ULMIA

universa K

The basic machine is a small table saw, which is optionally m1t in height adjustable single saw shaft (versions KD and KW) or with a combined Saw and planer knife shaft (version KHD and KHW) is supplied.

The circular saw is equipped with a tiltable table, a fence line for rip cuts, a sliding angle stop, gap edge and protective device for the saw blade equipped. The circular saw is used to make longitudinal, cross and angle cuts with the circular saw blade and - when using special tools - for drilling, grooves, teeth, rabbets, slots, tenons, burrs, milling and grinding.

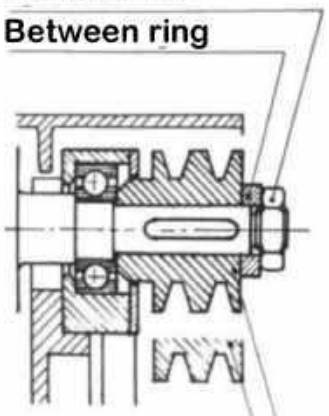
The basic machines KD and KW can be combined with the slot drilling device, Wood turning device, table drilling device, fretsaw device, edge saw device, the sharpening devices as well as with a flexible shaft. The basic machines KHD and KHW are also equipped with a surface planer combinable.

Installation and connection:
The machines KD and KW respectively. KHD and KHW are on the left side of the Machine cabinet T1 plate on the threaded bushings provided for with two Hex bolts and washers fastened. In other cases the machine should be placed on a workbench or a stable one The table with a flat surface is fixed through the two slots in the base plate. be screwed.

The machines are fully installed from the factory connection and with a pre-provided with written plug. It must be checked whether the type of current present and mains voltage corresponds to the machine supplied. In the case of a three-phase connection, the direction of rotation of the motor must be observed, counterclockwise when looking at the motor pulley. If necessary, the polarity of the plug must be reversed by a specialist. With an alternating current connection, the three-phase motor is equipped with a starting and Operating capacitor switched and runs on the single-phase network. The fuse for the supply line should be at least 6 amps, but not more than 10 amps. exhibit.

Hexagon nut

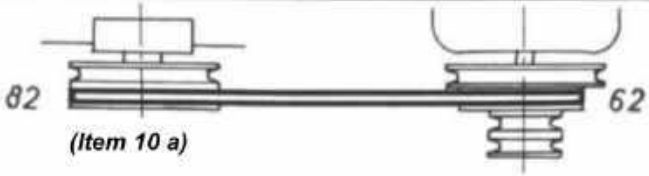
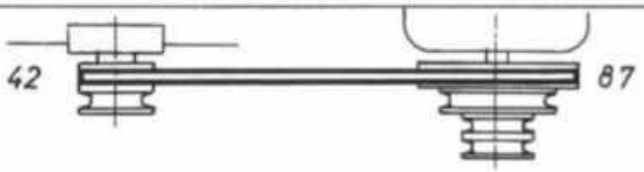
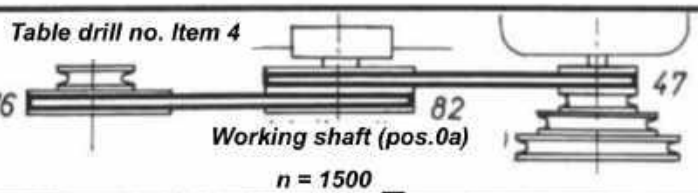
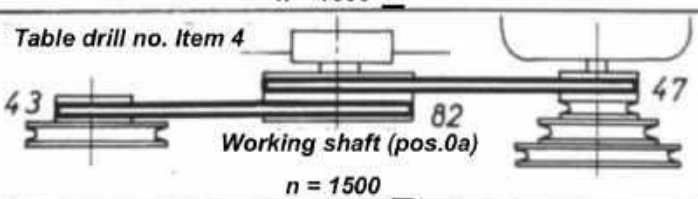
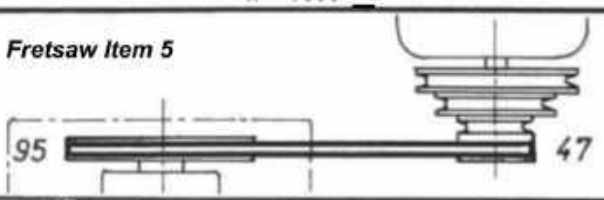
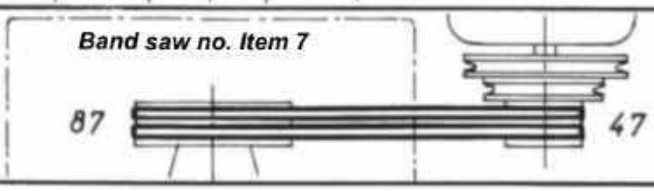
Between ring



Machine belts - washer 02 (Item 10 a)

Machine belts - washer 42

Setting the speed:
On the machine, the three-stage motor Pulley. in connection with the normal machine Pulley 42 and the additional machine belt different speeds for the Working wave can be achieved.
Setting the speeds and their use in the Practice takes place according to the enclosed speed table, After lifting the engine, the V-belt is attached to the pulley1 corresponding to the desired speed knocked down. The motor belt pulley can after loosening the cover disk be repositioned.
After loosening the six- square nut (right-hand thread) replaced.
Hook wrench 45/50 as a counter holder on the inner flange apply.

	Speed	On machine / On motor	Length (in mm)	on No.
Basic machine with additional equipment	1500		8×800	1 oder 2
	2000		8×800	1
	3000		8×750	1
	4200		8×750	1
	6000		8×800	1
Table drill Item 4	750		8×800	2
	1500		8×800	2
Fretsaw Item 5	1250		8×670	1
Bandsaw Item 7	1400		8 x 670	2

Selection of the speeds according to sheet 3a

Georg Ott, Ulm-Donau, Werkzeug- und Maschinenfabrik | gefertigt: | laufd. Nummer: | Blatt:

Operating instructions Ko-KWKHD-KHW
Selection of speeds *

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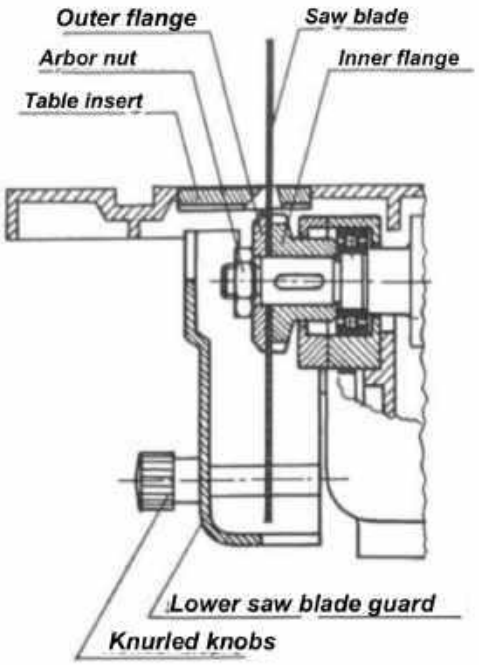
Operation	Material	Tool	Rotation Rev./min
SAWS with the circular saw	Wood & thin Plastics	Wood Circular saw blades 160 mm	4200
		Wood Circular saw blades 125 mm	6000
	Thin to Medium Plastics	Wooden circular saw blade 3 mm toothed wide, special circle saw blade 3102 fine or 2002	4200 3000
	Thin light metal profiles	Special circular saw blades 2002 or 2003	3000
	Medium light metal profiles	Special circular saw blade 2003	1500
	Thin colored metal profiles	Special circular saw blade 2002	
GRIND with the circular saw	Wood and Plastics	Steel disc with abrasive cover pos. 18a	3000
GROOVES, PRINTS with the circular saw	Wood	Conical grooving saw blade pos.1a, wobble saw pos.19a	4200
FOLDING, PROFILE MILLING, GROOVING with the circular saw	Wood	Milling head pos. 20a with Folding knife pos. 20b or Profile knife pos. 20c and 20d	4200
DRESSING PLANING with surface planing device item. 2	Wood	Planing knife pos. 2 and 2a	6000
LONG HOLE DRILLING with long hole drilling device pos. 1	Wood	Slot milling drill Item 1a	6000
DRILL with table drilling device, item 4	Wood-plastics	Twist drill pos. 4a	1500
	Non-ferrous metals-steel		750
ROTATE with wood turning device Item 3	Wood	Larger diameters. Facing work	1500
		Medium diameter From approx. 25-50mm	2000
		Small diameter up to approx. 25 mm	3000
Work with **FLEXIBLE SHAFT** Item 6	Various Materials	Speeds depending on the type and Diameter of the tools (Faster speeds for tools w/ small diameter)	1500 3000 4200 6000
Tool care **SHARPEN** of tools	With tool sharpening device pos. 25 (for general tools)		4200
	With circular saw sharpening device pos. 25 b (for wooden circular saw blades)		4200
	With planer knife and plane iron sharpening device Item 26 (for planer knives Item 2u2a and hand plane iron)		6000

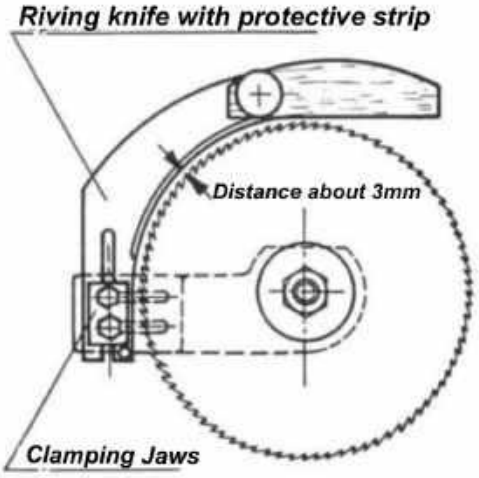
* Set the speeds according to sheet 3



Inserting the saw blades:
Remove the lower saw blade guard after removing both knurled knobs. Remove the table insert upwards. Remove the arbor nut.

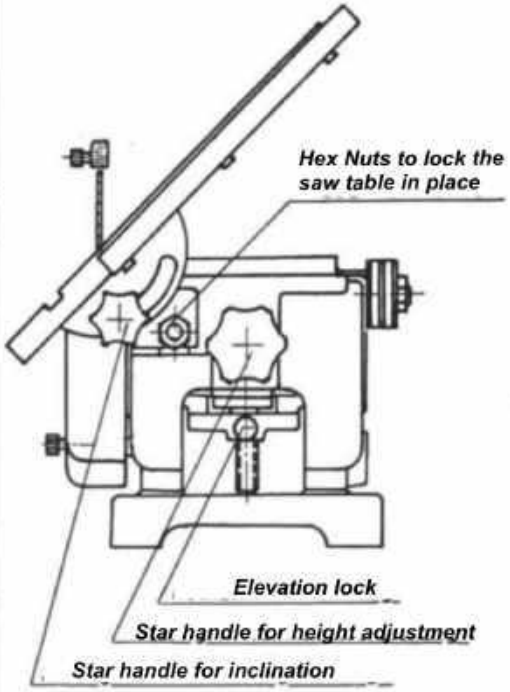
Note: left-hand thread!
Clockwise loosen the nut with open-end wrench SW 19, use hook wrench 45/50 on the inner flange as a counter holder. Before inserting the saw blade, clean both flanges thoroughly to guarrantee perfect concentricity. Lock nut tightly with the intended wrench, but not with force.
Insert the wooden table insert.

Insertion of the riving knife with protective strip:
The gap wedge holds the work pieces apart, so that the teeth on the back of saw blade don't lift or throw the workpiece.



The riving knife is ideal for everyone to use in sawing work. Insert the riving knife from above into the clamping jaws, at the correct distance from the saw blade (about 3mm) set and tighten with socket wrench SW 10.

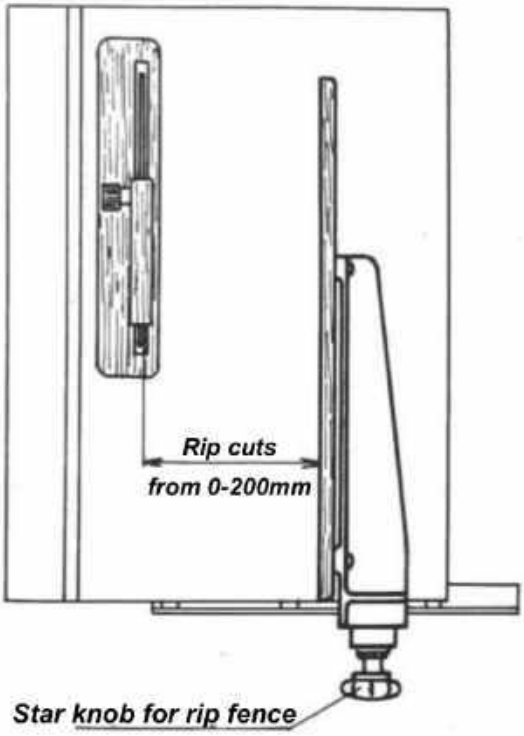
(If the riving knife is not used then the clamping jaws should always be clamped in the rearmost position.)
Always use the lower blade guard.



Adjusting the cutting height:
The front large star handle is used for the height adjustment of the saw shaft and for setting the desired cutting height of the blade. Turning to the right means lifting, turning to the left on the other hand, lowers the saw shaft. The position is locked with the knurled screw below the star handle.

Note: The height of the saw blade should always be set the same so that about half to full tooth height protrudes from the workpiece

Setting the table slope:
After loosening the two small star handles, the circular saw table can be inclined up to 45*
The front segment is visually marked with tick marks for the most common positions.



Removing the circular saw table:
The circular saw table is removed for changing the planer knives or attaching the planing device. To do this, the table is tilted about 30-45° and clamped, whereupon both hex nuts can be loosened with a socket wrench SW 14 and then the complete circular saw table with its segments and bearing covers on top can be withdrawn.

Reinstall in reverse order.

Note: The circular saw table must match the end shields up to the stop (threaded bolt) down and then be screwed tight. The blade shaft guard should always be installed, especially with the circular saw table tilted or removed.

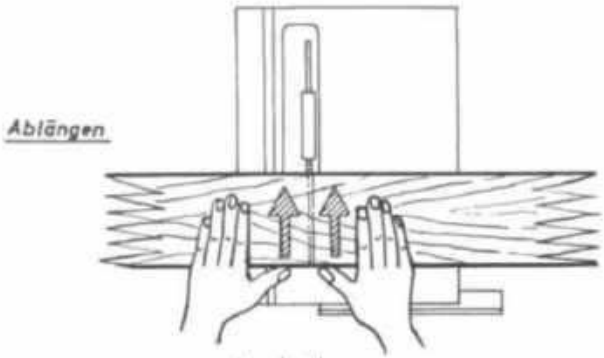
Mitre guage
The mitre guage is adjustable up to 45 in both directions, with tick marks for the the most common angles, after loosening the Star knob.*

Rip Fence:
The rip fence can be moved after loosening the star knob and locked at any distance from 0 - 200 mm from the saw blade.
The desired distance is determined with a tape measure and accuracy controlled with a test cut.

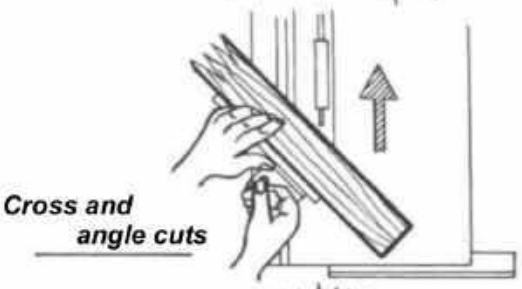
Working with the circular saw:

Note before starting the machine -
Always remove power from the machine during the preparatory work (Pull out the plug).
Set the correct speed for the respective work.
Set the working area, saw blades or attach other tools well.
For all saw blades or other tools install the matching wooden table insert.
Always turn the saw shaft by hand and check whether the saw blade or tools are free
Have a test run.

With machines KHD and KHW always make sure to install the shaft guard.

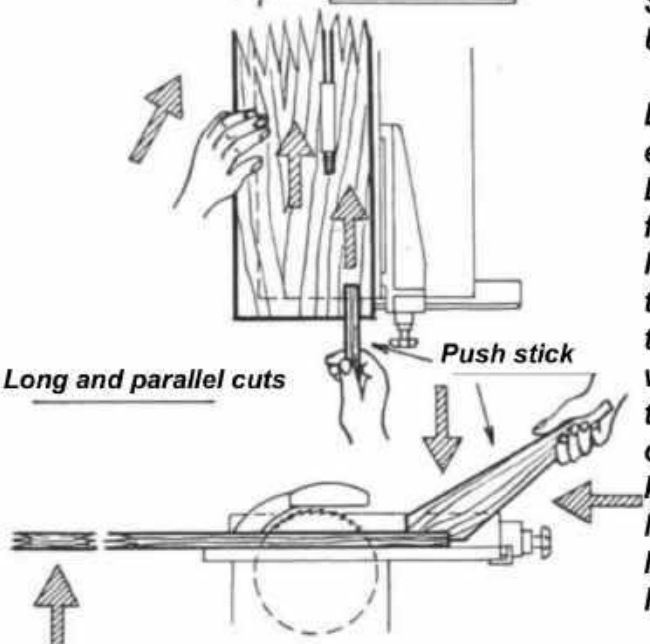


Cutting to length without stop
Workpiece must be at the interface rest. For long workpieces provide lateral support. Safe and equally fast without stopping or letting go
Speed 4200 rev./min.



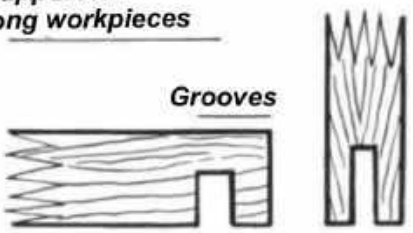
Cutting
Use fine-toothed saw blade. Cross and angled cuts are included the angle stop leads out. Set the desired angle and clamp. Workpiece with closed fingers of the left hand place on the table at the stop and evenly with the right hand push through quickly.

Speed 4200 rev./min.
Use a fine-toothed saw blade.

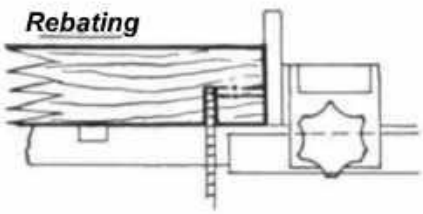


Longitudinal and parallel cuts are made executed with the rip fence.
Bring the fence to the desired distance from the saw blade and clamp it in place. Place the flat side of the workpiece on the table. The left hand presses against the stop. The right hand pushes the workpiece through at the same time. In the case of narrow sections, the last end only with one always,Push stick to be kept ready (to be made by yourself). Never bring your fingers into the cutting line. Provide rear support for long and heavier workpieces.

Speed 4200 rev./min.
Use a coarse-toothed saw blade.

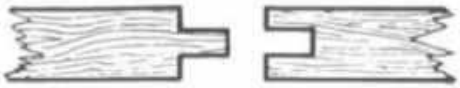


Grooves: Grooves can optionally be made with a saw blade or grooving cutter. Rolling saw or milling head can be produced. The groove depth is set by adjusting the saw shaft height. Longitudinal grooves are made with the rip fence, cross grooves are expediently made with the finger milling device or up to a certain width with the mitre guage.



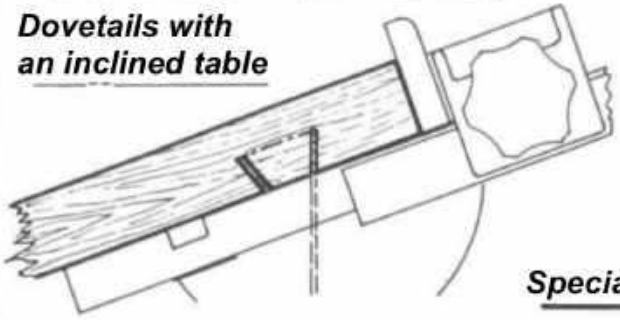
Rebate: Rebates on workpiece edges can be made with saw blades. The saw blade height and length stop are set to the rebate depth and rebate width. Use a push stick for small and narrow pieces.

Tenon and slot



Tenoning and Slotting:
Tenons and slots are made with the saw blade and the grooving saw blade.

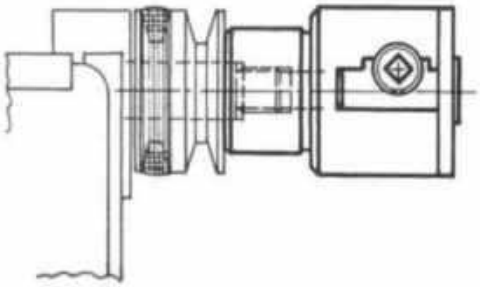
Dovetails with an inclined table



Dovetails:
Dovetailling with the saw blade is only possible as a preliminary cut by tilting the table. The edges are pre-sawn with the saw blade, the wood in between must be removed by hand.

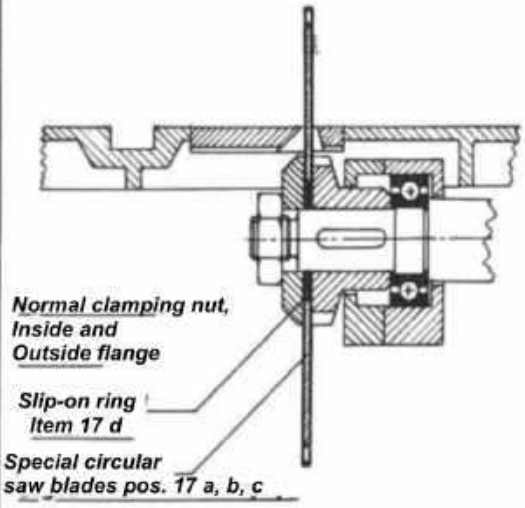
Special accessories

Two jaw chucks



Two-jaw chuck Pos.l0b required for:
Slot drilling device item I
Wood turning device pos. 3 and
Flexible shaft pos. 6.

The double jaw chuck is screwed onto the pulley side of the saw shaft instead of the intermediate ring and the hexagon nut (right-hand thread). Clamp the tools, inserts etc. with the corresponding drill head key.

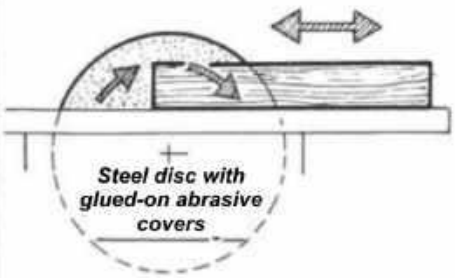


Special circular saw blades items 17a, b, c have a 32 mm saw blade bore. They are only to be attached with the corresponding slip-on ring 32/16 and normal outer flange and clamping nut.

