TO ASSEMBLE YOUR EMCO - STAR

Take all the individual parts out of the box.
Grip the EMCO-STAR by the electric motor and under the housing and lift it out of the box complete with the wooden frame. Unscrew the four wing nuts on the base of the machine; the EMCO-STAR can then be lifted off the wooden frame and placed on the bench or table.

Unscrew the circular-saw cover with the aid of the tubular box spanner, erect the riving knife, and use the 5/16" dia-25/64" dia. locking pin to secure the saw spindle. Take the M 14 nut, the spherical washer, and the clamping washer off the spindle - the backing washer remains in place.

Fit the circular saw blade (the teeth point in the direction of rotation of the electric motor - see the arrow on the motor), assemble the clamping washer, and the spherical washer on the spindle and tighten up the M 14 nut. Remove 5/16" dia-25/64" dia. locking pin.

Move the riving knife up until it is about 1/8 in. clear of the saw blade and bolt it in place.

Now replace the circular saw cover and secure it. Unscrew the four socket-heat M 6 x 15 screws from the two support segments M 6.00-33 Nut for the circular saw table, M 6.00-33 Nut for one segment, fit the table, and secure by means of the four socket-head screws. Then loosen the second segment and make sure that the table tilts freely. (If the table moves too easily, clamp both segments, loosen the socket-head screws, and tighten them up again with the segments still clamped). Place the table in its central position.

Fit the circular-saw guard in the square hole on the arm and secure by means of the knurled bolt, M 6 x 15.
Make sure the cut-out for the riving knife is correctly located. Place the arm on the circular-saw cover and secure with M 6.00-33 Nuts.

The band-saw table is fitted in the same way as the circular-saw table.

Take the cover plate off the band-saw casing and remove the guard from the guide head.

Fit the band-saw and thesanding belt (see Operating Instructions). Replace the band-saw guard and the cover plate on the casing.

Stick sandpaper to the disc-sanding plate.
Fit the two guide bars into the bench stand and then slide them into the base of the machine and secure. The sanding table is to be mounted on the guide bars.

If desired, the EMCO-STAR can be bolted to the bench.

Fit the earthed plug (note that the green-yellow striped lead is the earth lead).

Read the instructions through carefully before starting to use the machine.

First of all you are to be congratulated on your choice of an EMCO-STAR woodworking machine. You have made a wise decision since the name EMCO is a guarantee of high quality and good design.

When using the Emco-Star either for professional purposes or as a handyman, please always pay attention to the mentioned serving instructions and safety precautions.

ALWAYS USE TOOLS IN PERFECT CONDITION AND PROPERLY SHARPENED.

To familiarise yourself with the Emco-Star, read these instructions through carefully. You will find this of great assistance in showing you the easiest way of using the machine, while it is essential if the fullest use is to be made of its great versatility.

An Emco-Star fitted with all accessories will replace the following separate machines:

Circular saw, band saw, fret saw, jig saw, belt sander, disc sander, box combing, tongue and groove moulder, spindle moulder, lathe, drilling machine, tool grinder, and planer and thicknesser.

In addition, drilling, sanding and polishing can be performed with a flexible shaft.

OVERALL DIMENSIONS OF COMPLETE MACHINE:

Length:	39 3/8"
Width:	27-9/16"
Height:	29-17/32"
Weight:	81 1/2 lbs.

It is advisable to secure the Emco-Star to a bench which should be at least 39 3/8" x 27-9/16".
The height of the bench should be about 25 5/8".

CONNECTION TO POWER SUPPLY

The machine is supplied with the cable ends bare, no plug being fitted. In the case of single phase A.C., the Green lead is to be connected to the earth contact on the plug.

The machine must be plugged into a properly installed earthed socket.

The machine can be powered by either a single-phase or a three-phase A.C. motor:
Stage 1 = 1500 r.p.m. at 0.37 kW (0.5 h.p.)
Stage 2 = 3000 r.p.m. at 0.51 kW (0.7 h.p.)

The arrow on the motor casing shows the correct direction of rotation of the motor. A three-phase motor might rotate in the wrong direction when it is plugged in; if this is the case, two of the phases in the plug will have to be interchanged, i.e. two of the connections will have to be interchanged.

Arrangements should be made to make it impossible for the machine to be started up by unauthorised persons.

MACHINE POSITIONS:

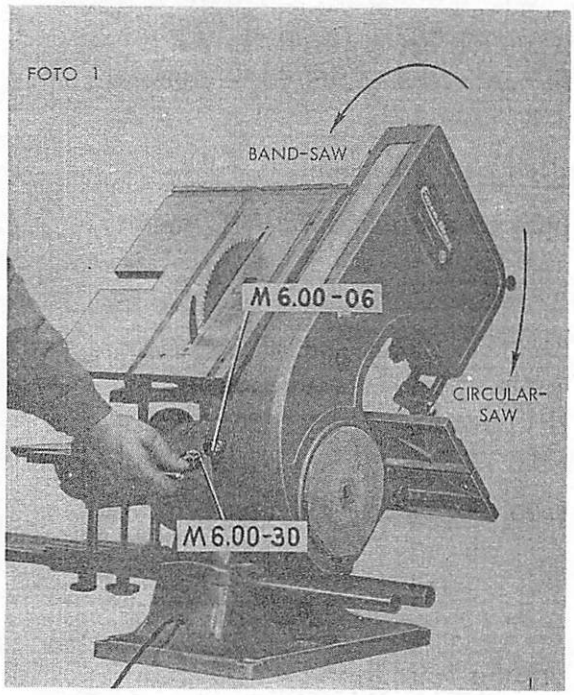
To change the machine over from the "band-saw" to the "circular-saw" position and back (see arrows, Photo 1), it is merely necessary to tilt the machine. Stops limit the travel in both directions. The weight of the machine ensures that it is firm in both positions. Hexagon bolt (M 6.00-06, Photo 1) must be slackened when the machine is tilted.

The machine can also be clamped in any intermediate position by means of bolt M 6.00-06 (Photo 1). It is, for example, advisable to have the machine at an angle of 45° when using it as a spindle moulder.

If the machine is tilted into the "band-saw" position while the circular-saw is running, the clutch will automatically be disengaged. The saw blade will then stop while the motor continues to run. The reverse applies when the machine is tilted the other way.

MACHINE BEARINGS:

All rotating parts are mounted in dust-proof permanently-lubricated ball bearings and require no maintenance. The longitudinally sliding parts of the fret-saw and jig-saw should, however, be lightly oiled at frequent intervals.



ACCESSORIES SUPPLIED WITH BASIC MACHINE

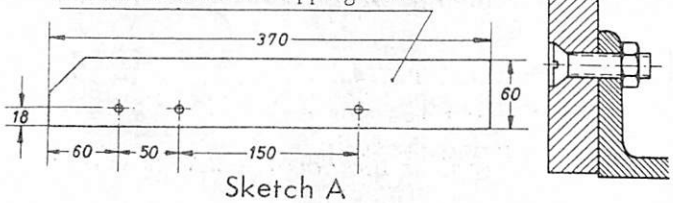
1 circular-saw blade for rip-sawing and cross-cutting
1 band-saw blade for cross-cutting
1 jig-saw blade for wood
1 sanding belt (grit 80)
1 doz. emery papers, fine
1 doz. fret-saw blades for wood
1 tin adhesive

1 tubular box spanner	M 6.00-30
1 Allen key	SW 5 DIN 911
1 locking pin	M 6.00-24

RIPPING FENCE:

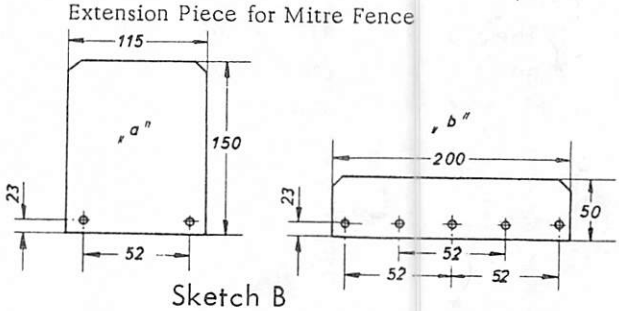
This is used to guide the components on the band-saw and circular-saw tables. To increase the bearing surface (which is often essential), an additional strip can be screwed to the main fence. This can be made of hardwood or hardboard about 5/15" thick. (Sketches A and B) (Drawing) Strip made of hardboard or wood.

Extension Piece for Ripping Fence



Sketch A

Extension Piece for Mitre Fence



Sketch B

EMCO - STAR USED AS A CIRCULAR-SAW

The circular bench saw is the most important woodworking machine. It can be used for rip-sawing, cross-cutting, mitring, grooving, rabbetting, etc.

DESCRIPTION OF PARTS:

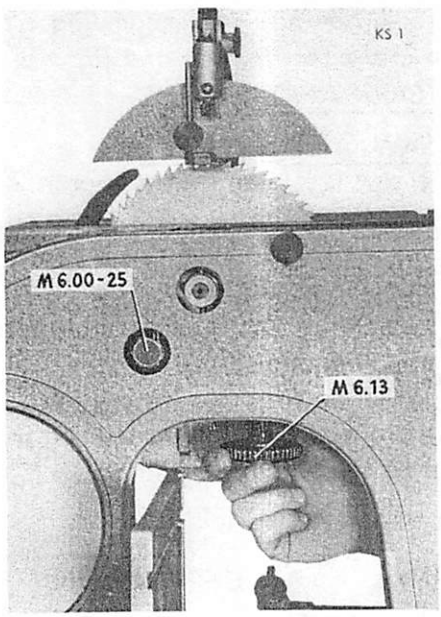
Saw blade	M 60.32
Saw table	M 6.20
Fence	M 6.23
Saw arm	M 6.22
Guard	M 6.19
Riving knife	M 6.00-18

TECHNICAL DATA OF CIRCULAR-SAW:

Saw blade 7 3/8" dia. with 5/8" bore, 3/64" thick,
Coarse-pitch blade for rip-sawing
Medium-pitch blade for rip-sawing and cross-cutting
Fine-pitch blade for cross-cutting

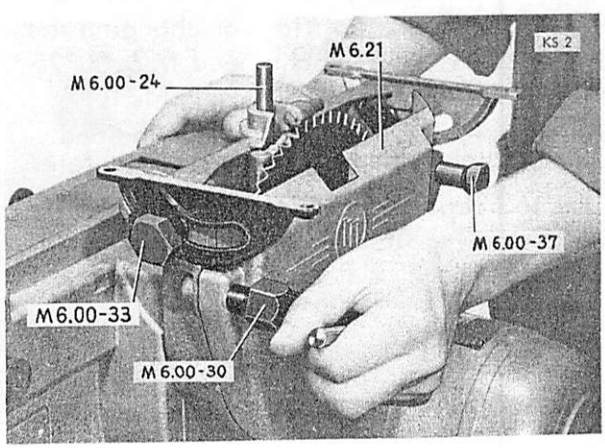
Speed of 1500 r.p.m. produces a cutting speed of 50 ft./sec.
Speed of 3000 r.p.m. produces a cutting speed of 103 ft./sec.

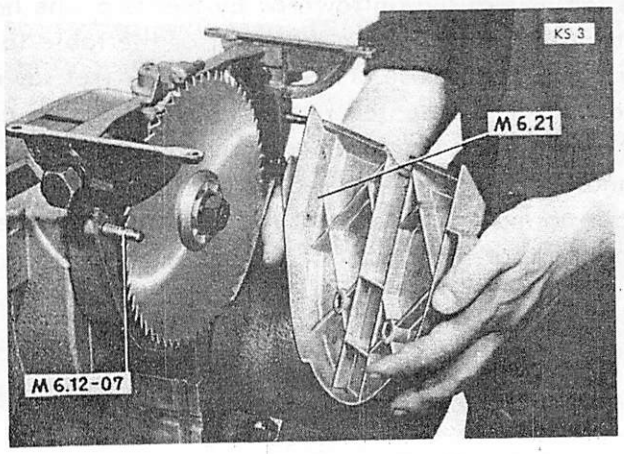
Table size 14 3/4" x 12", table cants up to 45°
Rise and fall of table = 2 3/8"
Max depth of cut: 2-5/32"
Max width of cut without fence limited by saw arm: 7-31/64"
Max width of cut using fence: 6-11/16"
Max width of slot cut by wobble saw: 33/64"

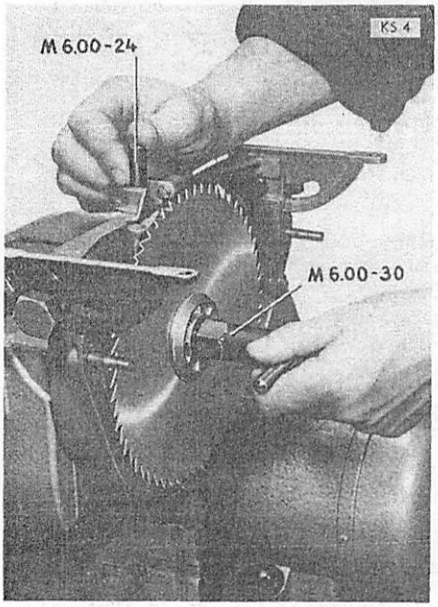


REMOVAL OF CIRCULAR-SAW BLADE:

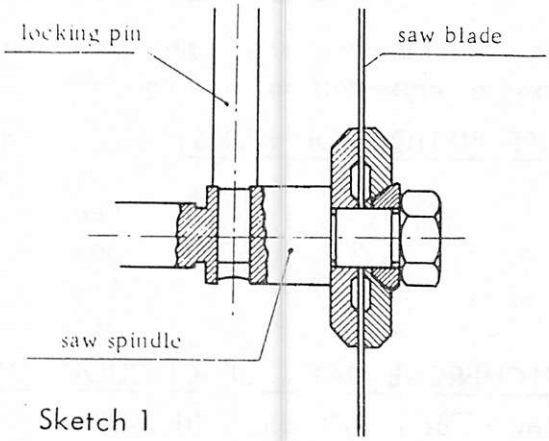
Tilt the machine to the "circular-saw" position.
If the saw blade is to be changed, the table must first be raised to its highest position.
Turning the handwheel M 6.13 (Photo KS 1) clockwise raises the table, while turning the handwheel anti-clockwise lowers the table.
The table will have attained its highest position when noticeable resistance is encountered to rotation of the handwheel.
To illustrate the further operations required when changing the saw blade more clearly (Photo KS 2) shows the circular saw section of the Emco-Star with the saw table removed. First take off the cover plate and saw arm. This is done by unscrewing the two M 6.00-37 nuts by means of the tubular box spanner M 6.00-30; the cover can then be removed (Photo KS 3), and the saw blade is exposed.



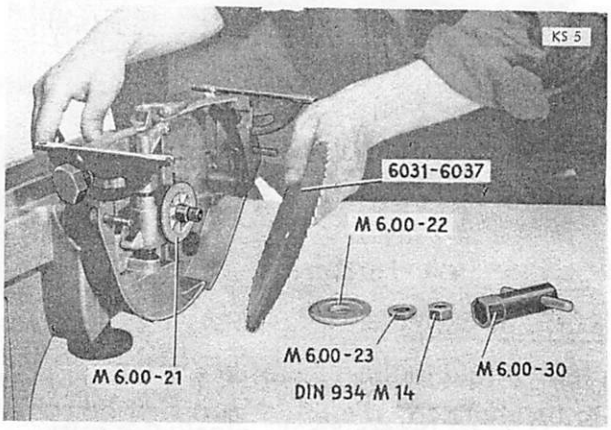




The removal of the nut on the saw spindle is illustrated in Photo KS 4 and Sketch 1. The spindle must first be secured by inserting the locking pin M 6.00-24 from above through a transverse hole in the spindle. The saw blade should be turned by hand until the locking pin can be entered into the hole. The nut can then be unscrewed by means of the box spanner.



Sketch 1

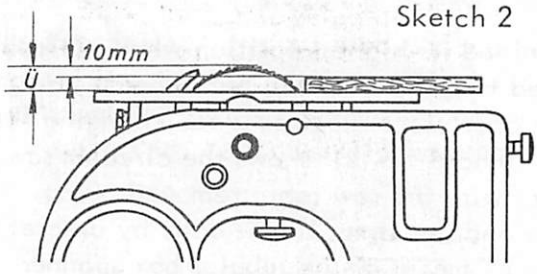


SEQUENCE IN WHICH PARTS ARE REMOVED FROM THE SPINDLE: (Photo KS 5)

1)	Hexagon nut	M 14 DIN 934
2)	Spherical washer	M 6.00-23
3)	Clamping washer	M 6.00-22
4)	Circular saw blade	6031-6037

The backing washer M 6.00-21 on the spindle is removed only if it is to be replaced by the two wobble-saw washers for grooving or box-combing operations, or by the crank for the fret and jig-saw attachments.

Sketch 2



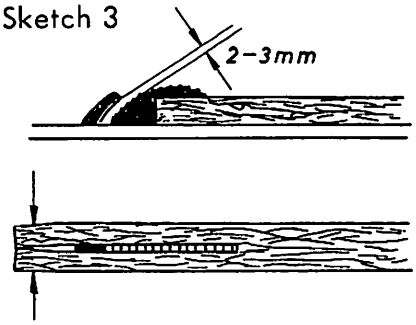
PROJECTION OF SAW AND HEIGHT ADJUSTMENT:

The projection of the saw is illustrated in Sketch 2; it amounts to the thickness of the material to be cut plus 25/64". If, for example, a .590" thick board is to be cut, the projection should amount to .984". This will keep the area of the saw blade in contact with the work to a miminum and so prevent the blade overheating. When cutting uneven plywood sheets a larger blade projection will be required to eliminate the danger of the wood kicking back.

