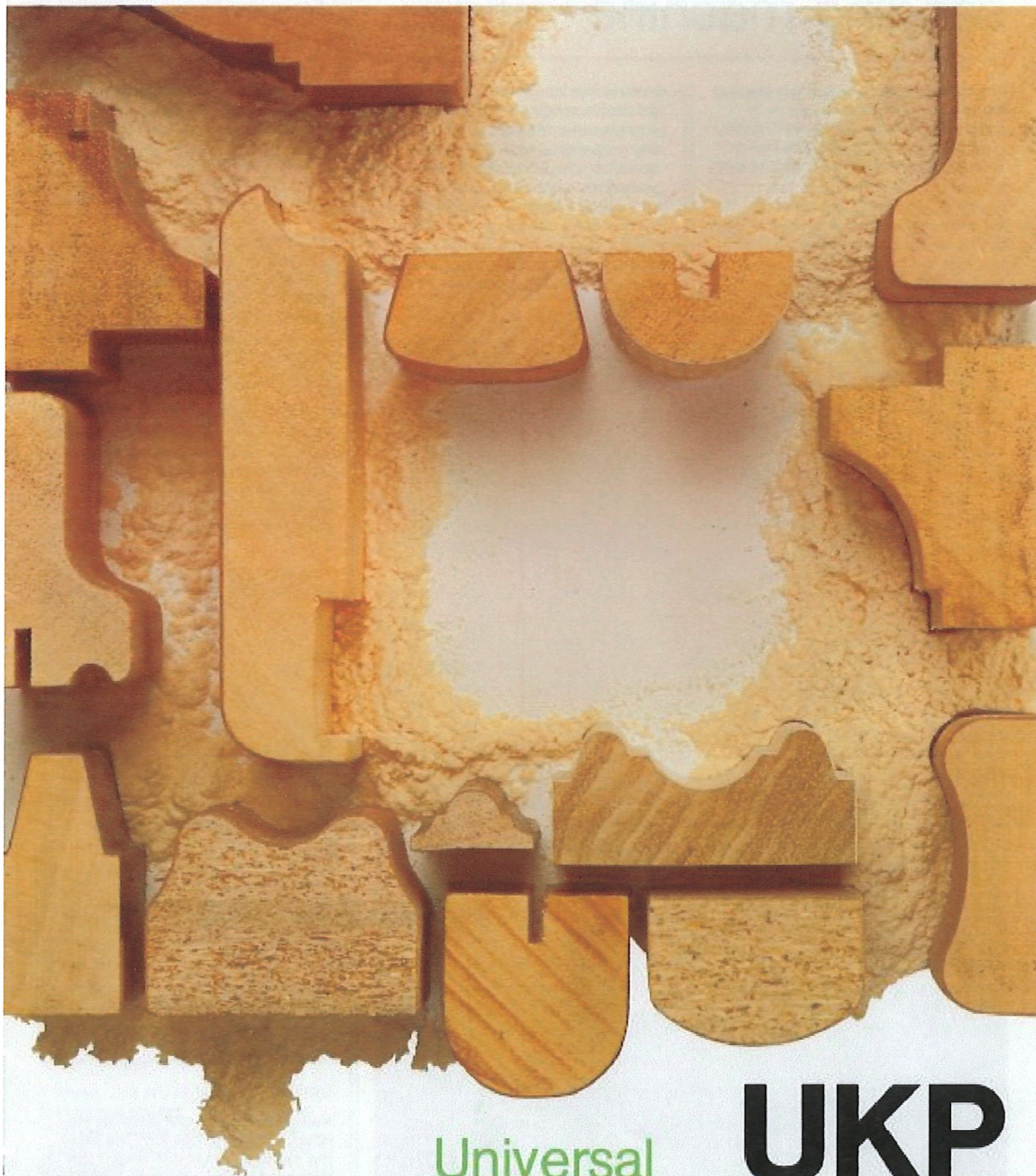


Heesemann



Universal
edge and profile
sanding machine

**UKP
22**

Universal edge and profile sanding machine

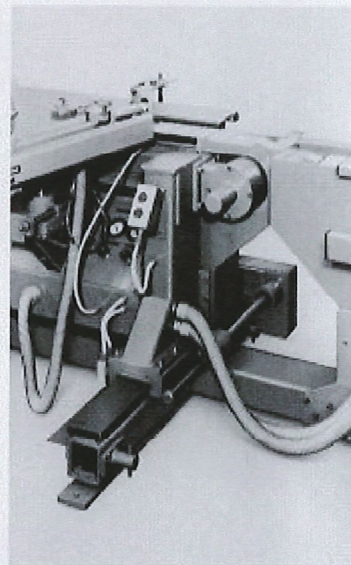
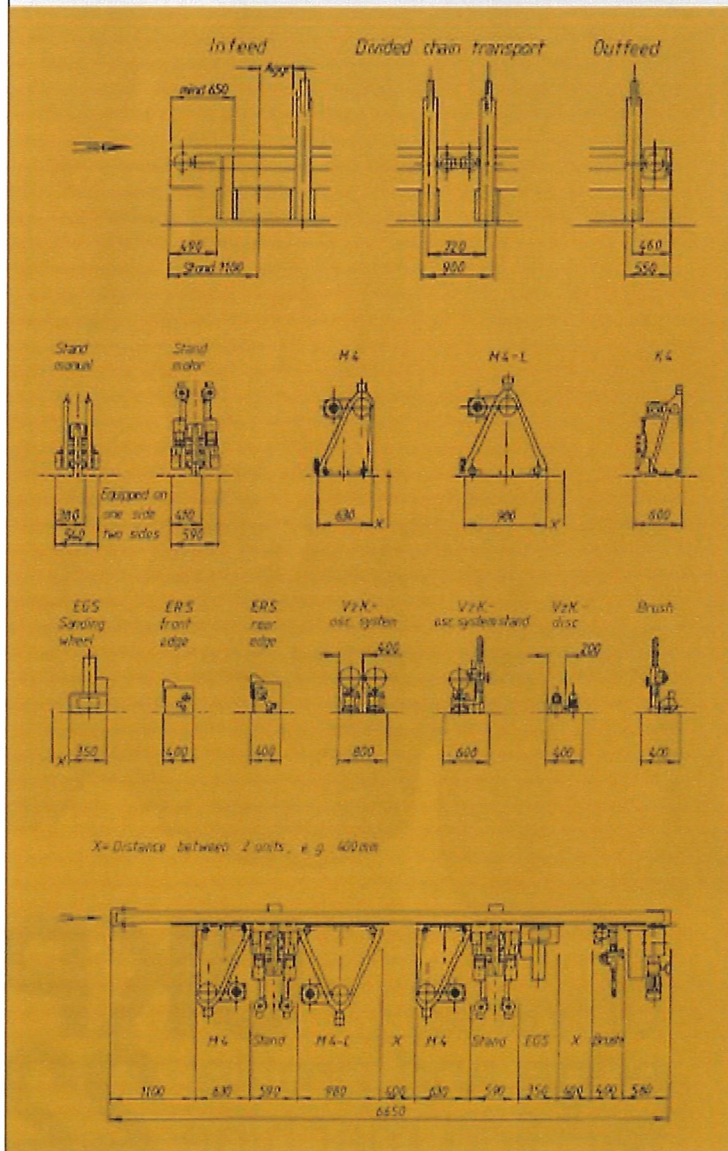
The demands of the woodworking industry, in particular to rationally sand complicated profiles in one operation, has led us to develop the JKP 22. Sanding units of various sizes enable the construction of this machine in accordance with the modular system. In the course of the development of this universal machine we have evaluated experience values, which have been collected over three decades in the

construction of our automatic edge and profile sanding machines. We have placed particular emphasis on simple operation and setting time reduction. The advanced construction guarantees a sanding quality meeting the highest standards, irrespective whether solid, veneered or profiled, straight edges or rebates are processed; whether these shapes occur on doors, table tops, cornices or mouldings.

Workpiece transport unit

The length of the distortion resistant workpiece transport unit is determined by the type and number of units to be fitted as well as the workpieces to be processed.

Single sided executions are available for right, left or double sided unit mounting as well as double sided machines, type DUKP 22, for adjustment ranges up to 3 m. For sanding rails we supply a divided chain transport allowing the rear transport unit to be laterally moved in relation to the front so that the rails always protrude over the processing side and can thus be processed on 3 sides. The adjustment range amounts to 300 mm and can be extended upon request. For extremely short workpieces a driven intermediate transport system guarantees a perfect throughfeed in the



Divided chain transport

