

The **helical angle** plays another role. An upward positive helical angle favours swarf removal towards the extraction hood and prevents tears on the lower cutting edge (-> workpiece side at the bottom). A downward negative helical angle applies pressure to the workpiece, supports the workpiece and prevents the upper cutting edge from tearing (-> workpiece side on top). Routers used for sizing coated panels material have both negative twist in the upper knife and positive twist in the lower area. Hence, top and bottom of the panels are processed without any tear outs. If the proportion with negative twist prevails, the tool can process varying panel thicknesses with the same length set up. If the proportion with positive twist prevails, the dust collection is improved significantly; however, the tool must be adjusted to the relevant board thickness in its axial position.

It is normal for routers that their milling part may be programmed at will. If this results in unfavourable machining situations such as cutting contrary to the fibre direction or exiting the workpiece against the feed, the turning direction must be changed. For this reason most routers have **left hand rotation** in addition to the usual **right hand rotation.**

Tungsten carbide (HW) in solid, tipped, or turnblade or **polycrystalline diamond (DP)** are used as cutting materials. Tungsten carbide tools can be produced with continuous knives and are suited to solid wood processing as finishing tools. Diamond tipped routers always have segmented knives and are mostly used for coated chipboard and fibre materials. It may be that turnblade routers are inferior to solid or tipped tools regarding their feed rates but, their use is justified in cases when constant diameters are important or where it is not possible to sharpen the tools.

For fast roughing (hogging) routers have a **roughing profile**; a wavy profile that is slightly set off at each knife breaks up the chip, and the cutting force is reduced allowing higher speed rates. Special designs with a cascaded profile, the individual steps in total create a straight line, allow hogging processing almost to finish quality. This is the roughing finishing router.

Turnblade shank router

Roughing-finishing router of solid tungsten carbide

Through hole boring bit

Dowel drill

In the aim for more flexible manufacturing with smaller batch sizes, separating boards with router cutters (example: Nesting) is competing against circular saws more and more. Nesting requires small tool diameters of 10 - 12 mm and high feed rates of 20 – 30 m min^{-1}. This makes high demands on the tool stiffness and why tungsten carbide tools are used predominately for **Nesting**.

Resharpening of tungsten carbide routers is usually on the cutting face, however, for diamond-tipped routers it is at the edge.

Drills

In principle, drills differ from routers as the knives are only at the end; the periphery is ground circular. They only produce holes with a fixed given diameter. The feed movement is axial.

A distinction is made between drills for through holes, e.g. for screws, and those for blind holes, e.g. for plugs or fittings. Through hole drills have a slim tip to produce entrance exits without tear outs by its scalloped cut. Typical features of drills for blind holes (e.g. plugs or for fittings) are spurs to avoid tear outs at the drilled edge when penetrating the panel, flutes to produce a smooth side, and a centring tip so that the drill is centred when drilling. Ideally, the spurs are formed in a way to apply pressure to the workpiece surface when penetrating and create a pulling cut. Both wood fibres and decorative coatings are cut cleanly before the flutes clear the inside of the drilled hole. Usually the diameter of the flute is reduced by a few decimillimeter right behind the drill tip to reduce friction between drill and drill hole and to help chip removal.

Essentially, drills for solid wood and board material differ with regard to cutting material, helical angle and length. Solid wood drills are manufactured from HS steel or tungsten carbide while it is mainly tungsten carbide and occasionally polycrystalline diamond that is used in drills for panel processing. Since the helical angle is the cutting angle for the drill separating the wood fibre requires a “destructive” cutting edge, solid wood drills have higher helical angles than drills for panel material. The required drilling depths are greater for solid wood applications than for panel material, and the drills are longer. For very deep holes, single edged “Levin drills” are used because their gullet aids chip removal. To avoid the chip choking and creating high frictional heat it may be necessary to clear the cutting space by withdrawing the drill for a short time.

Hinge boring bit

Levin drill

Multi purpose profile cutterhead for manual feed with limitors

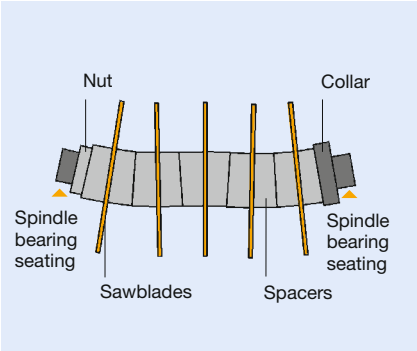
When using drills in drilling units and drilling aggregates, a constant length is important so the drilling depth always remains unchanged. Drills have a screw for adjusting the length at the end of the shank to set the drill length in advance so new and resharpened drills always have the same length. Most drill aggregates have different spindle rotations for design reasons. That is why there are drills rotating left hand and right hand. To reduce the danger of confusion, the two rotations are marked with different colours; drills rotating left hand usually are marked with a red colour, right hand black.

Cutting tools for manual feed

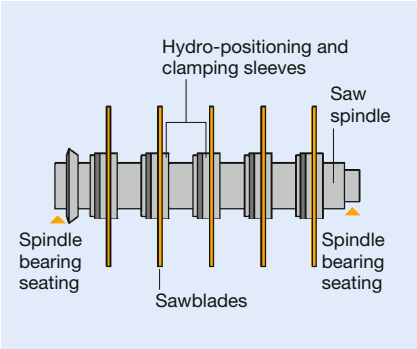
Cutting tools for manual feed must be designed with kickback limitation. They are subject to limitations regarding number of teeth, knife protrusion and gullet. The tool body must either be circular or equipped with limiters restricting the knife protrusion and the cutting gap width.

The design details vary with type of tool and are regulated in the European standard EN 847-1 “Machine-tools for the woodworking industry safety demands”. Cutting tools authorised for manual feed are marked “MAN” on the tool.

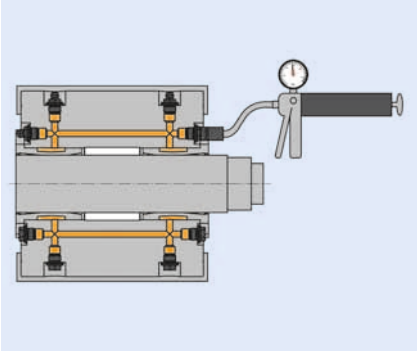
Arbor with detachable spindle/hub connection



Tools on a spindle axially clamped against each other



Hydraulically clamped tools an a spindle not depending on each other



Hydro clamping technology, open system

Tool clamping systems are the interface between tool and machine. They have an adaptor on the tool side and a mounting sleeve on the machine side. The tasks of the tool clamping system falls under three heading categories:

- **Torque transmission**
  The cutting forces must be received with sufficient safety, the tool must not spin.

- **Centring**
  The better a tool is centred on the machine spindle, the better the concentricity and balance quality.

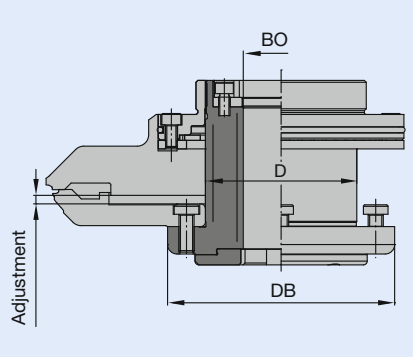
- **Replacing tools**
  The tooling times are shortened by easy and fast tool replacement. Automated tool replacement is required for flexible production.

The simplest form of tool clamping is a shank/hub connection. The tool is centred by means of a defined clearance **fit between tool bore and machine spindle**. Positive fit elements such as feather keys or drive pins transmit the torque. They are clamped by nuts at the shank end. Examples are drilling tools or flanged bushes for motor spindles with splined shank or cylindrical spindles of planing and finger jointing machines. This type of tool clamping has 2 important disadvantages:

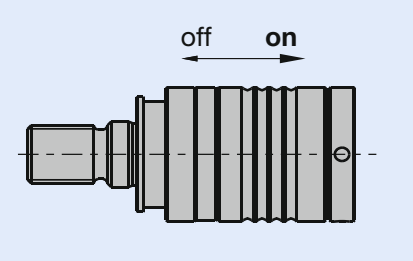
1. The tools are not centred free of play. The centre of gravity is offset by the tolerance, with a negative effect on concentricity and balance quality.
2. If several tools are clamped side by side or on top of each other, the axial run out tolerance of the bodies increases. If the body faces are not parallel. When applying axial tension at the end of the shank, the spindle may bend resulting in an increased imbalance and loading to the bearings.

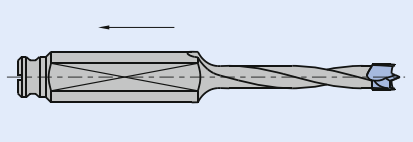
Tool clamping systems that centering free of play were developed to eliminate such disadvantages. One example is **hydro tools** or **hydro clamping elements**. This clamping method consists of a ring chamber around the bore filled with grease or oil. When pressure rises in the chamber, the thin wall concentrically distorts towards the bore. The tolerance becomes zero, and the tool is clamped to the shank. The tools are clamped individually to the shank, there are no clamping forces, and the shank is not bent. Open and closed systems are defined by how the pressure is introduced.

Open systems are filled with grease. The pressure is increased by means of a grease gun. To release the pressure, grease is let out by a bleed screw. Such systems usually can be found in the moulding, planing heads and profile tools. The required pressure of approx. 300 bar is adjusted by the volume of grease pressurised. The system can be used in a wide range of temperatures, important for planing mills.



Hydro-Duo clamping element with two independent chambers for adjustable tool sets

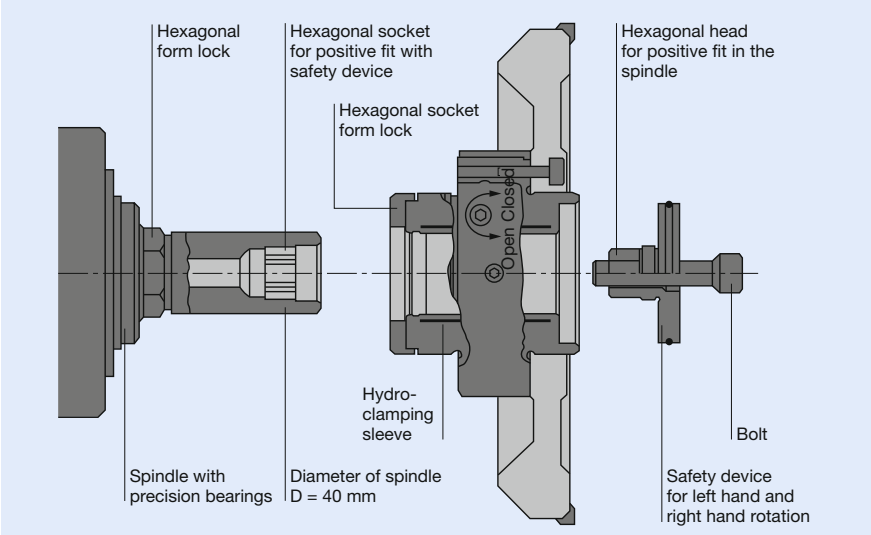




Drill quick clamping system

Tool set with HSK adaptor for automatic tool change

Closed systems are filled with grease or oil. Pressure is built up and released by an internal piston. The pressure is limited by the piston displacement and varies with temperature. Such systems are preferred where workpiece cleanliness is essential, e.g. in furniture, window or floor manufacturing.



Hydro-clamping element, closed system

Hydro clamping elements usually are designed as **“Hydro-Duo clamping elements”** with bi-directionally to center the tool on the clamping element and the clamping element on the shank. Such hydro duo clamping elements are ideal for adjustable two-part slot and tenon tools. When the pressure is released in the outer chamber, a tool part may be moved axially. During the subsequent build up of pressure the tool is centered and clamped again in its new position

As a safety measure against losing pressure, hydro clamping systems additionally are secured mechanically by locking mechanical collars as safety devices against twisting.