RISE AND FALL OF THE TABLE:

The table is raised an lowered by means of the handwheel M 6.13 (Photo KS 1). This allows the correct blade projection to be set or the table to be raised to its highest position for changing the saw blades or for use of the machine for fret sawing and jig sawing. An hexagon head M 6.00-25 (Photo KS 1) is located in a hole in the casing cover plate above the sanding disc. If this is tightened up by turning it clockwise by means of the box spanner, the table will be locked and cannot be raised or lowered by the handwheel.
Under normal circumstances, however, it will be sufficient to keep this hexagon head moderately tight, so that the height of the table can still be adjusted by turning the handwheel firmly.

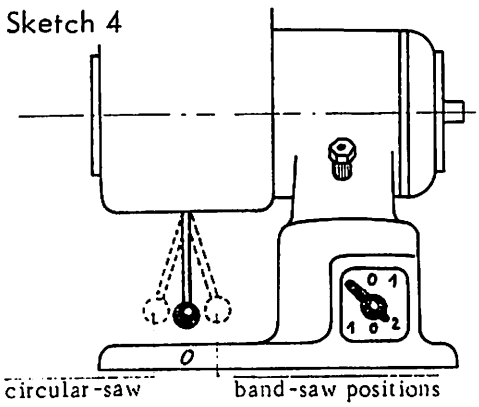
Sketch 3



THE RIVING KNIFE AND ITS ADJUSTMENT:

The riving knife (see adjacent sketch) is an important safety device on a circular saw. It prevents the saw kerf "closing up" which could cause the wood to "kick back". The riving knife will be correctly adjusted when it is 5/64" - 3/32" clear of the tips of the teeth on the saw blade. The riving knife is secured by clamping bolts.
The circular-saw cover plate should be removed to enable the riving knife to be adjusted.

Sketch 4



OPERATING OF THE CIRCULAR SAW:

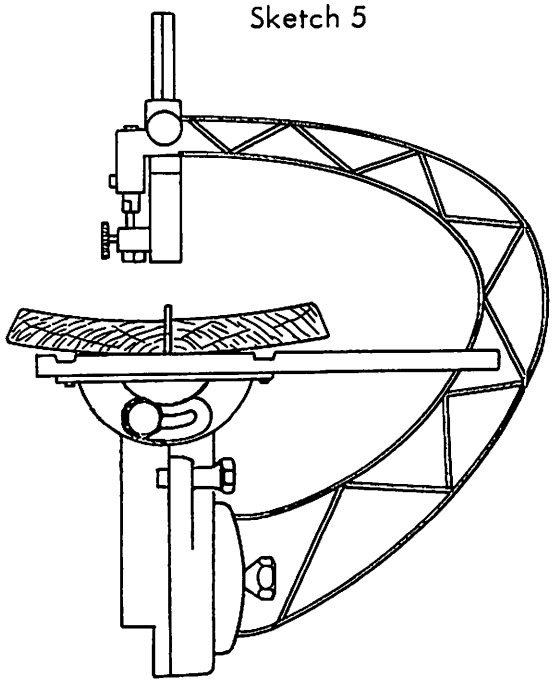
The machine must be tilted to the "circular-saw" position. The ball handle (see sketch) is pulled away from the motor to engage the clutch. The clutch dogs will engage more easily if the sanding disc is turned by hand.
The switch is moved through "Position 1" to "Position 2" (3000 r.p.m.).
The clutch must never be engaged or disengaged while the motor is running.

SAFETY PRECAUTIONS:

1. Always use saw blades in perfect condition and free from cracks (i.e. properly sharpened and set).
2. The saw blade must be firmly clamped on the saw spindle and its teeth must point in the correct direction.
3. The blade projection should be adjusted to suit the thickness of the material to be cut.
4. The riving knife must always be used and should never be removed.
5. The saw guard should always be set as low as possible.
6. The feed should be adapted to suit the material being worked.
7. Loose knots should be knocked out before sawing to avoid the danger of the wood kicking back.

HINTS FOR USE OF THE CIRCULAR SAW:

Sketch 5



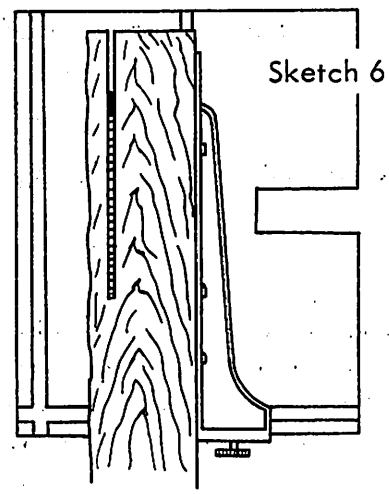
RIP-SAWING WITHOUT A FENCE:

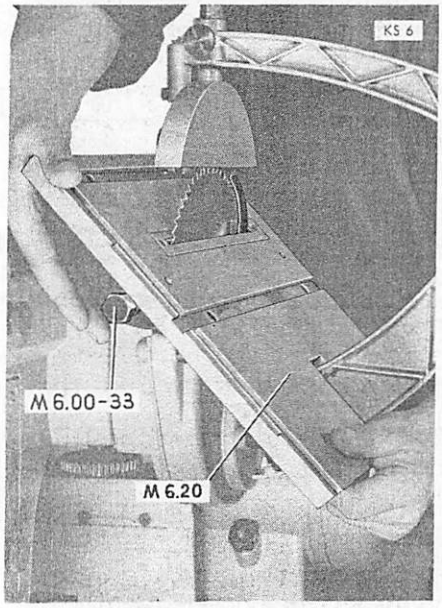
The coarse-tooth blade should be used for rip-sawing. To prevent the wood binding on the saw, a curved piece must be laid with the convex side resting on the table. The cut pieces will then fall away from the blade (Sketch 5).

RIP-SAWING WITH FENCE:

Material can be cut accurately to width only if one edge is first trued up (Sketch 6). The fence is then set to the required dimension as shown on the scale marked on the saw table (Sketch 6).

Sketch 6

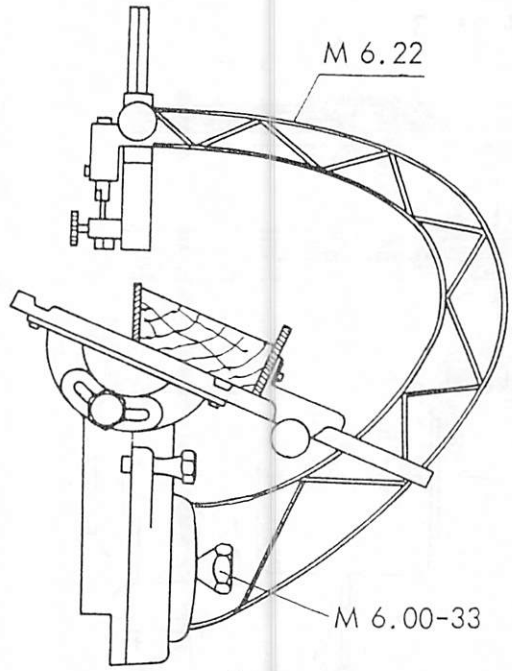




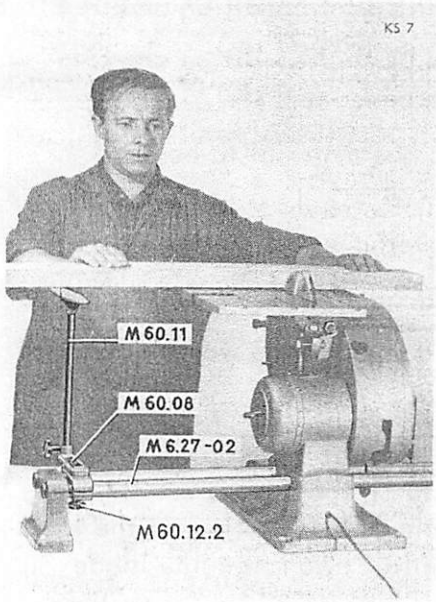
RIP-SAWING WITH TABLE CANTED:

The circular-saw table (Sketch 7 and Photo KS 6) can be canted up to 45°. This enables bevel cuts to be made even on long components. To cant the table, loosen the two M 6.00-33 nuts; the table can then be canted to the desired angle as indicated by the protractor on the segment.

Before each cut make sure that the two M 6.00-33 nuts are firmly tightened up (table might tilt).



Sketch 7



CROSS-CUTTING LONG ITEMS:

The medium-pitch saw blade should be used for cross cutting. The support M 60.11 is fitted in its holder (Photo KS 7) and set to the same height as the saw table.

The support M 60.11 can then be pushed to the end of the guide bars M 6.27-02 (i.e. hard over to the right) and secured in place by tightening up the wing nut M 60.12-2.

The saw arm M 6.22 should be removed by unscrewing the two nuts M 6.00-33, for cross-cutting long components.

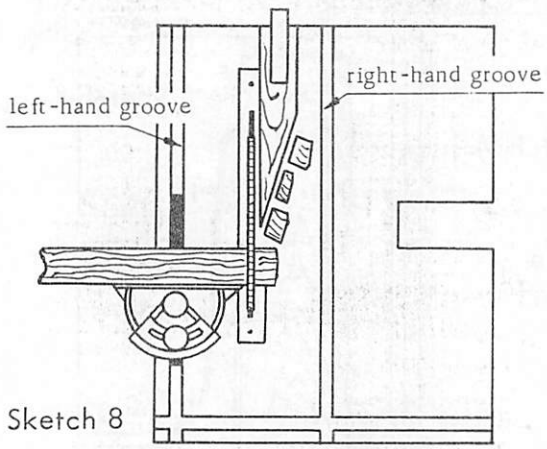
CROSS-CUTTING SHORT ITEMS:

It is possible to cut off pieces at the required angle only if the mitre fence is used. The component should be held hard up against the mitre fence (Sketch 8).

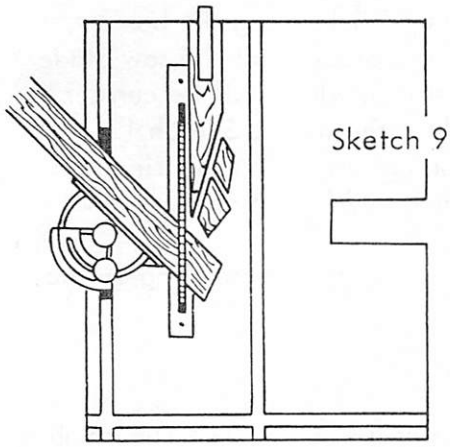
For cutting off long pieces of wood or to support the wood more firmly is may be desirable to fit the mitre fence in the right-hand groove.

In this case, the saw arm must first be removed.

If a large number of pieces are to be cut off it is advisable to fit a deflector wedge to the table. This then deflects the offcuts away from the saw blade and prevents them being thrown back (see Sketch 8).



Sketch 8



Sketch 9

MITRE CUTTING:

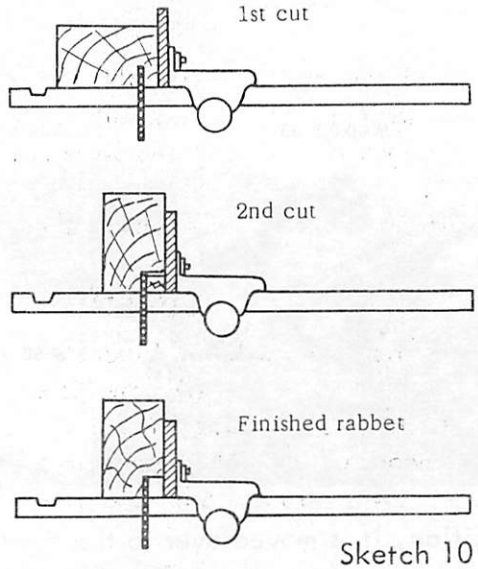
The circular saw is especially suitable for cutting mitres in flat frame members (see Sketch). The mitre fence, against which the wood is held, must first be set to the required angle.
If many mitre cuts are to be made, a deflector should be fitted.

RABBETING ON THE CIRCULAR-SAW:

For rabbeting, the ripping fence should be fitted with an extension to its bearing surface (Sketch A).
A slow feed must be employed, since the saw dust cannot be thrown out over the top of the component. Sketch 10 shows the operations involved in rabbeting on the circular saw.

GROOVING ON THE CIRCULAR SAW:

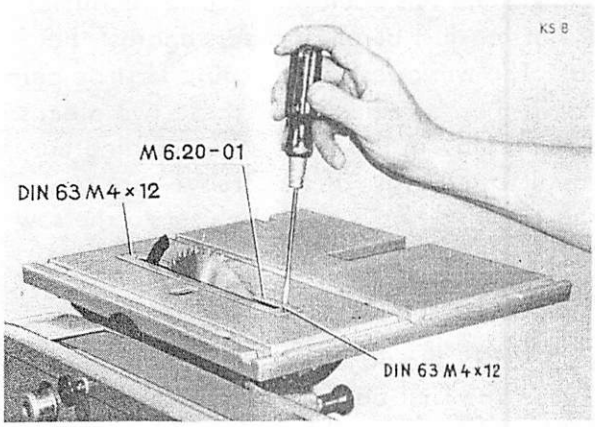
The circular saw can be used as a wobble saw if the saw blade is canted on the spindle by means of the two wobble-saw washers.



Sketch 10

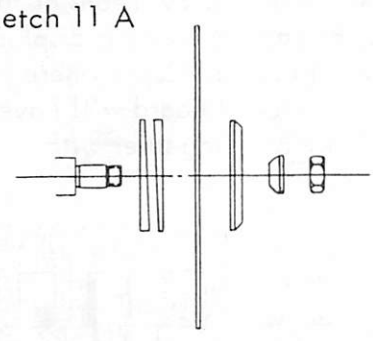
FITTING THE CIRCULAR SAW BLADE WITH WOBBLE ATTACHMENTS:

1. Remove the table insert M 6.20-01 by unscrewing the two countersunk screws DIN 63 M 4 x 12 (Photo KS 8 and KS 9).
2. Remove the saw arm and the circular saw cover plate (see "Fitting and removing circular-saw blade").
3. The saw blade and the backing washer on the spindle are removed.



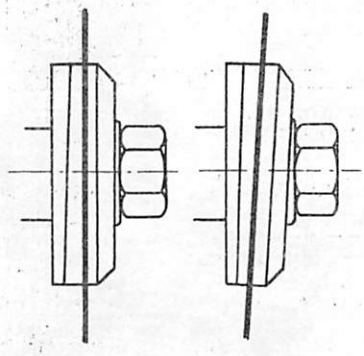
4. The two wobble-saw washers are placed on the spindle in place of the backing washer.
5. Fit the saw blade, the clamping washer, the spherical washer, and the hexagon nut, which should be tightened up only hand-tight (Sketch 11 A) .
6. Now adjust the relative positions of the two tapered wobble-saw washers until the saw blade is at the desired angle.

Sketch 11 A

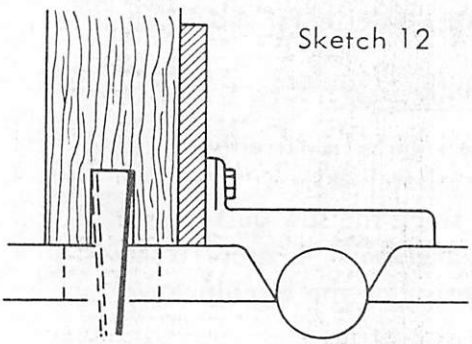


The left-hand illustration in Sketch 11 shows the blade set to the minimum angle for wobble-saw work, while the right-hand illustration shows it at the maximum angle. If the full available adjustment is utilised a groove width of 0.511" is obtainable.

Sketch 11



When the saw blade has been correctly adjusted, the nut is tightened up firmly using the box spanner while the spindle is held by the locking pin. For grooving, the projection of the saw blade above the table should be equal to the desired depth of groove. The groove width will be correct if it is about one-third the width of the wood. Sketch 12 shows the component and the ripping fence. The bearing surface of the fence has been extended by fitting an additional strip to it.



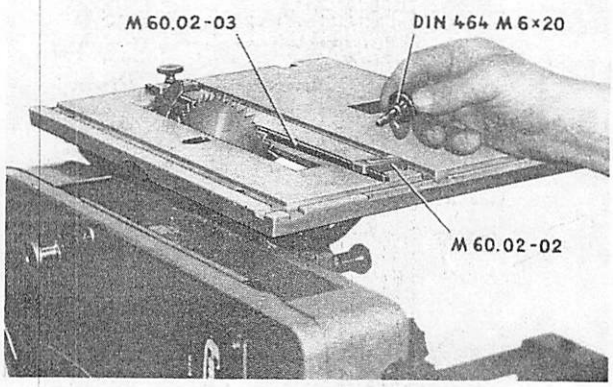
Sketch 12

A medium-pitch saw blade should be used for grooving on the circular saw.

MAKING A COMBED JOINT:

The circular saw should be set up as a wobble saw. The combing attachment is fitted to the saw table. The combing bar is secured to the table by two clamping dogs and two knurled bolts (Photo KS 10). The slotted holes in the clamping dogs enable the clearance between the saw blade and the combing bar to be adjusted.

KS 9



Combing is carried out as follows:

The height of the circurlar saw table is adjusted by means of the handwheel until the projection of the saw blade corresponds exactly to the thickness of the boards being combed.