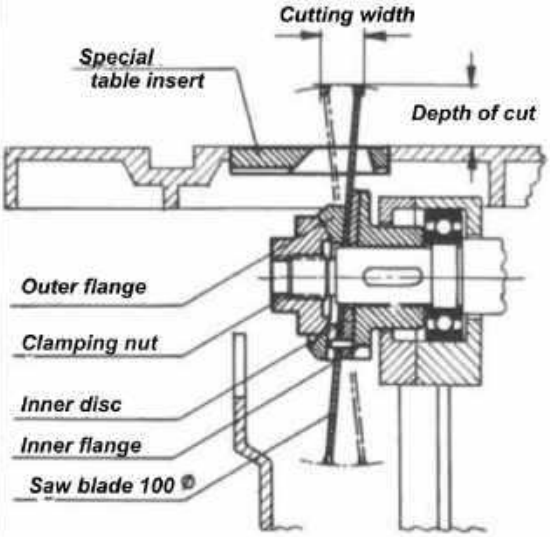
Circular saw blades item 17a (toothing 3102-fine) are for plastics up to about 3 mm thick. Speed 3000 rev / min,

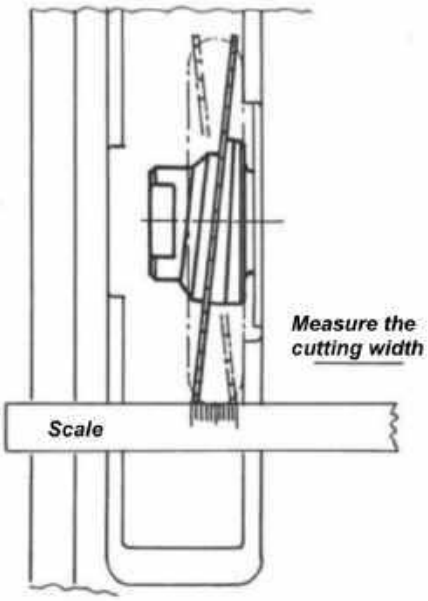
Circular saw blades item 17b and c (teeth 2002 and 2003) are suitable for colored or Light metal profiles. Speed 1500 resp. 3000 rev / min. depending on the dimensions.

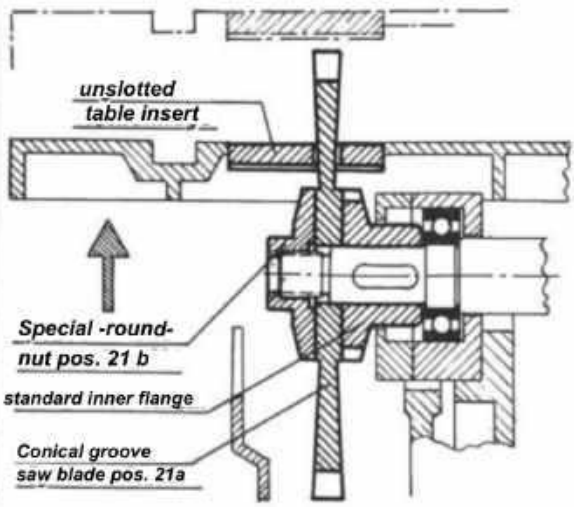
When sawing hacksaw, always use a cooling pen and a lubricating pen to smooth the saw blades.



Steel disc with abrasive covers item 18 a and b.
The is clamped in place of the circular saw blade for sanding longitudinal edges, bevels, chamfers, end faces and the like. When sanding, make sure that the sanding wheel, the steel wheel, tries to lift the workpiece in the rear area with glued grinding covers. Always push or pull the workpiece past the grinding wheel. Use a wooden table insert.
Speed 3000 rev./min.







Wobble saw pos. 19a:

The wobble saw can be used for longitudinal and transverse grooving with the longitudinal stop and the tooth milling device and up to groove widths of about 7 mm with the angle stop.
Max. Groove width 10 mm, max. Groove depth 20 mm.
The wobble saw should only be used if the groove is not particularly accurate, as the base of the groove becomes slightly round due to the swaying blade.

Inserting the wobble saw:

Remove the riving knife and table insert as well as clamping nut, outer and inner flange for saw blade. Fasten the inner flange, inner disk, saw blade, outer flange and clamping nut (left-hand thread) of the wobble saw in this order and tighten slightly by hand. Correspondence of the graduation marks results in axial run-out of the wobble groove saw.

Setting a specific groove width:

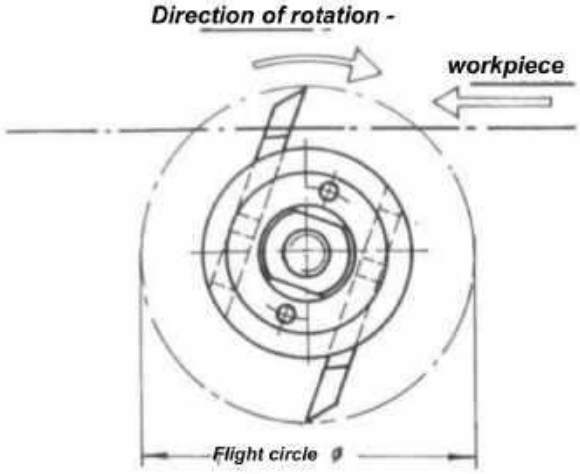
Loosen the clamping nut a little and while holding the saw blade, turn the saw shaft by hand through a certain angle. Measure the deflection of the saw blade using a ruler on the table plate, correct if necessary and tighten the clamping nut (left-hand thread) with a 19 mm open-ended spanner. Insert the hook wrench 45/50 as a counter holder on the inner flange.
Always a special wooden table insert for
Use the wobble saw. Saw test groove,
check and readjust the wobble saw if necessary.
Speed 4200 undr./min.

Insert the side saw blade guard.

Note:
During the installation or modification of the machine always secure against being switched on (pull out plug).

Grooving saw blades Pos.2la:

Grooving saw blades from a groove width of 4 mm are clamped with the special round nut (left-hand thread) instead of the external flange and the normal clamping nut. For this purpose, the unslotted wooden table insert is to be clamped in the circular saw table and to be cut through with the grooving saw blade by turning the saw shaft. Speed 4200 rev./min.



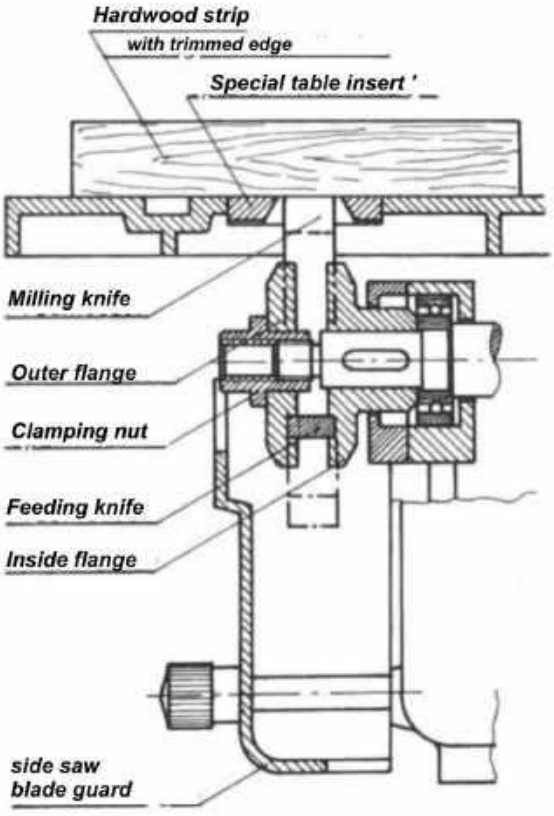
Milling head item 20a:

The milling head can be used for rebating, grooving and with profiled knives for grooving etc. Max. Knife width 15 mm, max. Cutting depth 15 m.

Inserting the milling head:

Remove riving knife and table insert as well as clamping nut, outer and inner flange for the saw blade. Attach the inner flange, cutter, outer flange and clamping nut of the milling head in this order (linkage thread).

Insert the cutter exactly as shown in the illustration. Then tighten the clamping nut firmly with a 19 mm open-ended spanner. Use a jack wrench as a counter holder on the outer flange.

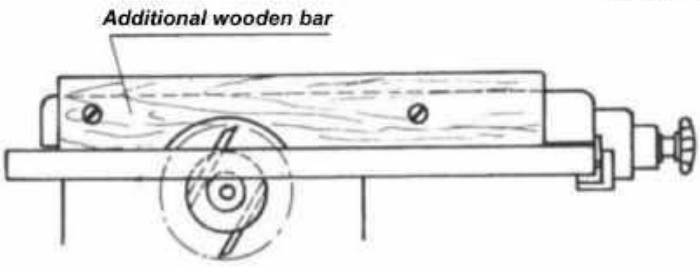


9mm Hardwood strip \ with trimmed edge Always use a special wooden insert for the prehead.

Speed 4200 rev./min.

Insert the side saw blade guard. Checking the built-in milling head: With two-cutting tools, both cutting edges must work evenly. That is why the rebated profile knives are provided in pairs with the same groove spacing. When resharpening the rebate or Profile knives must therefore ensure that the pair of knives is sharpened equally, i.e. the distance between the grooves and the cutting position must be exactly the same for both knives. A precise control is obtained by placing a hardwood strip with a trimmed edge (see illustration) on the circular saw table. To do this, the knife edges must be adjusted by raising them against the wooden strip and by turning the prehead by hand, check whether both knife edges are evenly touching the wooden strip.

Before commissioning, always check that the prehead is attached freely and that the clamping nut is firmly tightened. Check the free passage of the milling head by turning it by hand. Please note: Always secure the machine to prevent it from being switched on during installation or modification. (Pull out the plug).

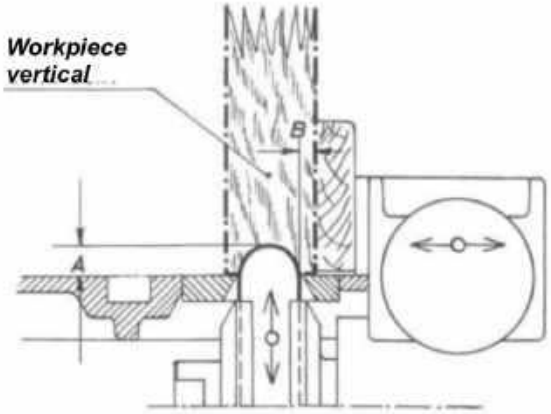


In order not to damage the stop rail during rebate and fillet work on the length stop, it is advisable to attach an additional wooden strip with a corresponding recess to the stop rule.

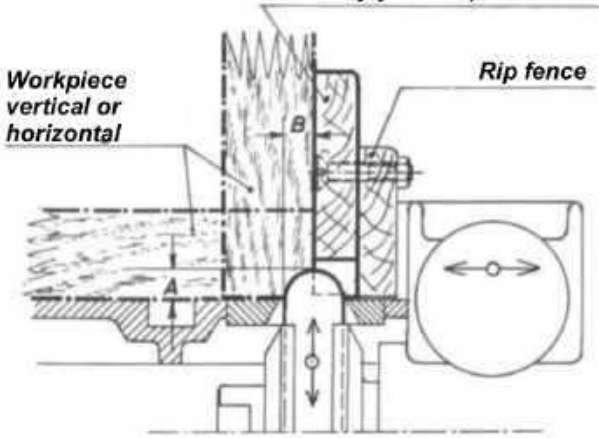
Milling head item 20a, application examples!

Adjustment: Dimension A by adjusting the height of the working shaft
Dimension B by cross adjustment of the longitudinal stop

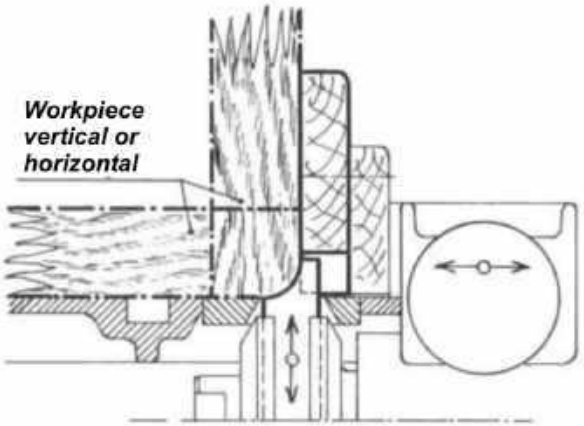
Additional wooden strip with recess attached to the longitudinal stop (to be made by yourself)



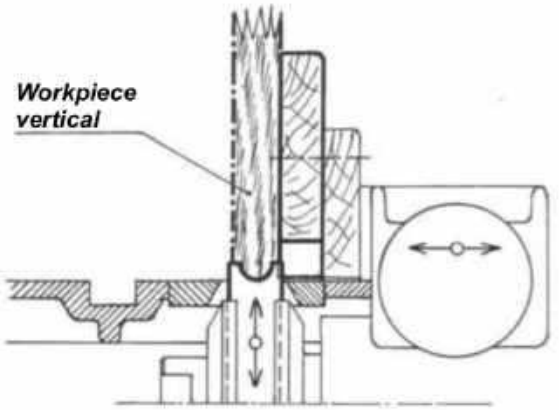
Manufacture of a coving with the coving - profile knife!



Production of a semi-hollow flute with the semi-hollow flute - or hollow flute - profile knife!



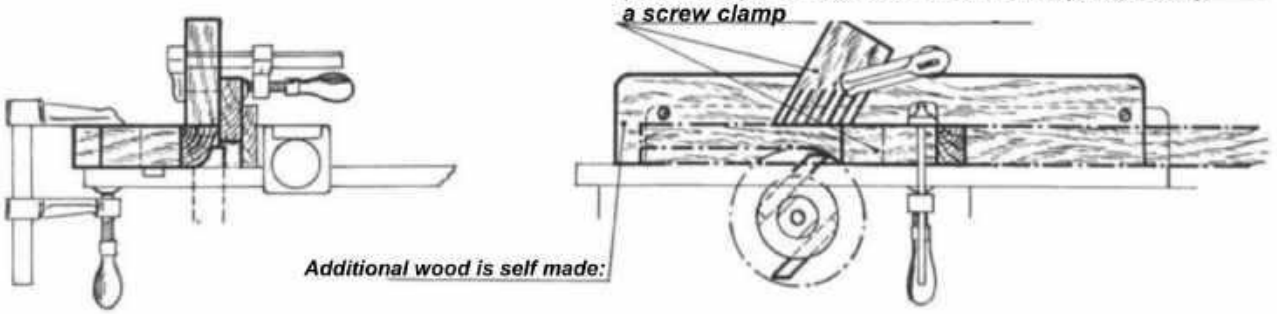
Production of a rounding or a quarter round with the quarter round profile knife!



Manufacture of a neck rod with the Half round - profile knife!

Precise guidance and protection against kickback with smaller strips!

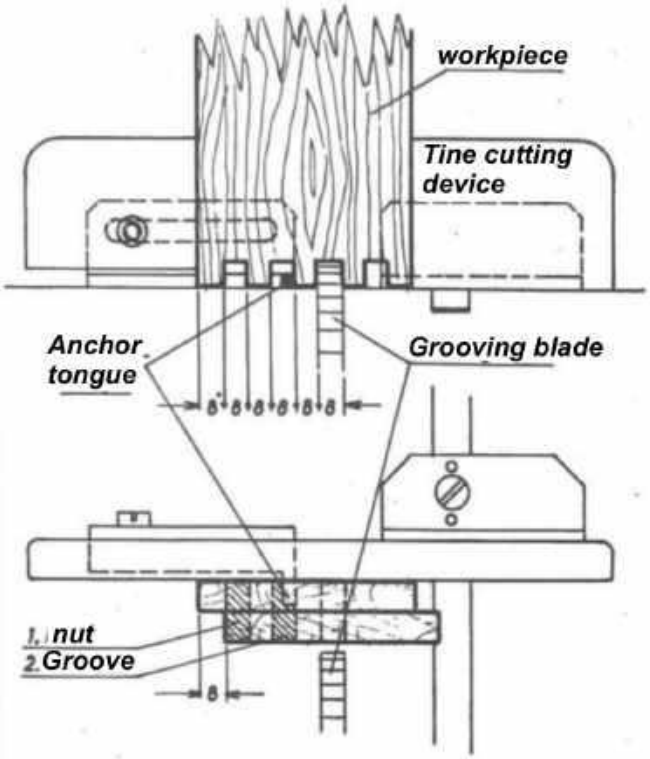
Comb-shaped compression spring made of wood (self-made) attached to the table or long stop using a screw clamp



Additional wood is self made:

Tine milling device Item 22:

The tine milling device enables the production of simple tines of any size and spacing on the circular saw. The grooving saw blade with a certain width, which is clamped in place of the circular saw blade, is particularly recommended for this purpose. The Zinkenfräs-E1nrichtung consists of a stop that can be displaced in the tongue groove with an adjustable stop tongue. The workpiece is pushed over the grooving saw blade at the stop.

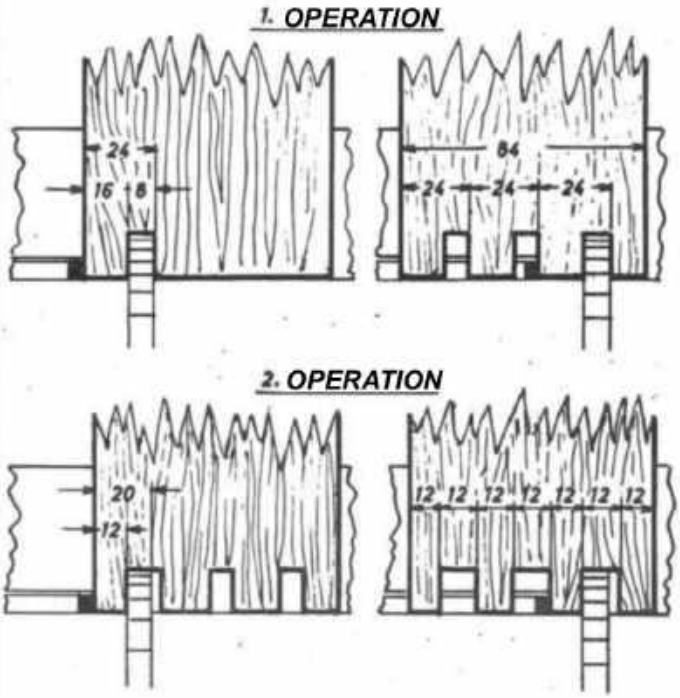


The simplest type of grooves and tines results from the tine width being the same as the tool width. Adjust the cutting height according to the workpiece thickness.

Stop tongue on tool board position (e.g. 8 mm), place the workpiece on the stop tongue and make the first groove.

The other grooves and prongs are created by repositioning the sawn groove on the stop tongue. It is advisable to clamp both workpieces together to offset the tine width and to produce grooves and tines as shown in the example.

Grooves and tines that are wider than the existing grooving saw blade can also be produced with the tine milling device.



Example:
Tines should be 12 mm wide.
The existing grooving saw blade is 8 mm wide.

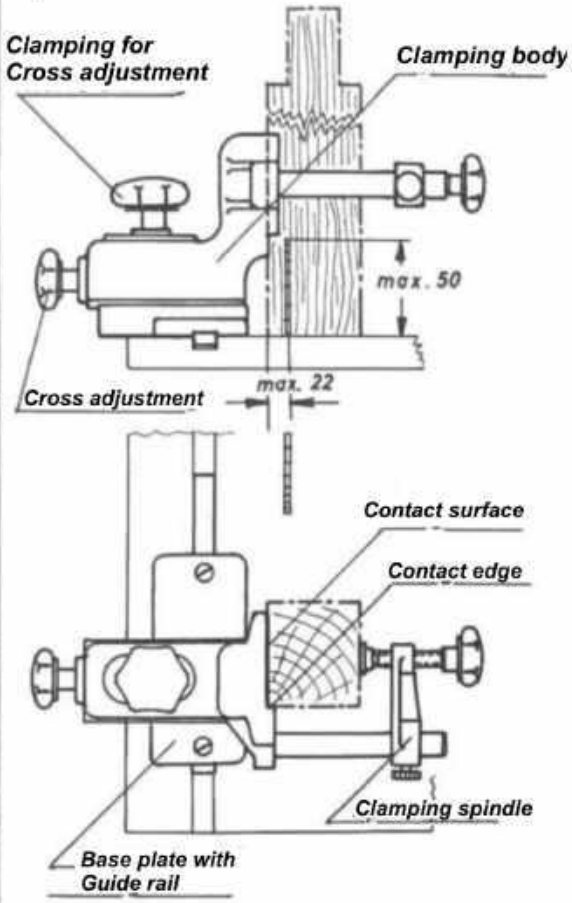
1st step:
Set the stop tongue to twice the width of the tine minus the tool handle. Groove the workpiece continuously on the stop tongue.

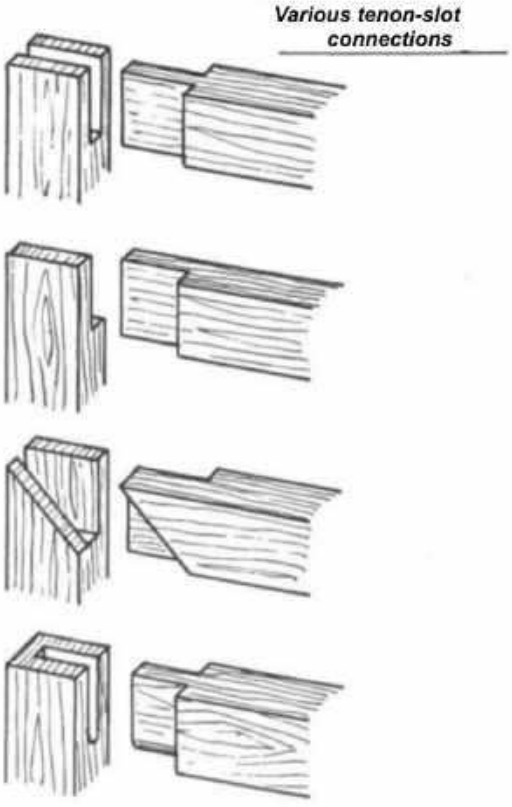
2nd operation
Adjust the stop tongue to the width of the tine. Groove the workpiece continuously on the stop tongue.

The accuracy of the prongs depends on the position of the stop tongue and the exact impact of the workpiece

Tenoning and clamping devices Item 24

The tenon cutting and clamping device is used for the precise production of tenon and slot connections on timber frames on the circular saw.bThe device consists of a base plate that can be slid in the mitre slot with a transversely adjustable clamping body with a clamping spindle.





Usable tools:
The various wooden circular saw blades 160 mm in diameter (max. Cutting depth 50 mm) and the differently thick, conical grooving saw blades I20 mm in diameter (max. Cutting depth 30 mm) are suitable.

Working method:
The complete clamping device is first placed in the table slot. The workpiece must be placed against the contact edge and clamped against the contact surface using the clamping spindle. The total workpiece is to be brought to the circular saw blade by adjusting the correct position and to be clamped using the star grip knob. The setting of the desired tenon length is achieved by raising the circular saw. The complete clamping device is then guided with the clamped workpiece in the table groove over the running tool.

The slotting is done through two incisions according to a scribed line. The slot can be chiseled out by hand or made by sawing in several times (readjusting the workpiece). The grooving saw blade is particularly suitable for this.

The tenons are also cut with two incisions according to the outline, the tenons are set down with the angle stop

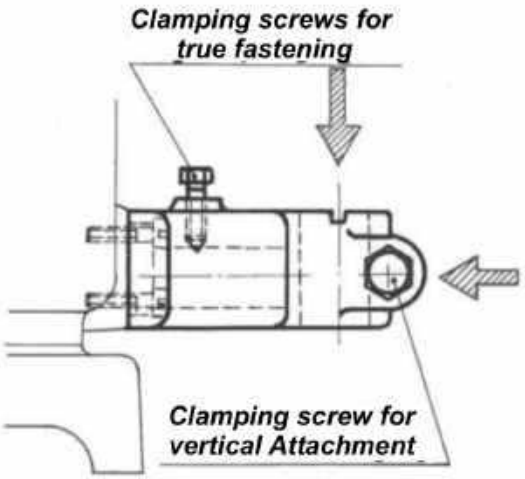
For exact fitting respectively. The grinding wheel can rework the tenons and slots Item 18a can be used instead of the circular saw blade. The accuracy of the tenon and slot connection is essentially dependent on the parallelism of the workpiece, as the workpiece usually has to be clamped turned by 180 degrees when sawing in. The tenoning and clamping device_als

Special accessories for the circular saw and the slot drilling device item 1 as an additional device enable the precise production of all the most common connections.