To shorten the tooling times for replacing the tools, **quick change systems** were developed for mounting on the machine shank and have a mounting tool flange clamped and loosened in seconds. Examples for this are bayonet mount systems for drilling tools that are operated mechanically or pneumatically or quick change systems that are operated totally tool free, similar to a hose coupling. Despite significantly reduced tooling down time these systems still require a manual intervention in the processing procedure.

Taper mounting sleeves between tool and machine were developed for **automated tool replacement**. Initially they were quick release tapers such as SK 40 or SK 30 but today **HSK interfaces** have expanded globally in wood processing. While initially developed for CNC processing centres, they have arrived in the through feed machine sector, in double end tenoners or planning/profiling machines. The HSK interface incorporates the advantages of both hydro and quick connect clamping systems: precision and speed.

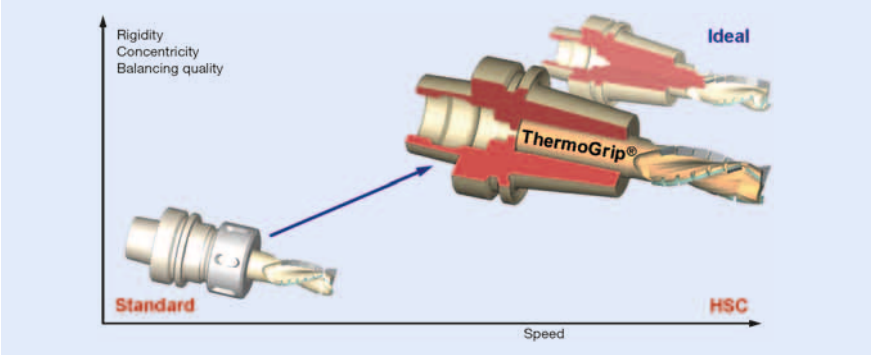
Hydro-strain clamping chuck

Collet chuck

Shrink-fit chuck ThermoGrip®

Ideally the HSK is designed in one part with the tool. So, the tool diameters can be reduced and speed can be increased. However, in most cases it is not possible for structural or economic reasons. This is why there are HSK adapters that are screwed to the tool. Hydro clamping systems are used again, for a removable and tool centring connection. A distinction is made between hydraulic chucks for drilling tools or multi-part tool sets in which the clamping mandrel is hydraulically opened out, and **hydro clamping chucks** for clamping shank tools.

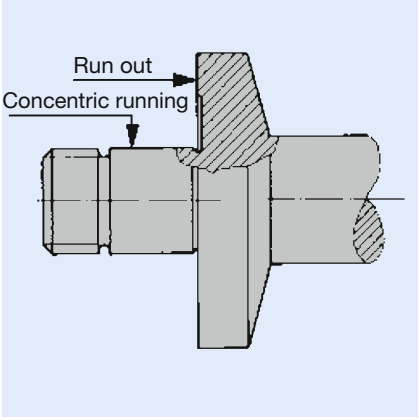
Collet chucks are a universal clamping system for shank tools. By using exchangeable collets, any shank diameter up to 25 mm may be clamped. The multitude of parts and wear on the collet result in moderate values of concentricity and balance quality. Tool excentricity may be up to 0.06 mm. High spindle speeds result in the nut being opened with a loss of clamping force. Consequently, high-quality collet chucks have balanced clamping nuts with an internal ball bearing to produce a higher preliminary tension. On the machine side, the collet chucks are designed with a HSK or taper interface.



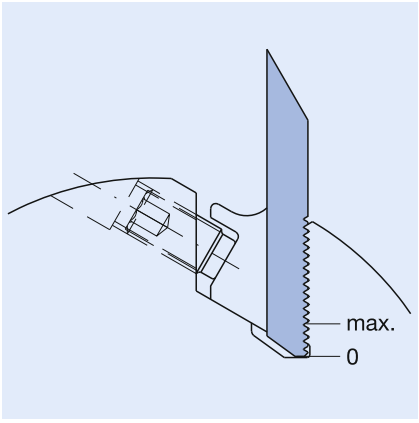
Shrink-fit chucks "ThermoGrip®" were developed for high performance processing. They create a virtual monolithic connection between tool and chuck. The chuck principle is based on thermal expansion and functions without mechanically moved parts. To insert the tool shank, the clamping part of the chuck is heated. The chuck bore is manufactured undersize expands, receives the tool shank and shrinks while cooling. This way, tool and chuck are connected to each other as one piece. The chuck is heated by induction by special high frequency generators. The chuck's heat expansion is faster than that of the tool so that the tools may be shrunk out again. Shrinking chucks "ThermoGrip®" may be used at speeds up to n = 36,000 min^{-1}, and due to their stiffness enable 30 % higher feed rates compared to collet chucks even in the conventional speed range up to n = 24,000 min^{-1}.

The same technique of shrinking on tools is also used for arbors for tool sets. It makes sense if the tool remains on the arbor for sharpening or changing knives. A higher balancing quality is achieved by the shrink fit connection since tools and arbor can be balanced as a unit, and the tool weight may be reduced by using light alloy tools. Both result in a considerable increase in the feed speed which increases productivity on stand alone machines, for example in window manufacturing with the wide tool sets usual in this industry.

Highest precision regarding concentric and axial run out and balancing quality is achieved if the tool is sharpened with the clamping system as a unit. This requires universal tool interfaces on the wood processing machines in production and the tool sharpening machines in service. Tools conditioned in this way may be operated at higher feed speeds and have a longer tool life.



Concentricity and run out



Note the readjustment area

1. Measures before commissioning

When installing a tool on the machine, please check the following points:

a) Please read the instructions before commissioning the tool.

b) Clean the tool and the tool adaptor.
All mating surfaces, the knife seating, the interfaces between machine spindle and tool adaptor, must be free from dirt, grease and corrosion.

c) Clamp tools only between the intended clamping areas in the machine. Clamping areas, such as bore, boss, conical surfaces and knife seatings must not be damaged during assembly.

d) The blades must not come into contact with machine parts during assembly – risk of breakage!

e) Check tools for chipped or damaged blades – in particular if the tool has collided with machine parts, such as machine table, tool clamping elements, extraction hoods. Do not use tools that have been deformed. Have damaged tools checked by an expert. Sets containing damaged or worn cutting edges, clamping elements or screws must be replaced with original parts. Tools with a damaged tool body or deformed knife seating must be removed. Repair of such tools is forbidden!

f) When assembling tool sets, use face ground spacers.

g) Tighten all clamping screws with the correct key. The torque specified in the operating instructions must be observed. Using of extensions or hammers not permitted.

h) Check tool tension and feed rate.

i) Check the correct direction of rotation of the tool.

j) Compare the maximum rotational speed (n_{max}) of the tool with the rotational speed of the machine. The value (n_{max}) as stated on the tool must not be exceeded. The rotational speed ideal for the application may be below n_{max}.

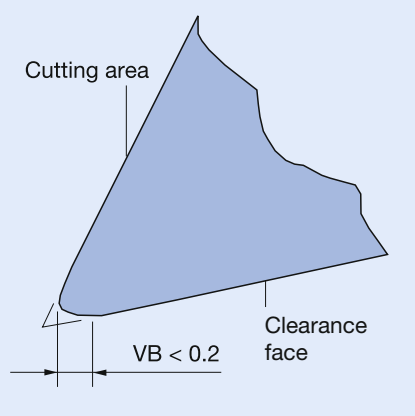
2. Measures to be adopted/care during use

Special care is required to maintain the quality and precision of a tool throughout its life. The following points are important for professional handling of the tools:

a) To prevent corrosion, protect wood processing tools from humidity. If not in use for a long period, the tools should be treated with a suitable care product, such as WD-40 or Ballistol.

b) Protect cutting edges and clamping surfaces from damage. For example, store and transport the tools in their packaging and do not place them on hard surfaces.

Tool wear and cutter condition should be checked during use to confirm the tool is serviceable, and to avoid unnecessary expense. Do not in any circumstances wait until cutter wear (blunting) has become too great or sections of the cutting edge have broken away. On many machines, checking the power consumption with an ammeter is an easy way to monitor the condition of the tool.



Maximum width of wear mark VB.

Cutting generates dust particles which, when mixed with resin or adhesive, can build up on the cutters or in the tool gullets. Such build up reduces the cutting angle, the size of the gullets, increases the power requirement, it shortens the tool life, reduces the surface quality and can, in extreme cases, even burn out motors.

Cleaning tools is not a luxury but an essential part of their use. Tools should be regularly cleaned of resin; special commercial cleaning agents are available. For tools with aluminium bodies, use only commercial cleaning agents with a pH value of between 4.5 and 8, as corrosion can destroy the alloy.
– Always comply with the manufacturer's instructions.

Frequent removal of any resin build up is especially important with tungsten carbide sawblades, as even small cutter projections have this problem. In some cases resin build up can lead to cracks in the sawblades.

Particles of workpiece material can damage the cutters if dust and chips are not extracted efficiently. The cutting edges can be chipped, as well as increased abrasive wear.

An extraction system with optimised extraction capacity and performance will help increase tool life.

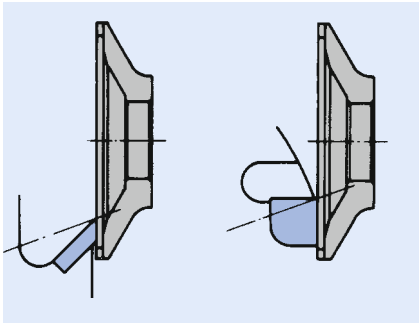
Regular maintenance is essential for proper and safe use of tools.

Tools must be resharpened when:
a) workpiece surface quality is no longer satisfactory
b) the wear mark width (VB) on the clearance face is greater than 0.2 mm
c) the machine's power consumption is too high
d) sections of the cutting edge have broken away.

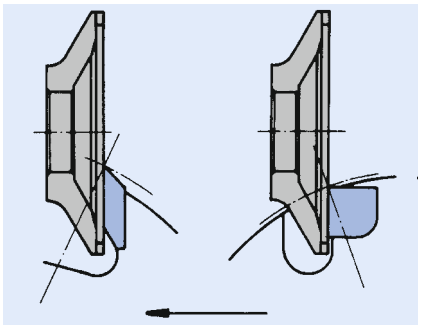
3. Tool servicing/Sharpening
This means reinstating the cutter sharpness of blunt tools, but also other repairs, for example replacing damaged cutting edges.

Servicing differs for the various materials, namely tipped high alloy tool steel, tungsten carbide or diamond.

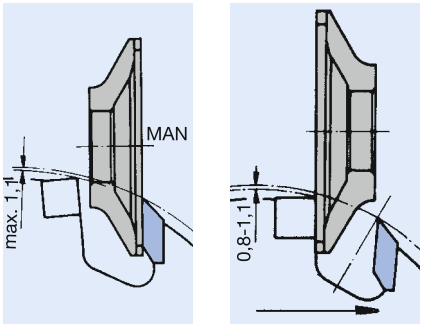
Special machining processes are necessary to minimise the temperature rise in the cutters during sharpening to ensure crack free cutting edges, a cutting geometry according to the drawing, maintenance of the original dimensions and tolerances and a sharp cutting edge.



Sharpening on the clearance face.



Sharpening on the cutting area.



MAN tools: Knife protrusion
in comparison to the limitors.

When servicing tools, the following has to be observed:
– the construction of composite tools must not be altered
– tipped tools must be serviced by trained personnel
– only spare parts to the manufacturer's original parts specification are used
– tolerances to ensure precise clamping, are retained.