transition zone of one chain to the other. In accordance with the table the necessary machine length can be determined with reference to the units. The drive capacity of the feed is matched to the length of the transport unit and the chain execution. Various chain systems are available dependent upon the task:

The versatility of the UKP 22 machine derives from the following features:

- Sanding, edge chamfering and milling on one machine
- Large swivelling and tilting range of the individual sanding units
- Arrangement of the machine execution according to particular requirements

- Central control of the individual units from the control panel
- Line control system designed for the particular demands of a sanding machine
- Pressure applied to panels by pressure bar – for rails, spring-mounted pressure rollers are used

- Central adjustment of press-on and guiding elements
- Quick-change device for press-on tools for fast rearrangement of equipment
- Computer controlled axis setting CNC

The standard chain:

Roller chain with precise centre guidance for a high running accuracy with 130 mm wide rubber faced transport plates.

The glide chain:

53 mm wide execution and thus ideally suited for double-sided machines type DUKP 22. Dependent upon the profile shape of the workpiece edges this machine allows double-sided sanding from 115 mm width.

80 mm wide execution, for heavy loads, with needle bearing mounted chain joints.

The feed speed range is infinitely adjustable between 6 – 30 m/min. Due to the constant working height of 880 mm, the machine is also suitable for use in production lines. Upon request the unit support can be designed as a central duct for dust extraction.

At the infeed the workpieces are guided on a centrally adjustable fence with digital indicator. If the leading edges of narrow components are to be processed, we recommend to equip the transport chain with slidable dogs at a certain spacing for alignment and secure workpiece transport. As an alternative to this, a removable angular guide can be provided as an infeed aid.