Maintenance of the machine:

The output shaft runs in sealed ball bearings with grease filling and is therefore completely maintenance-free. It is advisable to remove the V-belt pulley and saw blade flanges at regular intervals and to remove the storage room with a dry brush to remove any dust.
Important: Never rinse the bearings with liquid, otherwise the grease coating will be lost and the service life of the ball bearings will be reduced. The machine itself, its moving parts and guides should be cleaned frequently with a dry brush and cloth. Bare parts are easy to oil.

Sharpening the circular saw blades:
The circular saw sharpening device item 25 b is provided for sharpening wooden circular saw blades (see pages 32-35). Hollow-open special circular saw blades as well as planing circular saw blades and conical grooving saw blades should only be sharpened in a tool sharpening shop. It is important to ensure that the original teeth are retained.



The TS support piece is used to attach the additional equipment items 1, 3, 4, 5, 25, 25 b, 26. It is screwed onto the right-hand side of the machine with 4 M6x20 cylinder screws.

Of the various holes in the support piece, the two horizontal holes are used to accommodate the slot drilling device Pos.l and the wood turning device Pos 3, the vertical hole is used to accommodate the table drilling device Pos. 4 and the fretsaw device Pos. 5.

The support piece always remains attached to the basic machine.

Additional equipment for flexible shaft pos. 6:

The flexible shaft is clamped in the two-jaw drill chuck and accommodates a wide variety of milling, grinding and polishing tools in its other piece. Use tools with the shortest possible shaft. When not in use, store the shaft as straight as possible or only slightly curved. When working, grasp the shaft on the handpiece, only then switch on the drive, bend the shaft as little as possible while working. If necessary, clamp the workpiece if both hands are required to guide the red learning tool for larger jobs.

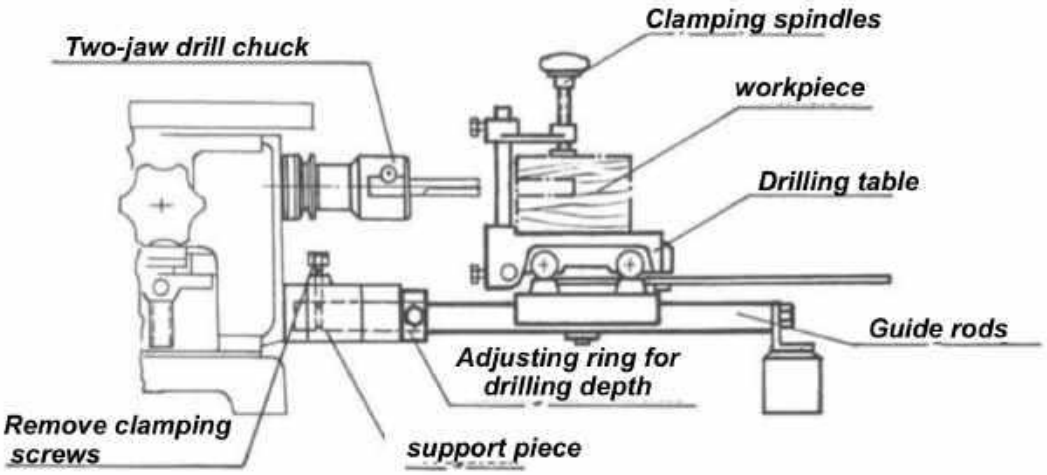
Speed of your choice:	6000 U/min 4200 U/min.	*for tools with a small diameter*
	3000 U/min.	*for tools with medium diameter*
	1500 U/min.	*for tools with a large diameter*

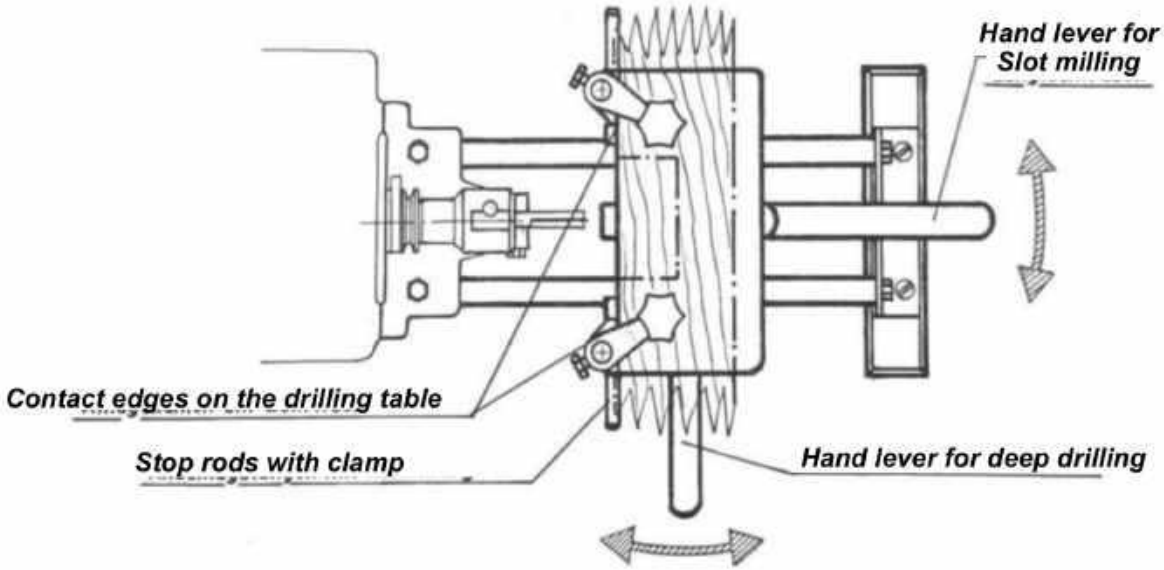
Operating manual
Oblong hole drilling device pos. 1

ULMIA universa

The slot drilling device is an additional device that can be attached to all universal basic machines.
It is used to produce round or single holes, elongated holes, grooves, slots and milled holes. Different types of drills can be used for round or single-cell holes, while for elongated holes and for milling grooves, slots and the like, only long-hole milling drills of the shortest possible design can be used.

Required for attachment: ***TS support piece***
Two-jaw chuck item 10b
1 V-belt 8x800.



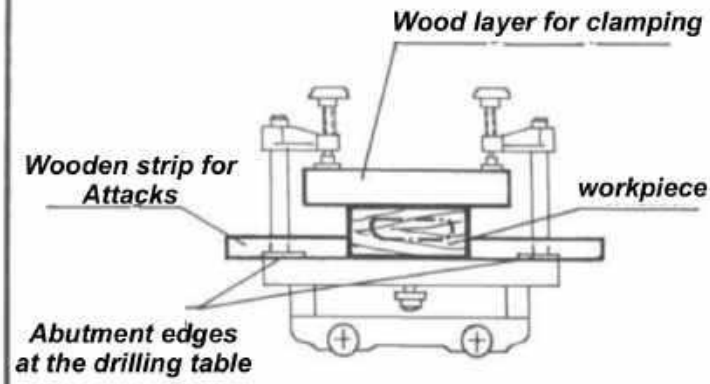


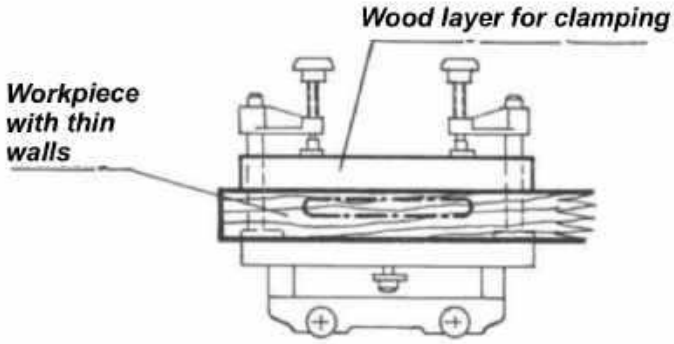
Installation:

Insert the complete slot drilling device with its guide rods into the horizontal bores of the support piece up to the marking groove and screw it tight. Screw the two-jaw chuck onto the saw shaft instead of the intermediate ring and the hexagon nut. Clamp the drill or slot cutter carefully.

Speed 6000 rev / min. Set according to the speed table.

Operating manual
Oblong hole drilling device pos. 1





Clamp work piece: Workpiece against contact edge and tighten the clamping spindles on the drilling table.

Abutment edges at the drilling table For short workpieces that do not touch the contact edge stir is an appropriate one Enclose wooden strip. A longer wood allowance used will.

The pressure of the clamping Spindles can be distributed over the workpiece with a wood allowance if the elongated hole to be milled leaves a visually weak wall.

Working with the slot drilling device

Mark the position of the individual or elongated holes on the workpiece. Clamp the workpiece as described above. Adjust height of the drill respectively. Adjust the long hole milling drill to the workpiece by turning the saw shaft upwards and clamping it in the up position. When drilling deep, the left hand guides the workpiece with the front hand lever to the drill, while the right hand holds the hand lever on the side for longitudinal movement or guides it when milling long holes. When making elongated holes, first drill both end holes to a depth and mill out the remaining web by means of an even, sensitive longitudinal movement with repeated chip removal - depending on the type of wood. In the case of deep holes, pull back the workpiece more often to ensure good chip clearance.

When producing several of the same.

With the help of the clampable stop rods, it is no longer necessary to mark the workpieces with elongated holes. To adjust the drilling depth, use the adjusting ring that can be clamped onto the front guide rod.

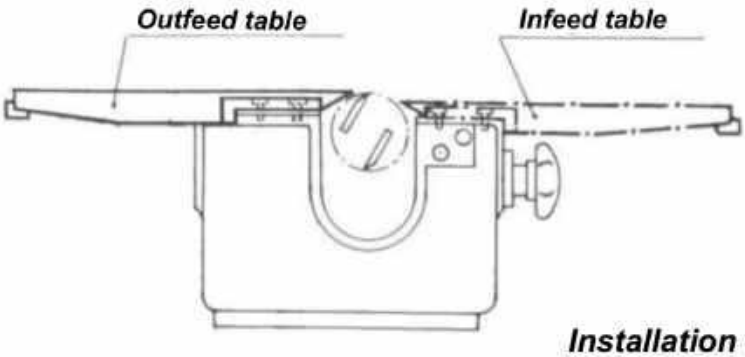
Maintenance of the slot drilling device -

It is advisable to clean the entire device at certain intervals and to lightly oil the moving parts and guides in particular.

Operating manual
Dressing and planing device Pos. 2

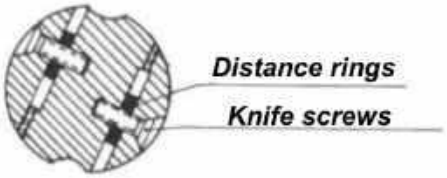
ULMIA universa

The surface planing device is an additional device that can only be attached to the universa basic machines KH, KHD and KHw. The dressing and planing device is used for dressing wooden surfaces, for lifting edges and for joining.

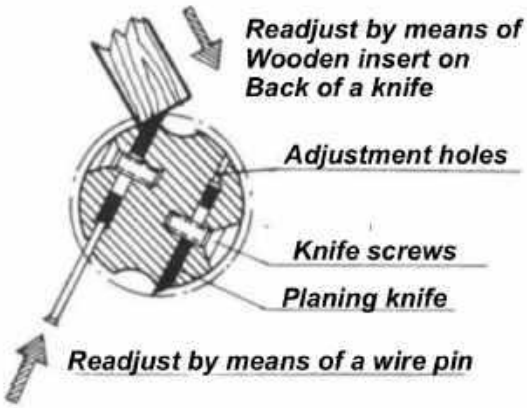


Installation:
First of all, stops, riving knife and compl. Remove the circular saw table as described on sheet 5.
Note: Always secure the machine to prevent it from being switched on during the conversion. (Pull out the plug). Speed 6000 rev / min. Set according to the speed table.

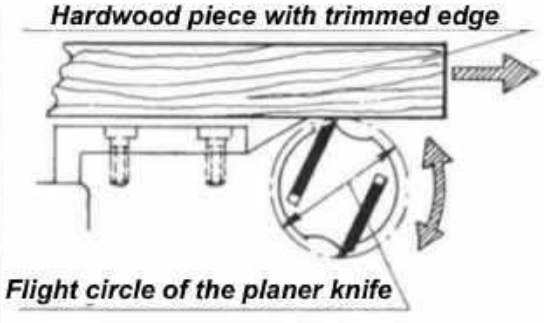
Installation of the planer knives and the planing tables
First remove the knife screws from the planer shaft with a hexagonal key and take out the spacer rings.



Carefully clean the planing knife from any oil residue before installing it, then insert it as far as possible into the slits of the knife shaft and initially only fasten it lightly with knife screws.



The table halves without guide rails as Screw the take-off table to the movable height-adjustable body with 4 cylinder screws M 6xl2. (Keep the screw-on surfaces clean). To set the planer knives precisely, place a well-flattened hardwood edge on the outfeed table and stir the planer knife against the hardwood edge by turning the knife shaft by hand. Bring the planer knife into the correct position on the acceptance table by tapping it lightly back and forth. Adjustment of the planing knife outwards with a wire pin through the adjustment holes. Readjust inwards by lightly tapping the knife handle with a wooden insert.



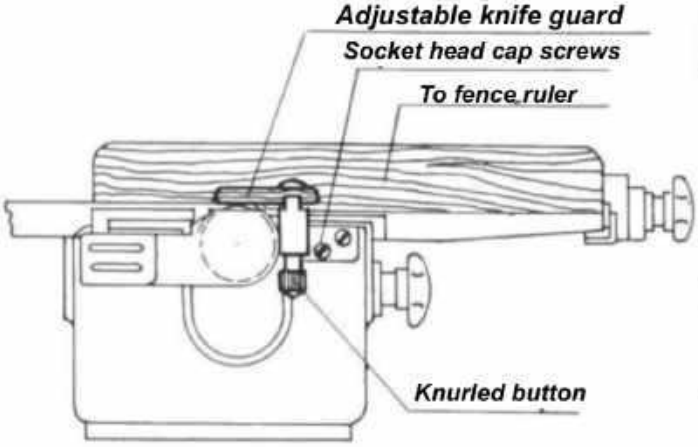
By briefly turning the knife shaft by hand, the trimmed hardwood edge should be touched by the planing knife and, with light, even pressure on the removal table, removed by about 1 to 2 mm.

The second planing knife is set in the same way. Use the hexagon socket wrench provided to fully tighten the knife screws.

Operating manual
Dressing and planing device Pos. 2

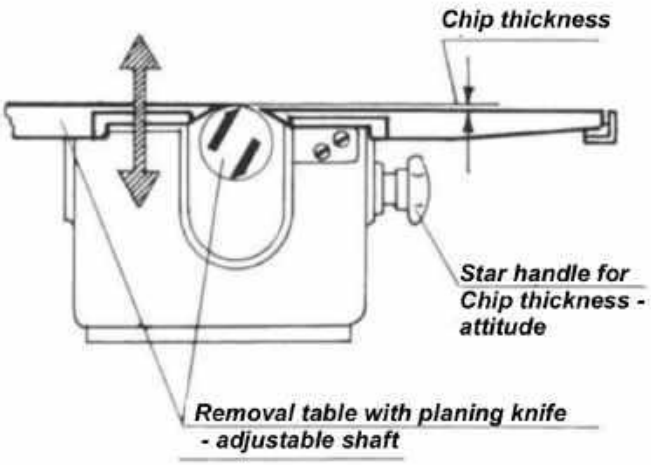
ULMIA universa

Installation of planing knives and planing tables:
With sufficient care, both planing knives are brought to exactly the same flight circle diameter and guarantee a precisely dressed wood surface with perfect sanding. After setting the planer knives, the table half with the guide rail is on the machine body with 4 cyl. Tighten the screws M 6xl2. (Keep the screw-on surfaces clean).



Before starting up, check whether planing knives are screwed securely in place and always attach adjustable knife guards.

The adjustable knife guard serves to cover the part of the planer knife shaft that is not used during dressing. Fastening on the left side of the machine with 2 cylinder screws M6xl5. Adjustment to the desired working width after loosening the knurled knob. The longitudinal stop of the circular saw is used as a stop ruler for dressing and is fixed in the same way.



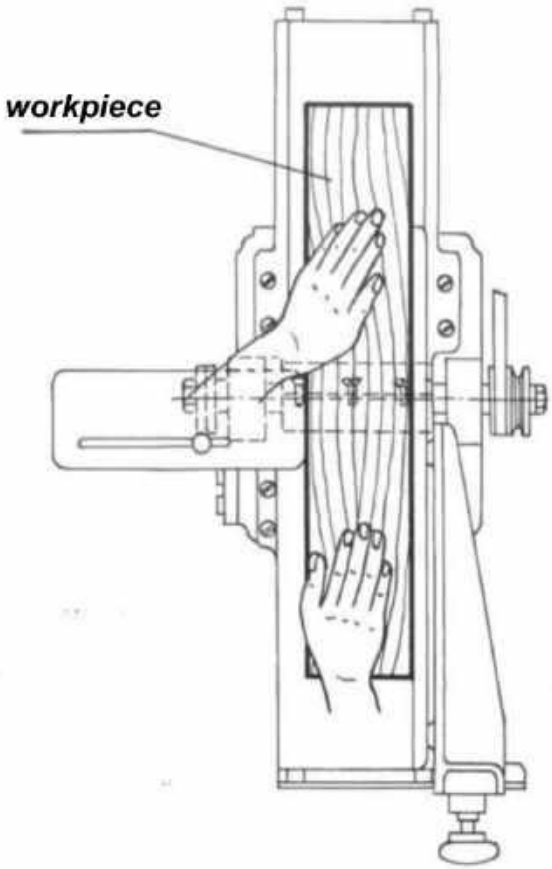
When dressing narrow workpieces, the fence should be adjusted from time to time so that the planing knives are worn evenly across their entire width.

The chip thickness is determined by equally high or Lower position of the knife shaft and the framing table set. Re-turning the star grip after releasing the clamping results in a greater chip thickness. The chip thickness must be set depending on the type of wood and dimensions. Smaller chip thickness and more frequent dressing are more advantageous and increase the surface cleanliness of the workpiece.

Working with the planer:

Before starting the machine, please note: Set correct speed 6000 rev / min.
Check knife for correct fit, tight screw connection and hardness.
Check the setting of the stop and the economy bracket (chip thickness).
Cover planing knife shaft bls with knife guard over the working width.
Check the running of the lifting knife shaft by turning it by hand.

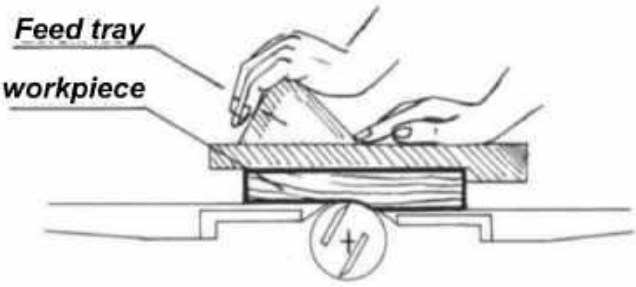
Dressing a wooden surface



Working with the dresser

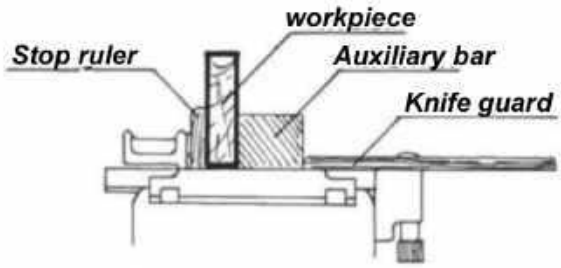
When dressing, note: the hollow side of the workpiece facing downwards, wood with sloping fibers from the back with the grain. Position the workpiece correctly, ensure that you hold your hands correctly and maintain sufficient distance from the table surface.
Guide the workpiece evenly over the knife shaft with light pressure against the dressing table and do not advance the workpiece too quickly.
Hold medium-length workpieces in such a way that they no longer have to be gripped after they have been placed. In the case of long workpieces, the overhanging piece should be reduced in height.
supported or removed by an assistant.
Always lift workpieces when retracting, do not allow the knives to touch them. Only dress short workpieces with the aid of a feed tray. (Should be made by yourself for such purposes - glued glass paper on the underside!).

Dressing of short workpieces with the help of a feed tray

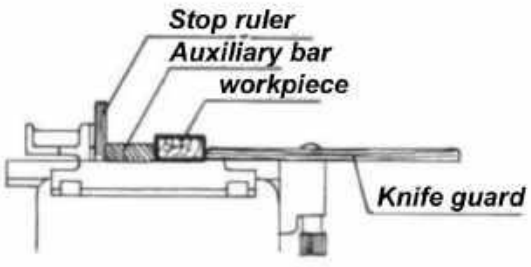


When planing or joining edges, guide the workpiece precisely on the fence and secure it against tipping with an auxiliary strip attached to the tables.

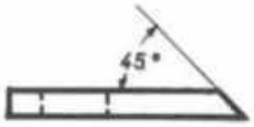
When dressing flat and soft workpieces, it is advisable to use an auxiliary stop (wooden strip roughly the same thickness as the workpiece), which should be attached to the table or to the fence.



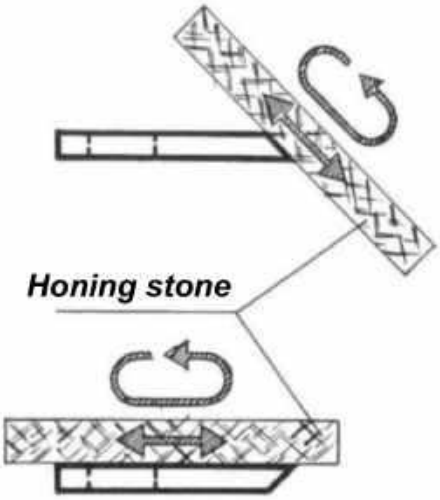
Planing or joining of edges with a support strip



Dressing narrow workpieces.



Planing knife



Honing stone

Guard plate for knife shaft

Sharpening the planer knives:

The planer knife and plane iron sharpening device item 26 is provided for this purpose (see pages 36-38) If this device is not available, the planer knives should be sharpened on knife grinding machines if possible. The cutting edge of the knife must be exactly level. When re-sharpening, make sure that the two planer knives always have the same weight. Uneven weight causes imbalance in the shaft, uneven running and influences the surface quality of the workpiece. After grinding, the burr on the cutting edge must be removed by hand with a whetstone (oil stone). It must be ensured that the whetstone is always flat to the cutting surface.

It is recommended to purchase a pair of spare planing knives so that blunt planing knives can be replaced at any time.