To avoid damaging the cutting material by overheating or stress cracking, cooling lubricants must be used when sharpening. Dry sharpening is not recommended. The specified tool body radius should not be changed when sharpening, to avoid the risk of fatigue stresses.

3.1. HL, HS, ST and HW tools (solid or tipped)

HW tools are sharpened with diamond grinding wheels. Corundum or CBN grinding wheels are used for all the other cutting materials listed above.

Basic rules
– clean the tools thoroughly before sharpening
– maintain concentricity tolerances – check with a dial gauge
– spur projection beyond main cutter: 0.3 – 0.5 mm
– cutting edge projection should not exceed 1.1 mm above the limiter on manual feed tools

Tools with radial tipping

a) Grooving cutter with or without spur

These tools are always sharpened on the top, so as not to change the cutting width.

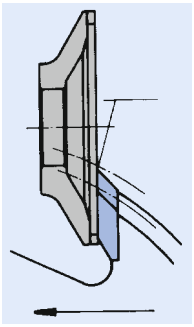
b) Jointing, rebating and bevelling cutter blocks

These tools are sharpened parallel to the face of the cutting edge or the spur.

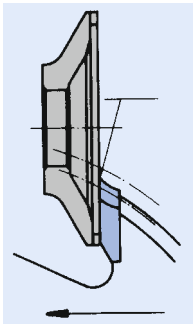
c) Profile cutterblocks

The shape of the tips depends on factors such as the cutting material, profile depth etc. The clearance face can be one of three types, concave, straight, or convex, depending on the purpose of the tool. Sharpening always takes place on the face of the cutter, not on the profile!

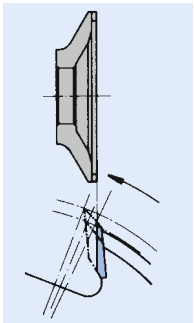
Profile cutterblocks with straight or concave clearance face are sharpened parallel to the face; profile cutterblocks with convex back relief are sharpened by rotating around the cutter axis. The maximum permissible cutting edge projection for manual feed profile cutterblocks (MAN) is 1.1 mm and must not be exceeded.



Straight clearance face.



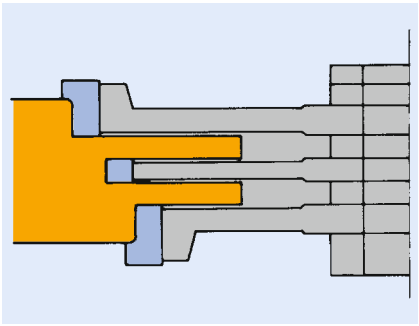
Concave clearance face.



Convex clearance face.

3.2. HS and HW slot and tenon cutters

The special blade tip geometry ensures constant rebate depths if the same amount is ground away from the face of every tip and removed parallel to the tip. For manual feed tools, the maximum permissible cutting edge projection of 1.1 mm must not be exceeded. After several sharpenings, the shimming must be adjusted (with a spacer set) to maintain the profile.



Slot and tenon cutter.

3.3. Cutterblocks and cutter sets

Single tools are sharpened as stated in guidelines 1 and 2 above. The amount removed during sharpening depends on the most worn cutter. All cutterblocks in a cutterset have to be sharpened to the same diameter to maintain the original workpiece profile.

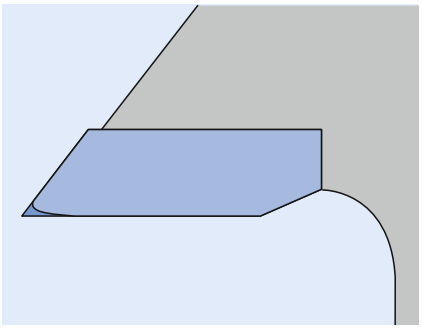
3.4. Diamond tipped tools (DP)

Diamond tipped tools can only be sharpened or eroded on the top, using machines with special fixtures. Sharpening can be either by grinding or by spark erosion. Special measuring equipment is needed to check the sharpened tool. Diamond tipped tools can only be serviced at Leitz service centres with the necessary special equipment, or at the Leitz production plants.

3.5. HW tipped circular sawblades

a) General information

HW tipped circular sawblades should only be sharpened on special purpose automatic sharpening machines. Manual sharpening on universal sharpening machines cannot be recommended for quality and cost reasons. Automatic sharpening machines use a plunge cut grinding principle and are designed for wet grinding. Many of these machines are capable of sharpening all the standard and special tooth forms in a single cycle on both the face and the top. Sawblades must be thoroughly cleaned before sharpening.



Wear on a HW saw tooth.

b) Reduction of saw plate and body

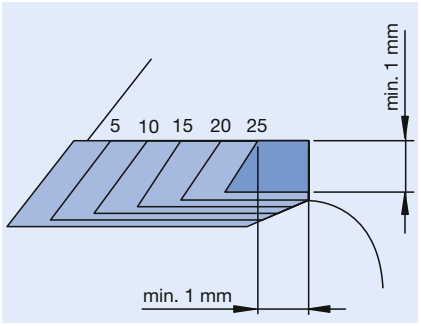
Only the tungsten carbide tips should be ground by the diamond wheel on automatic sharpening machines; the saw plate must be reduced behind the teeth and if necessary in the chip gullet as a separate operation. To avoid reducing the stability of the teeth unnecessarily, the HW tips should not project more than 0.2 mm (with SB < 3.2 mm) or 0.5 mm (with SB > 3.2 mm) above the saw body.

c) Resharpening

To sharpen a circular sawblade the maximum number of times, it is essential to sharpen both the face and the top of HW circular sawblades. As a rule, the removal ratio between the top and the face is 1:1 for solid wood machining and 1:2 for chipboard. Failure to remove the rounded-off areas at the tip edge completely reduces the tool life. The sharpening machine instruction manual will contain the necessary machine settings. Adjustment to the thickness of the sawblade is especially important, as teeth sharpened inaccurately will cause lateral sawblade runout.

d) Residual tooth height and thickness at end of life

When the tooth height measured from the tip seat is 1 mm, the sawblade is at the end of its life and should be scrapped for safety reasons.



Leitz recommendation for the remaining tooth size on the sawblade.

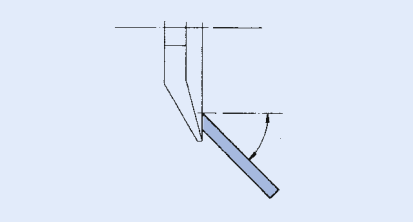
e) Retipping

All Leitz service centres offer a replacement service for individual damaged teeth on HW sawblades. The new tip is applied by induction brazing using the correct braze and flux.
Expert knowledge of both the carbide composition and the saw body material is necessary. Users are recommended not to carry out this work themselves.

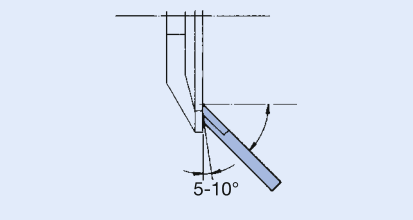
f) Flattening and tensioning

Flattening a sawblade means eliminating any twists in the plate for perfect flatness. Tensioning means stretching the saw plate at a point roughly halfway between the periphery and the centre. Flattening and tensioning are usually carried out as a single operation, and are essential for satisfactory sawblade performance. Sawblades should be checked regularly during resharpening for flatness and tension, and corrected if necessary. This is essential for multi-rip and thin-kerf sawblades, as these work in extreme conditions and can easily crack or fracture as a result. Sawblades severely discoloured by overheating should be discarded.

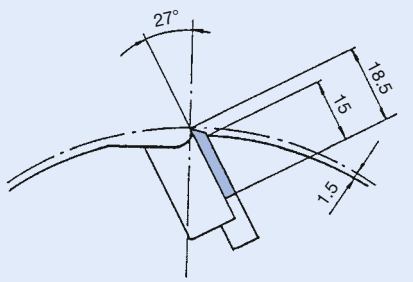
When in use, a sawblade should be supported by the correct flange; the flange diameter is based on the diameter of the sawblade. This relationship is laid down in German Industrial Standard DIN 8083. As a guide, the flange diameter should not be less than a quarter but preferably a third of the sawblade diameter.



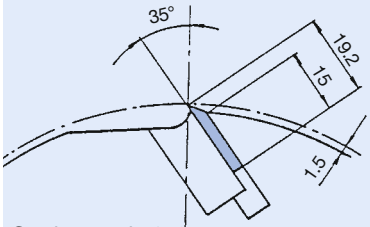
Sharpening of planer knives.



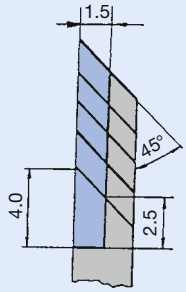
Recessing of the knife basic material of HW-tipped planer knives.



Planerhead
Cutting angle 27°



Cutting angle 35°



HW-tipped planer knives

Allowed minimum dimensions of planer knives.

3.6. Hoggers

a) Hogging cutters

Hoggers consist of a sawblade and a hogging cutter screwed together. Hogging cutters must be ground on the top of the teeth and occasionally on the face, so that the relationship between them and the sawblade is maintained. As the teeth are of equal pitch, it is more efficient if they are sharpened on an automatic machine. The hogging cutter has to be mounted on a special fixture for this operation.

b) Segment hoggers

Segment hoggers consist of hogging segments and a sawblade. The saw segment can be ground either while mounted in the hogger body on a conventional cutter sharpening machine, or dismantled from the hogger body and mounted in a special fixture for an automatic sharpening machine (as used for HW circular sawblades).

c) Compact hoggers

A diamond compact hogger (DP) is sharpened by erosion on all three edges (side, bevel and top), on a special machine. If the tool is mounted on a hydro sleeve during operation, sharpening must be carried out with the same level of clamping to achieve high concentricity and runout accuracy.

3.7. Cutterheads

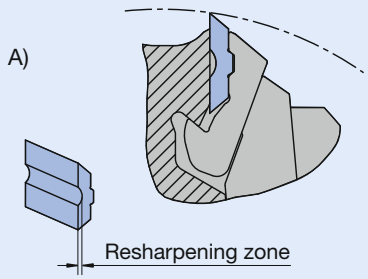
It is essential to follow the below when mounting planer knives:

1) All the tool body locating faces, knives and clamping elements must be clean and undamaged.
2) The clamping screws should be tightened from the centre to the outside (for larger cutting widths).
3) The knife setting should be checked with either a dial gauge or a setting gauge (for planer knives).
4) Do not use an extension to the wrench or key when tightening the bolts or screws.
5) Spurs should sit perfectly in their seats before the screws are tightened.
6) Cutterheads should be mounted on a suitable spindle when tightening the bolts or screws, to avoid distorting the body.
7) Seats and wedges in cutterheads must not be modified in any way as they are specifically designed for maximum safety.
8) All knives and clamping elements should be of equal weight.
9) New knives and clamping elements mounted in opposed seats should have the identical weight to avoid imbalance.

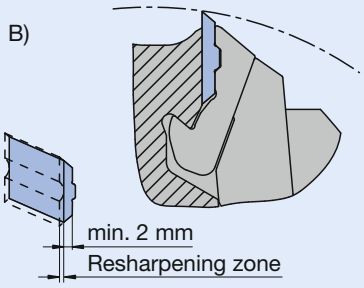
a) Planer knives

HL, HS and HW planer knives are ground only on the back to maintain the original angle. To prevent the diamond wheel from touching the tool body when resharpening the knives, the clearance from the steel backing must be 5 – 10° less than for the actual carbide tip.

Comply with the dimensional tolerances when sharpening planer knives. The minimum clamping width should not be exceeded (see the marks on the side of the tool body).