Flat surface workpiece pressure is provided through a height adjustable roller pressure beam which is also horizontally adjustable over the chain. The ball bearing mounted rollers are fitted at a spacing of 38 mm. Upon request a 19 mm spacing is also available for short workpieces. An extractable roller support track is provided on the free side to support the workpiece. If longer panels require sanding on the leading edge, a support track can be installed on the free side of the machine with a driven roller chain at the corresponding spacing.

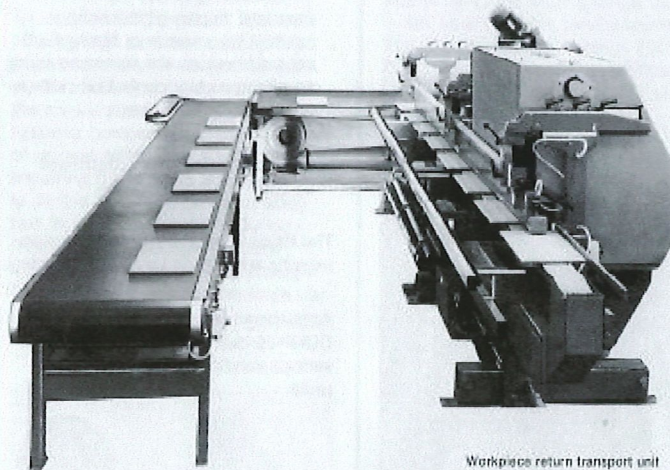
If profile rails are to be processed, the pressure is applied to the transport chain with spring loaded pressure rollers. The mounting to the central adjustment is made dependent on the requirements i. e. fixed or on a stand for individual adjustment possibilities.

Guidance is provided by a counter fence with central adjustment, which can be adjusted both in the height

and laterally with regard to the workpiece width. If the machine is envisaged for the sanding of rails as well as panels, the pressure beam is combined with the described roll versions, permitting fast machine conversion for the individual sanding task.

Workpiece return transport unit

The profile sanding machine allows one-man operation, if a workpiece return transport unit is mounted.



Workpiece return transport unit

Feed magazine

for rails or flat surface workpieces of varying dimensions. Damage to the workpiece surfaces is avoided by a controlled workpiece release.

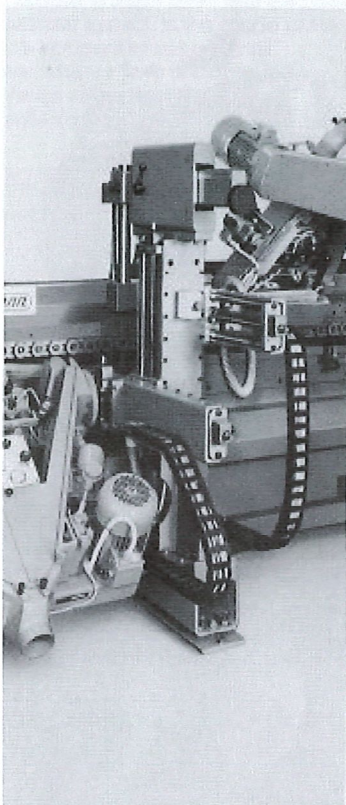
Angular transfer unit

Adapted angular transfer systems can be supplied for the individual application for use in linked machine lines.



Universal stand

accommodating the units M 4, M 4-L, ERS, EGS and for heavy duty milling units.



Universal stands with "M 4" units

In order to meet the requirements of computer controlled axial adjustment machine tool standards were applied for the construction of the universal stand, i. e. rigid, vibration free design with maintenance free guide elements. Hardened double round guides ensure wear free constant operation.

Maintenance free swivel mountings with zero-backlash cross roller bearings adopted from robot technology accept the units and permit a free swivel range of -45° and $+135^\circ$ above the horizontal.

The following versions are available:

- Basic version with digital displays for manual adjustment.
- Automated adjustment with electronic sensing at the individual axes and display of the axial position on a terminal. Memorized set point values are accessed using an electronically controlled changeable pneumatic motor.
- CNC controlled axis adjustment through adjusting motors.

The basic version of modular design permits retrofitting up to CNC control.

According to its task, the UKP 22/ DUKP 22 can be equipped with various sanding, milling and brush units.

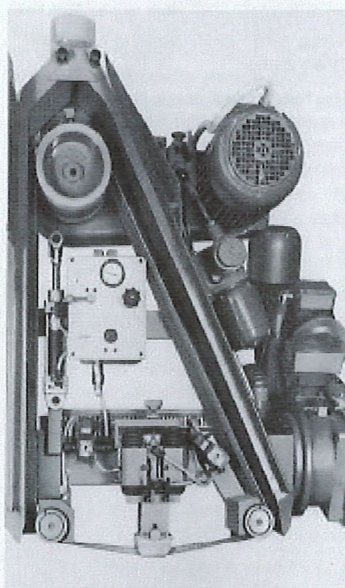
Belt sanding unit "M 4"

for sanding profile sections, rebates and straight edges.