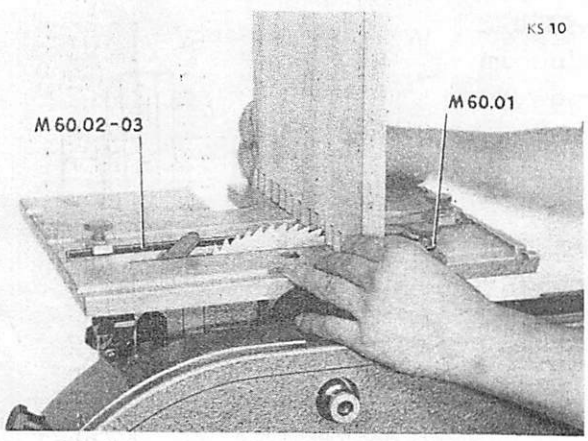
The component is then slowly pushed against the circular saw while it is held against the mitre fence and its edge runs along the combing bar (Photo KS 11).

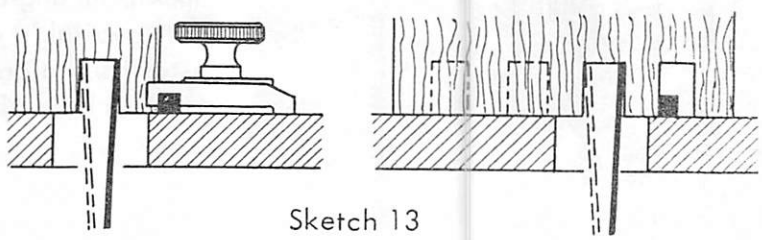
After the component has been returned to its initial position, it is moved over to the right, so that the groove that has just been cut bears against the combing bar (see Sketch 13). The second groove is then cut. The work described should first be performed on two short sample pieces of wood. An attempt should then be made to fit these two pieces together. If the grooves are too wide, so that there is too much play in the joint, the combing bar should be moved away from the saw blade by an amount equal to the play. If the grooves are too narrow, so that the pins will not enter into the grooves, the combing bar is moved closer to the saw blade which reduces the width of the pins.

When the combing bar has been adjusted a further set of grooves is cut in the sample pieces of wood and checked.

Not until the combed joint made in the sample pieces fits perfectly should a start be made on machining the actual components. When the grooves have been cut in the first board, reverse it, and hold it with the first groove against the combing bar; the second board is then held against the edge of the first and fed into the circular saw by means of the mitre fence. In this way, the second board is displaced by the width of one groove. In other words, where the first board has a pin, the second board will have a groove, and the two will then fit together with flush edges.

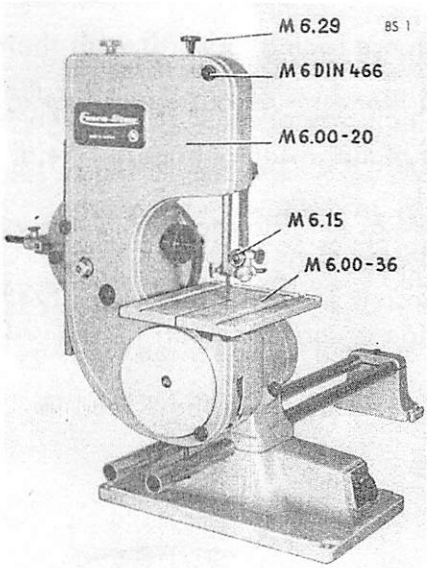
KS 10





Sketch 13

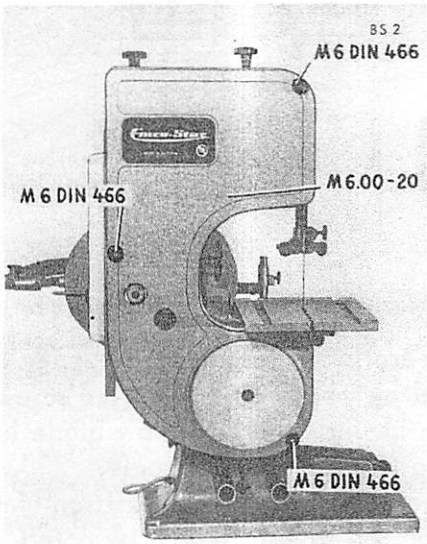
EMCO - STAR USED AS A BAND-SAW



DESCRIPTION OF PARTS: (Photo BS 1)

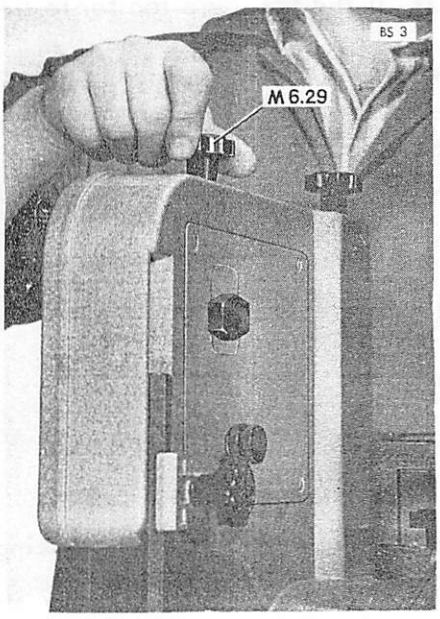
Star knob for adjusting blade tension	M 6.29
Knurled nut	M 6 DIN 466
Cover plate	M 6.00-20
Guide head	M 6.15
Band-saw table	M 6.00-36

The material is cut by means of an endless steel band provided with saw teeth.
The material is fed through the saw by hand.
The band-saw is suitable for rip-sawing, cross-cutting, and mitre cutting. With a narrow band-saw blade it is also possible to cut circles and curved lines.
Slots and tenons can easily be cut with the aid of the adjustable parallel fence M 6.23.



TECHNICAL DATA OF BAND-SAW:

Saw blade 55.14" long, 1/64" thick, .390" - .590" wide.
For rip-sawing a gap-tooth saw blade .590" wide is most suitable.
For cross-cutting a gap-tooth fine-pitch saw blade 0.59" wide is most suitable.
For cutting curves the most suitable blade is one with normal teeth .236" - .390" wide.
Wheel diameter 6 7/8".
A speed of 1500 r.p.m. produces a cutting speed of 45 ft./sec.
A speed of 3000 r.p.m. produces a cutting speed of 90 ft./sec.
Table size 9-27/32" x 7 7/8", table cants up to 45°.
Maximum depth of cut: 4-23/32".
Maximum width of cut without fence: 5-29/32".
Maximum width of cut with fence: 2-5/32".



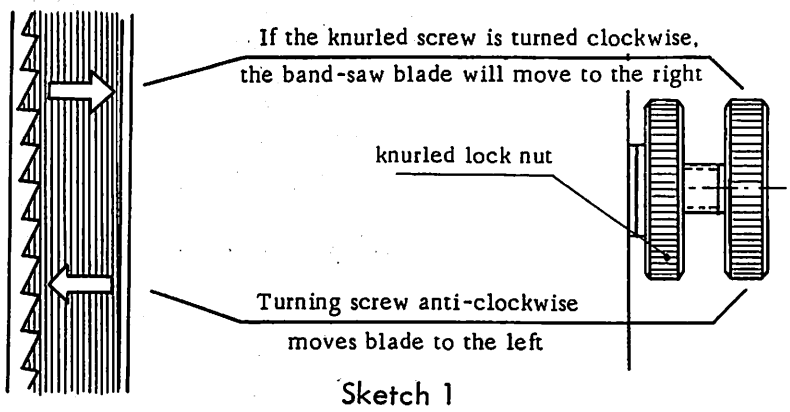
FITTING AND REMOVING BAND-SAW BLADE:

Removal:

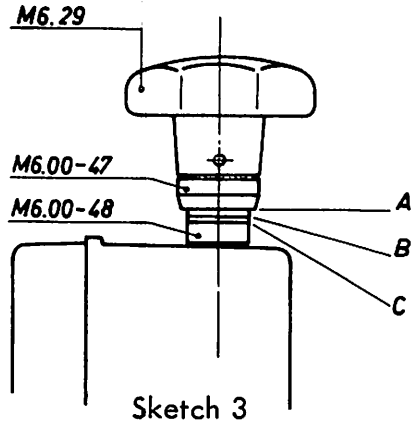
1. The three knurled nuts M 6 DIN 466 (Photo B 52) are unscrewed by hand, and the cover plate M 6.00-20 is then lifted off the studs. It may be necessary to pull the pins on the lower band-saw guide apart before the cover plate is removed. This can be done if the two knurled bolts M 6 x 15 DIN 464 are slackened off (Photo BS 5).
2. The knurled bolts M 6 x 15 DIN 653 on the guide head M 6.15 (upper band-saw guide) (Photo BS 4) must be slackened off and the pins M 6.15-01 pulled apart. The band-saw guard can then be simply pulled out of the guide head.
3. By means of the regulating screw M 6.29 (Photo BS 3) it is possible to reduce the blade tension.
4. The saw blade is then carefully pulled off the wheels through the slot in the table.

Fitting:

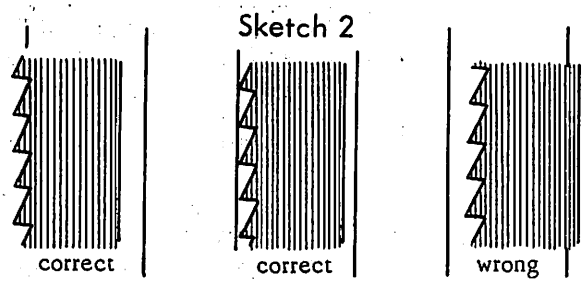
1. Place the saw blade on the wheels in such a way that the teeth are facing forwards with their tips pointing downwards onto the table.
   If the saw blade unwinds with the teeth wrongly positioned (which may occur if it has been turned inside out in its box while it is being packed), turn the blade inside out again like a stocking.
2. Adjust the blade tension by turning right the regulating screw M 6.29. The regulating screw will fall and reach with its metal ring M 6.00-47 the two marks on the lower spring tube M 6.00-48. When reaching the upper mark (A-B) the blade tension is correct for blades 1/4" and 3/8" wide. When reaching the lower mark (A-C) the tension is correct for all blades wider than 3/8". (Sketch 3).
   Note: Both excessive and insufficient blade tensions must be avoided, since these lead to early rupture of the blade.



Sketch 1



Sketch 3



Sketch 2

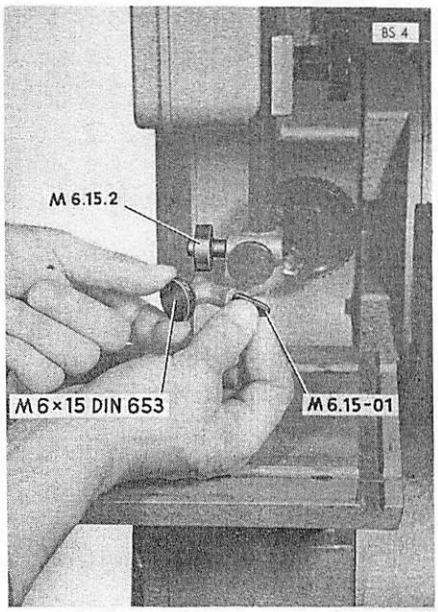
3. The next operation is to adjust the upper guide wheel by means of the knurled screw (see Sketch 1) until the band-saw blade is correctly positioned on the wheels.
   Sketch 2 indicates the correct position of the saw blade on the wheel. It will be noted that the tips of the teeth can project beyond the edge of the wheel or at least must be flush with it. If the teeth are too far to the rear, the wheels and the tips of the teeth will be damaged.
   The adjustment of the band-saw blade will be simplified if the upper wheel is turned over by hand. As soon as the blade is correctly positioned on the wheels, tighten up the knurled lock nut to secure the knurled screw. Replace blade guard and locate onto pins M 6.15-01.
4. Replace the cover plate and secure by means of the three knurled nuts.

THE BAND-SAW GUIDE:

The band-saw guide is in two parts, namely upper and lower, and is of great importance in ensuring accurate cutting.
The two pairs of guide pins prevent the saw blade moving sideways.

ADJUSTMENT OF UPPER BAND-SAW GUIDE:

1. Loosen the two knurled screws (Photo BS 4, left hand).
2. Now push the guide pins (Photo BS 4, right hand) towards the saw blade until they are making light contact. A slight rubbing noise may be heard when the band-saw is connected to the motor spindle (clutch engaged).

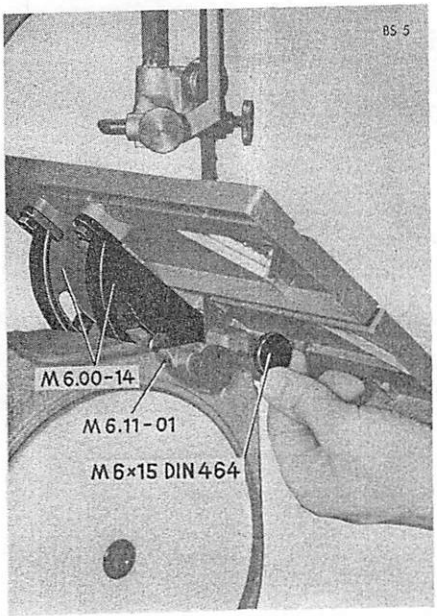


3. When the adjustment has been completed, tighten up the two knurled screws.
4. The back thrust wheel M 6.15-2 supports the saw blade against the feed pressure. The knurled screw is loosened, and the back thrust wheel is moved against the back of the saw blade in a way, that there is a distance of 1/52". Then tighten up the knurled screw to secure the back thrust wheel.

ADJUSTMENT OF LOWER BAND-SAW GUIDE:

The adjustment is made as follows:

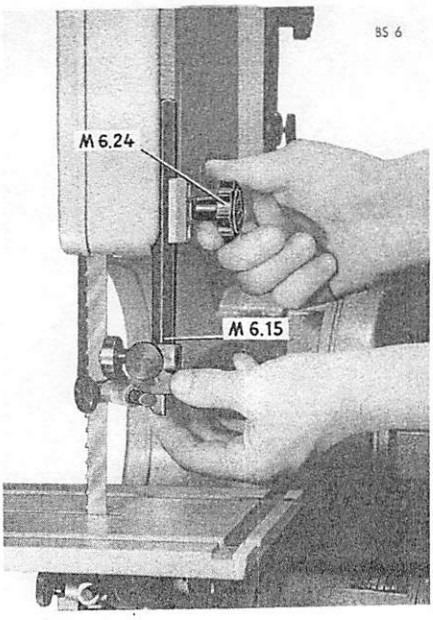
1. The two knurled screws M 6 x 15 DIN 464 are slackened (Photo BS 5).
2. The guide pins are then moved towards the saw blade until they are just touching it.
3. When the adjustment has been completed, tighten up both knurled screws.



ADJUSTMENT OF HEIGHT OF GUIDE HEAD M 6.15

(Photo BS 6)

To improve the cutting performance and also as a safety precaution the guide head should be set as low as possible. It is most satisfactory if the bottom of the guide head rests gently on top of the component being cut.
To adjust the height of the guide head, loosen the star knob M 6.24 with the right hand and raise or lower the guide head with the left hand. When the guide has been correctly positioned, tighten the star knob up again.



OPERATION OF THE BAND-SAW:

1. The machine must be tilted to the "band-saw" position. Otherwise the clutch for the band-saw cannot be engaged.
2. Push the clutch lever (Sketch 4, Circular saw section) towards the motor; turning the sanding disc by hand considerably simplifies the engagement of the clutch.
3. Check the blade tension and the location of the band-saw guides by turning the band-saw round manually by means of the sanding disc.
4. Switch on motor.
   Hard materials require a low speed (1500 r.p.m.) and slow feed - switch position 1.
   Soft materials can be machined at increased speed (3000 r.p.m.) and with a faster feed - switch position 2.
5. If work is stopped for any appreciable time the saw blade tension should be relaxed. Re-tension before using as Fitting Note 2.

SAFETY PRECAUTIONS:

1. Always use a saw blade that has been properly sharpened and set.
2. Check blade tension before switching on - see Fitting Note 2.
3. Set the upper blade guide as low as possible.
4. Do not use cracked saw blades; these can be recognised by the regular knocking noise they emit.

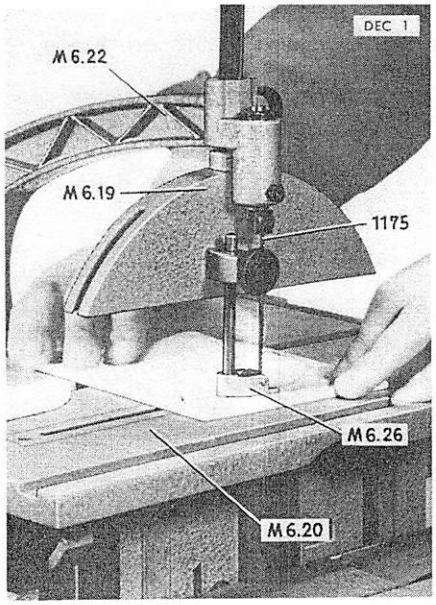
POSSIBLE USES OF THE BAND-SAW:

Most work on the band-saw will be performed with the table horizontal. If a bevel cut is to be made, however, the table should be canted the appropriate amount (Photo BS 5). If the hexagon nut M 6.10-33 is loosened, the table can be canted up to 45° in one direction. A protractor scale simplifies the adjustment of the table. When the table has been correctly positioned, tighten up the hexagon nut again.

Other band-saw operations include cutting to length, rip-sawing, mitring, slotting and cutting curves.

It is advisable to use the rip-sawing fence for rip-sawing and slotting. For cutting to length and mitring use the mitre gauge.
Here again, the fence can be provided with extensions. (As extension for Mitre Fence).