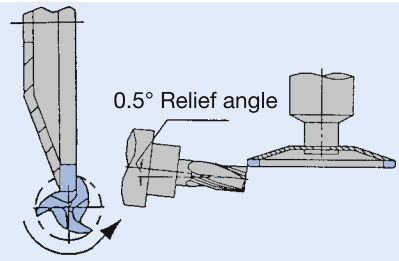


Tungsten carbide turnblade knives in new condition



...resharpened down to the remaining thickness

Sharpening of VariPlan knives.



Infleed through twisting by the tool axis

Sharpening of spiral routers.

For a minimum clamping width of 15 mm and a radial knife projection of 1.5 mm, the minimum knife height is 18.5 mm for a cutting angle of 27° and 19.2 mm for a cutting angle of 35°. Hydro cutterheads have a radial knife projection of 4 mm; for the same minimum clamping width, the minimum knife height is 21.3 mm.

Note, the minimum tip height must be at least 4 mm on HW tipped planer knives.

b) VariPlan planerhead

The cutter has straight, face-sharpened turnblade knives which can be sharpened. The knives have a raised trapezoidal area on the back and are mounted in a special fixture for sharpening.

The resharpening area of 1 mm is shown by the groove in the knife face. The clearance angle is matched to the clamping mechanism in such a way that after resharpening, the diameter of the tool remains constant and the clearance angle must not be changed.

c) Spiral planerhead

Sharpening the 1 mm thick flexible HS knives requires a special fixture supplied by the manufacturer. After sharpening, the knives are clamped in the cassette to the correct three-dimensional pattern. The user can then install the complete knife cassette in the spiral planerhead.

d) Profiled knives

Profiled knives are ground on the edge of the profile; the possible sharpening area and minimum knife clamping heights must be complied with.

The cutting edge quality and the life time can be improved, if one level is ground with a second clearance face, which is about 3°-5° smaller than the main clearance face. Radial profile sectors additionally require a lateral clearance face.

3.8. Tools for routing

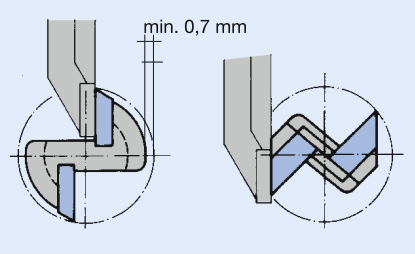
a) HS and HW spiral routers

These tools are manufactured in one of two designs: either as a finishing cutter with maximum chip removal of 1 – 3 mm, or as a roughing cutter for high hogging performance.

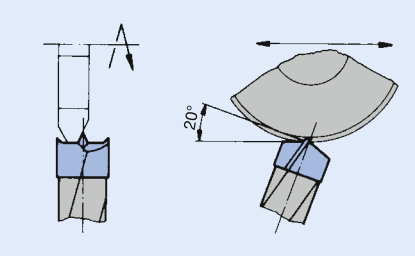
Roughing cutters are resharpened only on the face because of their special profile. Finishing cutters can also be resharpened on the clearance face.

b) HS and HW routers with shear angle

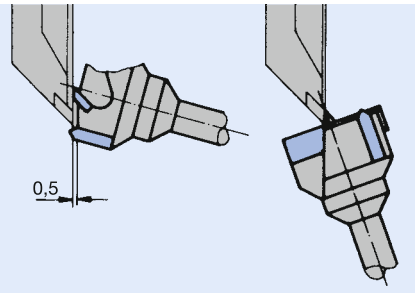
These are face ground. If the cutting edge is chipped, the back can also be ground down to the next possible nominal diameter. The body must be set back at least 0.7 mm from the knife cutting circle.



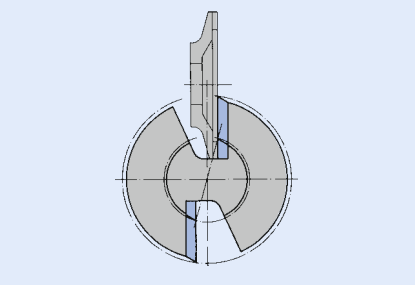
Sharpening of routers with straight edges.



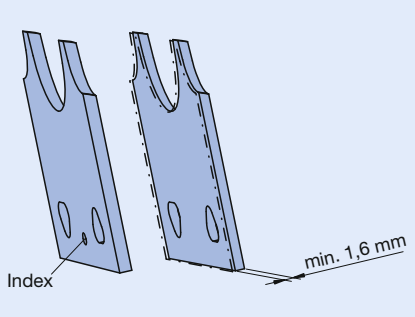
Sharpening of dowel drills.



Sharpening of hinge boring bits.



Sharpening of HW-tipped profile routers.



Sharpening of VariForm knives.

c) HW tipped dowel drills

Clamp the drill firmly in a collet before resharpening, to ensure high concentric running accuracy. HW tipped dowel drills are resharpened on the cutter edge, centre point and spur in one operation with a profiled diamond wheel. The projection of the centre point and spurs above the tool body must be maintained. Profile diamond grinding wheels are available for all frequently used diameters.

d) HW tipped hinge boring bits

Clamp the tool firmly in a collet before resharpening. The centre point and spurs are ground in a single operation. Before sharpening the edges of the main cutters, the tool body must be set back so that it is 0.5 mm below the main cutter. The spur should project above the main cutter by 0.3 – 0.5 mm; the centre point should project by 1.5 – 2.5 mm. If there is excessive wear, the main cutter can also be sharpened on the face, but only resharpened as far back as the centre of the bit.

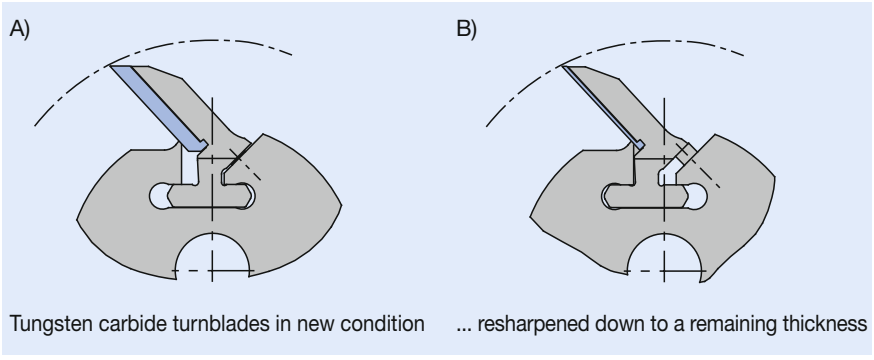
e) HW tipped profile router cutters

Profile router cutters are subject to the same sharpening guidelines as profile cutterblocks (3.1c). Profiled routers are clamped firmly in a collet before resharpening to maintain high concentric running accuracy. The restricted gullet geometry of MAN tools may require the use of thin, small diameter grinding wheels.

3.9. ProFix knives

HS and HW tipped ProFix knives are sharpened on the face after removal from the tool body and mounting in a pivoting fixture fitted to the table of the sharpening machine. This allows knives with different cutting angles (15°, 20°, 25°) to be aligned parallel to the sharpening direction. HW tips can be ground down to a minimum thickness of 0.5 mm, ensuring a high material utilisation.

- ProFix knives should only be sharpened by a Leitz service centre.



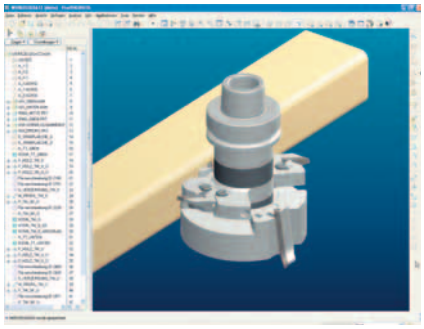
Sharpening of ProFix knives

3.10. VariForm profile knives

VariForm cutterheads (HW) are ground parallel with a diamond wheel over the entire front face of the knife (the cutting face).

Special grinding machine fixtures are required; these are installed at Leitz service centres.

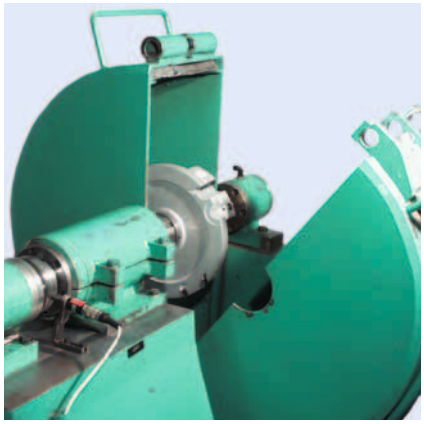
The sharpening area is identified by a circular hole in the cutting face. Once this hole has disappeared, the knife has reached the end of its useful Index life and cannot be resharpened any thinner (minimum thickness 1.6 mm).



Modern construction methods through 3D-CAD.

Labelling example of boring tools.

Labelling example of shank routers with a minimum clamping length.



Centrifugation test facility.

Tools for woodworking machines are potentially dangerous because of their high speeds and sharp cutting edges. Always use machine guards and only use tools tested for compliance with the technical safety requirements to reduce the risk of accidents.

Safety at Leitz

The highest level of product safety is important to Leitz as a major tool manufacturer. All Leitz tools are designed and manufactured to EN 847 standards and take the latest safety research findings into consideration. The basis for safe tools is established at an early stage in their development, as can be seen from:

- modern CAD techniques and calculation methods such as the Finite Element Method (FEM)
- extensive testing including overspeed and reversing tests in the Leitz research department
- tool certification according to the independent industrial accident tests laid down by the Deutsche Holz-Berufsgenosssenschaft (German Wood Trade Industrial Accident Insurers).

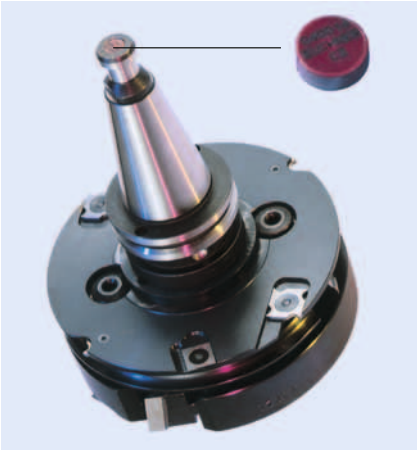
Manufacturing procedures checked and documented to DIN EN ISO 9001 and a certified quality management system guarantee the high quality and safety standards expected of tools supplied by Leitz. Support from Leitz – including local Leitz sharpening centres satisfy customers' needs and advice from technical specialists – ensures the safety of the tool throughout its life.

Safety in use

A tool is only as safe as how it is used by the operator. Detailed, easily understandable instructions on the safe use of the tools are just as important as their safe design. Leitz cooperated in the VDMA project to develop specimen instruction handbooks for different types of tools. These layouts are now used not only for Leitz products but are also recommended by the European woodworking industry association EUMABOIS.

Users are given the relevant safe handling information by the information etched on the tools, the maximum rotating speed, method of feed, minimal clamping length for shank tools etc.

Intelligent tools with integrated memory chips are available for CNC machining centres. These tools automatically supply the machine control system with the relevant geometry and technology data such as tool length, tool diameter, recommended running speed, direction of rotation etc. The risk of manual input errors is reduced ensuring high operating safety and process reliability.
The comprehensive safety instructions supplied by the machine manufacturer should be followed when using tools. The guards on the machine are to protect people and should not be modified or removed. Internationally accepted pictograms advise of any potential danger.



Intelligent CNC tools.

ISO 3864, U.S. ANSI Z535
VDMA woodworking machines.

Safety labels
Pictograms for handling, function monitoring and maintenance - woodworking machines

Important Note:
Tools and clamping tools are not subject to machine guidelines and are no allowed to have the CE-Sign.

Safety guidelines
Leitz and the other well-known German tool and machine manufacturers are members of the Association of German Machine Manufacturers (VDMA). Leitz's long experience has contributed to national and international standards and regulations for the safe construction of woodworking machine tools and for operator safety throughout the world.