The 2300 x 50 mm sanding belt (maximum width 200 mm) is pneumatically tensioned. The unit design takes into account the technical requirements placed upon automatic setting in CNC operation to achieve a superior repeat accuracy. The single-sided unit suspension permits an unconfined swivel movement without impeding edges, from -45° to $+135^\circ$ from the horizontal. The frame construction with integrated dust guide channels allows free access. Fix mounted belt guide rollers ensure unchanged conditions within the dust extraction system and for the sanding belt rotation when running in the direction of feed or the counter direction. In the basic execution the belts can run in both directions and offer optimum adaption to various wood and lacquer types.

The belt tension values once set remain constant irrespective of differing unit angular settings. This is achieved by implementing a balanced

drive motor suspension with V-belt drive. The sanding belt speeds of 6 or 12 m/sec. are set by appropriate pole changing. The infinite variable range between 1 and 12 m/sec. for lacquer sanding can be achieved via an electronic frequency control system. By changing the V-belt transmission, other speed ranges can be obtained. An efficient air blasting unit guarantees intensive belt cleaning.

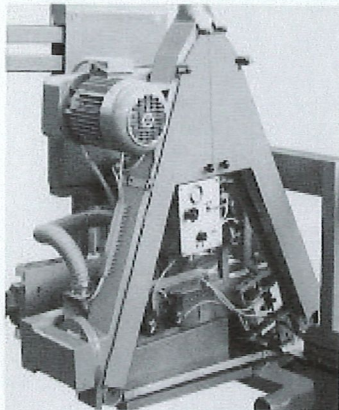


Belt sanding unit "M 4"

An optional oscillation system for the sanding belt or a unit oscillation device are incorporated to ensure an improved sanding belt usage for both belt running directions. The basic version encompasses a compressed air connection for counter-profile tools with air cushion and a security circuit in the event of a belt tear. Sanding shoe guide and controls are described separately.

Belt sanding unit "M 4-L"

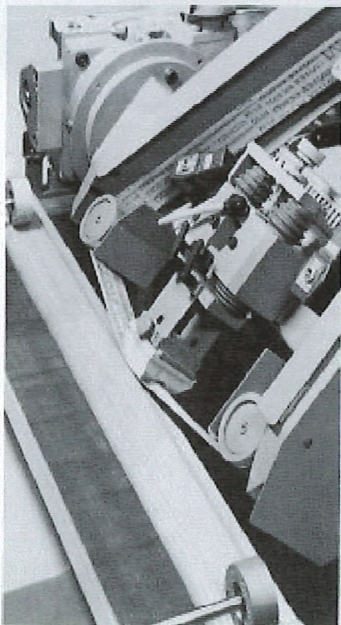
This unit features all technical characteristics as described under "M 4", however, offers an increased belt length of 2800 mm for a longer operating life. The free swivel area remains unchanged.



Cross sanding by means of the "M 4" unit

Cross sanding by means of the "M 4" - unit

Flat surface trimming sections and certain profile shapes can be presanded in compliance with the cross sanding principle to meet high surface quality requirements. To this effect the M 4 unit features a special suspension system.

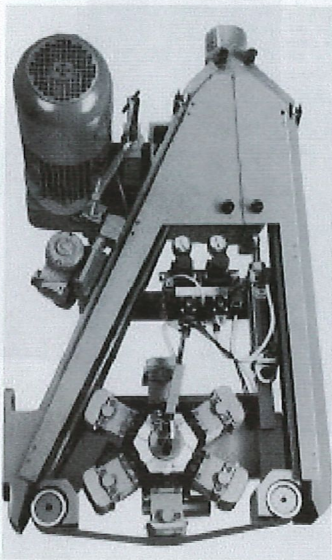


Tool holder

Cross veneered flat surfaces and profile sections can also be sanded in the grain direction on a cross sanding unit with the aid of a special tool holder.

Tool holder

An easy running pressure system offering high precision guides has been especially developed for our profile sanding units. As opposed to the conventional cylinders this system compensates for tolerances of several millimeters - without impairing the uniform sanding intensity. In this manner a constant adaption to edges and profiles during throughfeed production occurs without the risk of sanding through. The pneumatic sanding pressure can be sensitively adjusted in accordance with the sanding intensity required.



Revolving tool

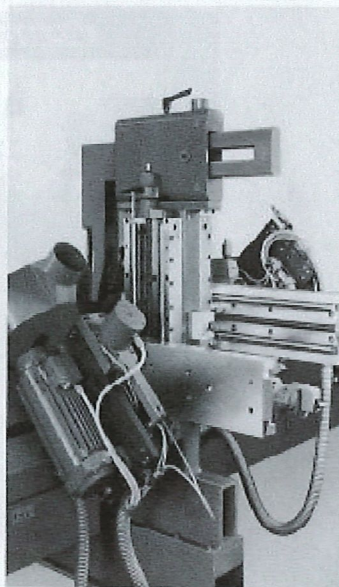
Revolving tool

For applications with frequently changing profiles "M 4" and "M 4-L" units can be fitted with an automatic tool changer. According to this concept, 6 or 8 counter-profile tools are accurately positioned. The revolving design permits the change-over during the sanding operation of those tools not required for the job. Tools with air cushion are automatically supplied with air when in operation

Small belt sanding unit "K 4"

The belt sanding unit "K 4" is used to sand small profile sections and also for light edge chamfering or rounding off. Each unit is mounted on a support with facility for vertical and horizontal adjustment. The setting range covers - 45° to + 90° from the horizontal. The sanding belt (dimension 2000 x 40 mm) is tensioned pneumatically, the belt speeds are 4 and 8 m/sec. or infinitely adjustable from 1 to 10 m/sec.