EMCO - STAR USED AS A FRET SAW



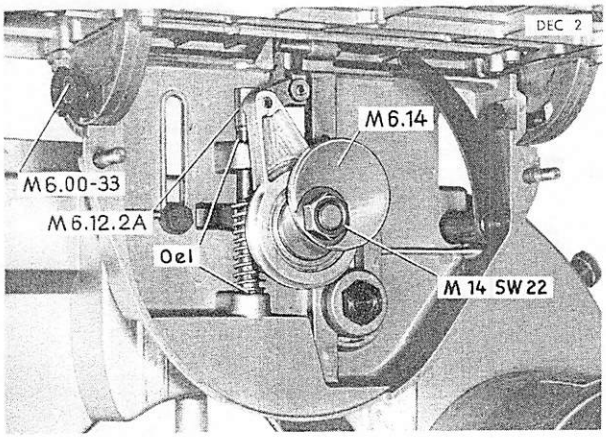
The fret-saw is used for marquetry work, for cutting small-radius curves, for cutting out figures, and similar operations.

DESCRIPTION OF PARTS (Photo DEC 1)

Fret-saw blade	1175
Holder-down	M 6.26
Saw guard	M 6.19
Saw arm	M 6.22
Saw table	M 6.20

TECHNICAL DATA OF FRET-SAW

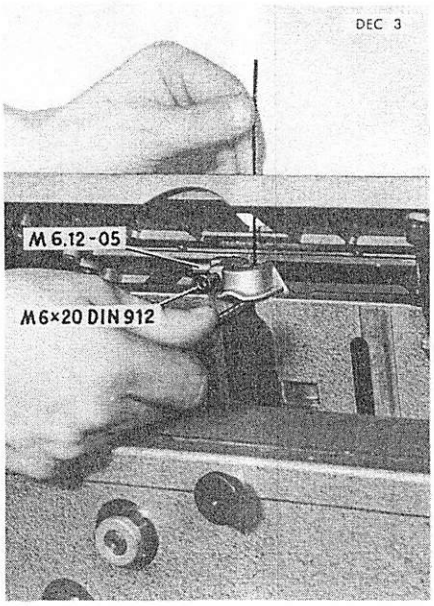
Saw blade width	.078"
Saw stroke	.510"
Speed	1500 r.p.m.
Table size	14 3/4" x 12"

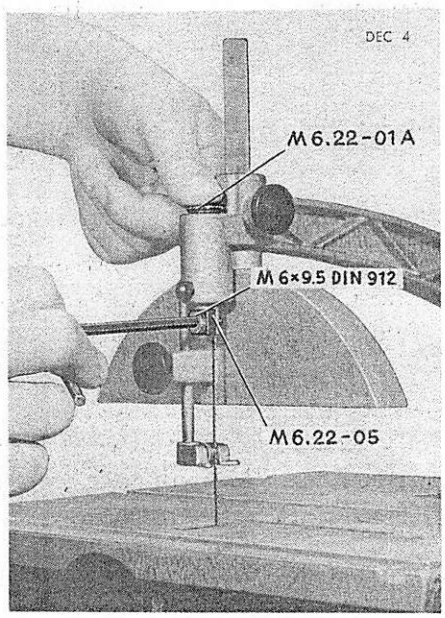


TO FIT SAW BLADE:

Tilt the machine to the "circular-saw" position.

1. The saw guard M 6.19 (Photo DEC 1) is raised to its highest position and secured by means of the knurled screw.
2. The circular saw table is raised as far as the stop permits. To prevent the table jamming in its highest position, turn the handwheel back half a turn.
3. The circular-saw cover plate and saw arm are removed after the two nuts M 6.00-37 have been unscrewed. Now use the locking pin to hold the circular-saw spindle, and remove the saw blade and all the washers (see section on circular-saw). The crank M 6.14 (Photo DEC 2) which is part of the equipment supplied with the basic machine, is fitted over the saw spindle in such a way that the 1/4" steel pin on its end engages in the hole in the reciprocating rod M 6.12.2A. Now secure the crank to prevent it rotating by tightening up the M 14 hexagon nut by means of the tubular box spanner M 6.00-30 (Photo DEC 2). It is then advisable to rotate the circular-saw spindle by hand a few times to make sure that the saw stroking mechanism is working correctly. While the cover plate is removed it is advisable to oil the two bushes in which the reciprocating rod slides before starting work. Now replace the secure the cover plate and saw arm.



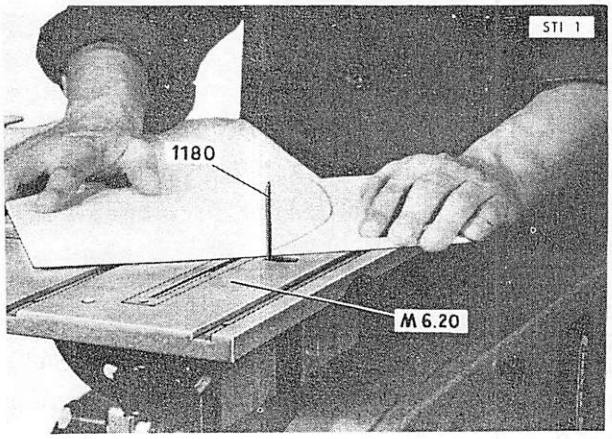


4. Loosen the two nuts M 6.00-33 under the circular saw table and cant the table to an angle of 45° (Photo DEC 3).
5. This simplifies the insertion of the saw blade. The bottom end of the fret-saw blade is first clamped in the reciprocating rod where it is held by a clamping and a socket-head screw (Photo DEC 3). The stop pin M 6.12-05 (brass) is pushed gently against the back of the saw blade and secured by the socket-head screw M 6 x 20 DIN 912.
6. The circular-saw table is returned to the horizontal position and held by means of the nuts M 6.00-33.
7. Fix the top end of the fret-saw blade in the spring-loaded rod by pushing the rod M 6.22-01 down with the thumb of the left hand until the upper end of the saw blade bears against the recess in the rod (Photo DEC 4). Screw up the clamping screw with the right hand.
8. Adjust the holder-down M6.26 and backing roller to the thickness of the material and secure by means of the knurled screw. The material must pass easily beneath the holder-down.

OPERATION OF THE FRET-SAW:

1. Tilt the machine to the "circular-saw" position.
2. See preceding paragraphs for instructions on fitting crank and saw blade.
3. Check tension of saw blade and position of holder-down.
4. Pull clutch lever away from motor, rotating sanding disc until clutch engages (Sketch 4. Circular Saw section).
5. Lightly oil the reciprocating parts of the fret saw at frequent intervals.
6. Turn motor switch to position 1 (1500 r.p.m.)

EMCO - STAR USED AS A JIG SAW



DESCRIPTIONS OF PARTS:

Jig-saw blade for wood	1180
Circular-saw table	M 6.20

The jig-saw can be used for straight and curved cuts and for making cut-outs even in large panels (Photo ST 1).

TECHNICAL DATA OF JIG-SAW:

Saw stroke	.510"
Speed	1500 r.p.m.
Table size	14 3/4" x 12"
Saw blades: wood	coarse-pitch teeth
plastics	medium-pitch teeth

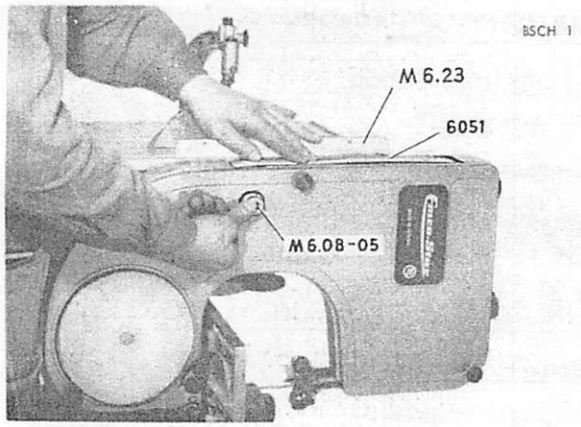
TO FIT SAW BLADE:

1. First remove the saw arm. To do this, unscrew the two nuts and remove the saw arm and guard.
2. Raise the saw table as far as the stop permits and then fit the crank as described in section 3 of the instructions for the fret-saw. The circular-saw table is then again canted 45°.
3. With the table canted 45° fitting the saw blade becomes a simple matter. The blade is clamped between the reciprocating rod and the clamping plate by means of the socket-head screw (as for the fret-saw). Make sure the blade is vertical.
4. A brass stop pin is fitted to support the jig-saw blade in such a way that the back of the blade enters the slot in the pin and bears gently against the pin. Secure the pin in this position by means of the socket-head screw.
5. The circular-saw table is returned to the horizontal position and secured by means of the two nuts M 6.00-33.

OPERATION OF THE JIG-SAW:

1. Tilt the machine to the "circular-saw" position.
2. If large components are to be handled, fit the support M 60.11 and set to the same height as the table.
3. See preceding paragraphs for instructions on fitting saw blade.
4. Pull clutch lever away from motor, rotating sanding disc until clutch engages.
5. Turn motor switch to position 1 (1500 r.p.m.)
6. Lightly oil the reciprocating parts of the jig-saw at frequent intervals.

EMCO - STAR USED AS A BELT SANDER



DESCRIPTION OF PARTS:

Sanding belt	6051
Clutch	M 6.08-05
Fence	M 6.23

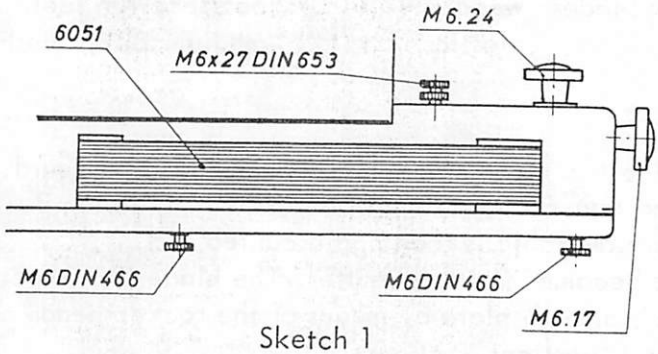
The belt sanding attachment provides an excellent means of smoothing all surfaces on small components that have been cut by the circular saw or band-saw (Photo BSCH 1).

TECHNICAL DATA OF BELT-SANDING ATTACHMENT:

Sanding belt 31 7/8" long, endless, 1-37/64" wide

Grit 100	Fine
Grit 80	Medium
Grit 60	Coarse
Pulley diameter	3-35/64"

At 1500 r.p.m. the belt speed is 23 ft./sec., and at 3000 r.p.m. 46 ft./sec.



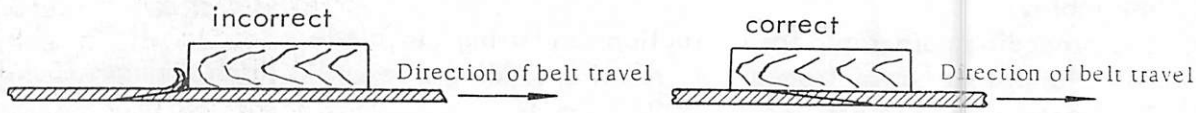
Sketch 1

FITTING AND REMOVING SANDING BELT (Sketch 1)

Removal

1. Unscrew the three knurled nuts M 6 DIN 466 by hand so that the cover plate can be removed from the studs.
2. Slightly loosen the star knob M 6.24.
3. Relieve sanding belt tension by turning regulating screw M 6.17 anti-clockwise.
4. The sanding belt can now be removed from the pulleys.

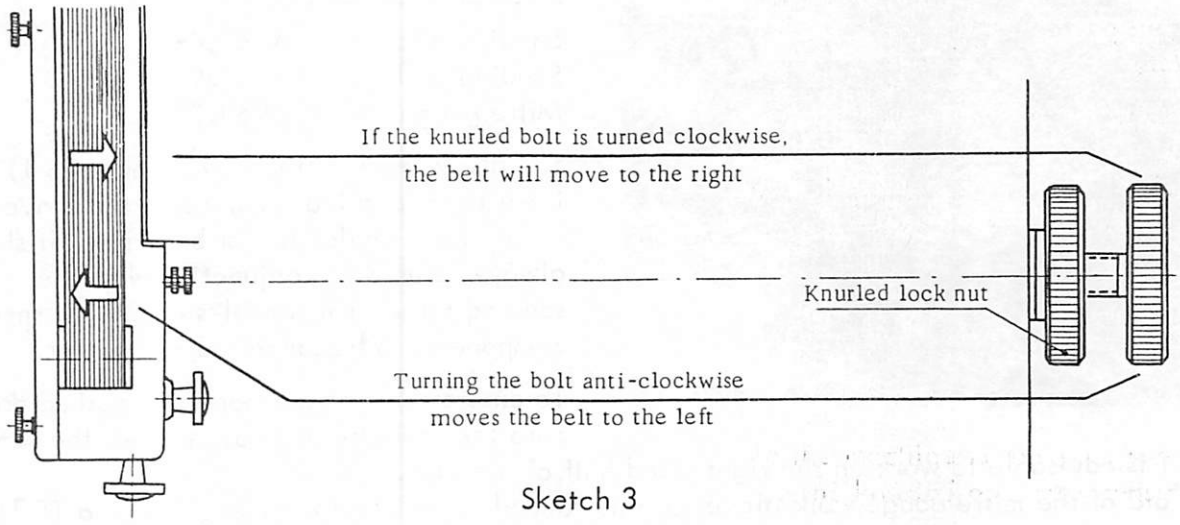
Fitting



Sketch 2

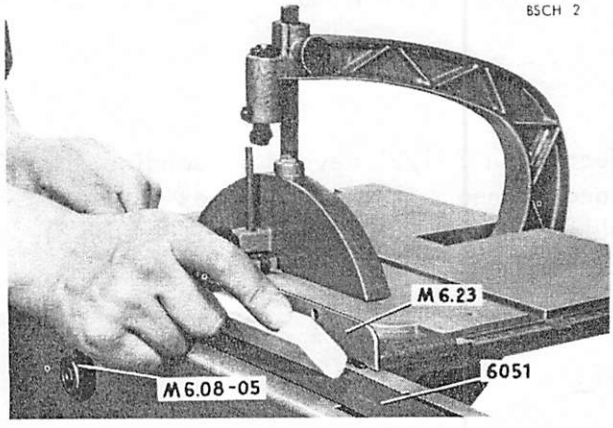
1. The sanding belt is placed on the two pulleys, attention being paid to the direction in which the belt joint faces (see Sketch 2). If the belt is fitted the wrong way round the joint will inevitably tear.
2. The tension of the belt is adjusted by means of the regulating screw (Sketch 1, M 6.17 - right hand) until the belt can still be deflected about 25/64" by finger pressure.
3. To maintain the belt tension at this value the regulating screw must be locked by means of the star knob (Sketch 1, M 6.24 - left hand). This star knob should not be slackened off more than is necessary to enable the regulating screw to be adjusted conveniently.
4. The sanding belt must not rub against either the casing or the cover plate. It must therefore be adjusted to ensure that it runs centrally on the pulleys. This adjustment is effected by means of the M 6 x 27 DIN 653 knurled bolt situated to the right of the star knob (see Sketch 1 and Sketch 3).

5. Replace the cover plate and secure with the three knurled nuts.
6. The belt can be adjusted to run centrally very easily while the machine is running, see Sketch 3. When the adjustment has been completed, secure the knurled bolt by means of the knurled lock nut.



Sketch 3

7. For sanding the narrow sides of components it is advisable to set the circular saw table about 3/8" - 19/32" higher than the sanding belt, and to move the circular-saw rip fence over until it overlaps the sanding belt by 1/16" - 1/8". This then provides a support for the components during belt sanding (Photo BSCH 2).



BSCH 2

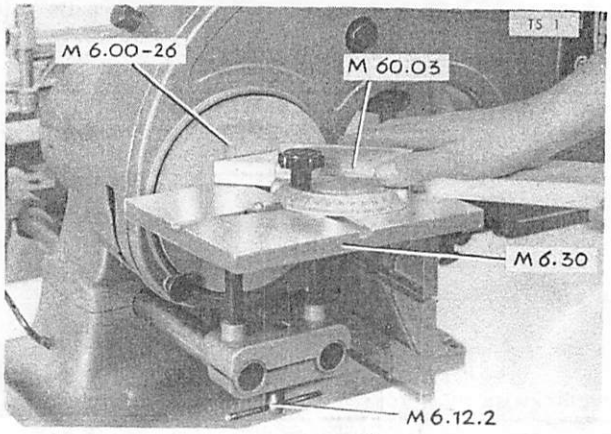
OPERATION OF THE BELT SANDING ATTACHMENT:

1. Tilt the machine to the "circular-saw" position and cover the saw blade completely with the saw guard (Photo BSCH 2).
2. The circular saw table is raised as far as the stop permits. To prevent the table jamming in its highest position, turn the handwheel back half a turn.
3. Pull clutch lever away from motor, rotating sanding disc until clutch engages.
4. Engage clutch M 6.08-05 for belt driving pulley (Photo BSCH 1). This is done by pressing in the clutch button with the right thumb while the left hand pulls the belt round; pulling the belt makes clutch engagement easier.
5. Check belt tension.
6. Check that belt is running centrally by turning sanding disc.
7. Turn motor switch to position 2.
8. On the completion of sanding, disengage the clutch M 6.08-05.

SAFETY PRECAUTIONS:

1. The circular-saw guard must be touching the table.
2. Make sure that the sanding-belt joint is pointing in the correct direction.
3. Hold the component firmly during sanding.
4. Do not use torn belts.
5. Very small components should preferably not be sanded on the belt sander, but on the disc sander using the sanding table.