The EN 847 series of European standards, parts 1 to 3 "Machine tools for woodworking – safety requirements" are the most important guideline for European tool manufacturers. Woodworking tools must comply to these minimum standards to be considered safe.

One of the aims of manual feed tools is to reduce kick back. The small gullet size and limited cutter edge projection reduce the severity of injuries. This is evident by the steady reduction in the number of accidents notified annually to the industrial accident insurers.

EN 847-1	Machine tools for woodworking – safety requirements Part 1: Milling and planing tools, circular sawblades
EN 847-2	Machine tools for woodworking – safety requirements Part 2: Requirements for shank milling tools
EN 847-3	Machine tools for woodworking – safety requirements Part 3: Clamping tools

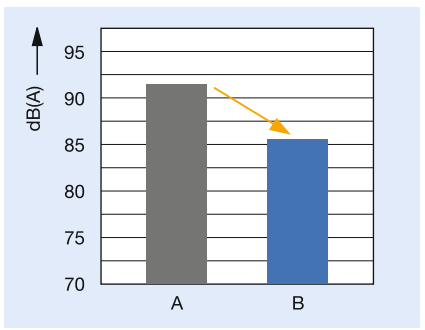
Constant decrease of the „new" accident benefit (source: Holz BG)

Tire profile with irregular pitch.

UT-hogger with irregular pitch.

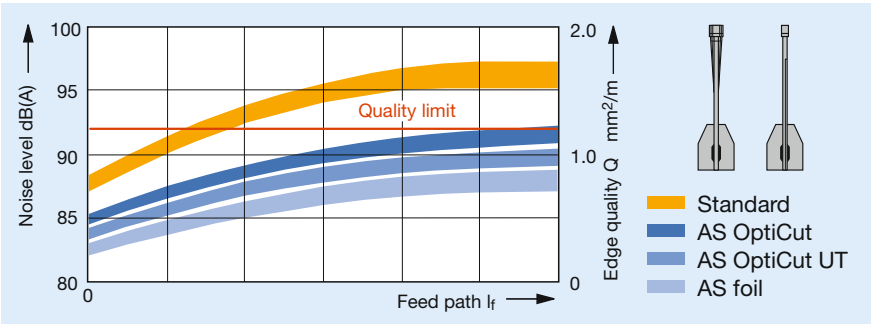
A) Conventional jointing cutter
91,5 dB(A).

B) Jointing cutter „WhisperCut“
86 dB(A).



Noise reduction for jointing cutters.

In addition to dust, noise is a major problem in the woodworking industry. It is important when developing new tools to reduce noise levels at source and to prevent them from increasing. If the level is lowered by 10 dB(A), the human ear perceives this as a 50% reduction in noise. The latest low noise tool systems considerably improve the users' working environment.



Axial body vibration of a plate type tool such as a sawblade causes noise radiation. The vibration amplitude can be significantly reduced by the design of the teeth, gullet geometry and by damping the saw plate. Leitz supplies a choice of designs of low noise sawblades (AS) which take into account all the criteria, the machine and the materials to be cut.

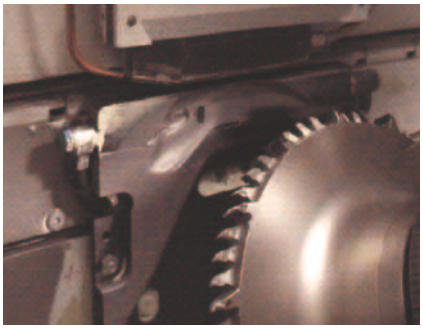
A) AS sawblade with foil (vibration damping by friction between sawblade and foil)
B) AS OptiCut UT sawblade (irregular pitched teeth supress harmonic vibrations in the sawblade)
C) AS OptiCut sawblade (laser ornaments in the sawblade body reduce natural resonance and vibration disturbing the sound waves).

Cutting edge airflow turbulence is another cause of noise as it stimulates vibration in the sawblade. When the cutting tips touch the workpiece, tool and workpiece vibrate. Varying the distance between successive cutting tips counteracts harmonic vibrations and dampens both free running and cutting noise.

The principle of irregularly pitched teeth (UT) is applied to both sawblades and profiling tools.

Research has also been carried out on ways to reduce the noise generated by cutting tools. A closed circular tool body shape, a profile that matches the tool body and optimised gullet geometry result in significant noise reduction. Today's diamond jointing tools with these features generate half the noise of their predecessors. But there are other, fully intentional, benefits from noise reduction. Reduced vibration means that the tool runs more smoothly, in turn leading to better cut quality and a longer tool life.

Laminate processing: Typical chip collection in the machine.



Problem: Machine wear through abrasive chips.

Every woodworking production process causes chips, chips to be extracted. Despite state of the art extraction systems, not all the chips are collected. Whether processing solid wood or panels, uncollected chips have a negative impact on added value. They reduce the product quality, make additional tool cleaning necessary, increase machine downtime and can cause machine breakdowns through wear. Leitz's answer to this problem is DFC® (Dust Flow Control).

DFC®

The philosophy behind DFC® is to control the chips by using the kinetic energy in the chip flow to direct the chips away from the workpiece and tool cutting edge into the extraction system.

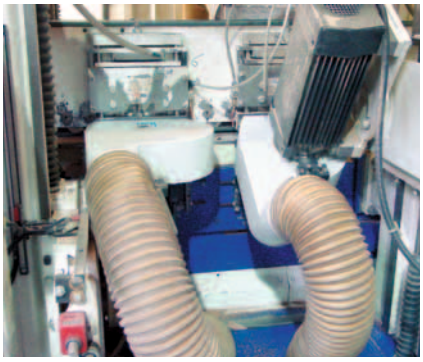
This improved method of chip collection has the following advantages:

– Energy saving:
  The extraction airflow no longer has to capture the chips, only transport the chips into the extraction system. This reduces the required airflow volume and, in winter, reduces heating costs, as the heated air is not being taken from the factory.

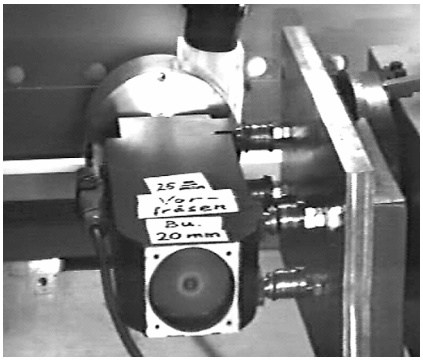
– Improved product quality:
  Sensing systems are not impaired in any way by chip imparing them or glue spillage.

– Higher productivity:
  Clean machines mean continuous production without stoppages. Clean workpieces do not need additional cleaning prior to packaging.

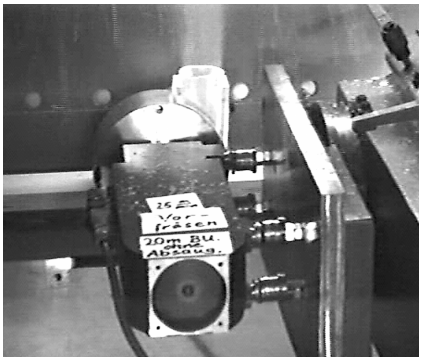
– Reduced servicing costs
  The abrasive chips are directed away from expensive machine elements and dispel their energy against replaceable wear parts such as guides or dust hoods.



i-Flooring: System unit consisting of DFC® tool and adjusted extraction hood. Most of the chips are collected and the wear is kept away from the machine.



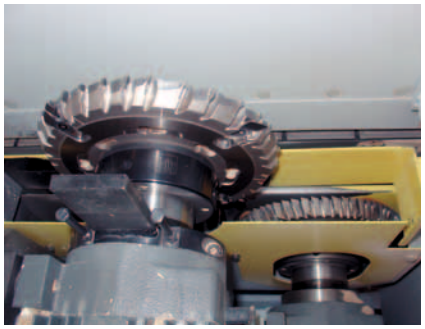
i-System: Tool and extraction hood are a unit. More than 95% of the chips are collected - here during edge trimming of edge banders.



Active chip collection: The chips are only collected through their kinetic energy. Demonstration without extraction hose.

Example: Hogging of veneered panels with free veneer projection.

Broken splinters block the extraction hood - fire risk through friction of the rotating tool!



DFC® hogger with shredding edges shred the veneer projection on an extractable size for a complete disposal.

Applications for DFC® tools:
DFC® technology is available for hoggers, jointing cutters, profile cutters, grooving and shank tools; it is the subject of ongoing continuous development. The best results are achieved when the tool and the extraction system are matched to each other. Examples of DFC system solutions are:

– i-system

  Developed with the machinery manufacturers for efficient chip collection on edge banding machines – over 95 % efficient.

– DFC® tools for laminate and parquet flooring production with matched extraction hoods, e. g. “i-flooring”: significant reduce wear caused by abrasive chips to the machine guides and feed systems.

DFC® tools are important in hogging; the problem of continuous high volume chip output cannot be solved simply by increasing the extraction velocity. The chips must be directed as produced in the right direction. The effect cannot be seen so easily as on CNC machining centres when sizing panel materials. Often compromises have to be made in the design of the tool, the working method and chip flow.

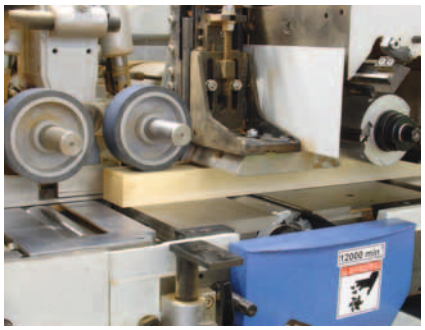
Chips can clog the extraction hood and a fire risk from friction with the rotating tool. Chips can also block the extraction pipes and stop production. A well known example is machining veneered panels where the coating projects over the edge of the panel. Conventional tools do not break up the weak projecting coating causing the long strips of veneer to clog the extraction system. Such blockages can cause machine fires. DFC® hoggers with shredder knives solve the problem by breaking the overhang into small, easily extracted pieces.

Splitting of worktops with DP-routers. Conventional router: Chip beam horizontally leaves the workpiece and shoots through bristle curtains or vertical blinds.

DFC® router: Chip beam is directed to the top of the extraction hood and can be extraced.

There are two different categories of wood processing machines with mechanical feed: through feed and stand alone machines.

Detailed view of an edge banding machine with chain feed.



Detailed view of a four side planing and profiling machine with roller feed.

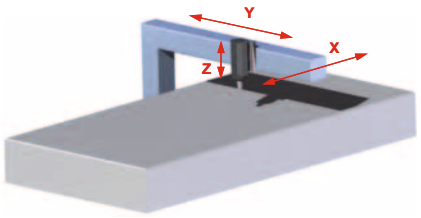
If the workpiece is guided through the machine by a feeding unit, it is called a **through feed machine**. The machining processing is made by guiding the workpiece past the tools. Several tools may be used subsequently, to fully process the workpiece. Depending on the type of feeding systems, a distinction is made between machines with chain feed and machines with roller feed.

Machines with chain feed are used to process the narrow sides of panel materials. The feed chain is used as the workpiece support and reference height for the process. A revolving top pressure belt clamps the workpieces to the chain and transports them through the machine. The part of the board workpieces protruding past the chain can be processed. The chain's uncoiling movement from the chain wheel, can cause minor variations in the feed; this is called the polygon effect. Such effect is counteracted structurally so that the polygon effect does not affect the processing quality. Typical examples for such machines are double end tenoners and edge banding machines for furniture components or machines for profiling laminate panels or parquet floor panels.