Otherwise this unit is identical to the main construction features of the "M 4" units.



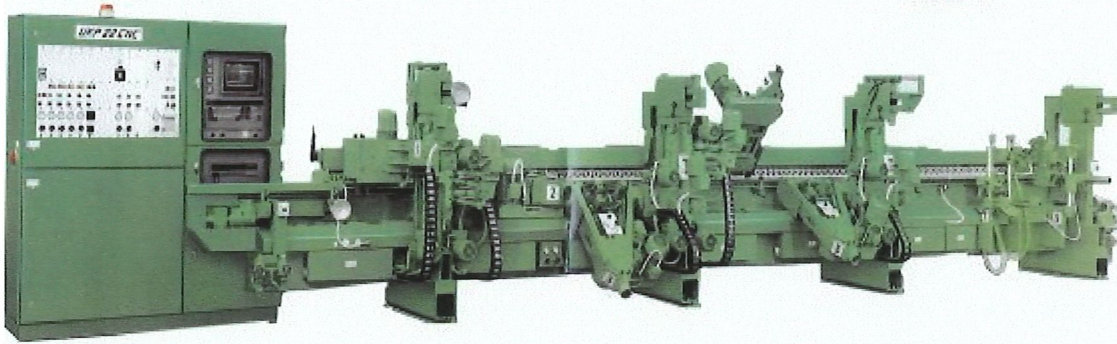
Sanding wheel unit "EGS"

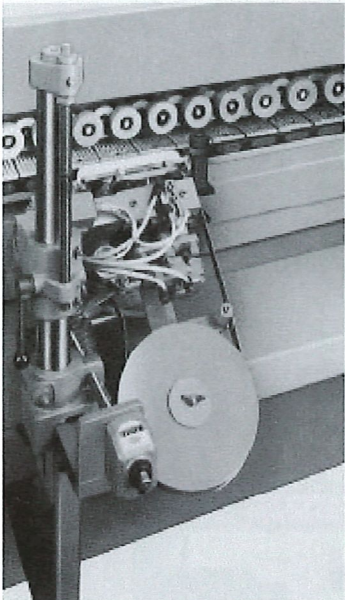
Controlled sanding wheel "EGS"

especially for wood and lacquer sanding and smoothing. Commercially available sanding wheels can be used in accordance with the processing task. Sanding is controlled by the line control system. Material wear during sanding is compensated for by an electronically controlled readjustment device. The cutting speeds can be matched to the various sanding tasks by an electronic frequency regulator. The sanding dust is blown off and extracted with the aid of an intensive blasting device.

Heesemann
Reliability by proven design

**UKP
22**





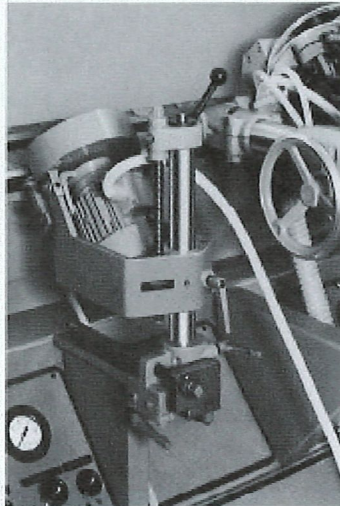
"VzK" oscillating system

Edge chamfering devices

Two optional "VzK" edge chamfering systems are available.

The chamfering device "VzK" operating according to the linear oscillating system is driven by a 0,25 kW three-phase motor and operates with a sanding belt which cyclically unwinds from the roll (width 20 mm, standard length 50 mm). Using this technique fresh sanding belt sections are always brought into operation, enhancing the system efficiency where edges are glued on with thermoplastic adhesives and for chamfering plastic edges. Through the profiling and the linear movement of the pressure tool the edges are not only chamfered but also rounded off. Engaging and disengaging of the pressure tools is controlled so as to guarantee perfect adaption to the workpiece.

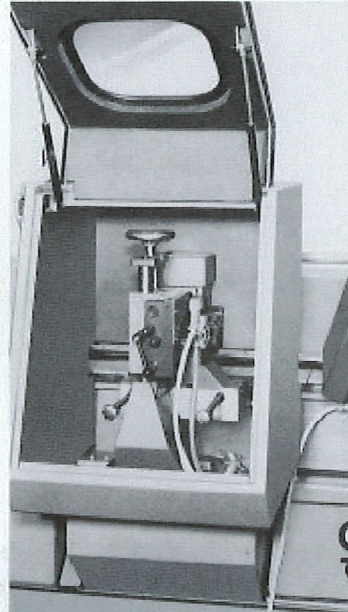
The "VzK" edge chamfering device with disc system is predominantly employed for solid wood edge chamfering. A pendulum mounted sanding disc is directly driven through a 1,12 kW three-phase motor. Precisely adjustable slide keys ensure the adaption to the workpiece edge and thus uniform material removal.