EMCO - STAR USED AS A DISC SANDER



DESCRIPTION OF PARTS:

Sanding disc	M 6.00-26
Sanding table	M 6.30
Mitre gauge	M 60.03

The disc sanding attachment (Photo TS 1) is ideal for smoothing all surfaces that have been cut by the circular saw or band saw. It should always be used in conjunction with the sanding table. This enables even very small components to be sanded satisfactorily.

To ensure that the component is pushed down onto the table by the movement of the sanding disc it is advisable to work on the right-hand half of the disc.
With aid of the mitre gauge work pieces can be sanded as desired in any angle (Photo TS 1).

TECHNICAL DATA OF DISC SANDING ATTACHMENT:

Sanding disc = 6 7/8" dia.
Abrasive paper: Grit 100 - fine
Grit 80 - medium
Grit 60 - coarse

The abrasive paper is secured to the sanding disc by adhesive.
Speed of rotation: 1500 r.p.m. for hardwood or 3000 r.p.m. for softwood.
Table size 7" x 8 5/7".

FITTING THE SANDING TABLE:

1. Adjust the guide columns so that their ends project about 3 1/2" beyond the sanding disc. To adjust the guide columns, the nut must be loosened by means of the tubular box spanner M 6.00-30 and tightened up again when the columns are correctly located (Photo DRE 3).
2. Now the sanding table can be fixed on the guide bars in a way, that there is a distance between the front edge of table and the sanding disc paper of 1/20".

OPERATION OF DISC SANDING ATTACHMENT:

1. Tilt the machine to the "circular saw" position.
2. Check that the guide columns and the sanding table are correctly positioned.
3. Place the clutch lever in the "0" position. (Sketch 4 Circular Saw Section).
4. Switch on motor, speed 1 or 2.

INSTRUCTIONS FOR FIXING THE EMERY PAPER:

The abrasive paper is fixed to the sanding disc by means of a contact adhesive. This adhesive is available in tins ready for use. Always keep the lids of the tins tightly closed.

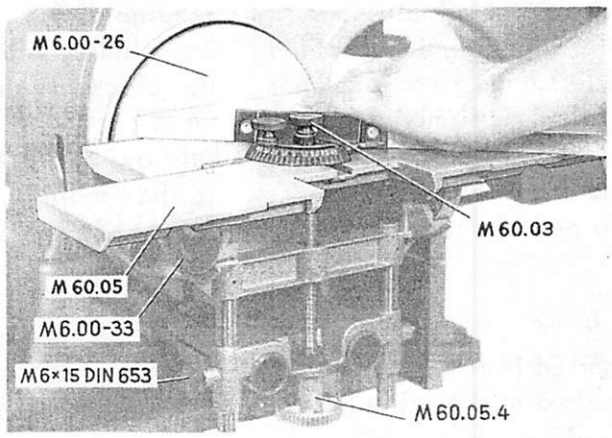
TO FIX EMERY PAPER:

1. Remove sanding disc.
   a) Unscrew knurled nuts on cover plate and remove latter.
   b) Unscrew hexagon-head bolt screw with tubular bolt spanner.
   c) Pull off sanding disc.

2. Clean the sanding disc and spread the adhesive evenly on both surfaces (the back of the abrasive paper and the sanding disc) by means of a brush or spreader.
3. The surfaces must now be left to dry for 10 to 20 minutes. The adhesive must be dry to the touch.
4. Place the abrasive paper in its correct position on the sanding disc and immediately apply pressure. it is sufficient to press down firmly with the flat of the hand.
5. Replace the sanding disc. When experience has been gained it will not be necessary to remove the sanding disc. In addition, up to three sheets of abrasive paper can be mounted on top of each other. When all three have worn out, remove them, cleaning off any remnants of paper and adhesive by means of a scraper. The sanding disc can be thoroughly cleaned with the aid of a suitable solvent.

SAFETY PRECAUTIONS:

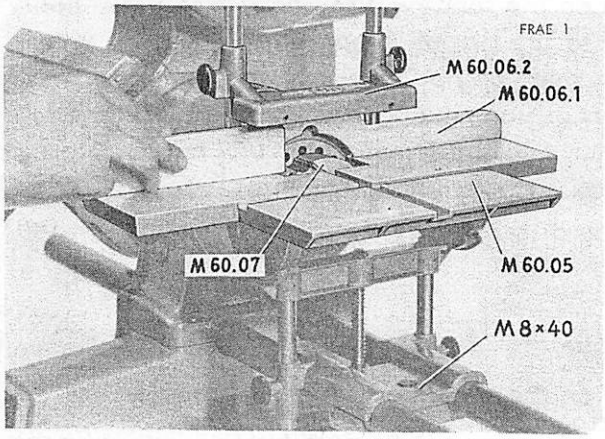
1. The abrasive paper must be stuck perfectly flat on the sanding disc. Any irregularities would lead to rapid wear or tearing of the paper.
2. Replace worn abrasive paper by fresh. Worn abrasive causes burn marks to appear on the component being sanded.
3. If the abrasive paper tears dispose of it and fit a fresh sheet.
4. Move the sanding table close to the sanding disc.
5. Sand small components on the right-hand half of the sanding disc. As the disc rotates it will help to push the component down against the table.
6. Hold the component carefully and firmly.



The sanding table shown on the picture close by is adjustable in angle and height and can be supplied on demand.

The sanding table is supported in the table carrier by means of two columns. The handwheel M 60.05.4 with its threaded spindle (Photo TS 1) serves as a means of adjusting the height of the table.
Turning the handwheel clockwise raises the table; turning it anti-clockwise lowers the table.
The two M 6 x 15 DIN 653 knurled screws enable the table to be secured at any height.
If the M 6.00-33 hexagon nuts fitted at the sides are loosened, the table can be tilted up to 45° in either direction. A protractor scale on the segments simplifies this adjustment. When the table has been tilted to the desired position, the hexagon nuts are tightened up again.
Before the table is placed on its columns, the hexagon-head bolt M 8 x 40 DIN 931 must be inserted from above through the moulder table carrier, whereupon this is placed on the guide columns and secured by means of the clamping plate and the star knob.

EMCO - STAR USED AS A SPINDLE MOULDER



DESCRIPTION OF PARTS:

Hand guard	M 60.06.2
Cutter block	M 60.07
Moulding fence	M 60.06.1
Moulder table	M 60.05

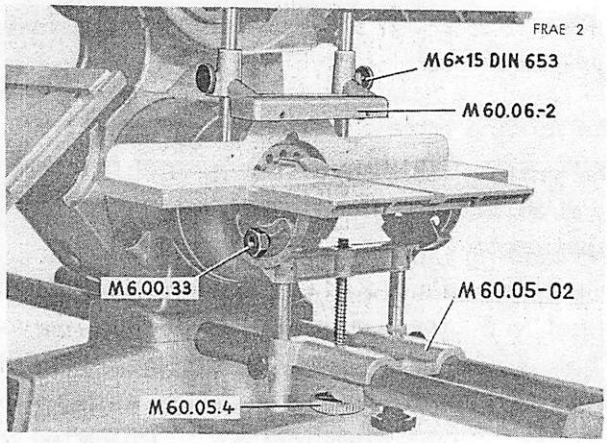
The moulding attachment (Photo FRAE 1) is used for moulding and rabbeting components.

TECHNICAL DATA OF SPINDLE MOULDING ATTACHMENT:

Cutter block diameter 3 1/4" width 1 3/16", two cutters.
Speed: 3000 r.p.m.
Cutting speed: 46 ft./sec.

MOULDER TABLE:

Table size 7 7/8" x 15 3/4", rise and fall 2 3/8", tilting up to 45° in either direction.



FITTING CUTTER BLOCK:

The cutter block M 60.07 is screwed onto the end of the motor spindle. The right hand holds the cutter block against the end of the spindle, while the left hand turns the sanding disc clockwise until the block is firmly screwed in place.
To remove the cutter head it is held by the right hand using the locking pin, while the sanding disc is turned anti-clockwise by the left hand.

THE MOULDER TABLE:

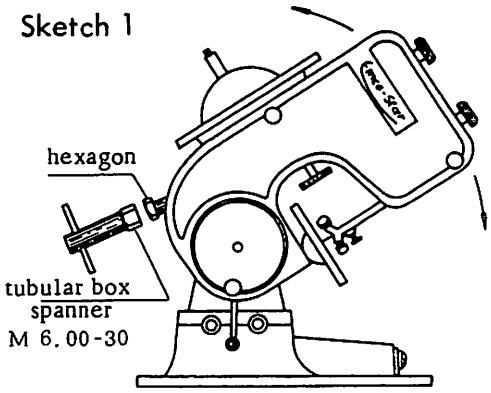
The moulder table (Photo FRAE 1, M 60.05) is supported in the moulder table carrier by means of two columns. The moulding fence M 60.06.1 is attached to the table by means of two knurled-head screws which are pushed up through the table from underneath.
Two columns secured to the moulding fence carry the hand guard M 60.06.2, the height of which can be adjusted. When the height of the guard has been set it is secured by means of two M 6 x 15 DIN 653 knurled-head screws (Photo FRAE 2).
If the two M 6.00.33 hexagon nuts are loosened, the table can be tilted up to 45° in either direction. A protractor scale on the segments simplifies this adjustment.
The height of the table is adjusted by means of a threaded spindle which is turned by the handwheel M 60.05.4. Turning the handwheel clockwise raises the table; turning it in the opposite direction lowers the table.
The knurled screws fitted to the sides of the table carrier M 60.05-02 must be loosened before its height is adjusted and tightened up again afterwards.

FITTING THE MOULDER TABLE:

1. Place the table on the two guide columns.
2. Insert the M 8 x 40 hexagon-head bolt from above through the moulder table carrier.
3. Attach the clamping plate on the underside with the star knob.
4. The complete moulder table can now be slid along the guide columns towards the cutter block. When the table is correctly located it is secured by tightening up the star knob.

SETTING UP THE SPINDLE MOULDING ATTACHMENT

Sketch 1



1. For spindle moulding, the machine should be tilted to an angle of about 45° - see Sketch 1. The machine is held in the tilted position by tigntening up the M 6.00-06 hexagon on the end face of the machine by means of the tubular box spanner.
2. Screw the cutter block onto the end of the spindle.
3. Fit and secure the moulder table.
4. Adjust the table to the correct height and secure.
5. Place the clutch lever in the "0" position. (Sketch 4 Circular Saw Section).
6. Switch the motor on to Stage 2 (3000 r.p.m.)

OPERATION OF THE SPINDLE MOULDER:

The moulder table is slid along the guide columns towards the cutter block until the latter protrudes beyond the fence by the width of the desired rabbet.

The depth of the cut is adjusted by altering the height of the table. The handwheel allows the height of the table to be adjusted with great accuracy.

The guard will be correctly set when it is just touching the top of the components being machined.

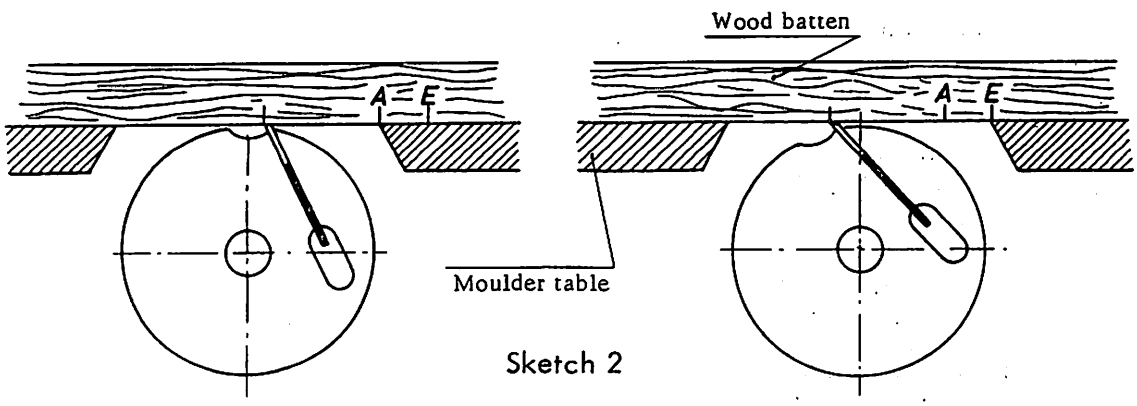
The components are fed through the spindle moulder by hand, and a steady and uniform movement should be employed.

FITTING THE CUTTERS:

The cutters must be rigidly clamped in the cutter block by means of the socket-head bolts. The quality of the finish obtained will depend on the accuracy with which the cutters are set up.

It is essential that the cutting edges of the cutters are equidistant from the centre of the cutter block, i.e. that the diameter of the cutting circle is the same for both cutters. This is achieved as follows:

1. Insert both cutters in the cutter block with the smooth edges of the cutter towards the concave end of the block. The edges of the cutters should be flush with the end faces of the cutter block. The cutting edges should protrude about 5/64" beyond the circumference of the cutter block.
2. The two cutters are held in this position by lightly tightening up the socket-head bolts.
3. The cutter block is now screwed onto the end of the spindle, and the height of the table should be adjusted until the cutting edge is flush with the table, i.e. until the edge of the first cutter projects by a fraction of an inch (perhaps .004") above the table.
4. A very smooth batten is now laid on the moulder table. As the cutter block is rotated by hand, this batten is carried by the first cutter, which projects very slightly above the table, from A to E. Mark the two points with a pencil. (See Sketch 2).



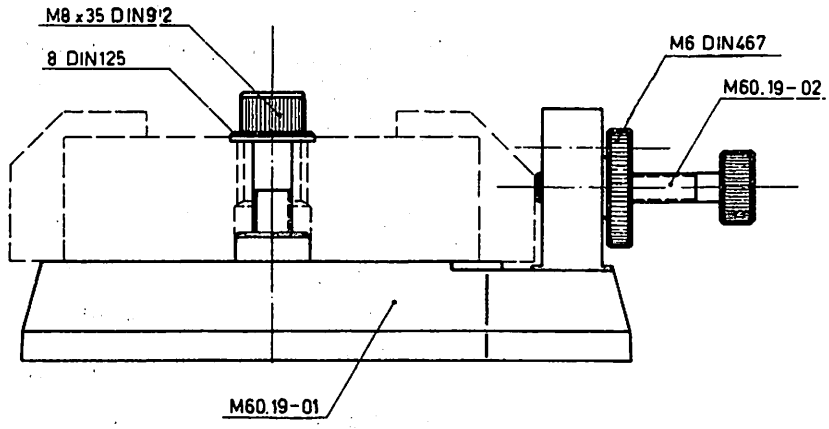
Sketch 2

5. Return the batten to its initial position.
6. When the second cutter carries the batten the same distance from the initial position A to the final position E, both cutters will be correctly located. If necessary, the position of the second cutter will have to be corrected.
7. When both cutters have been correctly positioned, as indicated by the check, tighten the socket-head bolts up firmly.
8. Form cutters are set up in the same way as straight cutters.

GAUGE FOR SETTING CUTTER BLOCK:

A considerably simpler method of setting the cutter block than that described above is to use the setting gauge M 60.19 for adjusting the flat cutters in the block. This is effected as follows:
The flat cutters are inserted in the block and are lightly held by screwing up the socket-head bolts very gently.

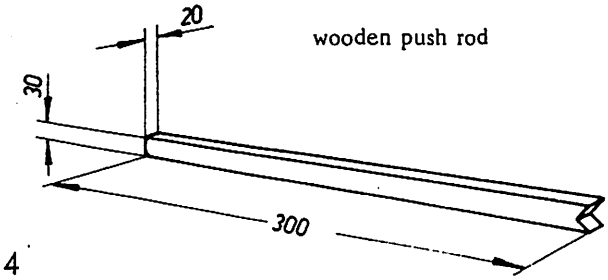
Sketch 3



Now place the cutter block on the setting gauge with one blade pointing towards the brass knurled screw M 60.19-02 (see sketch). The cutter block is held in this position by tightening up the socket-head bolt M 8 x 35 DIN 912. The knurled half nut M 6 DIN 467 is loosened, and the knurled screw turned back until the whole cutting edge of the blade projects beyond the periphery of the cutter block. This position of the screw is fixed by tightening up the knurled nut M 6 DIN 467. Then hold the cutter blade in contact with the knurled screw with one hand, and with the other secure the blade in the cutter block (with the aid of the Allen key). The socket-head bolt M 8 x 35 is then unscrewed, and the cutter block turned through 180°, so that the second cutter points towards the knurled screw. The second cutter is then pushed out until it is in contact with the knurled screw, which remains fixed, and secure. Both cutters are now adjusted to the same setting, and the cutter block can be removed from the setting gauge.
To adjust moulding cutters PM 9 and PM 11 the knurled screw is inserted in the upper hold in the setting gauge. The other moulding cutters are dealt with in the same way as flat cutters.