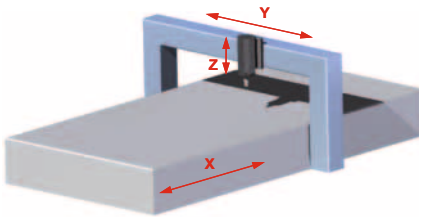
Machines with roller feed are used for four sided processing of solid wood or wood derived products. Typical examples of this machine category are multi spindle four side planing and profiling machines for manufacture of blanks, mouldings and profile panels. The workpieces are pushed along the machine table by driven feed rollers and guided along a fence. The roller feed, is smooth so the wood surfaces are ready for painting. It is also important for the processing quality that the workpieces are guided past the processing tools straight and without vibrations. The tools' zero diameter has to be set exactly to the table height and lateral guide in order to produce accurate workpiece surfaces. Constant tools save time since their zero diameter remains unchanged. Additionally sufficient support of the workpieces against the cutting pressure is important in order to avoid workpiece vibrations and rippled surfaces. The pressure shoes at each processing station must be set exactly to the workpiece dimensions. Chip extraction is also important.

Through feed machines enable a **high production performance** since all processing steps on one workpiece are made almost at once. These machines are designed for bigger batches since retooling is time consuming. Following the **trend towards smaller batch sizes**, elements from stand alone technology are now integrated into feed through machines: e.g. engines with HSK interface, preset tools, automatic tool changer, tracing aggregates, contour milling cutters or through feed drilling. To further increase the feed rates, dynamic linear actuators are used for the tracing aggregates.

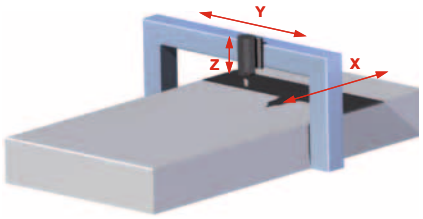
Cantilever type machining centre



Schema of a cantilever machine



Schema of a portal machine



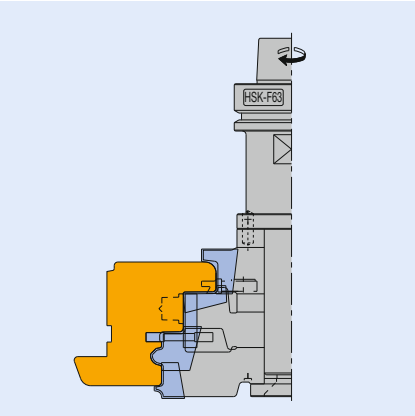
Schema of a Gantry machine

In **stand alone machines** the workpiece is clamped firmly, and the feed movement is achieved by contour controlled axis or the workpiece table. Depending on the arrangement for the moving axis, the different designs are called travelling column, portal or gantry. In the **travelling column design**, also called **cantilever**, machine spindle is situated on a mobile cantilever and executes the feeding movements in all 3 axis. In case of the **portal design**, the machine spindle which is mobile in Y and Z direction is situated on a fixed portal, and the feeding movement in X direction is made by the workpiece table. Such machines often are equipped with tandem tables, so one table may be loaded and unloaded by a handling system while processing is under way on the second. The **gantry design** is a **travelling portal** carrying the machine spindle. All feeding movements are achieved by the tool, similar to the travelling column design. Due to the bilateral support of the travelling portal, the gantry machines are more dynamic than the cantilever machines and often used for the nesting.

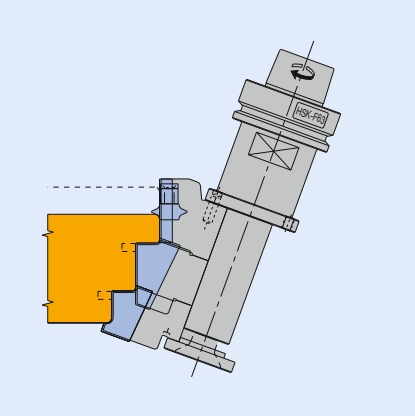
Coming from point-to-point drills and CNC routing cutters, these stand alone machines have been developed into complex **processing centres**. When equipped with drill drives and additional aggregates, they can machine the workpiece, drill it on all sides, saw and even edge band so that a component may be processed in one setting. The machines are made flexible by a tool magazine and automatic tool changer. The main spindle is usually designed to use a HSK interface; HSK-F63 and also HSK-E63 are common in wood processing. Since the tool diameters range between 3 mm to over 200 mm, the motor spindles are frequency controlled to a maximum speed of 24,000 min^{-1} or up to 30,000 min^{-1} for HSC machines.

CNC-controlled machines allow flexible component manufacturing with a batch size of 1. The software determines what process by which tools. The process task is changed by calling up a new CNC program on the control. Despite this theoretical flexibility, the component spectrum processed on one machine depends on the **workpiece clamping technology**. Beams may be positioned freely and with vacuum extraction clamps for panel workpieces or mechanical clamping devices, for window blanks, may be positioned. Additionally there are vacuum tables for clamping of bigger boards e.g. for nesting. Mouldings without level clamping surfaces, e.g. backrests, are clamped by specially manufactured templates that are set on the beams or vacuum tables mechanically or by vacuum as an auxiliary device. The arrangement and distance of the extraction or clamping devices on vacuum table are very important for the processing result. If the distance is too great, workpiece vibrating reduces the processing quality and tool life. Bigger pieces of waste should be clamped so they do not break off, damaging the tool.

Since all operating sequences on stand alone machines run one after the other the processing times are longer than on through feed machines. On the other hand, any shape can be produced, and the components are finished. To increase productivity various methods are employed. Each machining process is sped up by smaller tool diameters and higher spindle speeds. The movement dynamics are increased by employing linear actuators. By having multiple tools on one arbor, tool changing times are reduced by placing the tool in a different working position instead of replacing it. By using several independently controlled main spindles, operating sequences occurr in parallel. Moving workpiece clamping systems with part transfer enable a workpiece to be fed through the machine.



Rebating with a three axis machine



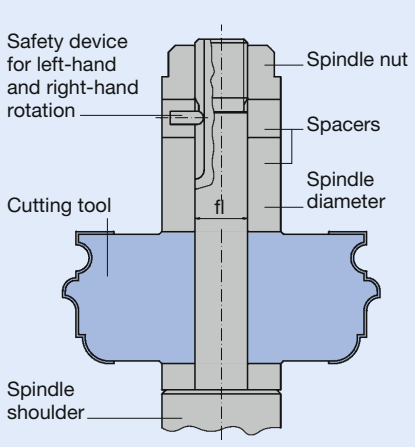
Rebating with swivelled spindle on a five axis machine

Another trend in stand alone technology are **5 axis machines**. For wood processing machines, the 4th and 5th axis are usually two additional spindle swivelling axis. There are two types: cartesian and gimbal 5 axis machines. Both systems have a vertical swivelling axis for the spindle as a 4th axis. In the cartesian system the motor spindle is rotatable around a horizontal axis in a “fork”. In the gimbal system the spindle swivels around an axis by 45°.

A classic application for 5 axis machines is processing 3D moulded parts, for example model making, mould making or boat building. However, this requires a CAD/CAM interface to program the control the 5 axis. In wood processing, the trend to utilise the 4th and 5th axis to swivel the main spindle is more widespread. It is possible to minimise the use of aggregates since bevels, saw cuts and holes can be made with standard tools on the main spindle. Additionally the quality of rebates can be increased by the same entry conditions at both sides of the rebate by using a inclined spindle. Tool life of double rebate profiles increased as the tool profile depth is reduced and the differences of cutting speed and operating path of the knives are decreased.

Manual feed machines are stand alone machines and the workpiece is usually fed by hand. The machine table is the supporting surface for the workpieces. The workpieces are guided past the tool by a sliding table of fence. Workpieces with shaped edges are guided by templates. Special tools with ball bearing guide rings are required. In principle, the same variety of workpieces as on machines with mechanical feed may be manufactured on machines with manual feed. Manual feed machines for one-off products or repair parts are essential in plants for industrial mass production.

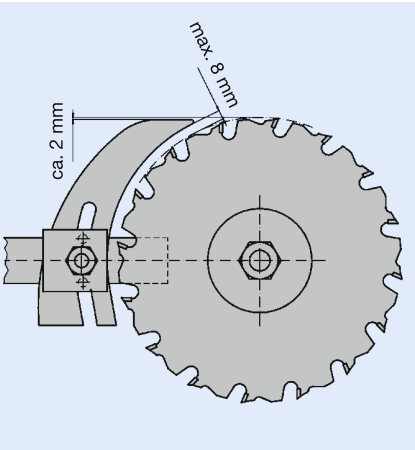
Typical examples of stand alone machines with manual feed are **circular saw benches, surface planing machines** and **vertical moulding machines**. They can be equipped with mechanical feeding devices (power feed) in addition to the manual feed but still are considered manual feed machines.



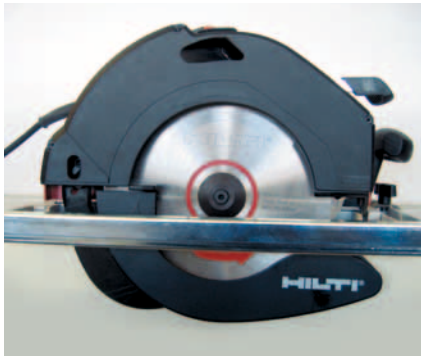
Example of a tool mounting on a spindle moulder.

The operator creates the feeding movement and is involved in the machining process and is exposed to a higher risk than machines with mechanical feed. The highest risk is the rotating tool since the cutting area is not enclosed. The machine directive for machines with manual feed stipulates numerous protective devices. Their use is stipulated in the national accident prevention regulations, their use is the user's responsibility. Protection against touching the rotating tool, preventing workpiece kickback and dust and noise are covered by the regulations. Extraction hoods have the function of a protective device and at the same time serve as noise protection.

Important safety requirements for working with manual feed machines:
Only tools marked with "MAN" designed with particular kickback limitations to EN 847-1 may be used (except for circular sawblades). The tool mounting on spindle moulders must be effected by a safety against twisting in order to prevent an accidental opening of the tool. The free spindle length has to be filled up with spacers, so that the clamping nut can transfer the clamping power to the tool. To prevent workpiece kickback you have to work against the feed (except for scoring). Short workpieces must be fed by a push stick to keep the hands as clear as possible of the hazard area. Openings between the tool and the machine table or lateral guides must be as small as possible. For stopped straight work stoppers for a defined pivot movement of the workpieces must be attached additionally. Circular sawblades must be operated with a riving knife adjusted to the sawblade diameter and the thickness of the saw kerf to prevent the sawblade jamming in the cut and the workpiece from being thorson back. For cutting edges without tears there are special scoring aggregates scoring the bottom of the workpiece to a cutting depth of approximately 1 mm with the feed before the separating cut is made with the main sawblade. The scoring sawblades create a cutting kerf about 0.1 - 0.2 mm wider than the main sawblade.



Correct adjustment of the riving knife on spindle moulders



Swing cover saw

Plunge saw

Portable router

Typical examples for hand operated electrical tools are circular hand saws and routers. Like stand alone machines they have a “table“ as a supporting surface for the workpiece; however, it is situated above the workpiece since the machine is placed on top of the workpiece.