"VzK" disc system

Profile sanding unit "ERS"

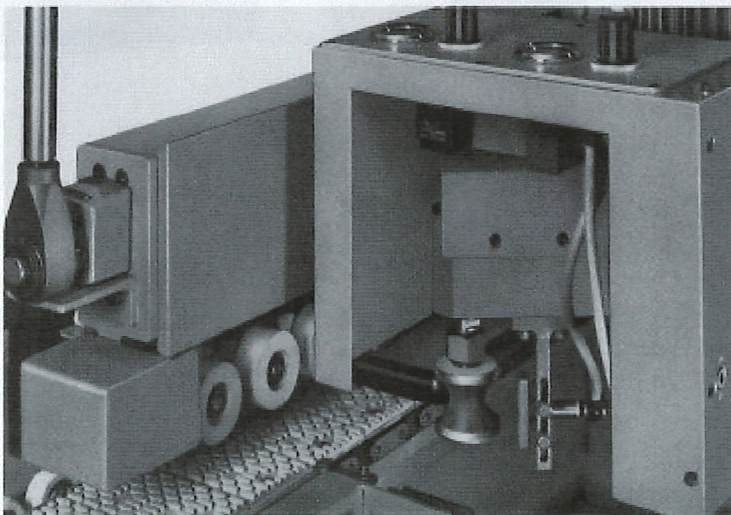
for rounded corners of different radii and profiles on flat surface workpieces. A profile sanding wheel surfaced with sanding grit follows the workpiece contour without template in the corner area and sands either the leading or the trailing edge in continuous operation. In addition to solid wood and veneer, the corner rounding sander can also be used for lacquer sanding. The required speed can be infinitely set through a frequency changer. Blasting jets ensure an extended sanding wheel operating life.



Milling unit

Milling units

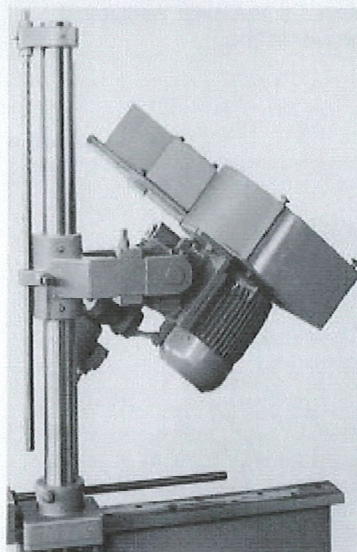
If milling shall be carried out in combination with profile and edge sanding, appropriate milling units in various executions, for straight edges, corner rounding and contours can be installed. The units are located under noise suppression hoods to meet protection regulations and are equipped with a safety brake device.



Corner rounding unit "ERS"

Buffing units "PS"

for polishing of, e. g. polyester surfaced edges and profiles on flat surface workpieces or lippings. The units are swivel-mounted with oscillation and adjustable to the individual profile shapes. Straight edges can be preliminary buffed in cross and finished in the longitudinal direction. Wax is supplied optionally by hand or automatically. 350 mm dia. buffing discs of usually 100 mm width are used.

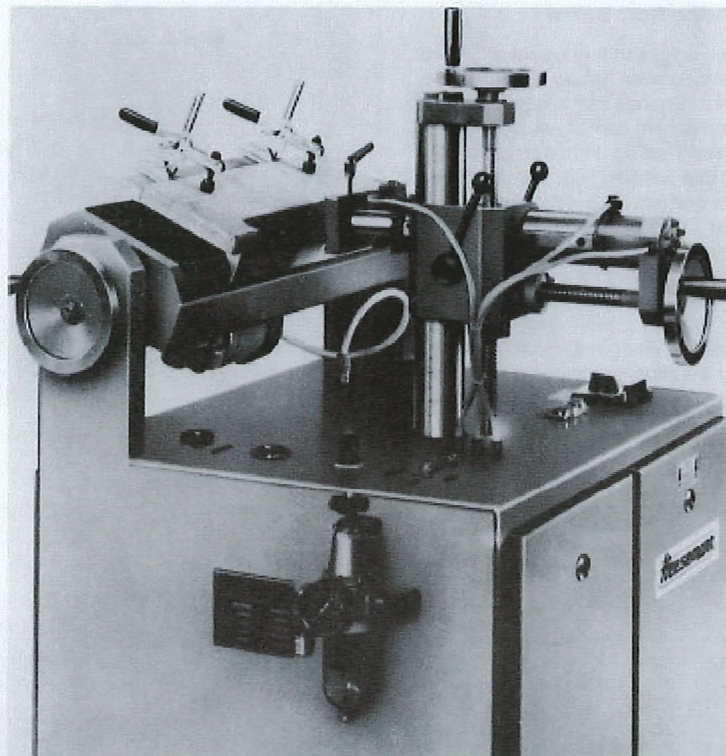


Buffing unit "PS"

Tools, sanding belts

Profiles are sanded using flexible twill sanding belts. The counter-profile usually consists of a special felt. If the stress on the felt counter tool should become too heavy due to shape and number of the workpieces to be sanded, a longer service life can be achieved e. g. by the use of a metal tool designed with air jets for cooling which also build up an air cushion to reduce friction.