Maintenance of the planer unit:

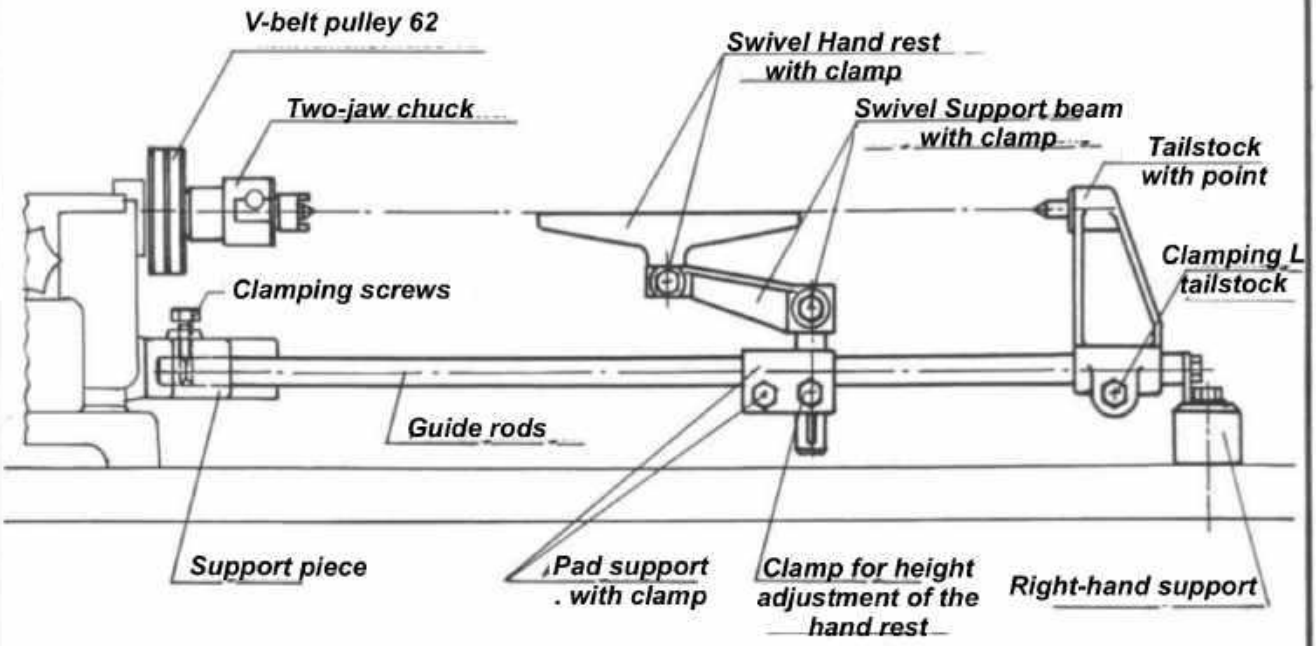
The most important point is the maintenance of the sharpened planer knives. Every time the planer knives, the planer tables and the fence are installed or modified, all mating surfaces must be cleared of dust and foreign bodies. Carefully clean the planer knife from oil residues before installation. When working on the circular saw or on additional equipment, especially when the circular saw table is removed, the protective plate for the knife shaft must always be used. The planer knives can then always remain inserted in the knife shaft. The planer knife shaft must never be started if no planer knives or spacer rings are installed. (Consequence: destruction of the knife slots by centrifugal force).
The knife screws must never be screwed in without planing knives or spacer rings. (Consequence: Destruction of the knife slots by pulling force of the screws).

Operating manual
Wood turning device pos. 3

ULMIA universa

The wood turning device is an additional device that can be attached to all Universa basic machines. It is used for "turning", i.e. for longitudinal, face and form turning of wood and plastics using hand tools.

Required for extension: *T8 support piece,*
Two-block drill chuck item 10 b,
Machine V-belt pulley 82 Item 10 a
2 key belts 8 x 800. Item 10 c

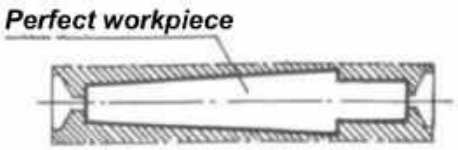


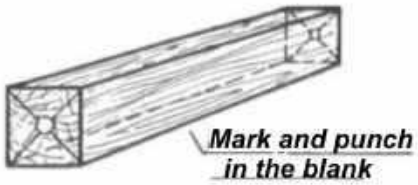
Installation :
Complete wood turning device with its guide bars in horizontal position
Insert the holes in the support bracket up to the marking groove and screw tight.
Right-hand support on the machine cabinet respectively. screw tight on the respective base.

Speeds:
Setting according to the speed table!
The speed 1500 rev / min. is sufficient in most cases. For small diameters up to approximately 35 mm, the speed of 2000 rev / min. is better. The smallest diameters of up to approx. 20 mm can also be run at a speed of 3000 rev / min..

The two-jaw chuck must be screwed onto the saw shaft instead of the intermediate ring and the hexagon nut (right-hand thread).

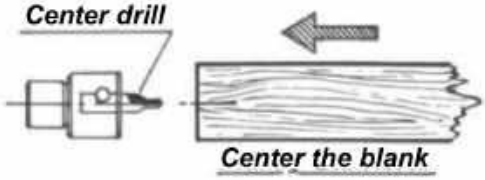
The adjustable hand rest is used to support and guide the hands when turning. The hand rest can be swiveled to all sides, adjustable in height, with the complete support on the guides movable and can be clamped in all positions. All clamping screws are conveniently operated with the hexagon socket wrench SW 10.



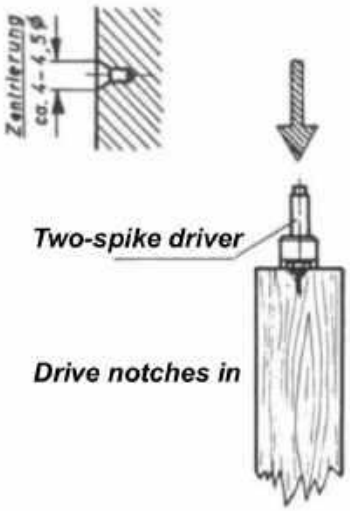


Clamping the workpieces between the centers: The wooden blank can have a round or square cross-section. It must have appropriate allowances in length and thickness, since the two ends that are used for driving and centering are usually cut off on the finished workpiece.

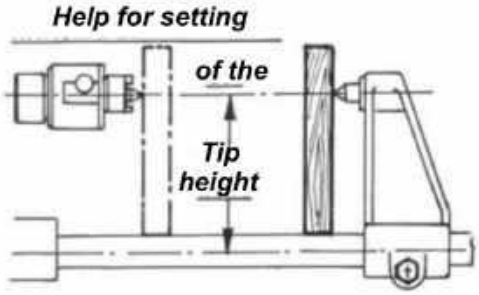
Centering:
First mark the middle on both ends. (For a square cross-section, draw diagonals). Punch in the middle.



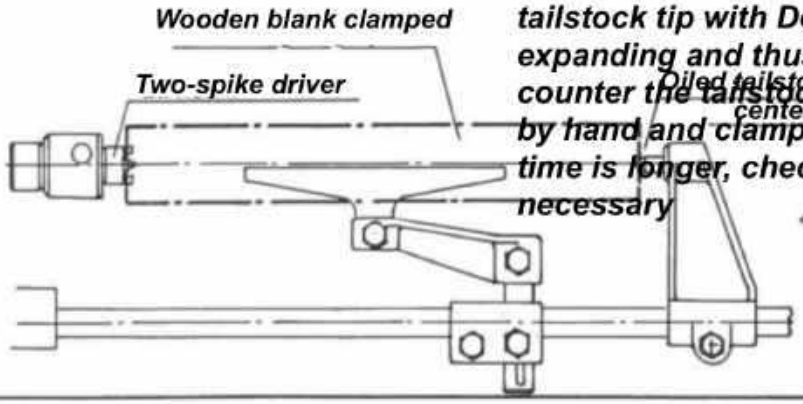
Only establish centering with the centering drill clamped in the two-jaw drill chuck. To do this, guide the wooden blank horizontally with the end faces against the running center drill. The diameter of the centering should be around 4 to 4.5 mm.



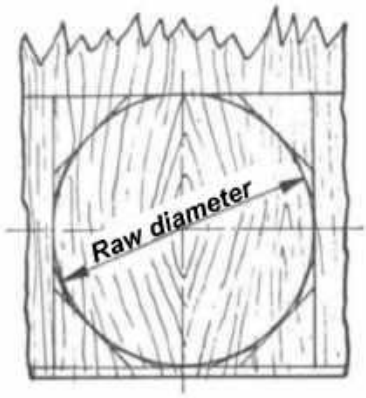
Make driving notches in one end of the wooden blank. To do this, start in the center and drive in by hand with light hammer blows. Make notches only outside the machine. Insert the two-arbor driver into the two-jaw drill chuck until it touches the collar and clamp it tight.

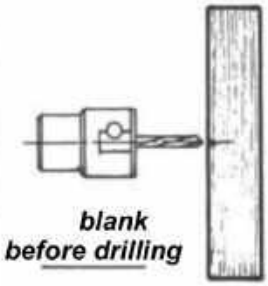


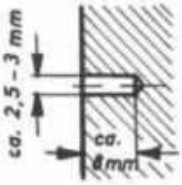
Adjust the center height before clamping the workpiece. To do this, bring the tip of the two-arbor driver by raising the output shaft to the same height as the tailstock tip. A piece of wood is used as an auxiliary gauge, which is placed on both guide rods and pressed against the tip of the tailstock. The center height of the double mandrel driver is set with the auxiliary gauge according to the indentation marked by the tailstock center.

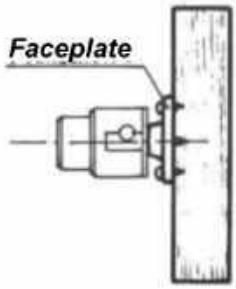


Now place the wooden blank with the driver side on the clamped two-mandrel driver,
Lubricate the centering of the blank to the tailstock tip with Del, (prevents the center from expanding and thus loosening of the workpiece), counter the tailstock tip in the center, press on by hand and clamp the tailstock. (If the turning time is longer, check the seat of the blank and if necessary









Clamping the workpieces on the faceplate: Disc-like and plate-like wooden blanks, which are mainly to be turned flat, are to be clamped on the flat plate and turned on the fly. For this purpose, the blank should be round, or at least polygonal, and have appropriate dimensional allowances in diameter and thickness. With larger diameters, make sure that the sawn blank does not have too much imbalance.

First of all, dissect the raw diameter with a compass and saw out the blank. Punch the center of the compass lightly and pre-drill to a depth of about 8mm with a 2.5 to 3 mm drill (either by hand or with the drill clamped in the double jaw chuck). Guide the wood blank at right angles against the running drill.

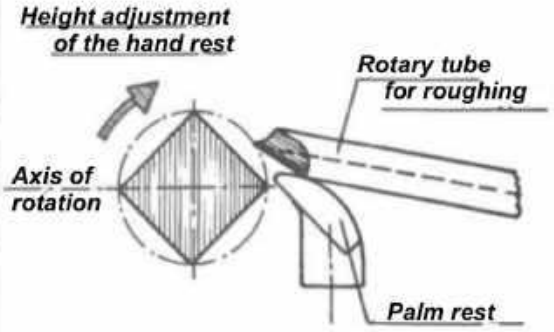
Push the face plate into the two-jaw chuck until it touches the collar and clamp it tight. Now screw the blank onto the thread parallel to the faceplate until it is firmly seated. With larger workpieces and especially with soft wood, the blank can be attached to the faceplate with 3 additional short screws. To do this, unclamp the faceplate with the attached blank from the two-jaw drill chuck, screw it in and clamp it again.

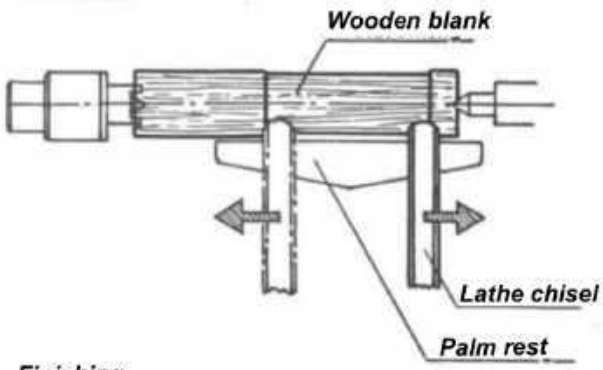
Turning workpieces:
The work briefly described in the following is intended to give those who are still inexperienced some basic information. With patience, a lot of practice and a little thought, even the layperson should be able to initially produce simpler workpieces. Before starting the machine, note the following:
Set the correct speed according to the speed table, check the workpiece clamping, check the correct position and tight fit of the hand rest. Check by turning by hand whether the workpiece and work shaft run freely.

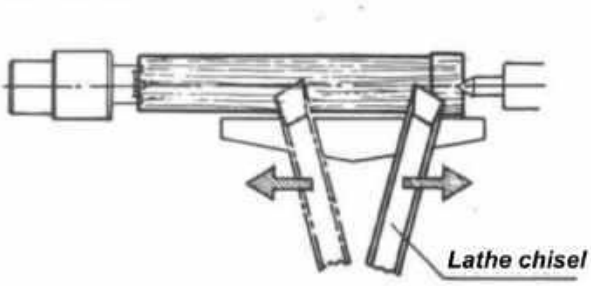
Check center height. Appropriately remove the dressing table on the basic machine. Always guard plate for knife shaft on basic machine KHD and KHW resp. use the adjustable knife guard on basic machines AH, AHD and AHW.

Operating manual
Wood turning device pos. 3

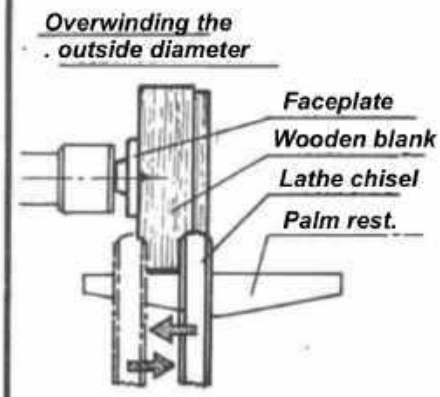
ULMIA universa



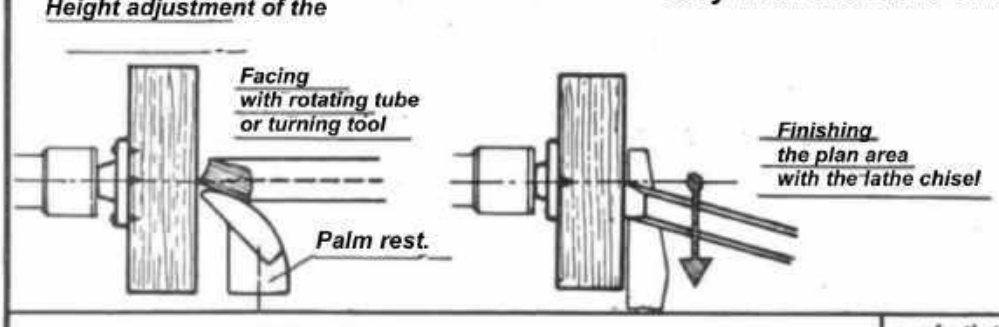




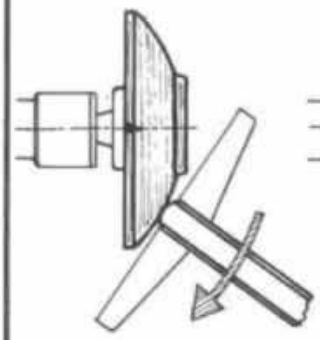
Long turning:
Adjust the height of the hand rest so that the cutting edge of the hand steel above the rotary axis is always close to the workpiece and parallel to the work surface. When turning, the hand steel rests on the hand rest, the left hand grabs the steel and at the same time leans on the hand rest, while the right hand holds the handle of the hand steel. To lift off the chip, move the steel on the palm rest equally from the. center outwards. Carefully start roughing the cross-section of the wooden blank. Always re-adjust the palm rest.
For roughing (pre-turning), the rotary tube item 3b is used, which should be at right angles to the work surface. The turning tool Pos3a is used for finishing (re-turning), the cutting edge of which must remove a fine chip.
For form turning, the turning chisel item 3a or the turning tube item 3b is used as required (chamfers, chamfers, etc.).
The parting tool item 2e is used for parting or grooving. Always cut something free on the side when grooving or parting off.
Sand the finished workpiece with glass paper. If necessary, the receiving sides can be pierced and torn off.



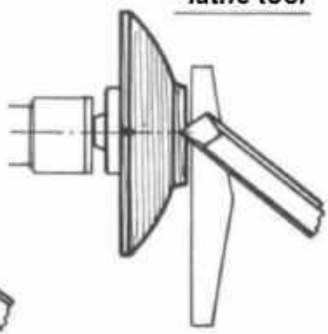
Facing:
First overturn the outside diameter so that the imbalance of the workpiece is eliminated. Cut the rotary tube over the axis of rotation and turn each from the outside towards the center.
To face turning, move the hand rest and adjust the height so that the cutting edge of the hand tool is in the center of the axis of rotation (hand rest a little below the point height). Facing with the rotary tube item 3b, Finishing and smoothing is very easy with the lathe chisel item 3a



Rotate plan shape.



Centering with a lathe tool

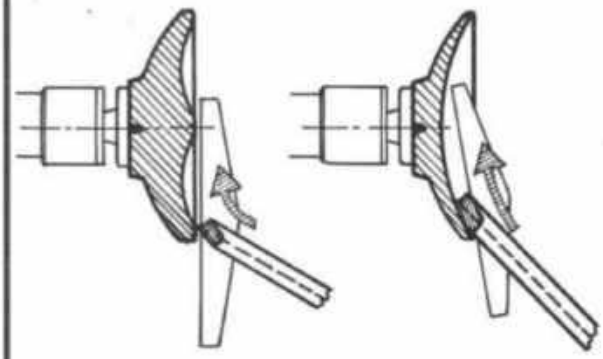


Facing (cont.)

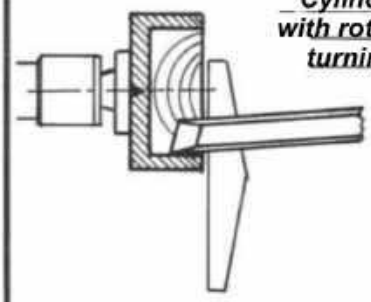
Face turning is done with the turning tool. Always place the hand rest close to the work surface and adjust it as often as necessary. Grind the finished outer shape with glass paper.

Note:
Before reclamping, center the turned side. Unscrew the workpiece from the faceplate, pre-drill in the new center and clamp it in reverse. Pay attention to concentricity. Unscrew the hollow forms with the rotary tube. In the case of deep hollow shapes, always turn from the outside towards the center. When turning from the center outwards, pay particular attention that the cutting center of the rotary tube lifts the chip away. Always readjust the palm rest. Only round edges by gently guiding the center of the cutting edge of the turning tool. Hollow forms, especially cyl. Pre-roughing holes with the rotary tube. Finish turning with the lathe. Cutting edge of the hand steel at the height of the axis of rotation. . Sand the finished workpiece with glass paper. The mounting hole can be closed with suitable wood putty or after drilling open with a wooden plug. If the location hole is not required for the last clamping, an appropriate amount of material must be added to the wooden blank, at least equal to the length of the threaded pin plus the parting width.

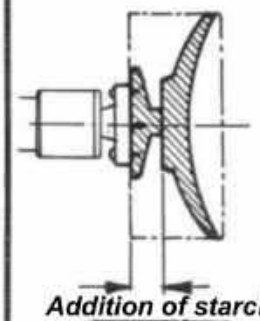
Turning hollow forms with a gouge



Cylindrical bore with rotary tube and turning chisel



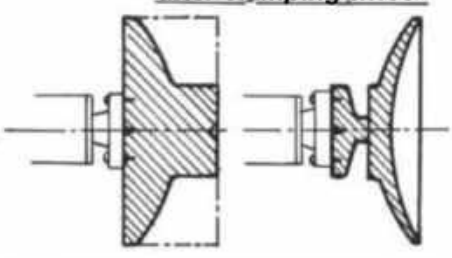
Finish turning in one setting



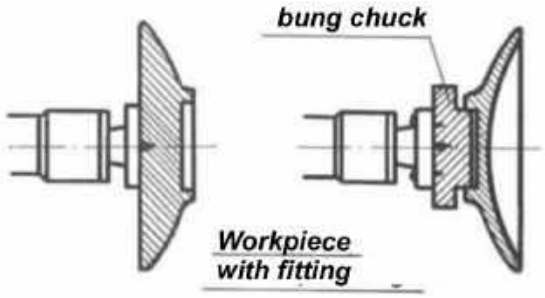
Addition of starch

The workpiece can be completely turned in one set-up or after being set up twice and must be cut off after the finish-grinding.

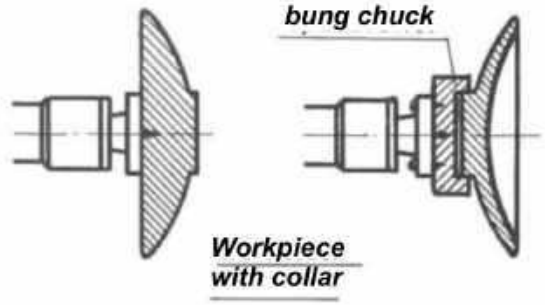
Finish turning after clamping twice

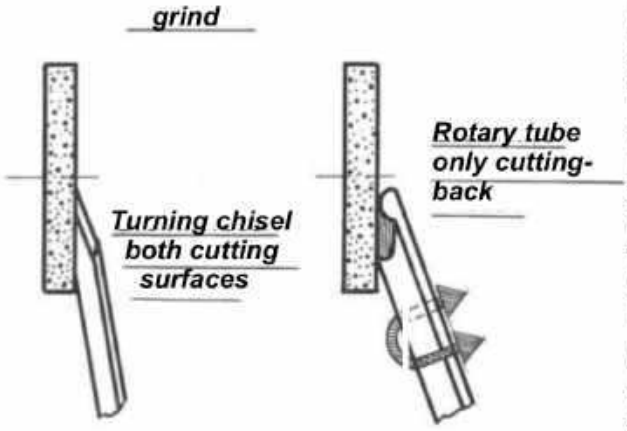


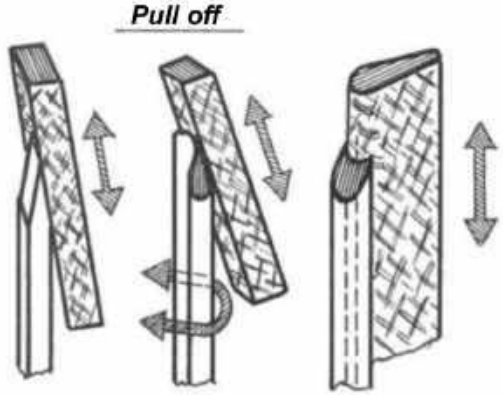
Turning with bung chuck



1st operation. 2nd step







Facing (continued)
If the workpiece blank does not allow any material to be parted off, the workpiece can also be machined in the following way without leaving a receiving bore.
It then has to be finished in two work steps on what is known as a bung chuck. For this purpose, the workpiece, depending on its shape, has to be provided with a fitting or a collar for the spun chuck during the first work step.

To set up the second work step, a chuck made of scrap wood must be turned, the holder must be slightly conical to fit in or to the collar of the workpiece. The workpiece is now pressed onto the chuck (if possible not clamped in the drill head), making sure that it runs smoothly. In the second work step, the workpiece is now completely turned and ground.

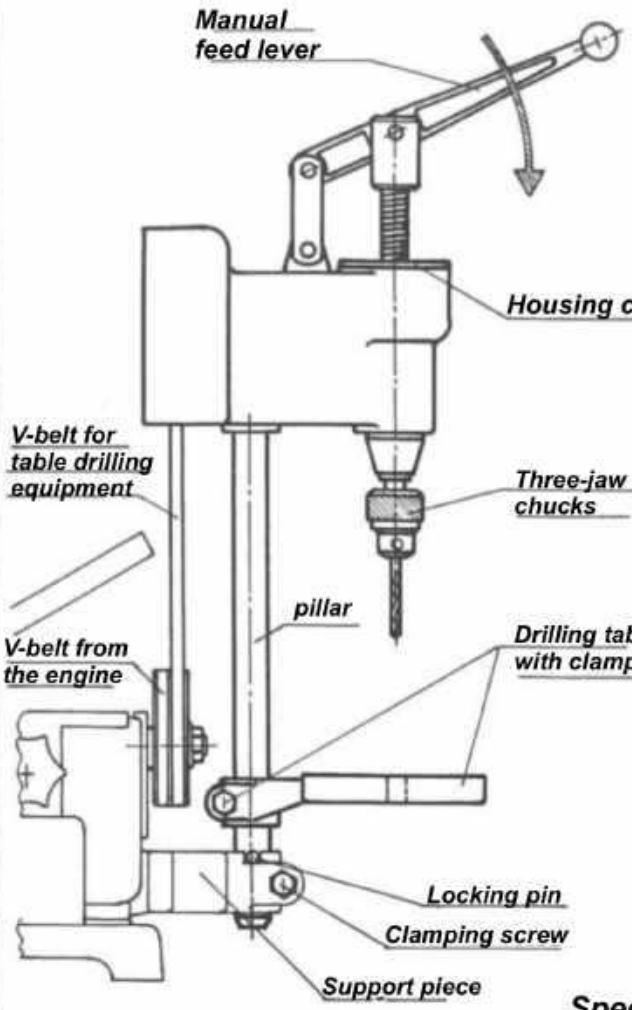
Sharpening of hand steels
Sharp hand tools are always required for perfect turning. The cutting edges of hand-held steels are often honed with a whetstone (oil stone). If the chordal edges are too blunt or broken, the hand-held steels must be re-sharpened on a grinding surface. The tool sharpening device item 25 (see page 30-31) is particularly suitable for this. The knives are then removed by hand. Carefully remove the grinding burr and make sure that the whetstone is always flat to the cutting surface.