There are two different designs for **circular hand saws**:

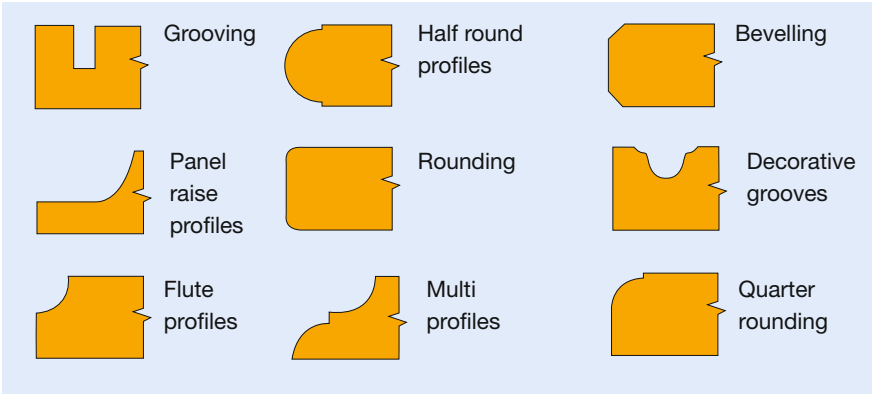
a) Swing cover saws b) Plunge saws

Most wide spread are **swing cover saws** that are usually available for bigger cutting depths. As the name indicates swing cover saws have a swing mounted protective cover that closes automatically after cutting. Plunge saws have a one part stationary protective cover. The complete motor and sawblade unit swivels back into the initial position after cutting so the sawblade disappears into the protective cover with these machines.

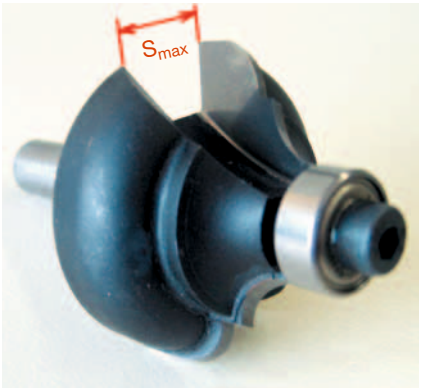
Plunge saws are used when it is necessary to make a plunge cut. On newer plunge saws, the splitting edge is spring loaded to allow for swivelling when making a plunge cut. There are various edge guide and guide rail systems available for circular hand saws, allowing for clean and most of all accurate saw cut. Only use under exceptional circumstances or when making a rough cut.

Usually, circular hand saw machines do not have scoring. A better cutting quality is obtained on the workpiece’s underside. And to achieve a workpiece upper side without tears (teeth exit side) it is recommended to score the top at a depth of approximately 1 mm first and to make the separating cut subsequently with a lateral set off of approximately 0.1 mm.

Hand router machines are versatile machines with almost unlimited uses. The following illustration gives an overview over the most important processing possibilities.



In most instances the tools for hand router machines have bearings or guide surfaces disks to guide the machine along the workpiece edge. Another method is working with templates. This means that a template is mounted in the machine table allowing an exact reproduction by following the contour. Sizing cuts or machining of grooves are best made by edge guides or guide rail systems. Round parts can be created by using a circular aid, similar to a compass.



Cutting tool with guide ring for portable router.

Hand router machines are often used for flush milling veneer or laminates glued to sized boards with an overhang. Router tools with the knife cutting radius equalling the bearing diameter are used. Often no effective extraction is available due to the limited space on hand routers. When grooving/profiling, chips may be extracted by an extraction pipe.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060649	●	365
060652	●	365
060653	●	365
060656	●	365
060662	□	459
060663	□	459
060671	●	365
060672	●	365, 459
060673	●	365
060675	●	366
060684	●	366
060685	●	366
060686	●	367
060688	●	366
060707	●	367
060717	●	366
060734	●	363
060742	●	364
060789	●	363
060790	●	364
061055	●	298
061056	●	298
061300	●	459
061351	●	75
061353	●	74, 88
061354	●	74, 87
061361	●	74
061362	●	74
061363	□	459
061375	●	60, 75
061376	●	60
061377	●	60, 75
061378	●	60, 75, 91
061379	●	60, 75
061380	●	60
061400	●	64
061401	●	64
061402	●	64
061406		64
061407		64
061408		64
061409	●	64
061414	●	64
061416		63
061433	●	34
061434	●	34
061441	●	64
061445	●	63
061446	●	63
061447	●	64
061448	●	64
061449	●	64
061450	●	63
061451	●	62
061452		63
061453	●	63
061454		63
061455	●	63
061456	●	64
061460	●	64
061470	●	79, 88
061471	●	79
061472	●	79
061473	●	79
061474	●	79
061477	●	79
061478	●	79, 84
061479	●	79, 90-91
061485	●	79, 85, 87
061486	●	79
061487	●	79, 92
061489	●	80, 91
061490	●	80, 86
061493	●	79
061495	●	79
061499	●	80, 87

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General Terms and Conditions
as at 03/2011

1. General, conclusion of contract
1.1. All quotations and agreements with business undertakings or legal entities under public law shall be based on the contractual conditions referred to below. Any purchase conditions of the customer's which differ from these Conditions shall not become part of the contract even through acceptance of the order. A contract shall be established by means of the written order confirmation.

1.2. Quotations shall be without engagement, insofar as an obligation which is limited in time does not arise from the quotation.

1.3. We reserve the right of ownership and copyright with regard to samples, quotations, cost estimates, drawings and similar information of a corporeal or incorporeal nature, including information in electronic form; they shall not be made available to third parties and shall be returned on request.

1.4. The order shall be confirmed with reference to the technical information available at the time. Measurements and tolerances shall be based on the appropriate standards applicable at the time, otherwise in accordance with normal trade practices as well as the state of the art and shall be considered specifications, not warranties. We reserve the right to supply tools of the current delivery program, if it corresponds in its functionality to the tool ordered.

1.5. Alterations to or the provision of greater details regarding the technical data after the conclusion of the contract require our consent, may delay the delivery date and shall be made at the expense of the customer.
The amount to be invoiced shall depend on the scope and expense necessary to implement the alteration.

2. Price and payment
2.1. Prices shall apply to an invoice value of the shipment of over € 250,– including packing free German destination (DAP) resp. for export shipments free German port (FOB) or free carrier (FCA). We reserve the right to select the most economical form of shipment. For shipments below an invoice value of € 250,– we deliver ex works (EXW), excluding packing. A processing fee of € 10,– shall be charged for the dispatch of small orders with an invoice value of up to € 80,–.

2.2 The prices on the day the order is placed shall apply plus value added tax. The offer/contract is based on the applied material/commodity prices at the time the quotation was submitted. We reserve the right to adjust the prices in case of raw materials/commodity price changes.

2.3. Additional costs for express shipment, insurance and other special requirements shall be borne by the customer. In case of goods return, which needs our prior express consent, we may charge a processing fee of 10 % of the order value, not less than € 15,–. This does not apply for non-conforming deliveries for which we are responsible.

2.4. The customer shall be entitled to withhold payments or offset them with counterclaims only insofar as the counterclaims of the former are undisputed or have been determined as legally effective.

2.5. Any amounts invoiced shall fall due 30 days after the invoice date.

3. Delivery date
3.1. The delivery date shall be established from the agreements between the contractual parties. Our compliance with this date shall be conditional on all commercial and technical queries being clarified and the customer having fulfilled all the obligations incumbent on him. Should this not be the case, the delivery period shall be extended accordingly. This shall not apply, insofar as we are responsible for the delay.

3.2. Meeting the delivery date shall be conditional on correct and prompt delivery to us.

3.3. The delivery date shall be met if the delivery item has left our production facility or readiness for shipment has been notified prior to the expiry of the delivery date.

3.4. If non-compliance with the delivery date is the result of force majeure or other events, which lie outside our sphere of influence, then the delivery period shall be extended accordingly.

3.5. Part shipments shall be permitted, unless the latter would be of no value to the customer.

3.6. Should the customer determine an appropriate period of time for performance after the due date and should this deadline not be met, the customer shall be entitled to withdraw from the contract within the framework of the statutory provisions. Other claims resulting from a delay in shipment shall be determined solely in accordance with Point 7.2 of these Conditions.

4. Incoterms®
The Incoterms® in their current version are in effect. If no Incoterm separately has been agreed, then ex works (EXW) is valid. This is also valid for cases in which we make partial shipments or have taken other services, e.g. delivery charges or commissioning.

5. Reservation of ownership
5.1. We reserve the ownership of the delivery item until all payments arising from the supply contract have been received.

5.2. The customer shall neither dispose of the delivery item (exception: agents, in that case: extended reservation of ownership), pledge nor transfer ownership of the latter as security. In the event of attachments as well as seizures or other dispositions by third parties, the customer shall notify us immediately.

5.3. In the event of behaviour in violation of the contract by the customer, in particular default on payments, we shall have the right to take back the delivery item after having sent a reminder and the customer shall be obligated to surrender it. Neither assertion of reservation of ownership nor the attachment of the delivery item by us shall be considered as withdrawal from the contract. An application to begin bankruptcy proceedings against the customer shall give us the right to withdraw from the contract and to demand the immediate return of the delivery item.

6. Claims for deficiencies
We will provide the following warranty for material defects and deficiencies in title in the shipment, to the exclusion of further claims – subject to the proviso of Section 7:
6.1. Material defects

6.1.1. Any parts which prove to be deficient as a result of circumstances prior to the passage of risk shall be repaired or a replacement delivery provided free of charge at our discretion. We shall be notified immediately in writing of the discovery of such deficiencies. Parts which are replaced shall become our property.

6.1.2. The customer shall give us the necessary time and opportunity to undertake all the improvements and replacement deliveries which we consider necessary, otherwise we shall be released from liability for the consequences arising from these.

6.1.3. Should the deficiency be only minor, the customer shall have the right merely to reduce the purchase price. The right to reduce the sales price shall otherwise be excluded.

6.1.4. No warranty shall be provided for the following cases in particular: unsuitable or inappropriate use, faulty commissioning by the customer or third parties, natural wear and tear, incorrect or negligent treatment, inappropriate maintenance, unsuitable operating material. Should the customer or a third party make subsequent improvements incorrectly, we shall not be liable for the resulting consequences. This shall also apply to alterations made to the delivery item without our prior consent.

6.2. Deficiencies in title
Should the use of the delivery item result in the violation of industrial property rights or copyright within Germany, we will, as a matter of principle, obtain the customer's right to continue using the former at our expense. Alternatively we will modify the delivery item for the customer in such a way that the violation of the industrial property right no longer applies. Should this not be possible on economically reasonable conditions, we or the customer shall be entitled to withdraw from the contract. The warranty for deficiencies in title shall be applicable only if these are not based on instructions given by the customer.

7. Liability
7.1. Should it not be possible for the customer to use the delivery item in accordance with the contract as a result of a violation of contractual obligations for which we are to blame, then the provisions of Section 6 and 7.2 shall apply accordingly to the exclusion of further claims by the customer.

7.2. With regard to losses which have not occurred through damage to the delivery item itself, we shall be liable, regardless of the legal argument, only in the event of malice aforethought, of gross negligence by executive bodies or executive employees, of culpable injury to persons' lives, bodies, or health, of deficiencies involving malicious reticence with regard to the defect or involving a warranty on our part regarding the absence of the defect, or in the event of deficiencies in the delivery item in so far as there is liability on our part for personal injury or damage to property relating to privately-used articles in accordance with the Product Liability Law. In the event of a culpable infringement of major contractual obligations, we shall be liable even for gross negligence by non-managerial employees and in the event of minor acts of negligence. The latter case shall be restricted to a reasonably foreseeable loss of a type typically covered by the contract.
Further claims shall be excluded.

8. Statutory limitation, law to be applied, legal venue
Any claims by the customer – for whatever legal argument – shall come under the statute of limitations 12 months after the passage of the risk, relative to use in single-shift operation. In the event of deliberate behaviour, with regard to claims in accordance with the Product Liability Law and claims based on the absence of warranty statements, and in the event of culpable injury to life, body or health, the statutory time limits shall apply. The laws of the Federal Republic of Germany that govern legal relations between German domestic parties shall apply to all legal relations between us and the customer to the exclusion of all other bodies of law. The legal venue shall be the court under whose jurisdiction we fall. However, we shall have the right to bring an action at the location of the head office of the customer.