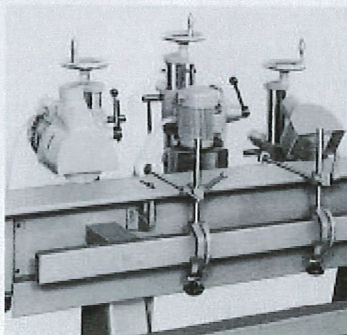
For counter tool production with always uniform shape we particularly emphasize the profile tool grinder PWS. The individual workpiece specimen is used to grind in the counter tools. This machine is indispensable when employing CNC controlled sanders in order to ensure an unsurpassed repeat accuracy.



Profile tool sanding machine "PWS"

Brush units

According to the individual workpiece shape, for cleaning purposes and to achieve additional smoothing, profiled or cylindrical sanding brushes in various widths can be employed. The brush units are mounted on stands allowing horizontal and vertical adjustment as well as swivelling. For special sanding effects, such as structuring, the units can be supplied with controls, upon request also with an oscillation system.



Brush units

Line control

We have developed a line control system for the controllable sanding and milling units which are especially matched to the requirements of a sanding machine.

The workpiece are sensed at the machine infeed, the impulses being transmitted to all subsequent machine units. Setting is in millimetre increments.

The advantages of this line control are to be seen in the fact that the different unit settings with regard to sanding pressure, angular setting, belt tension and feed speed necessary for profile sanding are electronically compensated for. Even the non uniform adaption behaviour of steel and felt tools is automatically taken into consideration by the line control.

In this manner it is ensured that also after readjustment of the complete machine the controls automatically set the precise attendant values, in order to relieve the operator from additional settings in this area.



Reliability by proven design

Sanding from below

In the edge sanding machine "H-G/U" operating from below, the bottom face of lippings and posts is sanded. This machine comprises of one or several sanding units with a 2000 x 220 mm sanding belt. The sanding units perform an oscillating movement. The machine is equipped with an automatic transport system, however, also allows interconnection with the UKP 22, so that in this machine combination all lipping sides can be sanded in one pass. When commencing the processing with a cross sanding unit, cross sanding can be performed.