Maintenance of the wood turning device:
It is advisable to clean the entire facility at certain tent intervals and, in particular, to lightly oil the moving parts and guides.

Operating manual

Table drilling device pos. 4

ULMIA universa



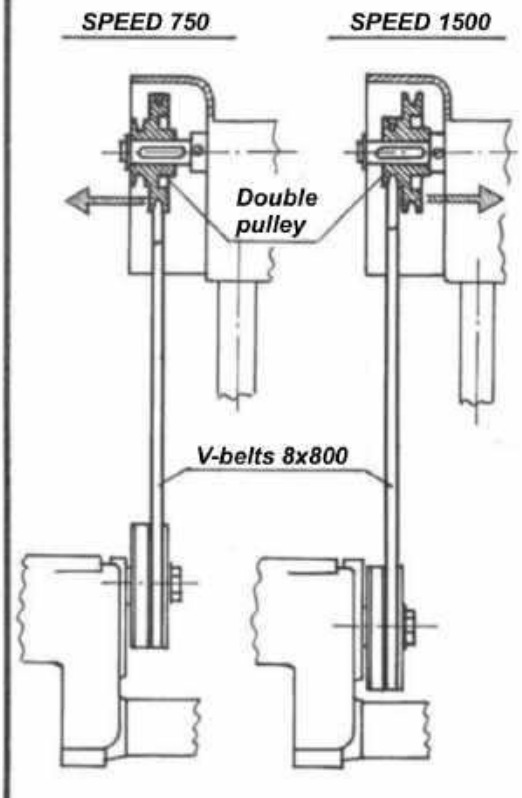
The table drilling device is an additional device that can be attached to all Universa basic machines. It is used for drilling wood, plastics, non-ferrous metals and steel. Their maximum drilling capacity is around 20 mm in wood and plastics and around 3 mm in non-ferrous metals and steel.

Required for attachment:
TS support piece
Machine belt pulley 82 Item 10a
2 V-belts 8x800 Pos.l0c.

Installation:
First set the speed 1500 rpm for the output shaft of the basic machine according to the speed table. Place a V-belt 8x800 on the inner groove. Insert the complete table drilling device with its column into the vertical borehole of the support piece until the locking pin strikes and clamp it with the hexagon screw.

With basic machines AH, AHD and AHW the acceptance table must be unscrewed.
With basic machines K, KH and KHW Tilt the circular saw table.

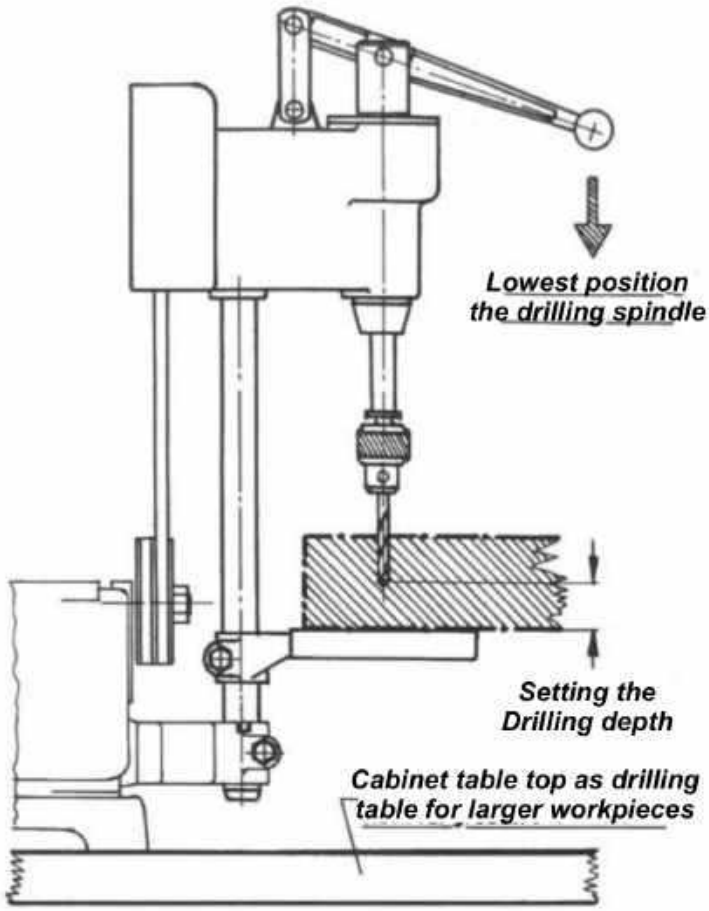
Speeds for drilling:
Steel and non-ferrous metals: 750 rev / min.
Wood and plastics: 1500 rev / min.



Setting the speed 750:
Bring the working shaft of the basic machine to the top end position by raising it to the top. Push the sliding double belt pulley of the drilling machine to the left as far as it will go (V-belt must be in line). Place the V-belt 8x800 over the larger V-grooves of and over the outer groove of the machine pulley 82. Slightly tension the V-belt by lowering the output shaft. Double-strap-clip

Setting the speed 1500:
Slacken the V-belt and place it on the smaller V-groove of the double belt pulley of the drilling machine, pushing the double belt pulley to the right as far as it will go (V-belt must be in line). Slightly tension the V-belt by lowering the working shaft.

Deep drilling with stop
by adjusting the drilling table



Three-jaw chuck:
The maximum clamping range of the drill chuck is 10 mm. or plastics up to a maximum of 20 mm, offset drills can be clamped. Clamp the drill carefully with the corresponding drill chuck key.

For drilling in wood
Drilling table:

The drilling table can be adjusted in height, rotated around the column and clamped with a hexagon screw. The desired drilling depth is set by bringing the drilling spindle to the lowest position and adjusting the drilling table as shown in the illustration. For drilling larger workpieces, the drilling table can be pushed up and swiveled away. The workpiece is then placed on the table top of the machine cabinet. of the workbench or workbench on which the basic machine is screwed down, if necessary with the use of appropriate documents.

Maintenance of the bench drilling device
The bevel gear drive housed in the housing, as well as the bearings for the drive shaft and the drilling spindle, are provided with sufficient lubricant at the factory. If the grease filling is significantly reduced after a longer period of operation, lubricant can be refilled after unscrewing the housing cover. Use only good branded, acid-free fat. Clean dead parts frequently and lightly oil bare parts.

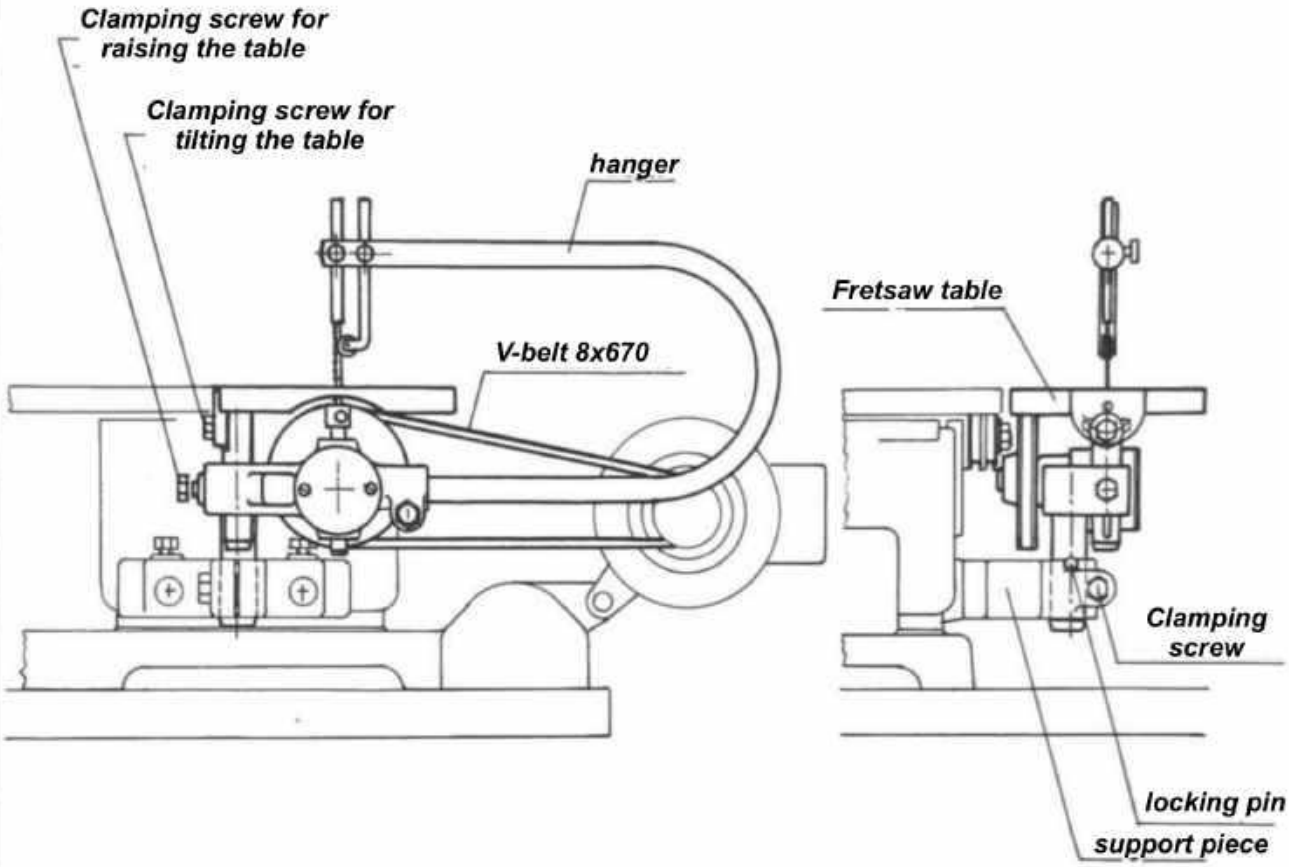
Operating manual

Fretsaw device pos. 5

ULMIA universa

The fretsaw device is an additional device that can be attached to all Universa basic machines. It is used to carry out fine welding work, to cut out closed contours and to produce intarsia work.

Required for attachment: TS support piece.



Operation::

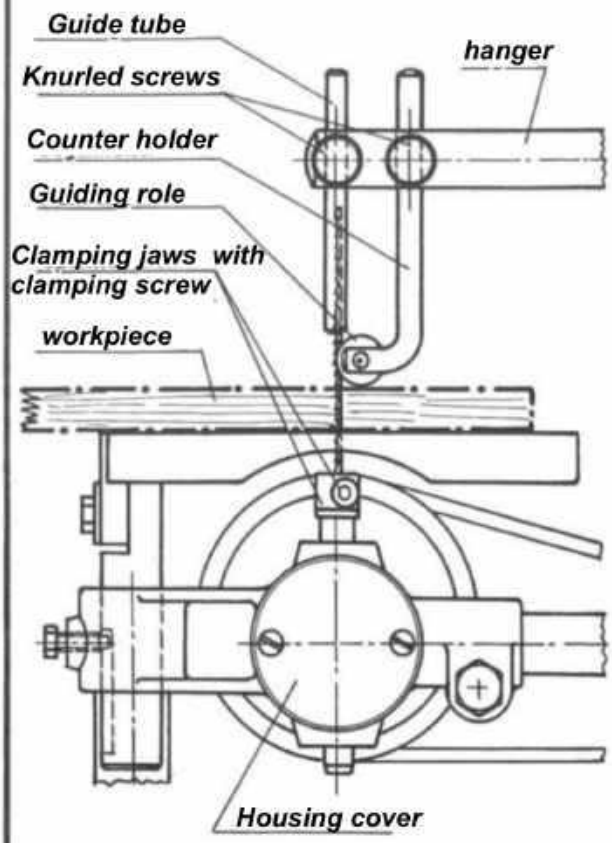
First attach the motor belt pulley according to the speed table. Place V-belt 8x670 on the pulley of the fretsaw device and complete. Insert the device with its fastening bolt into the vertical bore of the support piece until the locking pin strikes, then clamp it with the hexagon screw. Place the V-belt 8x670 on the outer V-groove of the motor pulley.

Setting up the fretsaw table:
The fretsaw table is adjustable in height and can be locked as required using a hexagon screw. This offers the advantage of being able to wear the saw blade along its entire length. With the same height setting of the fretsaw table as the circular saw table, an additional support surface is created for larger workpieces. The fretsaw table can also be tilted up to 30 degrees on both sides. When tilting to the left, the table must first be raised.

Operating manual

Fretsaw device pos. 5

ULMIA universa



Clamping the saw blade:

First remove the guide tube. Insert the saw blade through the bracket and the saw table into the clamping jaws on the vertical drawbar and clamp it with an Allen key. The saw blade pulls downwards, so the saw teeth must point downwards. The back of the saw blade must rest against the guide roller of the counter holder and the clamping screw of the clamping jaw. Insert guide bar and clamp.

Bracket with saw blade guide:
The bracket has a projection of about 280 mm. The counter holder with guide roller serves to guide the back of the saw blade and can be used as a hold-down device when adjusted to the thickness of the respective workpiece. The guide tube is an additional
safe saw blade guide and is clamped with a knurled screw like the counter holder

Working with the fretsaw equipment:

Before starting the machine, note:

Set the correct table position.
Check the correct position and seating of the saw blade.
Adjust the counter holder and guide roller to the workpiece thickness.

Check, by turning by hand, whether the fretwork is running freely. The workpiece must be pushed forward carefully so that there is no pressure on the saw blade. In most cases the workpiece is guided by hand according to a scribe (the shape to be sawed out is drawn on the material). In the case of angular lines, the workpiece should be turned slowly in the direction of the cut in order to give the saw blade time to cut freely. When sawing out inner contours, the saw blade must be unclamped, guided through the pilot hole on the workpiece and then clamped again. Max cutting capacity in softwood about 20 mm. The cutting performance for plastics and metals is largely dependent on the material and its dimensions. However, the performance range is lower here than with wood. Special saw blades are to be used for metals and hard plastics.

Maintenance of the fretsaw device:

The crank mechanism housed in the housing, as well as the bearing of the tie rod and the V-bolt pulley are provided with sufficient lubricant at the factory. If the grease filling should be significantly reduced after a longer period of operation, lubricant can be refilled after unscrewing the housing cover. Use only good branded, acid-free fat. Clean the remaining parts frequently and oil bare parts.

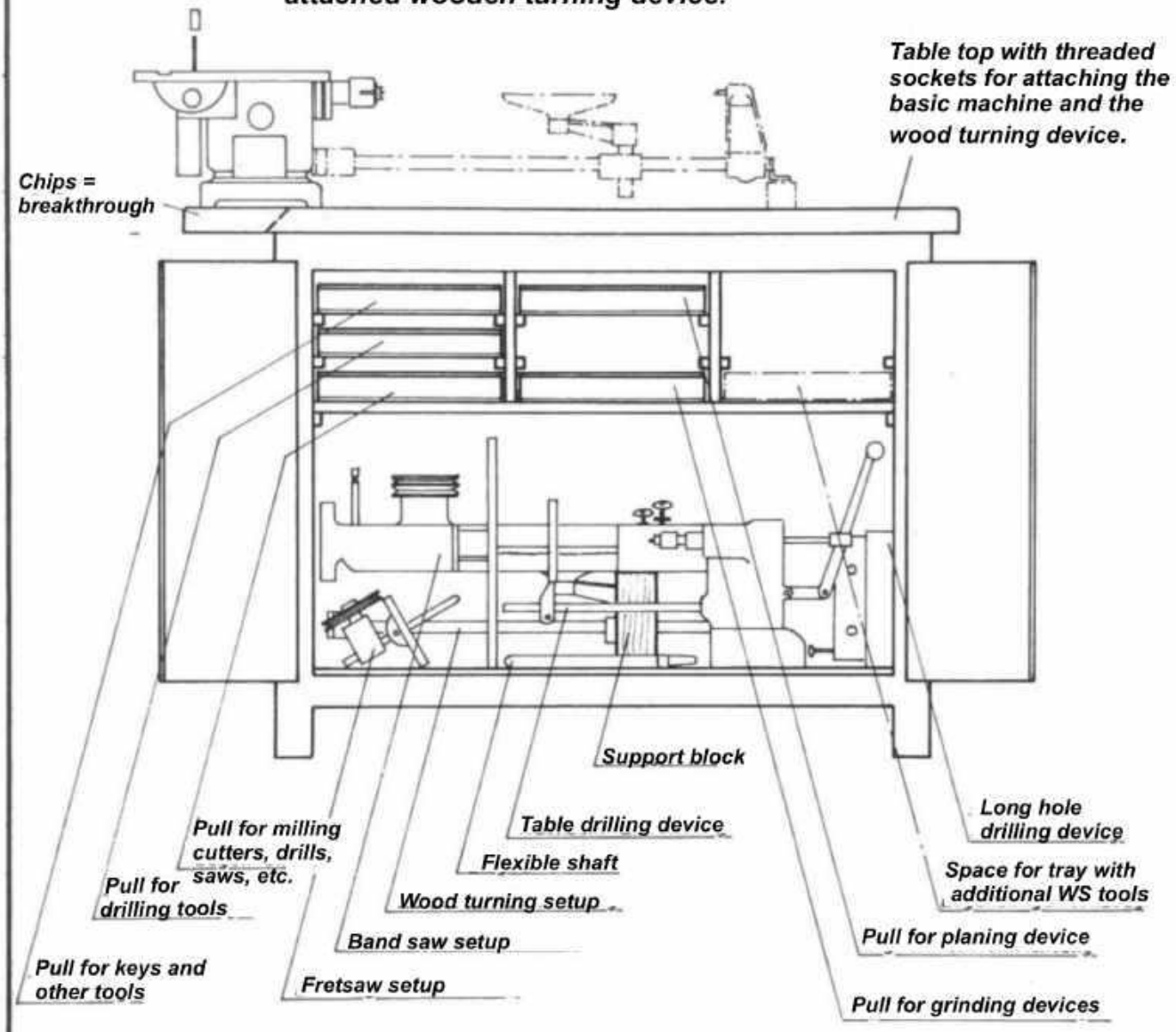
Operating manual

Machine cabinet pos. 9

ULMIA universa

The machine cabinet is a practical addition to the UlMIA-universa. The cabinet has a sturdy table top and serves as a work table on which the basic machine with the additional equipment required is attached. The table top is perforated underneath the basic machine so that the chips produced during sawing and planing can drain off and be collected in a collecting container.

Basic machine screwed to the table top with attached wooden turning device.



In the lockable machine cabinet, all additional equipment can be stored clearly and within easy reach according to the above illustration.

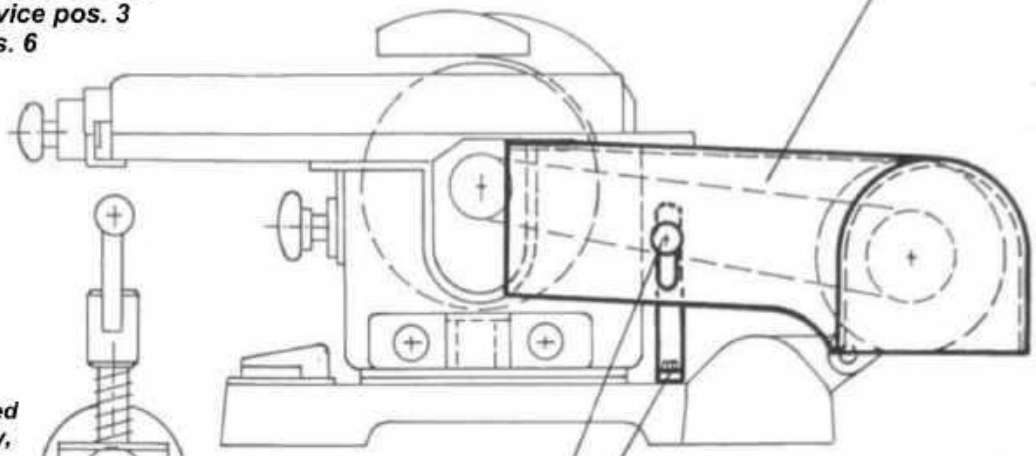
The various tools, smaller accessories and other parts are housed in the five trays. The upper right compartment is intended to accommodate the tray for the supplementary tool set WS (accessories according to the customer's choice). 4 hexagon bolts and washers each supplied are used to fasten the basic machine and the wood turning device to the machine cabinet.

Belt protection devices prescribed by the authorities

ULMIA universa

Belt guard for basic machines KD, KW, KHD, KHW, AHD, AHW

also in connection with:
Oblong hole attachment item 1
Surface planing device Pos. 2
Wood turning device pos. 3
Flexible shaft pos. 6



1. Fasten the threaded bolts in the drill body,

2. Place vertical V- belts.

3. Belt guard with knurled button on top clamp.

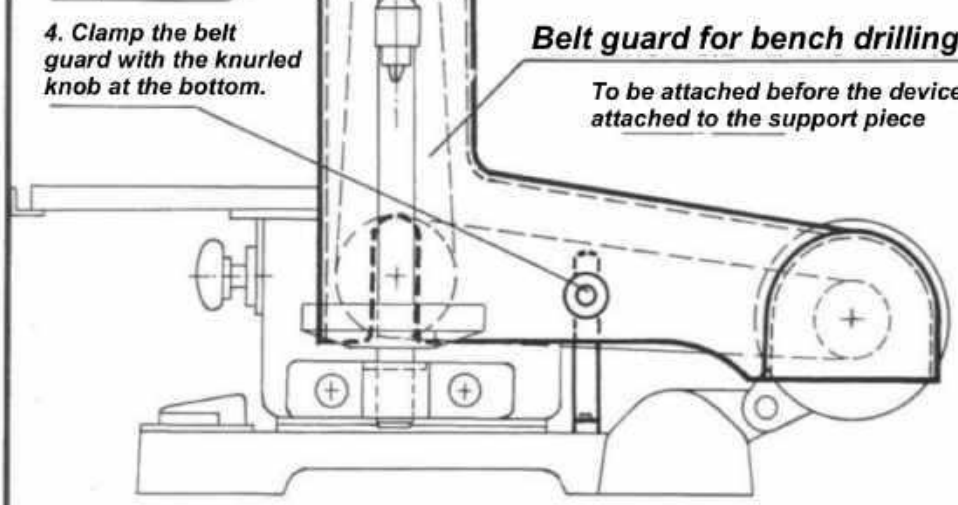
4. Clamp the belt guard with the knurled knob at the bottom.

screw the bracket onto the base plate (blanks mounted)

Clamp the attached protective cover in the correct position with the knurled knob.