9. Processing orders
The above-mentioned provisions shall apply, mutatis mutandis, to processing orders (e.g. re-sharpening tools).

Nominal fee: € 35,–

Key to pictograms


Sawing, multiple cut


Scoring, hogging


Profiling


Carving

Manual feed


Spindle with anti-twist keyway

SP
Alloyed tool steel


Sawing, thin kerf


Hogging


Profiling joints


Grooving, sizing


Solid metal tool


Spindle with anti-twist hexagon

HL
High-alloyed tool steel


Sawing, horizontal


Double hogging


Profiling tongue and groove


Finish sizing


Tipped tool


Hydro clamping system - open

HS
High-speed steel


Sawing along grain


Hogging, folding


Planing


Grooving, horizontal and vertical

Special body alloy


Hydro clamping system - closed

ST
Stellite


Sawing across grain


End trimming


Planing, profiling


Jointing

Light alloy body


Hydro-Duo (bi-directional) clamping

HW
Tungsten carbide


Sawing, universal


Edge trimming


Drilling blind holes


Copy shaping


Inter-changeable knives


Hydro clamping arbors

DP
Poly-crystalline diamond (PKD)


Scoring, sawing


Grooving, horizontal and vertical


Drilling, through holes


Rebating


Mechanical knife clamping, reversible


Hydro clamping

DM
Mono-crystalline diamond (MKD)

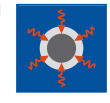

Scoring and sawing stacks


Grooving honeycomb panels


Step drilling


Bevelling


Centrifugal knife clamping, reversible


Shrink-fit clamping

Carbide metal coating


Sawing hollow sections


Jointing


Counter-sinking


Panel raising


Mechanical knife clamping, non-adjustable

Quick clamping system

Diamond coating


Sawing, honeycomb panels


Copy shaping


Slotting


Profiling


Mechanical knife clamping, adjustable - serrated


Resharpenable cutting face


Sawing hollow transparent plastic


Rebating


Spiral boring


Profiling joints


Mechanical knife clamping adjustable - plane


Resharpenable clearance face


Sawing solid transparent plastic


Bevelling

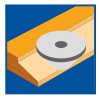

Non-axial boring


Mortising

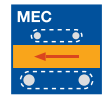
Mechanical knife clamping, re-sharpenable and constant diameter

Low noise

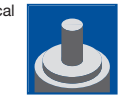

Scoring, top and bottom


Panel raising


Plug cutting

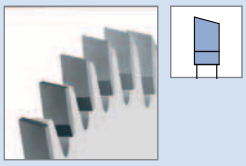


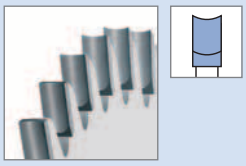
Mechanical feed

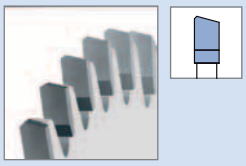

Spindle without twist protection

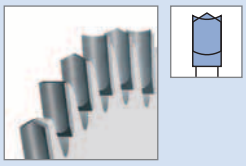
Optimised chip flow

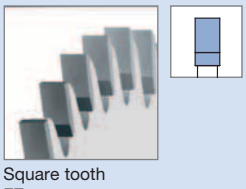
Overview of tooth shapes

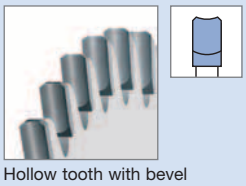

One-sided bevel tooth
ES

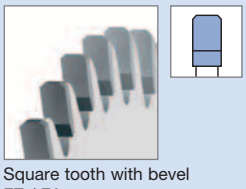

Hollow tooth
HZ


One-sided bevel tooth with bevel
ES / FA

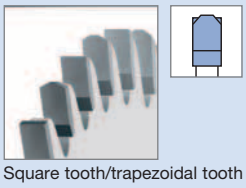

Hollow tooth/inverted V-tooth
HZ / DZ

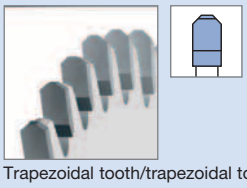

Square tooth
FZ

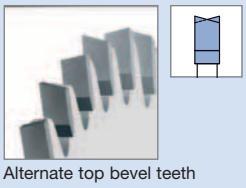

Hollow tooth with bevel
HZ / FA

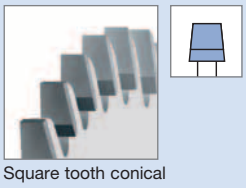

Square tooth with bevel
FZ / FA

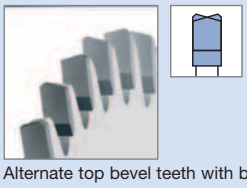

Trapezoidal tooth
TR

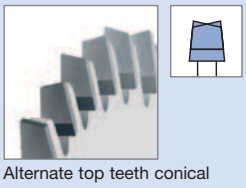

Square tooth/trapezoidal tooth
FZ / TR

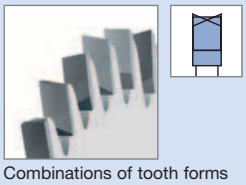

Trapezoidal tooth/trapezoidal tooth
TR / TR

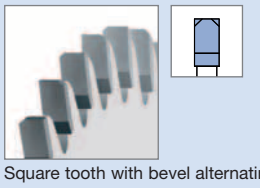

Alternate top bevel teeth
WZ


Square tooth conical
KON / FZ


Alternate top bevel teeth with bevel
WZ / FA


Alternate top teeth conical
KON / WZ


Combinations of tooth forms
WZ / WZ / FZ


Square tooth with bevel alternating
FZFA / FZFA

Conversion mm / inch

1 mm = 0,039 inch **1 inch = 25,4 mm**

mm		inch	mm		inch	mm		inch
0,10	=	0,004	11	=	0,433	110	=	4,331
0,20	=	0,008	12	=	0,472	120	=	4,724
0,30	=	0,012	13	=	0,512	130	=	5,118
0,40	=	0,016	14	=	0,551	140	=	5,512
0,50	=	0,020	15	=	0,591	150	=	5,906
0,60	=	0,024	16	=	0,630	160	=	6,299
0,70	=	0,028	17	=	0,669	170	=	6,693
0,80	=	0,031	18	=	0,709	180	=	7,087
0,90	=	0,035	19	=	0,748	190	=	7,480
1,00	=	0,039	20	=	0,787	200	=	7,874
1,10	=	0,043	21	=	0,827	210	=	8,268
1,20	=	0,047	22	=	0,866	220	=	8,661
1,30	=	0,051	23	=	0,906	230	=	9,055
1,40	=	0,055	24	=	0,945	240	=	9,449
1,50	=	0,059	25	=	0,984	250	=	9,843
1,60	=	0,063	26	=	1,024	260	=	10,236
1,70	=	0,067	27	=	1,063	270	=	10,630
1,80	=	0,071	28	=	1,102	280	=	11,024
1,90	=	0,075	29	=	1,142	290	=	11,417
2,00	=	0,079	30	=	1,181	300	=	11,811
2,10	=	0,083	31	=	1,220	310	=	12,205
2,20	=	0,087	32	=	1,260	320	=	12,598
2,30	=	0,091	33	=	1,299	330	=	12,992
2,40	=	0,094	34	=	1,339	340	=	13,386
2,50	=	0,098	35	=	1,378	350	=	13,780
2,60	=	0,102	36	=	1,417	360	=	14,173
2,70	=	0,106	37	=	1,457	370	=	14,567
2,80	=	0,110	38	=	1,496	380	=	14,961
2,90	=	0,114	39	=	1,535	390	=	15,354
3,00	=	0,118	40	=	1,575	400	=	15,748
3,10	=	0,122	41	=	1,614	410	=	16,142
3,20	=	0,126	42	=	1,654	420	=	16,535
3,30	=	0,130	43	=	1,693	430	=	16,929
3,40	=	0,134	44	=	1,732	440	=	17,323
3,50	=	0,138	45	=	1,772	450	=	17,717
3,60	=	0,142	46	=	1,811	460	=	18,110
3,70	=	0,146	47	=	1,850	470	=	18,504
3,80	=	0,150	48	=	1,890	480	=	18,898
3,90	=	0,154	49	=	1,929	490	=	19,291
4,00	=	0,157	50	=	1,969	500	=	19,685
4,10	=	0,161	51	=	2,008	510	=	20,079
4,20	=	0,165	52	=	2,047	520	=	20,472
4,30	=	0,169	53	=	2,087	530	=	20,866
4,40	=	0,173	54	=	2,126	540	=	21,260
4,50	=	0,177	55	=	2,165	550	=	21,654
4,60	=	0,181	56	=	2,205	560	=	22,047
4,70	=	0,185	57	=	2,244	570	=	22,441
4,80	=	0,189	58	=	2,283	580	=	22,835
4,90	=	0,193	59	=	2,323	590	=	23,228
5,00	=	0,197	60	=	2,362	600	=	23,622
5,10	=	0,201	61	=	2,402	610	=	24,016
5,20	=	0,205	62	=	2,441	620	=	24,409
5,30	=	0,209	63	=	2,480	630	=	24,803
5,40	=	0,213	64	=	2,520	640	=	25,197
5,50	=	0,217	65	=	2,559	650	=	25,591
5,60	=	0,220	66	=	2,598	660	=	25,984
5,70	=	0,224	67	=	2,638	670	=	26,378
5,80	=	0,228	68	=	2,677	680	=	26,772
5,90	=	0,232	69	=	2,717	690	=	27,165
6,00	=	0,236	70	=	2,756	700	=	27,559
6,10	=	0,240	71	=	2,795	710	=	27,953
6,20	=	0,244	72	=	2,835	720	=	28,346
6,30	=	0,248	73	=	2,874	730	=	28,740
6,40	=	0,252	74	=	2,913	740	=	29,134
6,50	=	0,256	75	=	2,953	750	=	29,528
6,60	=	0,260	76	=	2,992	760	=	29,921
6,70	=	0,264	77	=	3,031	770	=	30,315
6,80	=	0,268	78	=	3,071	780	=	30,709
6,90	=	0,272	79	=	3,110	790	=	31,102
7,00	=	0,276	80	=	3,150	800	=	31,496
7,10	=	0,280	81	=	3,189	810	=	31,890
7,20	=	0,283	82	=	3,228	820	=	32,283
7,30	=	0,287	83	=	3,268	830	=	32,677
7,40	=	0,291	84	=	3,307	840	=	33,071
7,50	=	0,295	85	=	3,346	850	=	33,465
7,60	=	0,299	86	=	3,386	860	=	33,858
7,70	=	0,303	87	=	3,425	870	=	34,252
7,80	=	0,307	88	=	3,465	880	=	34,646
7,90	=	0,311	89	=	3,504	890	=	35,039
8,00	=	0,315	90	=	3,543	900	=	35,433
8,10	=	0,319	91	=	3,583	910	=	35,827
8,20	=	0,323	92	=	3,622	920	=	36,220
8,30	=	0,327	93	=	3,661	930	=	36,614
8,40	=	0,331	94	=	3,701	940	=	37,008
8,50	=	0,335	95	=	3,740	950	=	37,402
8,60	=	0,339	96	=	3,780	960	=	37,795
8,70	=	0,343	97	=	3,819	970	=	38,189
8,80	=	0,346	98	=	3,858	980	=	38,583
8,90	=	0,350	99	=	3,898	990	=	38,976
9,00	=	0,354	100	=	3,937	1000	=	39,370
9,10	=	0,358						
9,20	=	0,362						
9,30	=	0,366						
9,40	=	0,370						
9,50	=	0,374						
9,60	=	0,378						
9,70	=	0,382						
9,80	=	0,386						
9,90	=	0,390						
10,00	=	0,394						

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