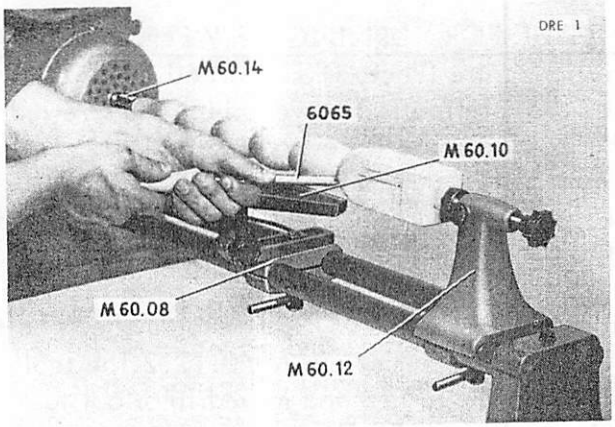
SAFETY PRECAUTIONS:

1. Always use sharp cutters.
2. Screw the cutter block on firmly.
3. Make sure the cutters are always correctly positioned and firmly clamped.
4. Set the guard so that it just contacts the top of the components.
5. Loose knots must be removed from the wood before it is machined.
6. Do not use too deep a cut or too fast a feed.
7. The components must be pressed firmly against the table and against the fence while they are being machined.
8. Small components should be fed past the cutters with the aid of a push rod (see Sketch 4) made up locally, and not directly by hand.



Sketch 4

EMCO - STAR USED AS A WOOD-TURNING LATHE

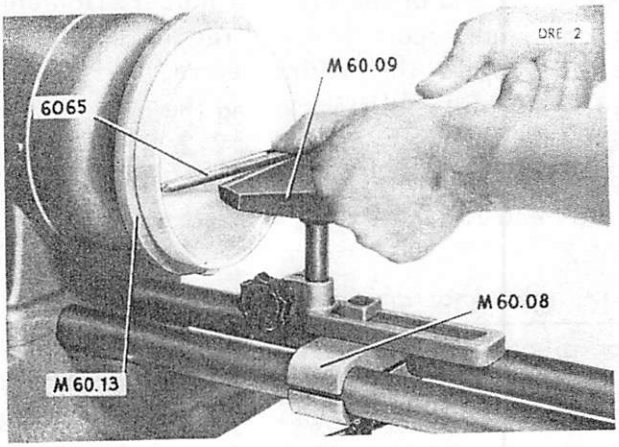


TURNING BETWEEN CENTRES:

Description of parts:

Two-prong driving centre	M 60.14
Turning gouge	6065
Hand tool rest	M 60.09-M 60.10
Tailstock	M 60.12
Tool rest holder	M 60.08

This type of turning (Photo DRE 1) is particularly suitable for making long round articles such as skittles, chair legs, etc. The turning tool is supported on the large tool rest which has a length of 11 7/8" M 60.10.



FACEPLATE TURNING:

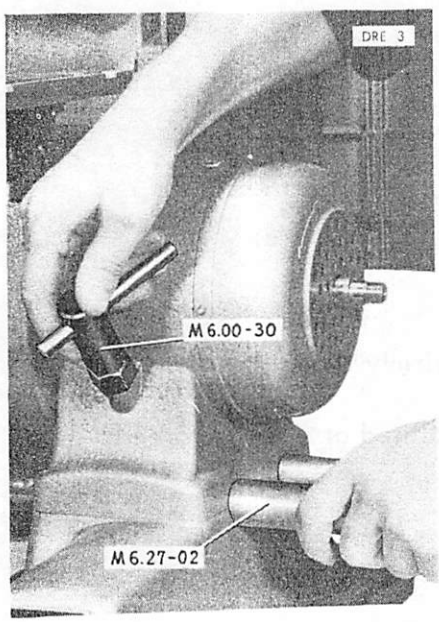
Description of parts:

Faceplate	M 60.13
Turning gouge	M 60.65
Hand tool rest	M 60.09
Tool rest holder	M 60.08

This type of turning is used for making disc-shaped objects such as bowls, dishes, etc. The turning tool is usually supported on the small tool rest M 60.09.

TECHNICAL DATA OF WOOD-TURNING LATHE:

Height of centres 4 1/2" (max. diameter of workpiece 9")
Distance between centre 19 5/8"
Face plate 6 7/8" dia.
Speed 1500 r.p.m. for surfacing and for longitudinal turning of components that are not perfectly balanced.
3000 r.p.m. for longitudinal turning of small-diameter components.

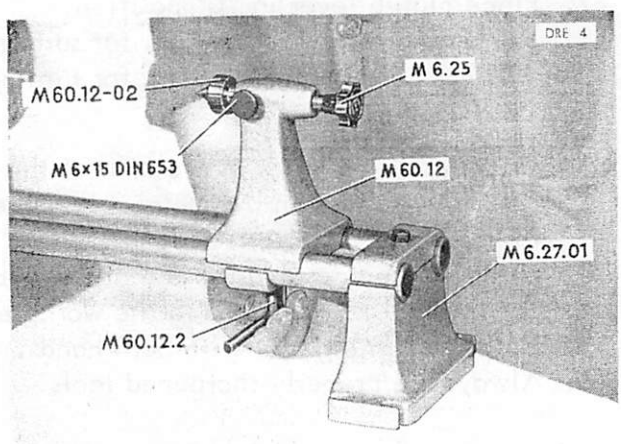


TURNING TOOLS:

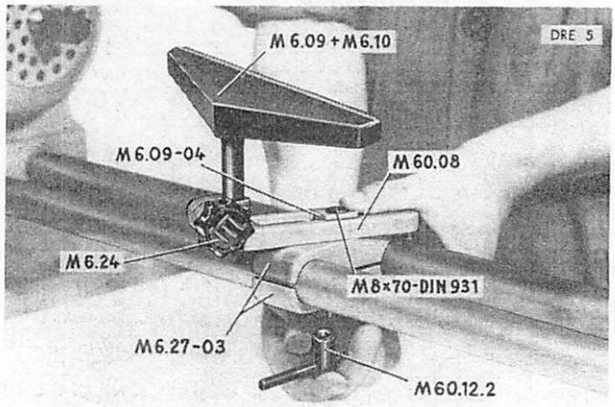
Turning gouge	6065
Turning chisel	6066

SETTING UP THE WOOD-TURNING LATHE:

The two guide columns are pulled out to the right to their fullest extent, the M 6.00-30 hexagon nut on the motor casing first being slackened off with the aid of the tubular box spanner (Photo DRE 3).

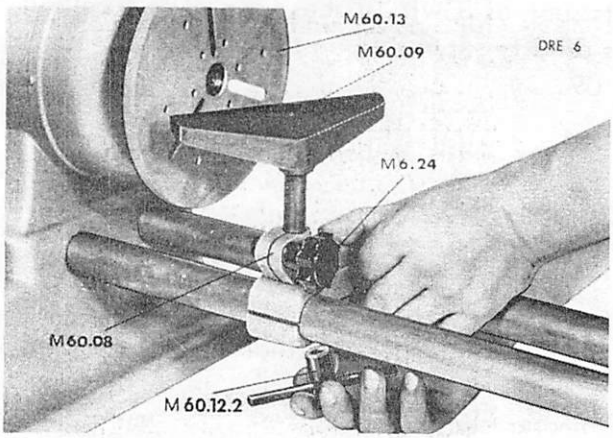


The guide columns (Photo DRE 4, M 6.27-02) are supported by the bench stand M 6.27-01. The bench stand in turn can be screwed to the bench.



SETTING UP FOR TURNING BETWEEN CENTRES:

The driving centre (Photo DRE 1, M 60.14), which transmits the rotation to the workpiece, is screwed onto the motor spindle (screw on clockwise).
The hand tool rest (Photo DRE 5, M 60.09 or M 60.10) absorbs the cutting pressure and makes it possible to guide the turning tool accurately. The tool rest holder M 60.08 is secured by means of the two clamping plates M 6.27-03, the hexagon-head bolt M 8 x 70, and the tommy nut M 60.12.2. The tool rest holder can be turned and moved in or out to any desired position. Finally, the tool rest is clamped in the end of the tool rest holder. Tightening up the tommy nut secures the tool rest in place.
The tailstock (Photo DRE 4, M 60.12) is an adjustable back stop for the driving centre. It is adjusted to approximately the correct position by sliding the complete tailstock along the guide columns. The tailstock is then secured in place by means of the tommy nut M 60.12.2. The live centre is forced into the centering hole on the component by turning the knob M 6.25. The workpiece is now supported by the driving centre and the live centre. Tighten the knurled screw M 6 x 15 to lock the live centre in the tailstock.



SETTING UP FOR SURFACING:

The workpiece that is to be turned is secured to the faceplate M 60.13 by means of wood screws (Photo DRE 6). The illustration shows the faceplate screwed to the end of the spindle. (Screw faceplate on by turning it clockwise). The short tool rest M 60.09 will prove most convenient for surfacing. It is set up as described in connection with Photo DRE 5.

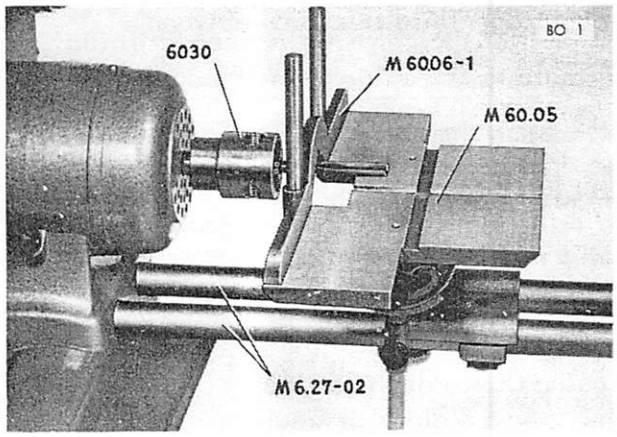
OPERATION OF THE WOOD-TURNING LATHE:

1. Tilt the machine to the "band-saw" position.
2. Pull out the guide columns to the required length. (If necessary screw the bench stand to the bench).
3. Fit the driving centre or the faceplate.
4. Fit the tool rest holder and tool rest.
5. Fit the tailstock and adjust the distance between centres.
6. Secure the workpiece to the faceplate or between centres.
7. Place clutch lever in "0" position.
8. Switch on motor 1500 r.p.m. for surfacing and for unbalanced workpieces,
   3000 r.p.m. for turning slender workpieces between centres.

SAFETY PRECAUTIONS:

1. Drill centering holes in the ends of the workpieces.
2. Before switching on the motor make sure that the workpiece is firmly clamped and that the tailstock is correctly fitted.
3. Large workpieces and those that are unbalanced must only be rotated at a slower speed.
4. Set the tool rest as close to the workpiece as possible.
5. Hold the turning tool with both hands.
6. Always use properly sharpened tools.

EMCO - STAR USED AS A DRILLING MACHINE



DESCRIPTION OF PARTS:

Two-jaw chuck	6030
Moulder table	M 60.05
Moulding fence	M 60.06-1
Guide columns	M 6.27-02

With the drilling attachment dowel holes can be drilled and slots cut. Holes can be drilled at an angle with the aid of the mitre gauge set at the desired angle, the moulding fence is then not required.

TECHNICAL DATA OF DRILLING ATTACHMENT:

Two-jaw chuck capacity up to 1/2"
Drills: Slotting cutter, four-cutter rim auger bit, twist drills.
Speed: Slotting cutter 3000 r.p.m., rim auger und twist drills 1500 r.p.m.
Table: 7 7/8" x 15 3/4" tilts up to 45° in either direction. Rise and fall movement 2 3/8" controlled by handwheel.

FITTING TABLE:

This is described in detail in the section on the use of the machine as a spindle moulder.

INSERTING DRILL IN CHUCK:

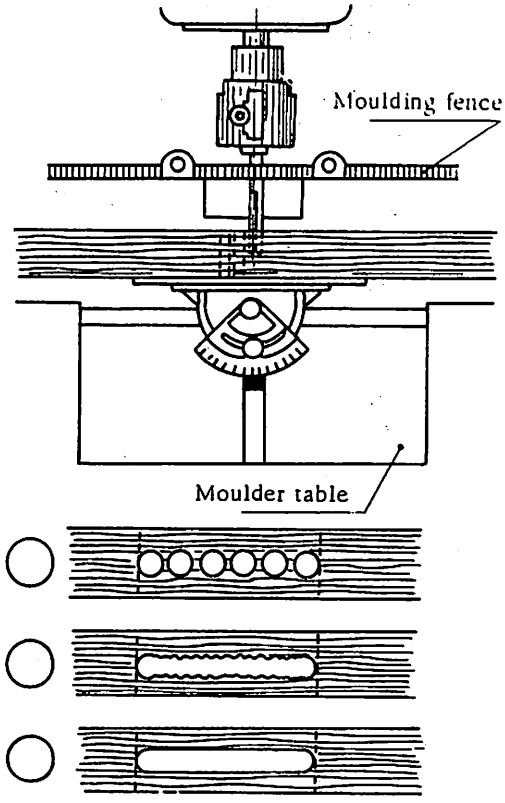
Screw the two-jaw chuck (Photo BO 1, M 6030 onto the end of the motor spindle by turning it clockwise.
Push the drill into the chuck M 6030 as far as it will go and then tighten up the jaws by means of the square key.

OPERATION OF DRILLING MACHINE:

1. Tilt the machine to the "circular saw" position.
2. Screw the two-jaw chuck onto the end of the spindle.
3. Grip the drill in the chuck.
4. Fit the moulder table and secure it.
5. Adjust the table to the desired height and secure it.
6. Place the clutch lever in the "0" position.
7. Switch on motor (make sure it is running at the correct speed - see above).

SAFETY PRECAUTIONS:

1. Do not use bent or blunt drills.
2. Insert the shank of the drill as far as possible into the chuck.
3. As soon as the jaws have been tightened up remove the square chuck key.
4. Adjust the table before starting the motor.
5. Guide the workpiece firmly and carefully.



Sketch 1

SLOTTING:

a) Select a drill of the correct diameter (drill diameter about one-third thickness of wood).

b) Set the table to the correct height.

c) Move the table towards the chuck (see sketch) so that the drill projects beyond the moulding fence by at least the deptb of the hole.

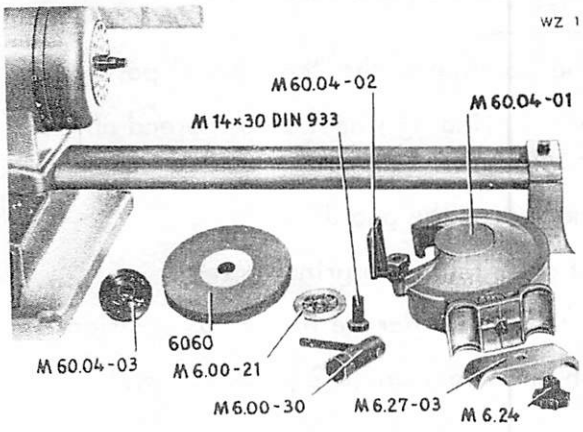
d) The workpiece is supported against the mitre gauge (fitted with an extension piece) and slowly pushed towards the drill.
Withdraw the workpiece at frequent intervals to clear the shavings.

e) Drill holes one beside the other. The holes must not break into each other. The positions of the end holes are determined by the length of the slot.

f) Drill out the webs between adjacent holes.

g) Press the workpiece down against the table and slide it slowly along the moulding fence. (Sketch 1).

EMCO - STAR USED AS A TOOL GRINDER



DESCRIPTION OF PARTS:

Flange	M 60.04-03
Grinding wheel	6060
Clamping washer	M 6.00-21
Hexagon-head bolt	M 14 x 30 DIN 933
Tubular box spanner	M 6.00-30
Grinding rest	M 60.04-02
Guard	M 60.04-01
Clamping plate	M 6.27-03
Star knob	M 6.24

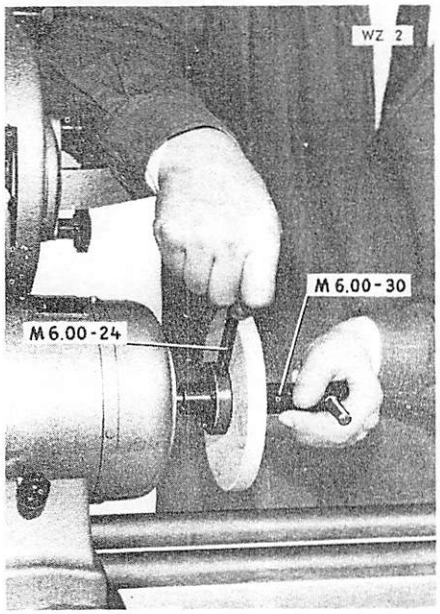
The tool grinding attachment is used for sharpening wood and metal-cutting tools.

TECHNICAL DATA OF GRINDING ATTACHMENT:

Grinding wheel:

Diameter = 6" Thickness = 19/32" Bore = 3/4"
Grit: 80 Hardness: M

The higher the grit number, the finer the wheel. The "hardness" of a grinding wheel determines the ease with which blunted abrasive particles are broken loose from the grinding wheel. Hardness "M" is suitable for sharphening normal tools.
Speed: 3000 r.p.m. = 82.5 ft./sec.

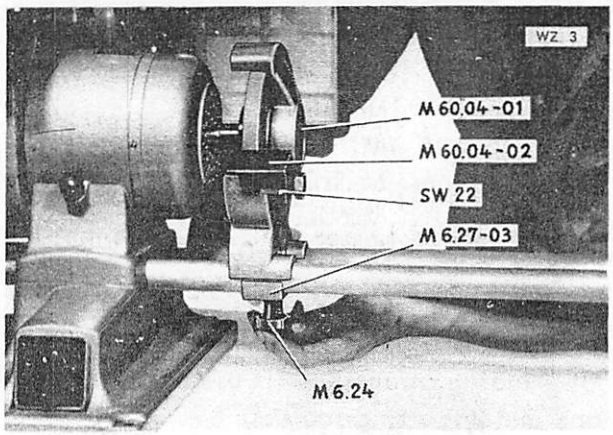


FITTING GRINDING WHEEL (Photo WZ 2)

1. Screw the flange M 60.04-03 on the end of the motor spindle (turn it clockwise).
2. Place the grinding wheel on the flange.
3. Screw on the clamping washer and the hexagon-head nut by hand.
4. Hold the flange by means of the locking pin M 6.00-24 and tighten up the hexagon-head bolt with the aid of the tubular box spanner. Overtightening this bolt could cause the grinding wheel to crack or break. If the grinding wheel does not run true, clean it up with a dressing tool. The flange, grinding wheel, clamping washer, and bolt can be assembled as unit first, and the unit screwed on the end of the motor spindle (by turning it clockwise).