Belt guard for bench drilling device pos. 4

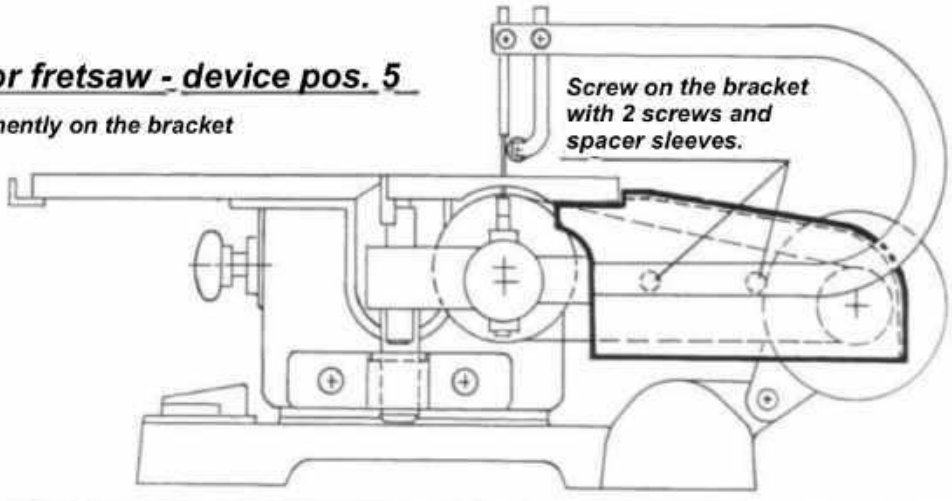
To be attached before the device is attached to the support piece



Belt guard for fretsaw - device pos. 5

Remains permanently on the bracket after assembly

Screw on the bracket with 2 screws and spacer sleeves.



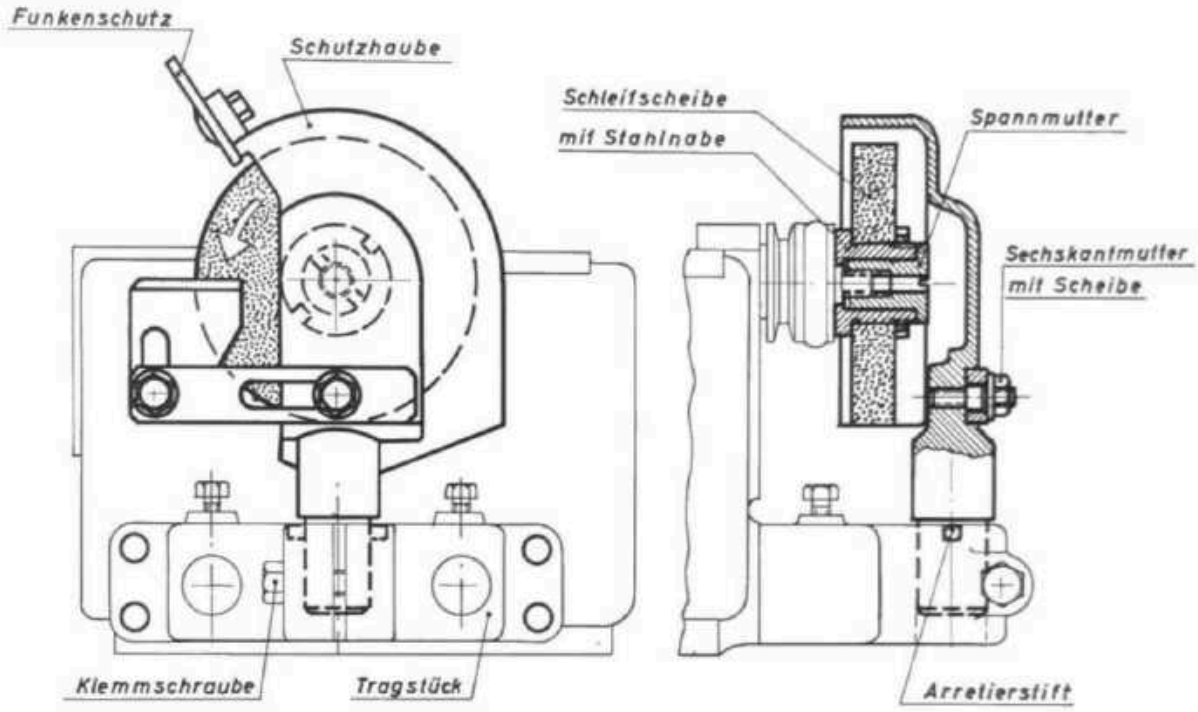
Betriebs-Anleitung
Werkzeug-Schärfeinrichtung Pos. 25

ULMIA universa

Diese Zusatzeinrichtung kann an alle Universa-Grundmaschinen angebaut werden. Sie dient zum Schärfen von Hand- und Maschinen-Werkzeugen wie Holzdrehwerkzeugen, Falz- und Profilmessern, Spiralbohrern, Stechbeiteln usw.

Die Einrichtung besteht aus einer Schutzhaube mit Funkenschutz, einer in Abstand, Höhe und Neigung verstellbaren Werkzeugauflage, einer Schleifscheibe 100 x 16 mm auf Stahlnabe sowie einer Spannmutter mit Winkelschlüssel und einem Abdrehstein.

Zum Anbau erforderlich: Tragstück TS



Anbau:
Arbeitswelle durch Hochstellen in obere Endlage bringen und arretieren.

Drehzahl der Arbeitswelle gemäß Drehzahlentabelle auf 4200 Umdr./min. einstellen.

Kreissägetisch abnehmen und bei Maschine KH oder AH Messerwellenschutz einsetzen.

Prüfen, ob Schleifscheibe unbeschädigt ist und fest auf der Stahlnabe sitzt. Nachziehen mittels Winkelschlüssel (Zapfenseite).

Schleifscheibe mit Stahlnabe anstelle des Zwischenringes und der Sechskantmutter auf die Arbeitswelle stecken (Paßflächen säubern) und Spannmutter mit dem Winkelschlüssel (glatte Seite) festziehen. Hakenschlüssel als Gegenhalter am Sägeblatt-Innenflansch ansetzen.

Freien Lauf der Arbeitswelle und Rundlauf der Schleifscheibe durch Drehen von Hand prüfen. Gegebenenfalls Schleifscheibe gemäß Wartungsvorschrift abrichten.

Schutzhaube in senkrechte Bohrung des Tragstückes einführen bis Arretierstift anschlägt und festklemmen.

Verstellbare Werkzeugauflage an Schutzhaube mit Scheibe und Sechskantmutter festklemmen.

Georg Ott, Ulm-Donau, Werkzeug- und Maschinenfabrik

gefertigt:	laufd. Nummer:	Blatt:
2. 3. 1964	14 230 – 4	30

Working with the tool sharpening device:
A prerequisite for good sharpness results is some practice and observance of the following notes. and circumferential speed suitable for the most common sharpening jobs. The grinding wheel has a grain size, hardness. The cutting edges of the tool to be sharpened must be guided against the direction of rotation of the grinding wheel.

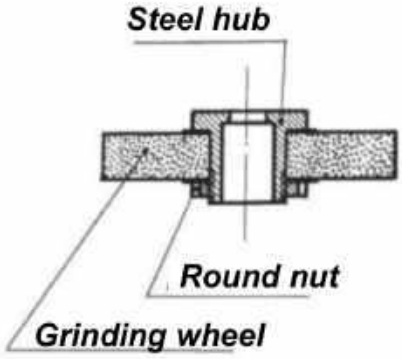
Note: **Always place straight cutting surfaces flat on the grinding wheel, rounded cutting surfaces with correspondingly even rotation.**

Grind with low pressure and interrupt the grinding process frequently for larger cutting surfaces and cool the tool cutting edge in water.

Use protective goggles whenever possible when grinding.

Carefully remove the burr that remains on the cutting edge after grinding with a whetstone (oil stone), whereby the whetstone must always lie flat on the cutting surface. (See also sheet 23).

Maintenance:
The grinding wheel must always be kept perfectly round and grainy. Dull or smeared grinding discs are to be roughened with the calibration stone or to train. The turning stone is guided free-hand and should only attack the grinding wheel with a sharp edge. Press the calibration stone only moderately. Use protective goggles when dressing. When the grinding wheel has reached an outside diameter of 90mm after a long period of use and frequent dressing, increase speed to 6000 rev / min.



Replacing the grinding wheel:

The grinding wheel remains on the mounted steel hub until it is used up.

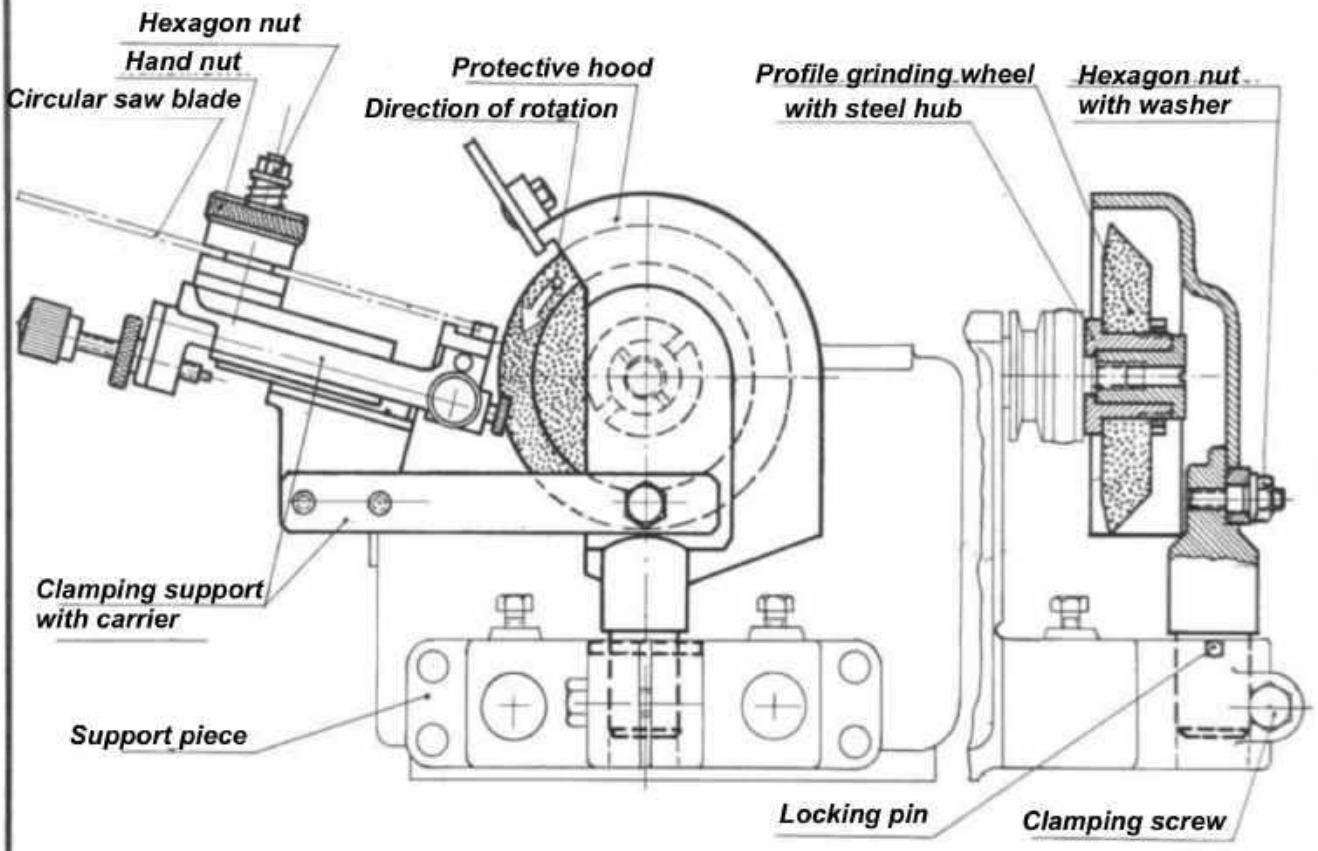
The new grinding wheel is carefully placed on the steel hub and the round nut with the Tighten the angle wrench (pin side) well.

The new sole must be checked for exact concentricity and, if necessary, trued with the calibration stone.

This additional device for sharpening wooden circular saw blades with a diameter of 100-160 with triangular teeth with a tooth width of 5-12mm can be used with all universa

The device consists of a clamping support with pin adjustment for tooth width and tooth depth, a profile grinding wheel 100x16 mm on a steel hub and a profile

Required for attachment: TS support piece
Item 25e = protective cover, clamping nut, key and calibration stone



Cultivation:
Bring the working shaft to the upper end position by raising it and lock it. Set the speed of the output shaft according to the speed table to 4200 rev / min.

Remove the circular saw table and use the knife shaft guard on the KH or AH machines. Check whether the profile grinding disc is undamaged and is firmly seated on the steel disc. Retighten using an angle wrench (pin side).

Place the profile grinding wheel 100x16mm with steel hub instead of the intermediate ring and the hexagon nut on the working shaft (clean the mating surfaces). and tighten the clamping nut with the angle wrench (smooth side).

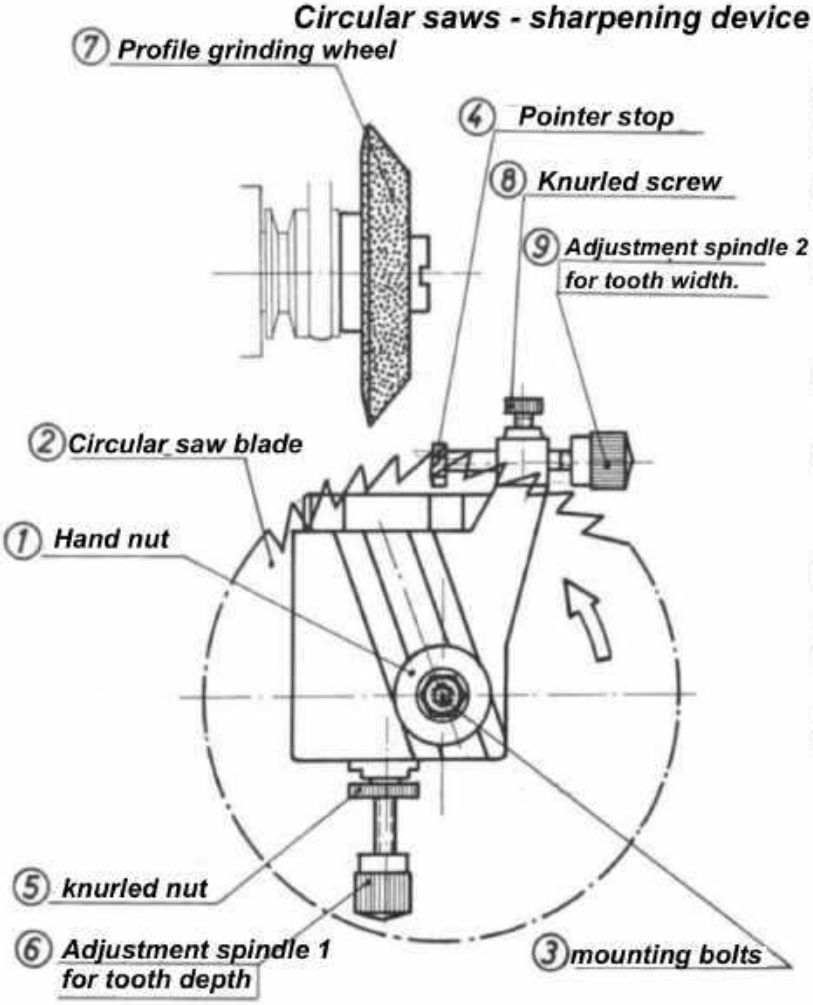
Place the hook wrench as a counter holder on the inner flange of the saw blade. Check that the working shaft is running correctly and that the profile grinding wheel is concentric by turning it by hand. If necessary, dress the grinding wheel in accordance with the maintenance instructions. Insert the protective cover into the vertical hole in the support piece until the locking pin strikes and locks in place. Clamp the clamping support with carrier on the protective cover with a washer and hexagon nut.

Working with the circular saw sharpening device:

A prerequisite for perfectly sharpened circular saw blades is some practice and the observance of the following information. Since the feed is done by and tooth by tooth at the pointer stop, the circular saw blade must not have any major pitch errors, such as those that can arise when filing the teeth by hand. Damaged circular saw blades must be re-toothed by the supplier.

Before resharpening, the setting must always be checked (see setting the circular saw blades). Clamping and setting the circular saw blade to the tooth depth and tooth width:

Operating manual
Circular saws - sharpening device pos. 25b



1 = Unscrew the hand nut
2 = Put on the circular saw blade
3 = Opening bolt in groove set so that
4 = the face of the tooth (not the curve in the base of the tooth) at the pointer stop
5 = Loosen the knurled nut on spindle I.
6 = with spindle I set the saw blade so far that
7 = the grinding wheel records the exact tooth depth
8 = Loosen the knurled screw on spindle 2 and
9 = Use spindle II to set the pointer stop for the tooth width so that the profile of the grinding wheel fits exactly into the tooth gap.

When the Masohine is at a standstill, check the position of the tooth gaps in relation to the profile of the grinding wheel by feeding in the circular saw blade (contact the pointer stop) and correct if necessary. By lifting and turning the clamped circular saw blade, this check can be carried out at various points on the circumference of the blade.

Sharpening the circular saw blades
The teeth should be sharpened in the first line on the tooth root. The profile lever should only touch the tooth face very slightly. It is only intended to remove the burr that forms at the tip of the tooth. In the case of severely blunted teeth, initially only sharpen the back of the tooth without touching the face.

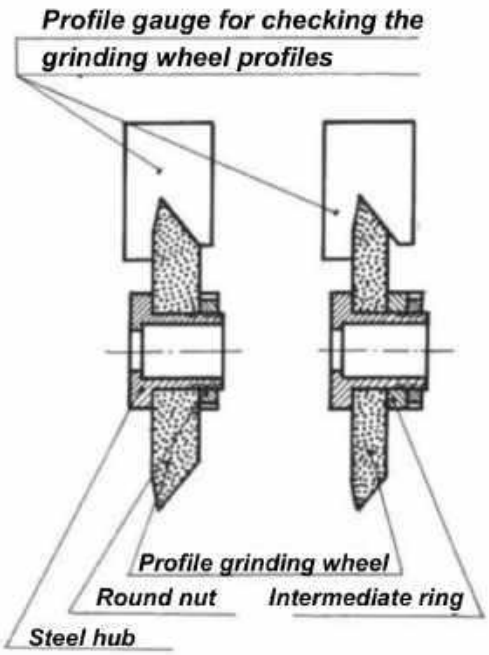
Note:
Flawlessly sharp teeth that retain their edge are achieved by sharpening the teeth several times with only a slight attack on the grinding wheel while avoiding excessive heating, which could cause the tooth tips to turn blue and possibly even burn out.

When sharpening, hold the saw blade (2) against the pointer stop (4) with your left hand and use your right hand to feed the spring-loaded clamping support on the knurled knob (6) of the setting spindle I of the profile grinding plate (7). Then pull back the saw blade, lift it with both hands and move it to the left (counterclockwise) to the next tooth gap.

Maintenance:
The profile grinding wheel can always be kept perfectly round and grainy while maintaining the original profiles. Grinding wheels that have become dull or smeared must be roughened up with the calibration stone or to train.

The turning stone is guided freehand and should only attack the grinding wheel with a sharp edge. Press the calibration stone only moderately and, in particular, carefully dress the profile edges. Shut down the profile grinding wheel frequently and check with the profile gauge. Wear protective goggles when dressing. When the profile grinding wheel has reached an outside diameter of 90 mm after long use and frequent dressing, speed to 6000 rev / min. increase.

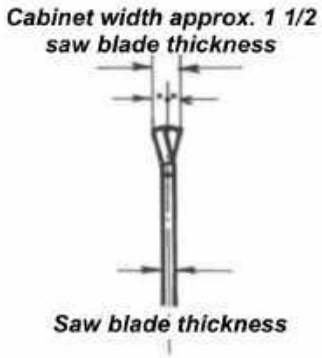
Replacing the profile grinding wheel
The profile grinding wheel remains mounted on the steel hub until it is used up (approx. 80 m outside diameter). The new profile grinding wheel is to be carefully placed on the steel hub and the round nut to be tightened well using an angle wrench (pin side).



The new grinding wheel must be checked for precise concentricity and, if necessary, trued with the turning stone. The profile grinding wheel is only to be used for the intended purpose. The profile surfaces are not to be used for any other grinding work.

The profile grinding wheel l00x8mm is intended for circular saw blades with small tooth widths of 3 to about 5 mm. This rubber-bound special washer is supplied complete with a steel hub. The tip of the profile must be dressed particularly carefully. Maintenance and replacement exactly as described above. The profile gauge is used for both grinding wheels.

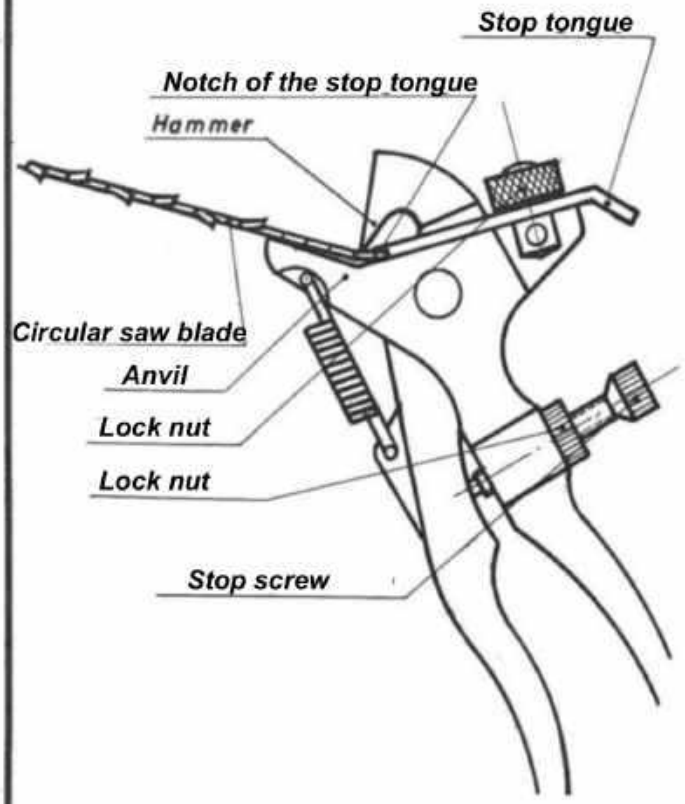
Setting the circular saw blades:
The secondary width of the circular saw blade must always be larger than the saw blade thickness. This is achieved by setting, whereby the tooth tips are bent out alternately to the left and right. Too tight a loop leads to jamming in the cut and burns on the saw blade and cut material. Too wide or uneven set causes uneven running, unnecessary cutting loss, increased effort, reduces the sonitt performance and gives rough cut surfaces. The soak width depends on the type of wood to be cut. Wet and soft woods require larger cupboard widths than dry and hard woods.



The mean value is: set width approximately equal to 1 1/2 times the saw blade thickness. A saw blade thickness of 1 mm results in a set width of about 1.7-1.8 mm. The teeth are set to a maximum of 2/3 of their depth. The setting has respectively before sharpening. Resharpening of the saw blade to be carried out. Since the sawing reduces the set width, the setting must be re-set in good time. In the case of badly worn or damaged teeth, it is advisable to first sharpen, then set and then re-sharpen slightly.

The UlMIA setting pliers No. 50 is recommended for setting the circular saw blades

Use and mode of operation: The setting pliers are to be placed on the saw blade in such a way that the tip of the tooth rests in the notch of the stop tongue. By operating the pliers, the hammer pushes the saw blade down against the anvil and at the same time bends the tooth tip upwards.



Attitude:
After loosening the clamping nut, the stop tongue must be adjusted so that the tip of the tooth is not bent open by more than 2/3. The stop screw with lock nut is used to set the set width.