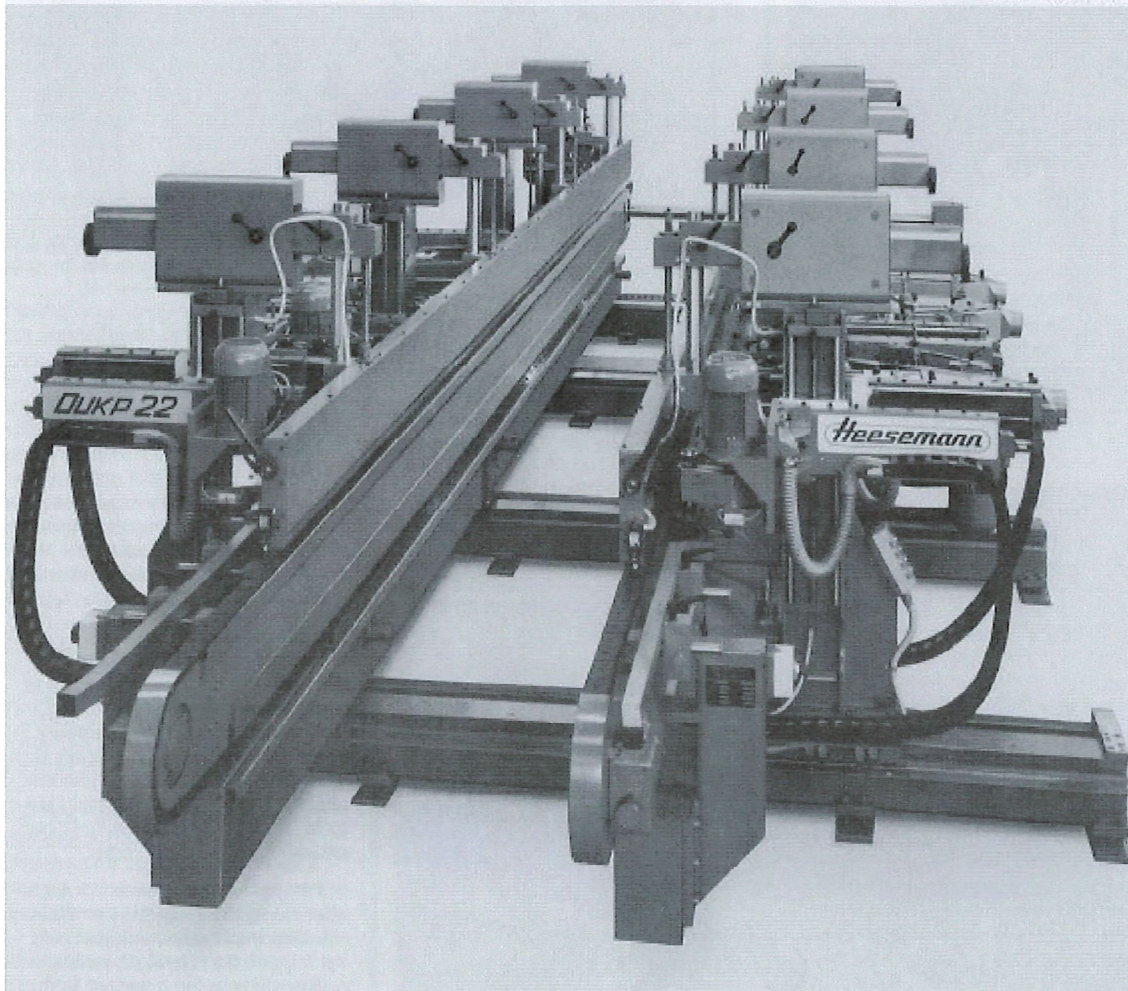


"H-G-U" operating from below

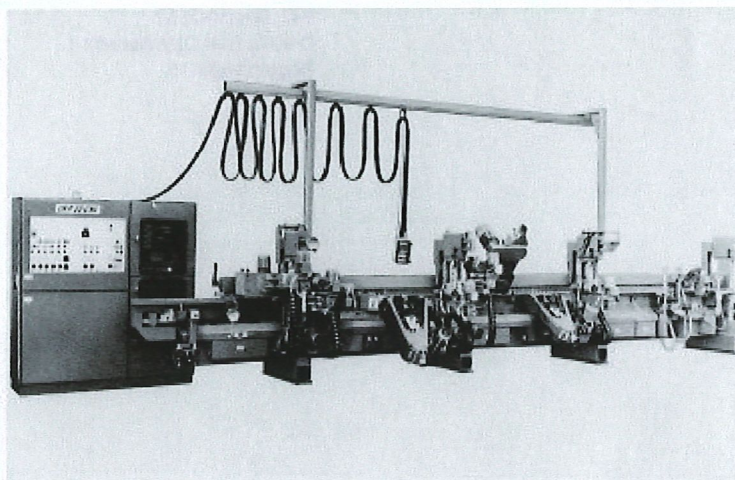
Computer controlled axis setting CNC

The user can achieve a dramatic reduction of setting time when employing a CNC axis control for all sanding and milling units at the universal machine stand as well as for pressure rollers and guide elements. The computer memorizes the axis positions for the various profiles. Its storage capacity can be modularly adapted. Released by a push-button, the units move in all three axial directions, i. e. horizontal, vertical and angular setting.

Type UKP 22



The operator sets all functions on the terminal located on the machine, e. g. for the line control, the drive motors, motor speeds, tool exchange and axis positions. Furthermore possible fault functions are displayed. The terminal can be moved to any unit desired via a running rail. Unit positions modified in jog mode can be transcribed into the individual programmes in the "teach-in mode", this allowing a rapid adaption to minor profile changes.



Type UKF 22-CNC

Technical Data	Motor rating kW Speed rpm	Belt or feed speed	Tilt range of sanding units	Dimensions of sanding belts mm	Weight kg approx.
Belt sanding unit					
M 4 - 50	1,0/1,2	6 and 12 m/s	from horizontal	2300 x 50	70
M 4-L 50	750/1500		135° upwards to 45° downwards	2800 x 50	75
M 4 - 80	2,0/2,0	6 and 12 m/s		2300 x 80	75
M 4-L 80	750/1500			2800 x 80	80
M 4 130	2,6/3,2			2300 x 130	85
M 4-L 130	750/1500			2800 x 130	90
M 4 150	2,6/3,2			2300 x 150	90
M 4-L 150	750/1500			2800 x 150	95
M 4 200	4,2/4,5			2300 x 200	100
M 4-L 200	750 x 1500			2800 x 200	105
K 4	0,55/0,75	4 and 8 m/s		2000 x 30	90
Edge sanding machine HG - U	2,6/3,2 1500/3000	10 and 20 m/s	—	2000 x 220	600
Edge chamfering device V.z.K. oscillating system	0,25 1500	0,5 m/s	45° from above to 45° from below	50000 x 20	60
V.z.K. disc system (2 units)	0,125 2750	—	45° from above and 45° from below	Ø 150	50
Sanding brush	0,25 0,74	—	from horizontal 90° upwards to 45° downwards	width of brush 60 width of brush 150	55 60
Corner rounding off unit ERS	0,75/1,1 1,1	—	—	Ø 45 x 50 Ø 80 x 60	90
Sanding wheel EGS	1,5 1500	400 - 1500	from horizontal 90° upwards to 45° downwards	Ø 200 x 50	120
Buffing unit PS	1,5 1500	—		Ø 350 x 100	120
Workpiece conveyor unit	3,0 - 7,5	6 - 30 m/min	—	—	—
Milling units	Specification depends on version supplied				