FITTING THE GUARD (Photo WZ 3)

The guard is placed on the guide columns and the clamping plate held against its underside.
The guard is attached to the clamping plate by means of a hexagon-head bolt.
The whole guard assembly is then slid up as close to the grinding wheel as possible, and secured by tightening up the star knob.
The grinding rest M 60.04-02 should be moved close up to the grinding wheel. The gap should not exceed 7/64". When the grinding rest is correctly positioned, secure it by tightening up the hexagon nut. The nut is tightening or loosened with the aid of the tubular box spanner.



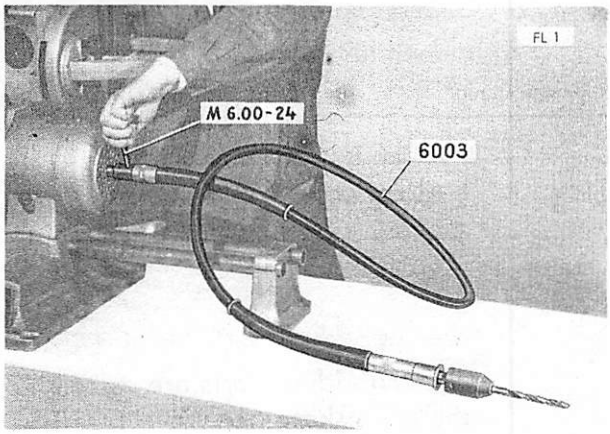
OPERATION OF THE GRINDING ATTACHMENT:

1. Tilt the machine to the "band-saw" position.
2. Screw the grinding wheel onto the end of the motor spindle.
3. Fit and secure the guard.
4. Adjust and secure the grinding rest.
5. Place the clutch handle in the "0" position.
6. Switch on motor, Stage 2 (3000 r.p.m.)

SAFETY PRECAUTIONS WHEN GRINDING:

1. Dress the grinding wheel if it is running out of true.
2. Before fitting the wheel tap it lightly to see that it rings clearly (to check for cracks).
3. Tighten up the clamping flange with moderate pressure.
4. Always use the guard.
5. Move the grinding rest close up to the wheel.
6. Run the machine for a short time before starting grinding to make sure it is correctly set up.
7. Always wear goggles when grinding.

EMCO - STAR USED WITH A FLEXIBLE SHAFT



The flexible shaft is used mainly for machining fixed workpieces which are too large to be worked on the machine.

One end of the shaft is screwed onto the end of the motor spindle. The handle of the flexible shaft carries a "Gooddel" three-jaw chuck which can be tightened up to grip the tools by hand. A flexible shaft is available for use with the Emco-Star.

The flexible shaft has a length of 7", and the inner drive shaft has a diameter of 23/64" . This shaft is capable of transmitting the full power of the motor. It can therefore be used for drilling holes up to 1/2" in diameter using drills with turned-down shanks.

FITTING FLEXIBLE SHAFT:

There is a female thread at the end of the flexible shaft and this can be screwed directly onto the end of the motor spindle which is held by means of the locking pin M 6.00-24 (Photo FL 1).
To grip the tools, the shaft is held with one hand by means of the locking pin supplied which is applied behind the chuck while the chuck is tightened up to grip the tool by turning the knurled sleeve with the other hand.

OPERATION OF THE FLEXIBLE SHAFT:

1. Tilt the machine to the "band saw" position.
2. Screw the flexible shaft onto the end of the motor spindle.
3. Fit the required tool in the chuck.
4. Place the clutch lever in the "0" position.
5. Switch on the motor and choose speed to suit the work.

SAFETY PRECAUTIONS:

1. The flexible shaft must be screwed onto the spindle as far as it will go.
2. Bent drills must not be used.
3. Always use sharp drills and cutters.
4. Before switching on the motor, hold the handle of the flexible shaft loosely.

COMBINED PLANER AND THICKNESSER

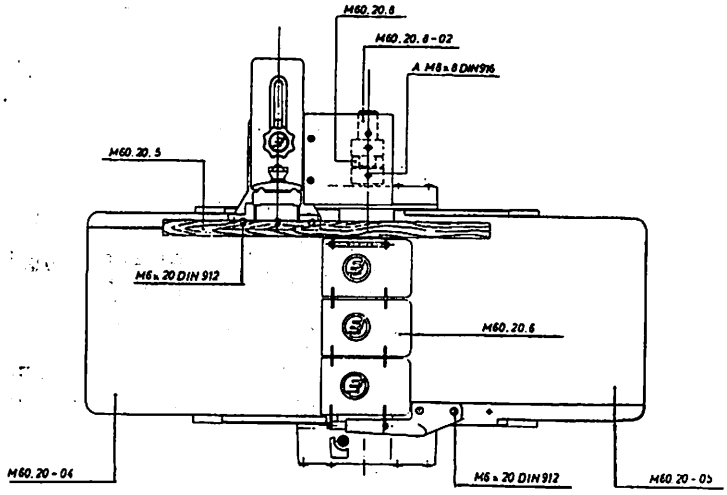
The EMCO-REX Planer and Thicknesser can be used either as an attachment to the Emco-Star or as an independent machine.

The height of the bench should be about 23 1/2" to 26 1/2", depending on the height of the operator.

INSTALLATION OF THE EMCO-REX AS AN ATTACHMENT TO THE EMCO-STAR

Supplied with the EMCO-REX attachment are:

Coupling	M 60.20.8
Fence Assembly	M 60.20.5
Guard Assembly	M 60.20.6
5 Socket-head bolts M 6 x 25 DIN 912	
1 Allen key, SW 4	
1 Allen key, SW 5	



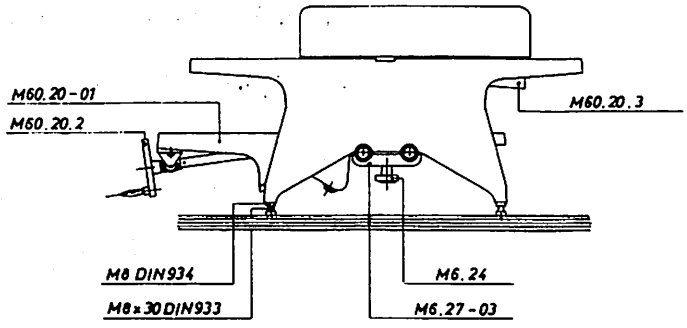
Sketch 1

The individual parts are assembled as shown in sketch 1.

The coupling M 60.20.8 is placed on the free end of the planer shaft with the set screw M 8 x 8 DIN 916 located above the recess in the shaft. The set screw is then tightened up with the aid of the SW 4 Allen key. The two M 6.24 knobs are then unscrewed from underneath after which the two clamping plates M 6.27-03 can be removed (see sketch 2).

The planer is now placed on the guide columns of the Emco-Star, pushed towards the motor, and the coupling boss (M 60.20.8-02, sketch 1) screwed onto the end of the motor spindle with the aid of the locking pin M 6.00-24. The rubber spider between the two halves of the coupling should have an axial play of about 1/32". When the planer is correctly positioned the two clamping plates are fitted and secured by tightening up the knobs.

The four screw feet (M 8 x 30 DIN 933 - sketch 2) are now adjusted so that they rest on the table and bring the coupling M 60.20.8 into alignment. The two halves of the coupling must be accurately aligned; if there is any radial misalignment the rubber spider will be subject to rapid wear and the machine will vibrate in service. Once the screw feet have been correctly adjusted they are locked by tightening up the nuts (M 8 DIN 934), sketch 2. Now the fence assembly (M 60.20.5) is secured by means of three socket-head bolts (M 6 x 25 DIN 912) as shown in sketch 1 to the infeed table (M 60.20-04), sketch 2, and the guard assembly (M 60.20.6) by means of two socket-head bolts to the outfeed table (M 60.20-05). The SW 5 Allen key provided is used to tighten these bolts. If you have orderec the SUVA guard for the planer, this is fitted (in place of the normal guard) by means of three socket-head bolts



Sketch 2

(M 6 x 25 DIN 912) to the side of the outfeed table.

The planer is now completely assembled and ready for use. Turn the motor switch to stage 2 (3000 r.p.m.). When the Emco-Star is being used for other work it is advisable to disconnect the planer. To do this, loosen the two knobs and slide the planer 3/4" - 1 3/16" away from the motor. The two halves of the coupling will then disengage, and the planer shaft will not rotate.

INSTALLATION OF THE EMCO-REX AS AN INDEPENDENT MACHINE

If the Emco-Rex is to be used as an independent machine it will require an electric motor developing at least 0.75 h.p. at 2800 r.p.m. to drive it. Since losses occur in a belt drive, it is advisable to use a 1 h.p. electric motor.

Supplied with the machine are:

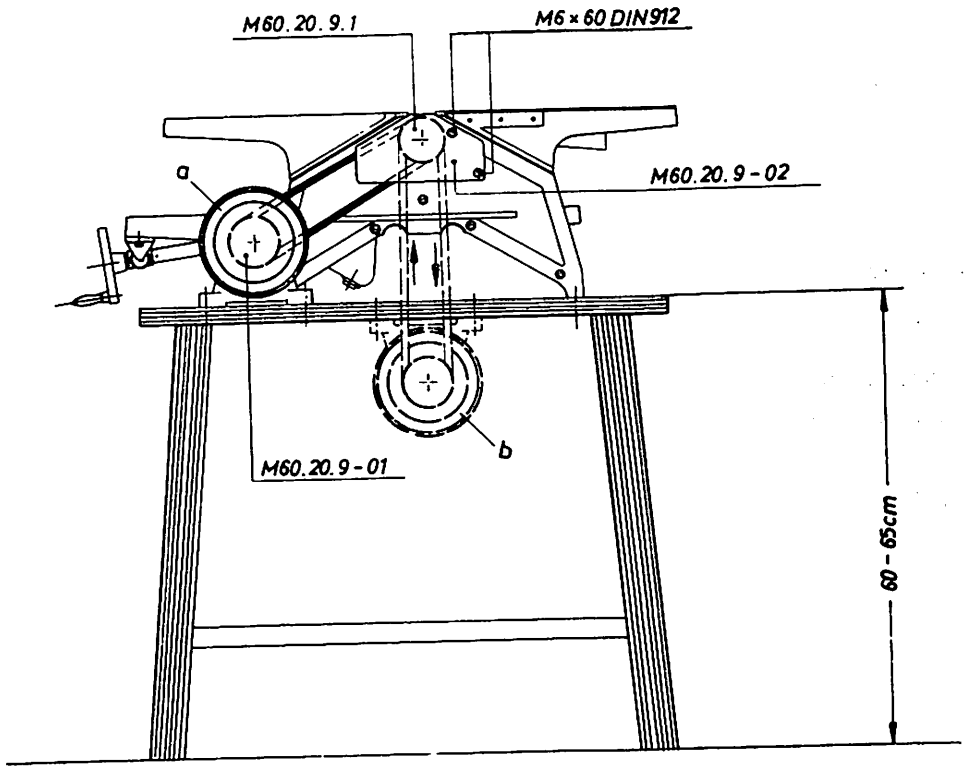
1 fence assembly	(M 60.20.5)
1 guard assembly	(M 60.20.6)
1 belt pulley, 2 3/8" DIA	(M 60.20.9.1)
1 belt pulley, 3" DIA	(M 60.21.9-01)
1 belt guard	(M 60.20.0-02)
5 Socket-head bolts	M 6 x 25 DIN 912
2 Socket-head bolts	M 6 x 60 DIN 912
1 Allen key,	SW 5
1 Allen key,	SW 4

Have a hole drilled in the motor belt pulley to suit the shaft of your motor and fit this pulley.

The Emco-Rex is secured to the table or bench by the four foot screws. The motor can be located

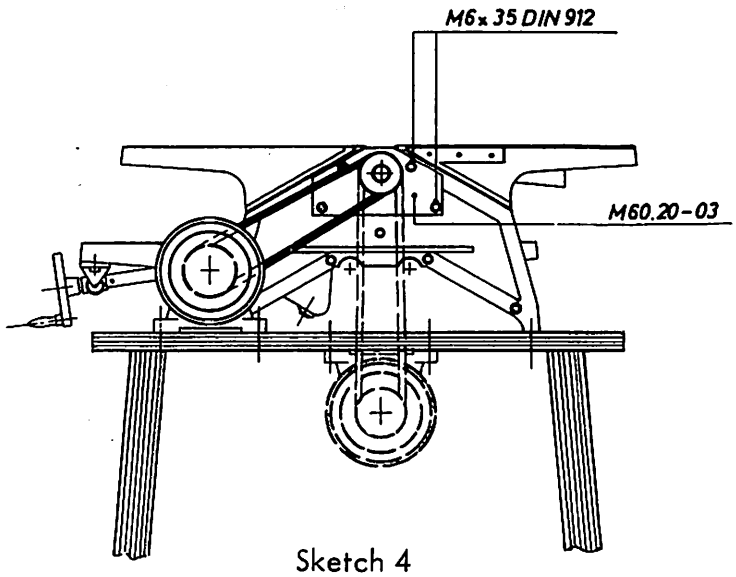
The driving belt is a 13/32 x 15/64" belt which is available commercially in lengths from 19 5/8". The length required will depend on the distance between the motor and the planer.

When the planer has been secured to the bench, place the 2 3/8" dia. belt pulley (M 60.20.9.1) on the free end of the planer shaft. Make sure that the boss on the pulley points towards the planer and that the set screw in the pulley mates with the recess in the shaft. Tighten the set screw up firmly with the SW 4 Allen key. Now fit the V-belt and move the motor sideways until the belt is properly tensioned and the belt pulleys are in alignment; secure the motor in this position.



Sketch 3

The two M 6 x 35 DIN 912 socket-head bolts are unscrewed from the chaincase (M 60.20-03, sketch 3), and the belt guard (M 60.20.9-02),



Sketch 4

sketch 4) is secured to the chaincase by means of two M 6 x 60 DIN 912 socket-head bolts. The fence assembly and the guard assembly are fitted in the same way as described in the previous chapter for the planer used as an attachment (p. 1). The fence is normally mounted on the belt-pulley side. It can, however, also be mounted on the opposite side, suitable tapped holes being provided. The cutter guard, and the SUVA guard which can be supplied to special order, can also be mounted on either side.

Switch the motor on and make sure it is rotating in the correct direction. If the motor rotates in the incorrect direction, two of the phases of the supply lead will have to be interchanged.

To meet the safety regulations, the belt pulley on the motor must be provided with a guard which can be made locally out of wood or metal.

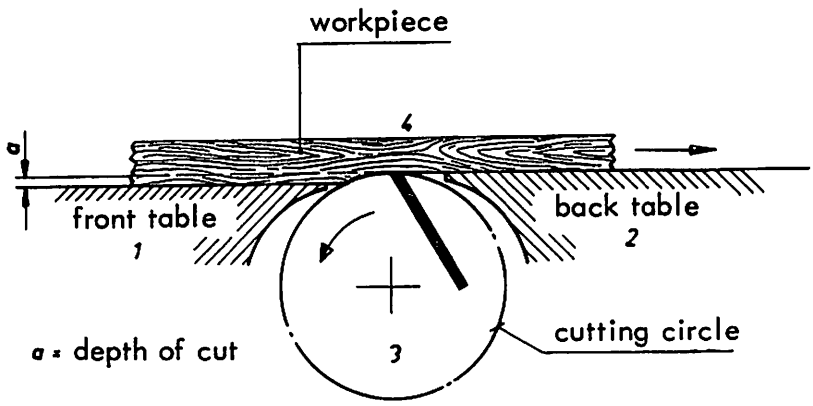
The Emco-Rex is now completely assembled as in independent machine and is ready for use.

EMCO-REX SURFACE PLANER

Technical data:

Cutter head 2 27/32" dia. with 3 knives 1 3/16" x 1/8" x 8 1/4"
Cutting circule diameter of knives 2 29/32"
Speed 3000 r.p.m. } as an attachment
Cutting speed 39 1/4 ft/sec }
Speed 3700 r.p.m. } as an independent machine
Cutting speed 47 ft/sec }
Planing width 8"
Max. depth of cut 7/64"
Length of table 26 3/4"

The surface planer is used for planing boards and battens, for bevelling, and for jointing.



Sketch 5

Front table (infeed table)	1
Back table (outfeed table)	2
Cutting circle	3
Workpiece	4
Depth of cut	a

The knives are set so that they are exactly flush with the back table (Sketch 5, No.2).

If, as shown in Sketch 5, the front table is set lower than this by an amount "a", a strip of thickness "a" will be planed off the workpiece. The height of the front table M 60.20-04 is adjusted by turning the knob M 60.20.3 (Sketch 2).

The depth of cut to which the machine is set is shown on a scale M 60.20-22 at the side (Sketch 2).

CORRECT OPERATION OF SURFACE PLANER

The required depth of cut is set by raising or lowering the front table by means of the knob M 60.20.3 (Sketch 2).

On average, it will be found advisable to set the depth of cut to 1/32" (maximum 7/64") since at this setting the planed surface will be much smoother than at 7/64".