Setting: Always set teeth on the same side. First set a smaller cabinet width. Set two teeth to one side and the tooth in between to the other side. Check the bar width using a caliper, readjust the setting pliers if necessary. Then set every second tooth to one side and the teeth in between to the other side.

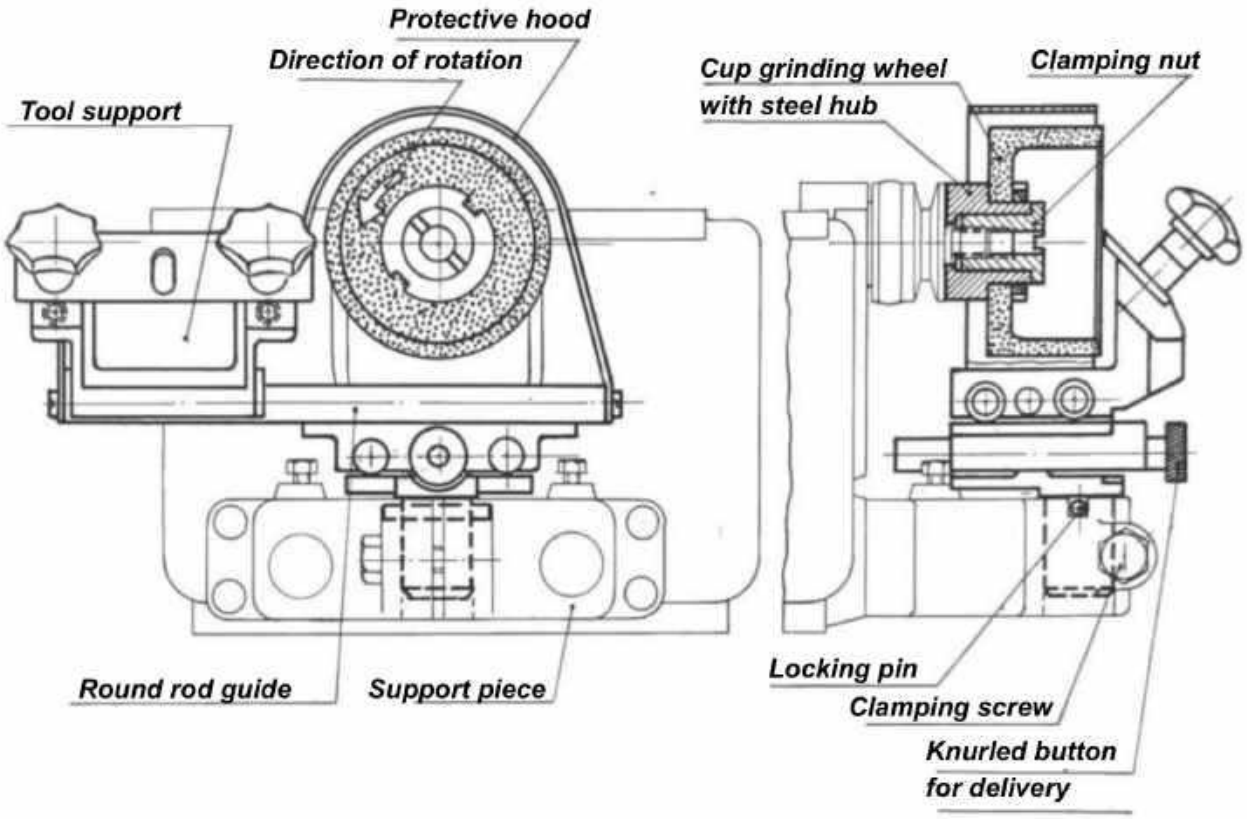
Operating manual

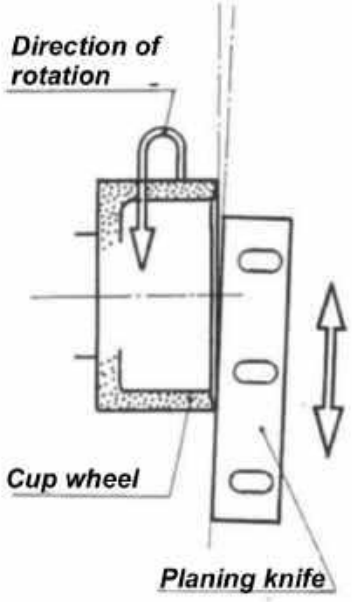
Plane knife and plane iron sharpener. Item 26

ULMIA universa

This additional device can be attached to all universa basic machines. It is used to sharpen the universa planer knives 100x32 and hand plane blades up to a maximum width of 54mm with a wedge angle of 25 The device consists of a finely adjustable tool support that glides on a double round rod guide, a cup grinding wheel 75 x 40 m on a steel hub, a protective hood, a clamping nut with angled wrench and a turning stone.

Required for attachment: TS support piece
1 V-belt 8x800 mm Item 10 c



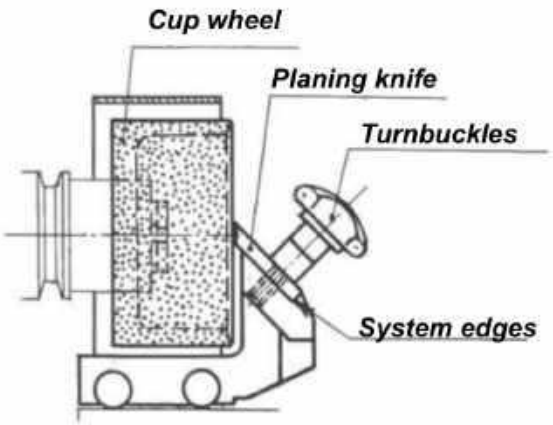


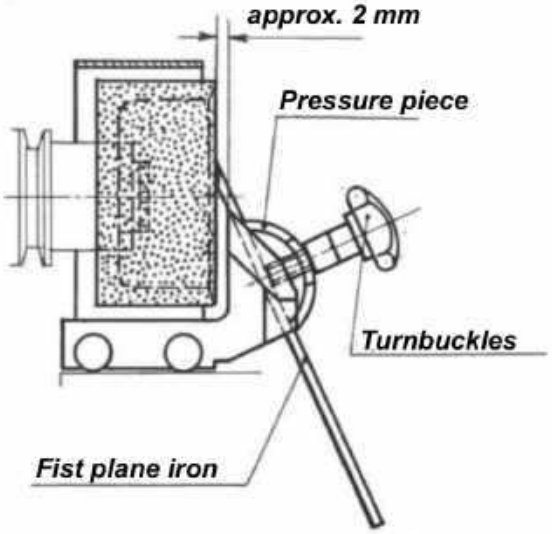
Operation:
Bring the working shaft to the upper end position by raising it and lock it. Speed of the working shaft according to the speed table to 6000 rev./min. to adjust. Remove the circular saw table and use the knife shaft guard on machines KH or AH.

Check whether the cup grinding wheel is undamaged and is firmly seated on the steel hub. Retighten with the angle wrench (pin side). Insert the complete tool support into the vertical bore of the support piece until the locking pin strikes and clamp it. Check the position of the tool in relation to the cup wheel (see picture). The rear edge of the grinding wheel must not touch the cutting surface of the tool.

Cultivation: (port setting)

Place the cup grinding wheel with steel hub instead of the intermediate ring and the hexagon nut on the work shaft (clean the mating surfaces) and tighten the , clamping nut with the angle wrench (flat side).





Check the free running of the work shaft and the concentricity of the cup grinding wheel by turning it by hand. If necessary, train in accordance with the maintenance instructions.

Clamping and setting the planing knives respectively. Fist plane iron:

The planer knife must be placed against the two contact edges (clean surfaces) and fastened with 2 clamping screws through the two outer slots in the upper threaded holes.

Fist plane blades are to be placed on the middle surface in such a way that the cutting surface of the plane iron protrudes approx. 2 m over the back edge of the tool support. After aligning (possibly placing it against one of the side edges), the plane iron must be fastened with the pressure piece and the 2 clamping screws in the two lower threaded holes.

To be on the safe side, the tool support must first be screwed back using the knurled knob for infeed (turn it

Sharpening the planer knife or Fist planing:
After switching on the motor, the tool support with the clamped tool must be carefully positioned on the cup grinding wheel until a slight spark is formed.

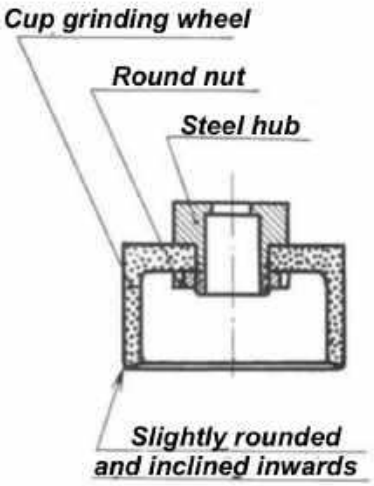
The tool support is to be guided regularly and smoothly by hand (it is advisable to hold the clamping screws) along the sole plate without stopping.

Note: Repeated grinding with only a small infeed avoids unnecessary heating, as otherwise the tool tips will turn blue and possibly burn out.

Wear protective goggles whenever possible when grinding. The burrs created during grinding must be carefully removed with a whetstone (oil stone), whereby the whetstone must always lie flat on the cut surface (see also page 17).

Maintenance:
The cup grinding wheel must always run smoothly and be maintained. Grinding wheel that has become dull or smeared must be roughened with the turning stone. to train.

The turning stone is guided freehand and should only touch the key disc with a sharp edge. Press the turning stone only moderately. Wear protective goggles when turning.



The grinding wheel rim on the face is to be dressed at a slight angle and with a small radius so that only the rounded edge grips the tool edge during grinding.

It is recommended that all moving parts, especially the round rod guide, be cleaned of sanding dust and lightly oiled at certain intervals.

The movable tool support is provided with felt wipers, which can be readjusted a little after loosening the socket head screw and replaced if necessary.

Replacing the cup grinding wheel:

The cup grinding wheel remains mounted on its steel hub until it is used up (about 20 mm wide). The new grinding wheel is to be carefully placed on the steel hub and the round nut to be tightened well with the angled wrench (pin side). Now check the new disc for concentricity and, if necessary, dress it.

Important:
The cup grinding wheel is only to be used for the intended purpose. The circumferential surface of this grinding wheel must never be used for grinding work.

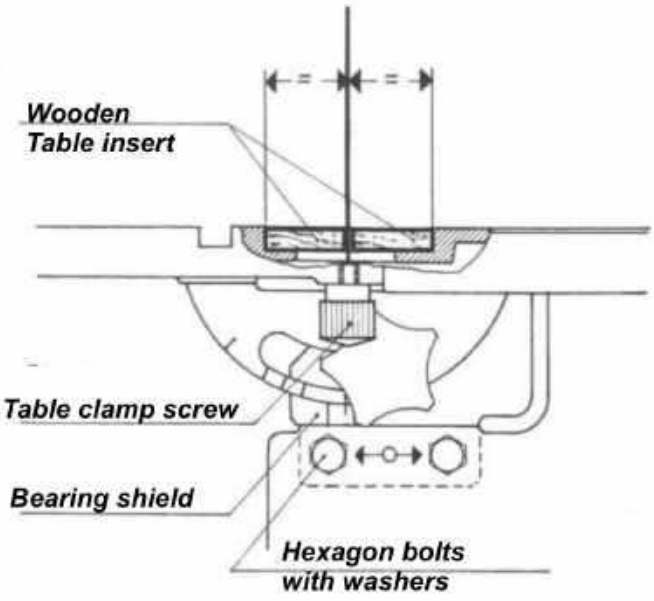
Operating manual

Band saw device, item 7

ULMIA universa

The band saw device is an additional device that can be attached to all Universa basic machines. It is used in particular for welding work, i.e. of round and curved chords, for processing larger workpieces, making slots and tenons (which are no longer possible on the circular saw), as well as for rip, cross and format cuts as well as for Cutting to length and trimming.

For attachment to the basic machine required: TS support piece



Attachment of the table top removed during shipping

Remove the table clamping screw and both hexagon head screws with washers on the stand. Table top with slot over band saw blade (initially at an angle) introduce. Bearing shield of the table top with the
Screw both hexagon head screws and washers to the stand (only tighten slightly).

With the saw blade tensioned, adjust the position of the table - and the saw blade exactly in the middle of the two wooden table inserts - and tighten both hexagon screws.

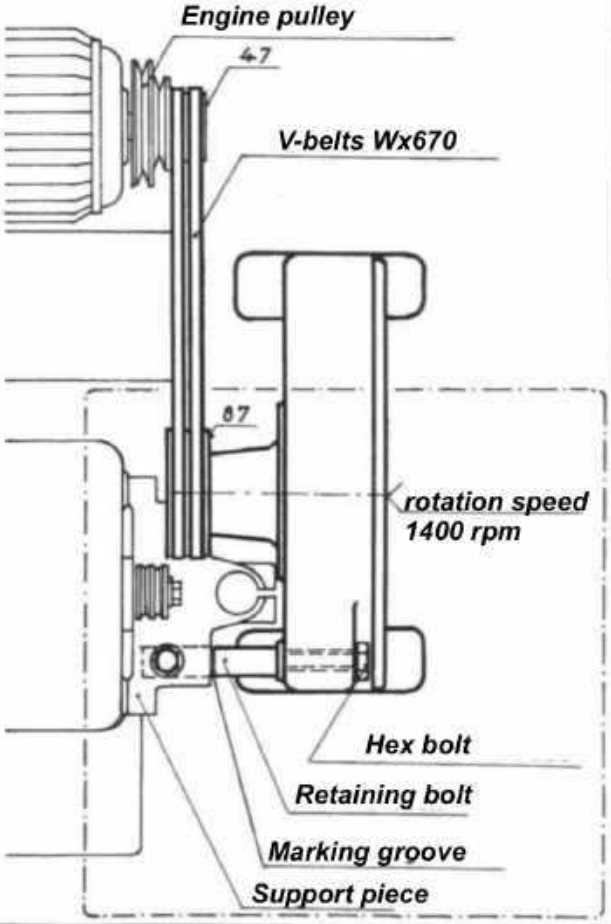
Insert the table clamping screw and relax the saw blade.

Attachment to the basic machine:
Fit the three-stage engine belt pulley so that the largest V-groove faces the engine.

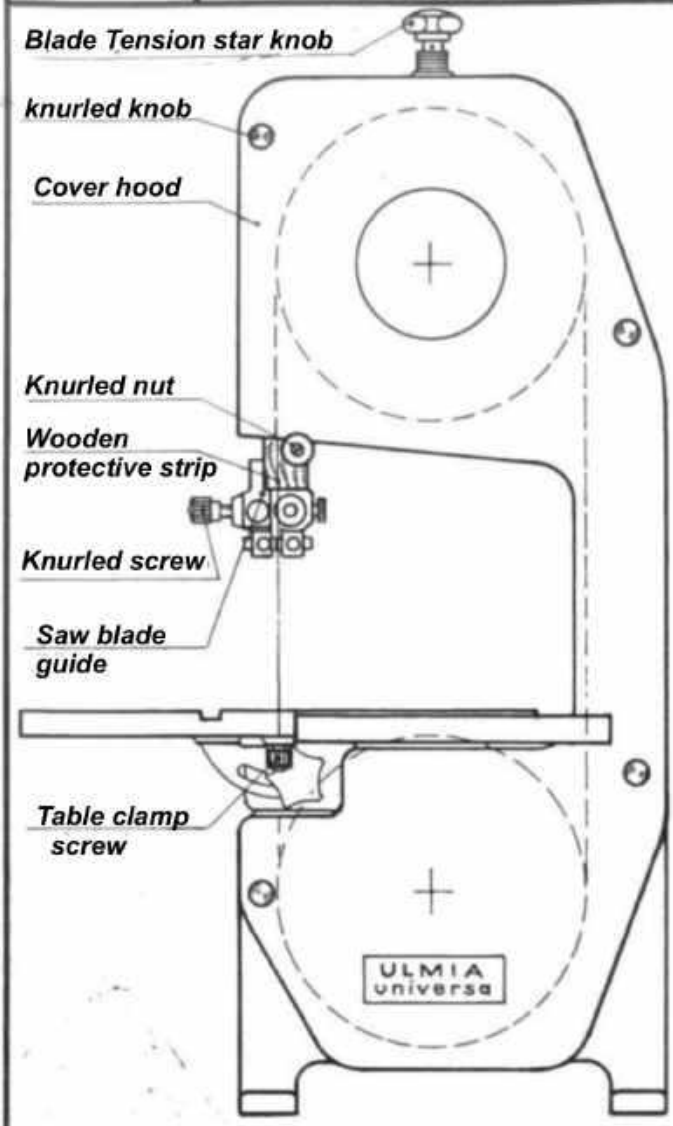
Remove the circular saw table from the basic machine.

Place both V-belts 8 x 670 on the band saw pulley, complete. Band saw device with its retaining bolt in the front horizontal hole of the support piece up to
Insert the marking groove and screw it tight.

Lift the engine and place the V-belt on the outer grooves of the engine pulley 47.



For a single fixation of the retaining bolt on the band saw stand, the hexagon screw must first be loosened slightly and, after the installation has been completed, the complete. Firmly tighten the device.



Installation and removal of the band saw blade:

Note: During the preparatory work, always secure the machine against being switched on (pull out the plug)

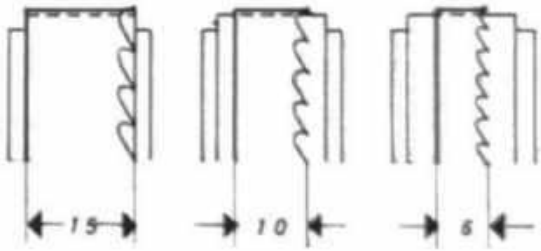
Remove before installing or removing the saw blade:
cover (after loosening the four knurled knobs), wooden protective strip (after loosening the knurled nut), saw blade guide (after loosening the knurled screw), and table clamping screw on the front of the work table.

First of all relax the upper band saw roll sufficiently by means of the upper star grip (turn counterclockwise).

Note the correct installation position of the saw blade! Teeth must point forward and downward, otherwise turn the saw blade inside out.

Insert the band saw blade with the back through the table slot, place it over both band saw wheels, align the blade in the middle and tighten them slightly. Insert the table clamping screw again.

Correct position of the band saw blades

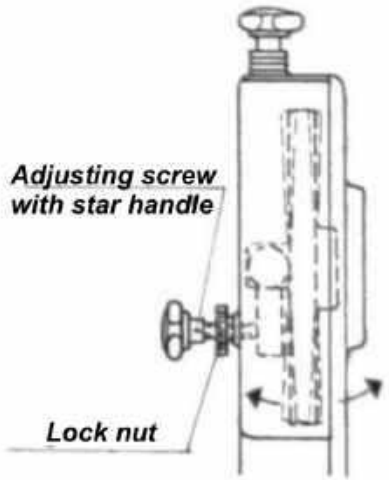


Adjusting the blade travel:

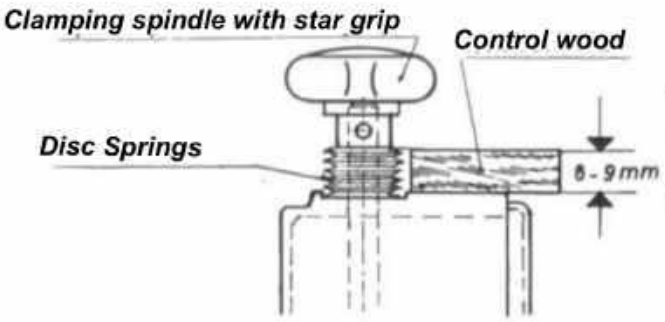
Make sure that the band saw blade always runs roughly in the middle of the band saw wheels equipped with rubber tires. The adjusting screw and lock nut on the back of the stand are used to adjust the blade run.

The setting of the correct inclination position of the upper band saw roller is achieved by turning the adjusting screw by hand at the same time. If, for example, it appears that the band saw blade is moving forward, the end-to-end saw blade can be brought into position by turning the adjusting screw slightly clockwise. - By turning it by hand several times (expediently on the hub of the upper band saw roller) and correcting the adjusting screw accordingly, the correct blade run is finally determined.

The adjusting screw is then to be secured with the lock nut.



Tensioning the saw blade:
The band saw blade is tensioned by turning the upper tensioning spindle with a star grip. Correspondingly arranged disc springs ensure elastic compensation and absorb any bumps that may occur during sawing.



Turning the star handle clockwise means tensioning the band saw roll upwards.

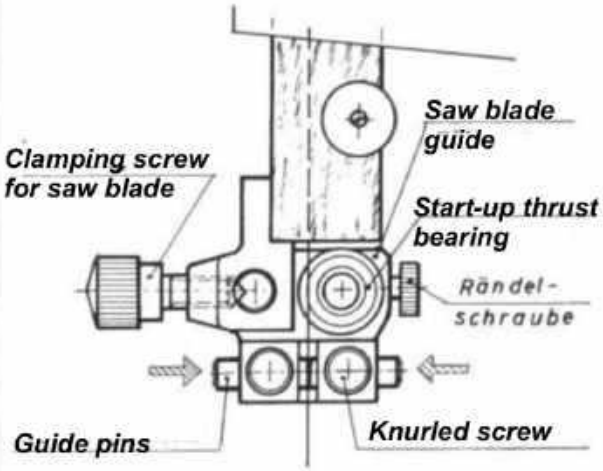
To protect the band saw blades, always ensure that the blade tension on the disc springs (11) 6-9 mm is correct.

It must never be more than is necessary to take it along on the band saw rollers

The mean value is: disc springs are tensioned approximately 8 to 9 mn. (It is advisable to make a control piece of wood with the appropriate thickness).

Narrower bandsaw blades tighten a little less, wider ones, on the other hand, tighten a little more. Keep checking the blade movement when tensioned!
Always relax the saw blade for long breaks.

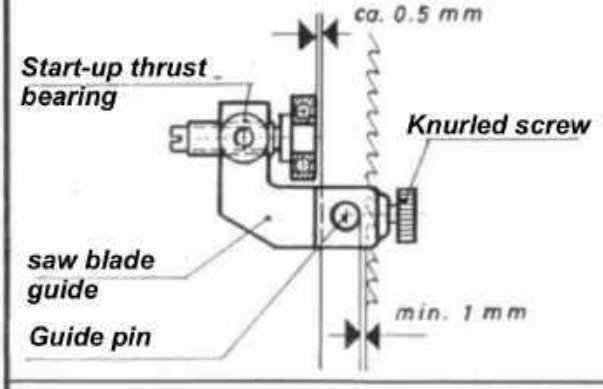
Adjusting the saw blade guide:
The saw blade guide provides the band saw blade with a safeguard against sideways movement, supports it against the feed pressure and largely encloses the end saw blade with the vertically adjustable guide bar and the wooden cut bar. The two guide pins are used for lateral guidance, while the start-up thrust bearing supports the back of the saw blade when cutting pressure occurs.

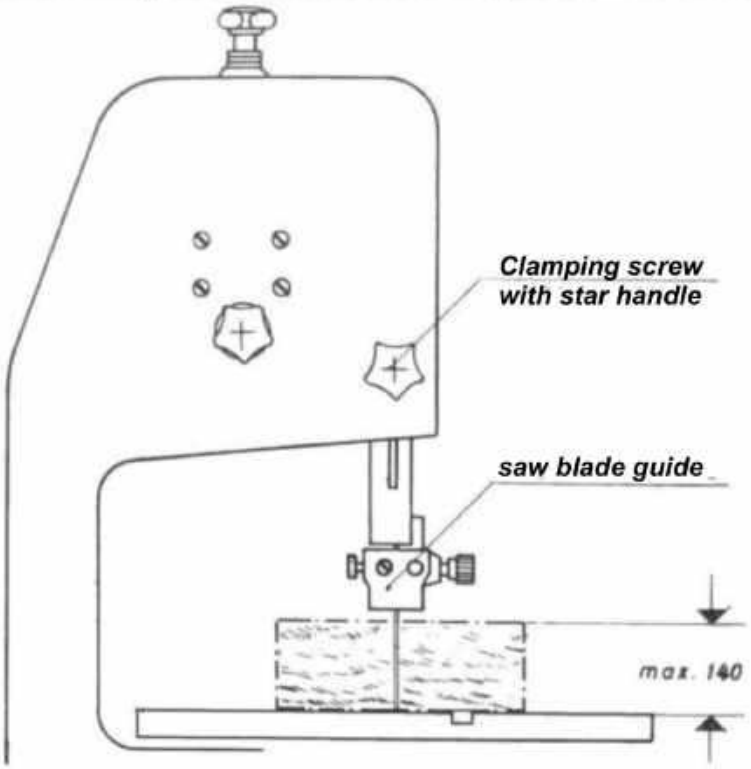


Before installing the saw blade guide, turn the thrust bearing completely back after loosening the small knurled screw and pull both guide pins outwards after loosening the two knurled screws in front.

Insert the complete saw blade guide with grooved bolts into the horizontal bore of the vertical guide rod so that the guide pins are at a distance of min. 1 mm to the tooth base and tighten with the clamping screw Check the distance by turning the band saw roller by hand. Make sure that the saw blade is not pushed out of its tensioned position. approx. 0.5 mm

While turning the band saw roller by hand, place the start-up thrust bearing up to about 0.5 mm on the back of the saw blade and tighten with the knurled screw. The start-up thrust bearing may only turn when the cutting pressure occurs.



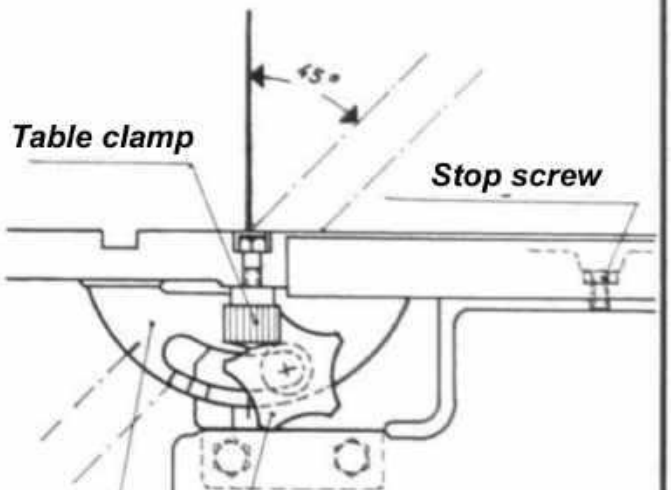


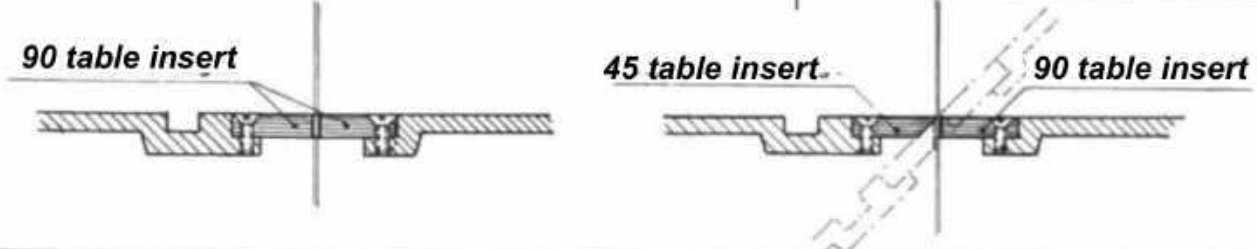
For safety reasons and for the purpose of guiding the workpiece as closely as possible, the saw blade guide must be adjusted to the workpiece height. The rear clamping screw with star grip allows any clamping to be practically on the work table.

Saw table top:
The saw table top is fixed in its upright position by a stop screw attached to its underside and locked by the lower star grille. Loosen counterclockwise. To make bevel cuts, the table top can be tilted up to 45 degrees outwards. For this purpose, the front swivel segment is provided with graduation marks for the most common inclines.

Two wooden table inserts screwed into the saw table top prevent damage to the tooth tips and support the guidance of the end saw blade. Both 90 table inserts are used when shipping. On inclined tables, the left table insert can be exchanged with the

The table clamping screw on the front of the saw table top is only to be removed for installing or removing the band saw blade.





Rough cut:
The angle guide rail on the front of the saw table top allows the rip fence of the basic machines K, KH and AH to be used.

After loosening the star grip, the rip fence can be set to any distance from 0 to 150 mm. If necessary, the rip fence can also be used to the left of the saw blade by moving the angled guide bar to the rear of the saw table top (this is more advantageous if necessary with angled rip cuts). The guide groove in the table top enables the use of the cut-off angle stop of the basic machines K and KH.

Selection of band saw blades:
The decisive factor in achieving perfect cutting results is the selection of the right band saw blades.

Wood bandsaw blade 1500 x 0.4 x 15 mm wide (normal accessories)
for straight rip, cross and format cuts, for cutting to length, trimming, tenoning and slotting. Curving work only with larger radii.

Wood band saw blade 1500 x 0.4 x 10 mm wide
For curved work with medium radii, if necessary for shorter, straight cuts, tenons and slots.

Wood band saw blade 1500 x o, 4 x 6 mm wide
if possible only for curved work with small and medium radii.

Metal band saw blade 1500 x 0.45 x 15 mm wide
for all straight cuts and larger radii on soft metals, thin aluminum plates and profiles and plastics.

Band knife 1500 x 0.45 x 10 mm wide
straight cuts and tailing work for leather, Rubber, cork, foams and the like.

Working with the band saw:

Before starting the machine, make sure to use the correct saw blade for the job

Check the condition of the saw blade

Set correct blade tension

Check that the blades are running correctly

Check the setting of the saw blade guide

Make sure that all clamping screws and star handles are tightened

Check the free passage of the saw blade (by turning the V-belt pulley by hand)

For safety reasons, always attach a wooden protective strip and cover

Keep the saw table top free from resin parts and contamination.

Notes on sawing:

Workpieces must lie flat on the work table and be secured against tilting and tilting when guided. (Use of the stops or suitable, self-made positioning angles).

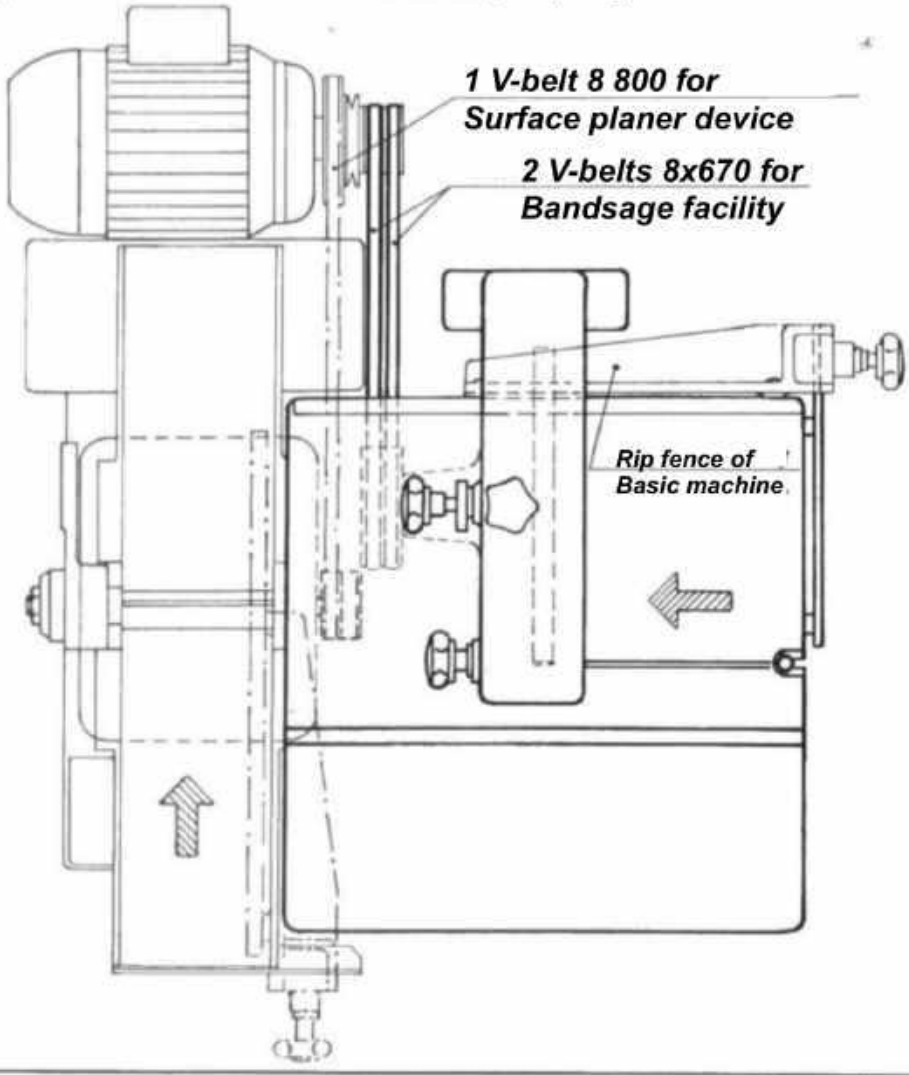
For long workpieces, always provide for odd support (when cutting to length) and for rear support (for longitudinal cuts, trimming, etc.) at the height of the saw table.

After attaching, push through evenly, with a gentle feed, according to the type and thickness of the material. Direct the cutting pressure against the tips of the teeth, avoid lateral pressure against the saw blade.

In the case of narrow sections, only push the last end through with a push stick (to be made by yourself) that you always have to hand.

Never pull back workpieces jerkily (e.g. if the blade gets stuck in the cutting track). If necessary, switch off the machine and pull the workpiece out of the cutting track while the saw blade is stationary. Pay attention to a correspondingly slower feed, with sloping grain and coarse-grained softwoods (risk of running). It is better to cut according to the scratch.

Prevent any wood splinters from getting between the insert slot and the saw blade (this will cause the saw blade to jump off), shut down the machine.



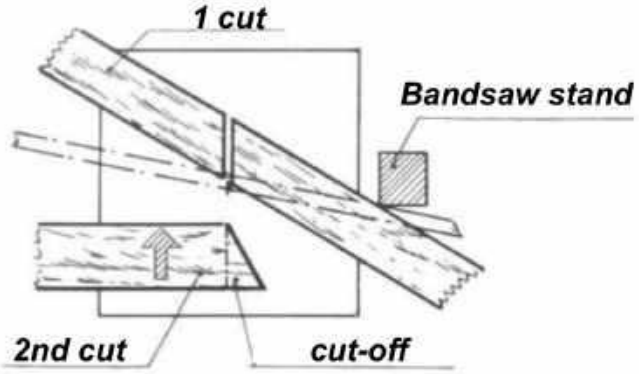
Since the straight band saw cut shows minor unevenness even with the greatest care, we recommend adding a cut and reworking with the planing device.

Band saw device and planer device mounted on the basic machine, allow the use of both devices - without conversion - in quick succession, whereby the V-belts have to be changed accordingly.

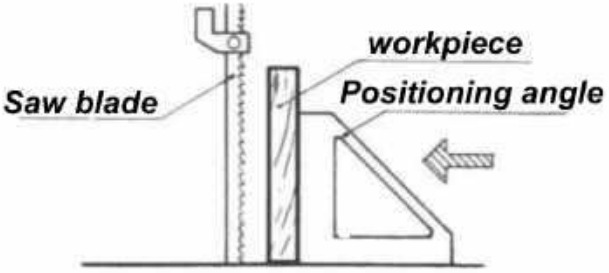
Operating manual

Band saw device, item 7

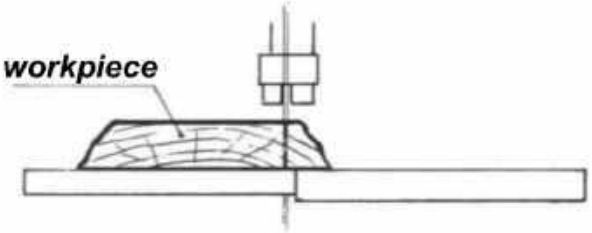
ULMIA universa



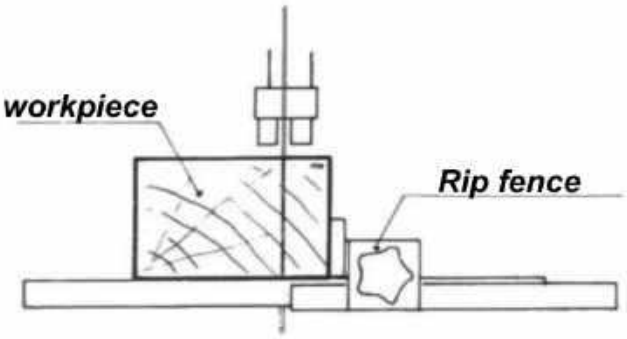
Cutting to length:
Angular cutting to length is limited in length by the projection of the machine (max. 200 mn). Greater lengths are only possible with a previous bevel cut. In the case of flat workpieces, make the first bevel cut on edge, this results in less cutting loss.



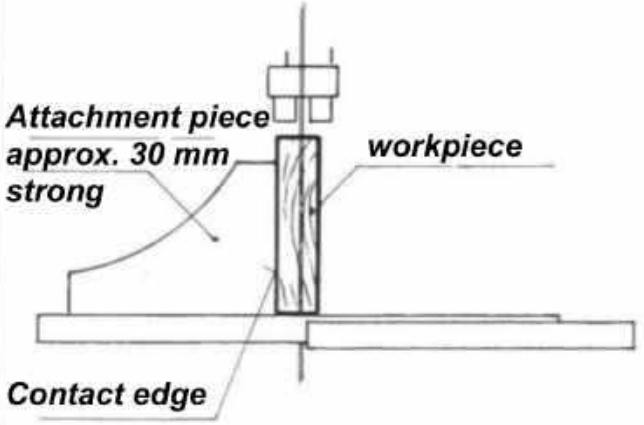
Note:
Only push through vertically positioned workpieces with the help of an angle bracket (to be made by yourself). Proper investment is required.



Trimming:
Trimming, i.e. cutting off raw edges (edges of trees on boards) is best done freehand after a scribe. Even, not too fast feed, especially with coarse-grained wood.



Rip, parallel, cross and format cuts:
If possible, the cuts are made with the longitudinal or crosscut fence. The prerequisite is that the band saw blade is in good condition. Place the flat side as possible on the work table. Guide the workpiece evenly against the stop. Workpieces placed on edge, e.g. when cutting strips into narrow boards, are more advantageous to guide them on a self-made attachment piece. The important contact edge can be reached with a careful band saw cut.



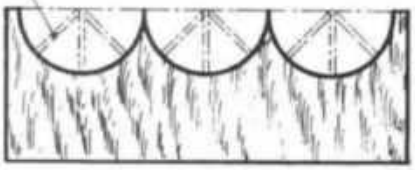
Carry out cuts on larger workpieces freehand according to the outline. Short cross-sections can be made with the angle stop.

Tail:
The narrow width of the sanding saw blade allows the workpiece to rotate to a certain extent when sawing, thereby allowing round and curved cuts to be made. The smallest radius that can be achieved depends on the blade width and the cabinet width of the saw teeth.

Basically, the tail cut is made freehand according to the pre-drawn line (scratch). In order to obtain the smoothest possible cutting line, it must be advanced quickly in an even movement. Side pressure on the band saw blade is to be avoided. Every rotation must take place around the blade teeth.

Examples of tail work

Auxiliary cuts for tight radii

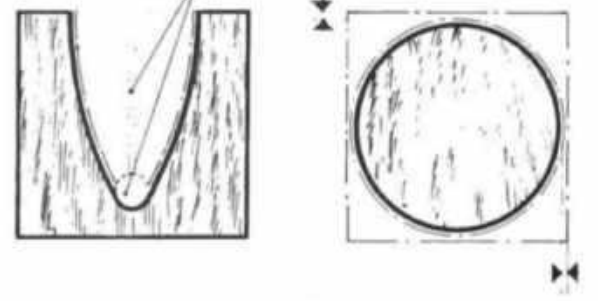


In the case of tight radii, auxiliary cuts are first unavoidable. Auxiliary holes make turning the saw blade easier.

Short cuts or auxiliary cuts should be made first, as this makes it easier to pull back from the cutting track. The material should always be large enough so that the band saw blade is constantly guided in the cutting track.

Auxiliary drilling and auxiliary cuts

Material addition

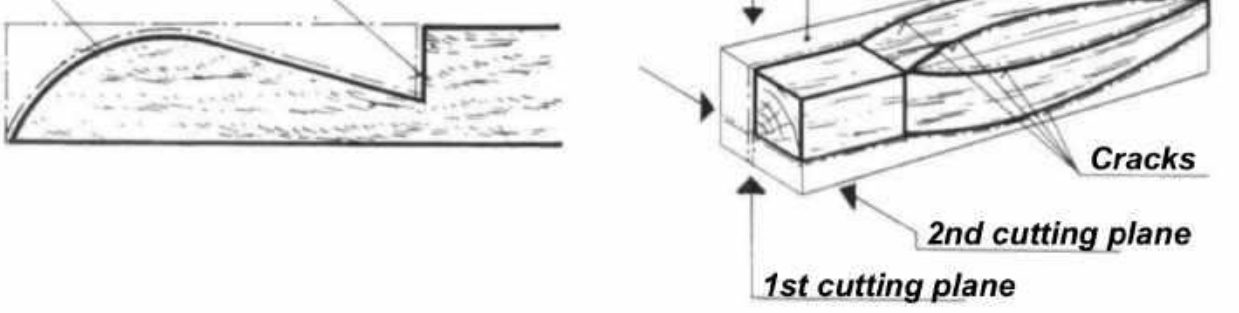


With multi-sided curves in two
First of all, the first side is to be sawed out according to the plan and the sloping piece to be fastened again so that a right-angled support surface is created. In the event of attachment with pins, pay attention to the new cutting track. The workpiece turned by 90 can now also be sawed according to the outline.

Falling piece after 1st cut

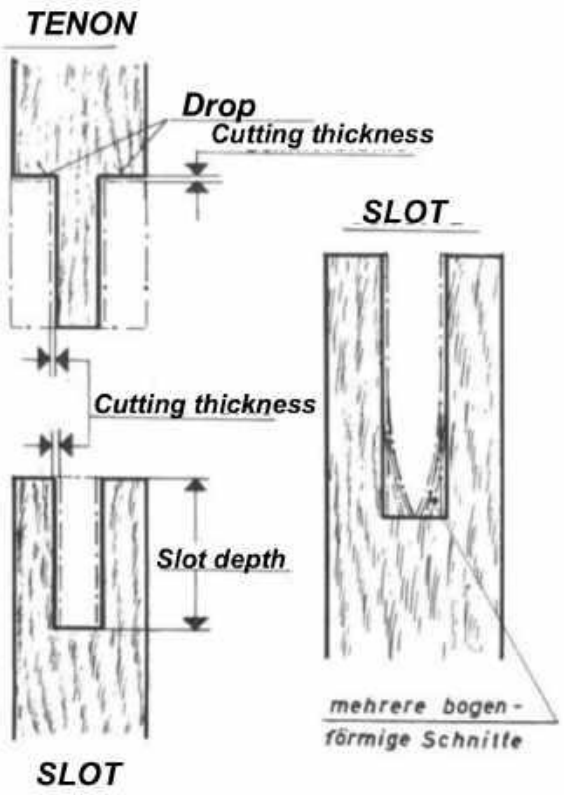
2nd cut

1st cut (short cut)



Slotting and tenoning:

A fully-fledged work result can only be achieved with a well-sharpened, perfectly set and smooth-running band saw blade. Workpieces are to be guided at the longitudinal stop or a positioning bracket (self-made) with slow feed.



The slot and tenon are to be precisely marked with the spacing.

Slitting:
Make both incisions first, chisel out the remainder by hand with a punch or, if the slit is large enough, remove it by making several curved incisions.

Tenons:
Cutting the tenon according to the outline, taking into account the cutting thickness. Set down the pin after marking it with the crosscut fence or lay-on angle. Define the depth of the slots and tenons according to the outline or a facing strip attached to the longitudinal stop. When producing several identical tenons and slots, all slots must first be made with the longitudinal stop set the same. several arc-shaped cuts The matching tenon is determined on a test piece and made in the same way as the slot.

Maintenance and care of the band saw blades:
Flawless cutting results are largely dependent on the sharpening and setting of the saw blades. To increase the service life of the band saw blades, the following information must be observed:

Choice of the most suitable saw blade

Correct blade tensioning of the band saw blade after work is finished, especially before long breaks, always relax the band saw blades and keep them free from contamination

Correct setting of the saw blade guide, adapt the workpiece feed to the type and thickness of the material.

Always ensure that the workpiece is positioned and positioned properly, as tilting can lead to the band saw blade kinking and tearing.

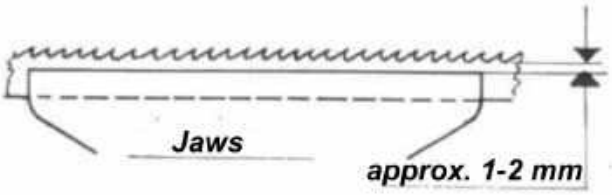
The knocking noise that occurs when sawing is due to the formation of RIB in the band saw blade. Switch off the machine and put on a new band saw blade!

Maintenance and care of the band saw blades: (cont.)

It is advisable to have some replacement saw blades available, which are so inexpensive that it is not profitable to send worn or torn band saw blades to the manufacturer.

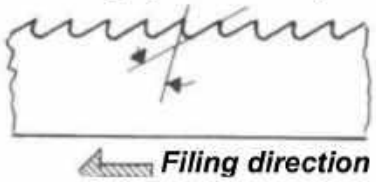
With a little practice it is possible to re-sharpen blunt band saw blades yourself. When taking bearings by hand, the sanding saw blade must be clamped in a band saw bearing clip (alternatively two longer clamping jaws) with an even, not too large protrusion.

Protrusion of the tooth base



Triangular files with round edges should be used to sharpen the teeth (angular tooth bases lead to cracking). The arrow must always be guided at right angles to the plane of the blade with even pressure and the same number of file strokes.

Tooth shape, tooth base, cutting angle



Particular attention must be paid to the original tooth shape and its position.

The cabinet width of the new band saw blade is designed so that two to three times careful re-sharpening is possible. This service life corresponds to the normal

Maintenance of the band saw device:
Both band saw rollers run on sealed ball bearings filled with grease and are therefore completely maintenance-free. The following must be oiled at certain tent distances: All bare parts, the swiveling segments of the saw table top, the guide and clamping spindle of the upper sanding roller and the adjusting spindle of the thrust bearing The ball bearing itself is sealed and filled with grease!

We recommend cleaning the entire machine and the interior of the stand from sawdust more often. The surface of the rubber bandages must often be freed of any clinging chips and impurities. The following parts, which are subject to a certain amount of wear and tear, should be replaced in good time:

Wooden table inserts, wear from the bandsaw blade when moving sideways.

Wooden protective strip, wear and tear from possible jumping off the band saw rollers.

Guide pins, wear and tear from the and saw blade, especially from the stress of grinding. Always rework the contact surfaces of the guide pins so that they are flat.

Rubber tires, possible wear from the tooth tips of the band saw blade after long use, the band saw blades can be replaced with the band saw rollers installed; make sure that no air particles get into the grooves of the band saw rollers.