For planing, the workpiece is laid on the front table, pressed down with both hands, and slowly pushed against the cutter head. As soon as the front of the workpiece has passed the cutter head, this end should be pressed down onto the back table with one hand while the other continues to push the workpiece against the cutter head.

The concave side of a board is always planed (see Sketch 6). If the board were laid down with its convex side on the table, it could not be held level while it is fed over the knives.

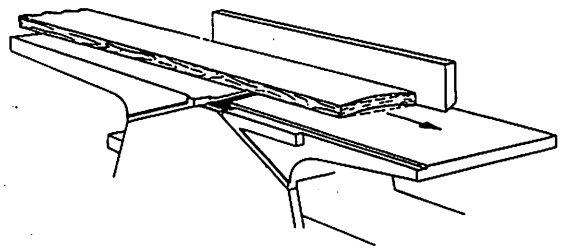
To plane an edge (narrow side of board), the fence is fitted square to the table surface.

The board is then held with the planed face pressed against the fence and it is pushed with a uniform pressure over the cutter head (see Sketch 7).

The knives should as far as possible be covered by the guard.

Small workpieces should be fed through the planer with the aid of a home-made pusher to prevent injury to the hands. Sandpaper can be stuck to the underside of the pusher to make it grip better (see Sketch 8).

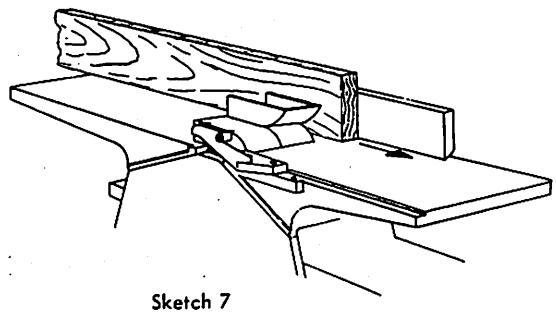
The fence fitted to the planer is adjustable across the table and also for height; in addition, it can be canted up to 45° in either direction, and is fitted with a protractor.



Sketch 6

The fence can therefore be used for planing bevels on narrow edges. The transverse adjustment of the fence is particularly useful since it enables the full width of the knives to be utilised.

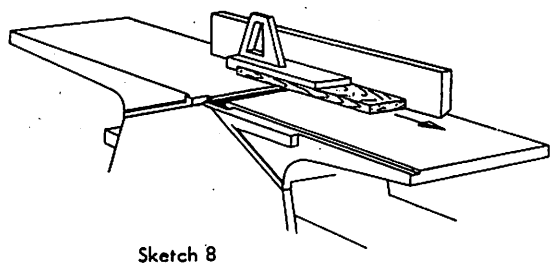
If the fence were always left in the same place when planing narrow workpieces, the knives would soon become blunt.



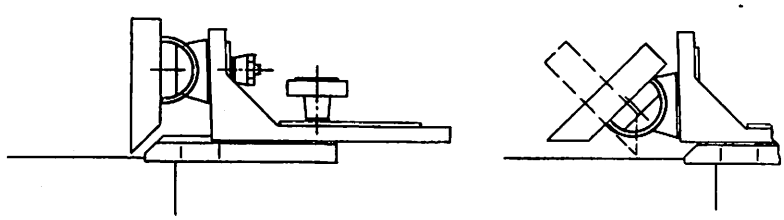
Sketch 7

SAFETY PRECAUTIONS FOR SURFACE PLANERS

1. The cutter block should be covered by the guard to the fullest possible extent; this applies in particular when jointing and when planing narrow workpieces.
2. Always use sharp knives. This greatly reduces the danger of the workpiece kicking back.
3. Always use a pusher when feeding small workpieces through the machine.
4. Use the palms of the hand and not the tips of the fingers to press the workpieces down against the table.
5. Before starting to feed a workpiece through the planer clear away any shavings from the tables by blowing or by brushing them with a piece of wood.



Sketch 8



Sketch 9

EMCO-REX THICKNESSER

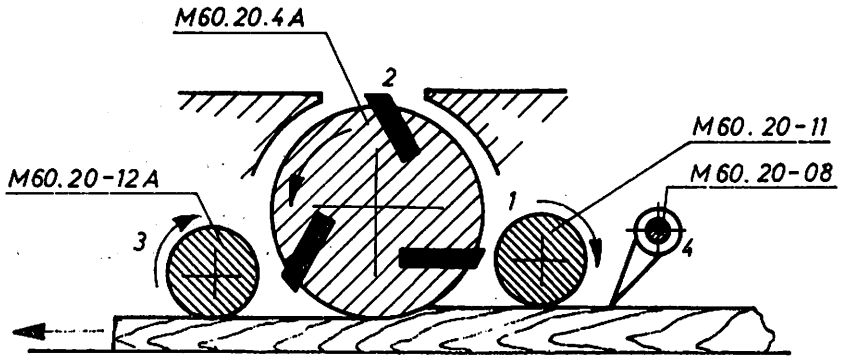
Technical data:

Planing width 8"	
Max.thickness of workpiece	2 5/32"
Max.depth of cut	7/64"
Automatic feed	13,1/8 ft/min.
Table length	23 5/8"

The thicknesser is used for planing boards and battens to a desired thickness with the opposite faces parallel.

The cutter block is situated above the table.

The workpiece is automatically fed through the machine by mechanically-driven feed rollers.



Thicknessing table

Sketch 10

Fluted roller	1
Cutter block	2
Outfeed roller	3
Anti-kickback device	4

The workpiece rests on the table M 60.20-01, sketch, the height of which can be adjusted.

The depth of cut is regulated by means of the handwheel M 60.20.2. A graduated scale M 60.20-23 at the side enables the required thickness of cut to be set.

The feed roller fitted in front of the cutter block is fluted so that the workpiece is automatically fed through the machine.

The outfeed roller located behind the cutter block is smooth to avoid marking the machined surface.

CORRECT OPERATION OF THICKNESSER

Before being passed through the thicknesser all workpieces must be planed on one face. This is essential to ensure that the finished items are flat.

2. Place the planed board on the table with its unplaned side uppermost and push it forward until it contacts the fluted feed roller.

3. Pieces of non-uniform thickness should always be fed in with the thicker end leading. This

prevents them jamming in the machine.

4. If the maximum depth of cut of 7/64" would have to be exceeded it will not be possible to feed the workpiece into the machine.

5. If large amounts are to be removed, several passes through the machine will therefore have to be made.

6. If a workpiece jams while passing through the machine (excessive depth of cut), lower the table about 1/32" by means of the handwheel, and the workpiece will continue to feed through the machine.

7. When machining narrow workpieces (battens) do not always lay them in the same place on the table, but make full use of the width of the knives.

8. Clean shavings and other dirt off the table at frequent intervals.

9. If after some time the friction becomes excessive and a workpiece fails to feed through, the planer tables will have become coated with resin (occurs particularly when machining fir). It will then be necessary to clean the table with a rag soaked in turpentine. Then wipe the table dry and rub in paraffin. Do not rub in oil, since the wood would soak this up and would then become unsuitable for glueing, staining or painting.

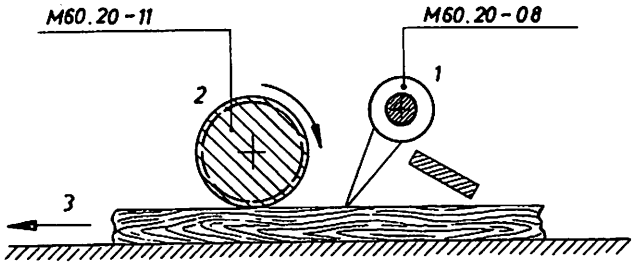
10. If very thin boards are to be machined (less than 3/16"), these should be laid on a planed board 3/4" thick, and the two passed through the machine together.

11. The Emco-Rex gear box is filled with a special viscous gear grease and greased for life. If grease should be lost when opening the gear box or for any other reason, only a self-liquid and viscous gear grease (KLÜBER-LUBRICATION St 15/400 PPa) must be refilled. The complete filling quantity is about of 1/5 lbs.

SAFETY PRECAUTIONS FOR THICKNESSERS

1. 14 anti-kickback pawls are fitted over the full width of the table on the EMCO-REX thicknesser to protect the operator from injury by workpieces that are kicked back.

Anti-kickback pawl	1
Fluted roller	2
Workpiece	3



Sketch 11

If boards of different thicknesses are beeing machined simultaneously, the thinner pieces could be kicked back; this is prevented by the anti-kickback pawls. They allow the components to pass in the normal direction of feed, but press them down against the table and hold them if they try to move backwards.

2. Cover the cutter block with the sections of the guard.

3. Keep a look out for nails and other foreign bodies in the workpieces and remove any that are present.

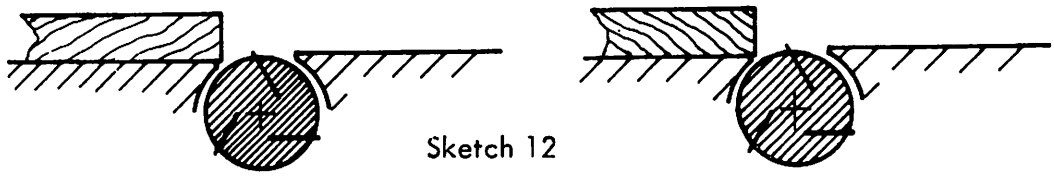
4. Do not pass workpieces shorter than 4 7/8" in length through the thicknesser, since these would not be properly gripped and guided by the outfeed roller.

5. When finishing work, lower the thicknesser table as far as possible by means of the handwheel to make it easier to clean off all shavings.

NOTES ON WORKPIECES

The boards are usually stood up with their ends resting on the ground. As sand and small stones tend to become lodged in the ends of the boards, and these can damage the knives, trim off the rough ends of the boards with the circular saw before passing them through the planer.

Workpieces should be passed through the planer and thicknesser with the grain, since this produces a smoother finish (see sketch 12).

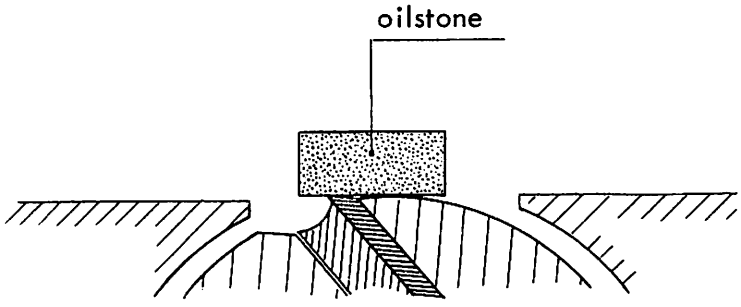


correct wrong

Sketch 12

SHARPENING (TOUCHING UP) THE PLANER KNIVES

If a lot of saw dust is produced in addition to shavings when planing it is a sign that the knives are no longer sharp. In this case it is possible to sharpen the knives without removing them from the machine using a fine oilstone (size about 1" x 19/32" x 3-15/16"). The stone is oiled and is then placed on the cutter block as shown in sketch 13. The stone is pushed uniformly to and from over the length of the knives under a gentle pressure until the knives are sharp again.



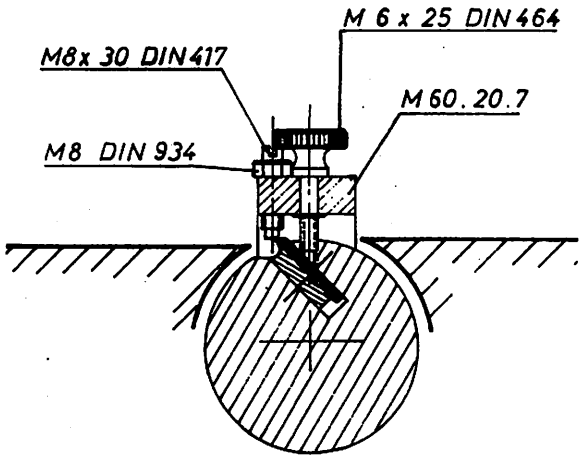
Sketch 13

REPLACING AND SETTING THE PLANER KNIVES

When the machine has been in use for some time, the knives may have become nicked by small stones lodged in the workpieces. In such a case raised lines will be observed on the boards after planing.
Planer knives that have nicked cutting edges or that have become so blunt that they can no longer be sharpened by touching them up with an oilstone while they are in the machine, will have to be removed and reground. It is an advantage to have a set of three spare knives that can be fitted and used while waiting for the original set to be reground.

1. To remove planer knives

Lower the front table to its fullest extent to make access to the 4 bolts (socket-head M 6 x 15) that secure the knives easier. The bolts that secure one knife are then unscrewed with the aid of the SW 5 Allen key, and the planer knife (M 60.20-09) is removed together with the backing bar (M 60.20-10, sketch 14). The cutter block is then rotated a third turn at a time and the other



Sketch 14

two knives are removed in the same way. The grooves on the cutter block, as also the knives and backing bars should be thorougly cleaned.

2. Fitting reground planer knives

One planer knife is inserted in the groove in the cutter block together with its backing bar, and the four socket-head bolts are tightened up very gently. A straight edge is then laid on edge on the fixed back table, and the cutter block is turned until the knife is in its highest position. Both ends of the knife must then touch the straightedge. If this is not the case, the knife must be adjusted by tapping its projecting ends with the bolts still tightened up sufficiently to prevent it slipping, until it is level with the straightedge. Now tighten up the four socket-head bolts, and fit the setting gauge (M 60.2.7, sketch 14) securing it to the cutter block with the knurled-head screw (M 6 x 25 DIN 464). The two brass screws (M 8 x 25 DIN 464) should now just contact the cutting edge at both ends of the knife. If this is not the case, the gauge should be adjusted accordingly. This is done with the gauge in place by loosening the two hexagon nuts and turning the brass screws until they do contact the cutting edge. The hexagon nuts are then tightened up to lock the screws in this position. Once the gauge has been adjusted for a particular machine it should not be altered and it can then be used on subsequent occasions to set the knives correctly without the aid of the straightedge. Each of the other knives is then fitted as described above; it is, however, not necessary to use a straightedge to locate the knives. Instead the setting gauge is fitted, and the projecting ends of the knives are pushed up with a screw-driver until the cutting edges contact the brass screws on the setting gauge. The bolts are then tightened up to secure the knife in this position, the gauge is removed, and the procedure is repeated until all four knives have been fitted and set.

If you do not possess a setting gauge it is possible to set all four knives using a straightedge (as initially described). This, however, takes considerably more time.

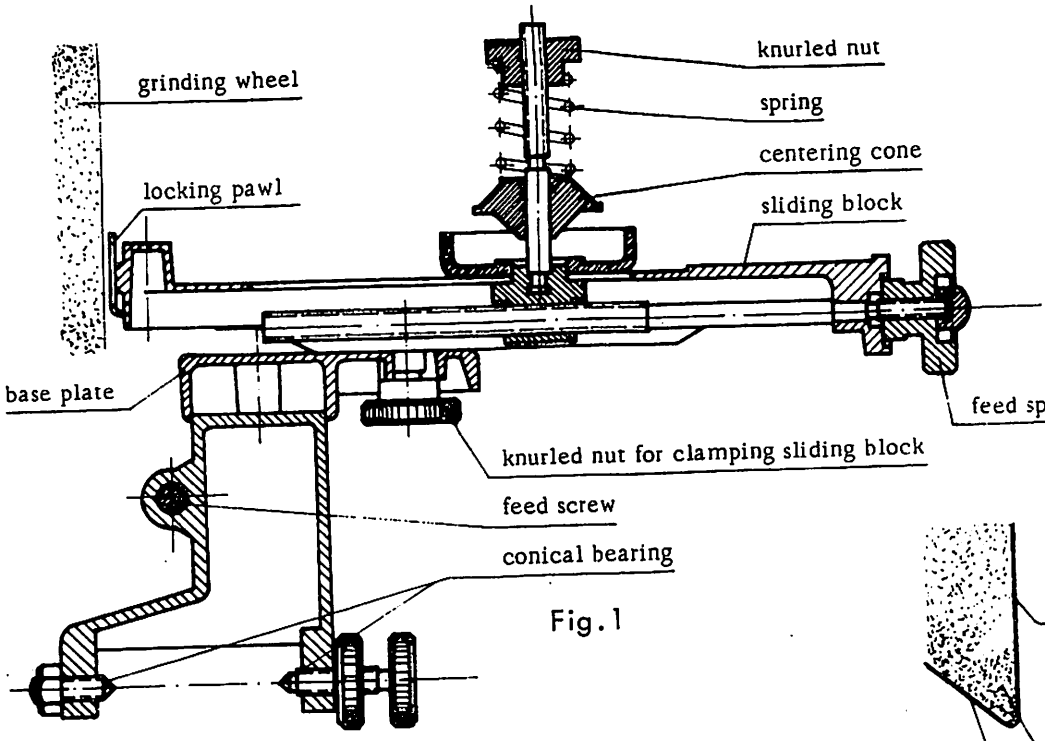


Fig.1

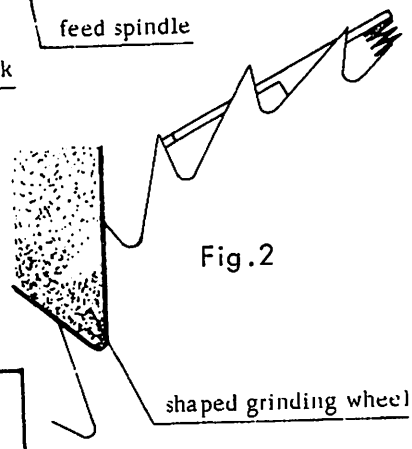


Fig.2

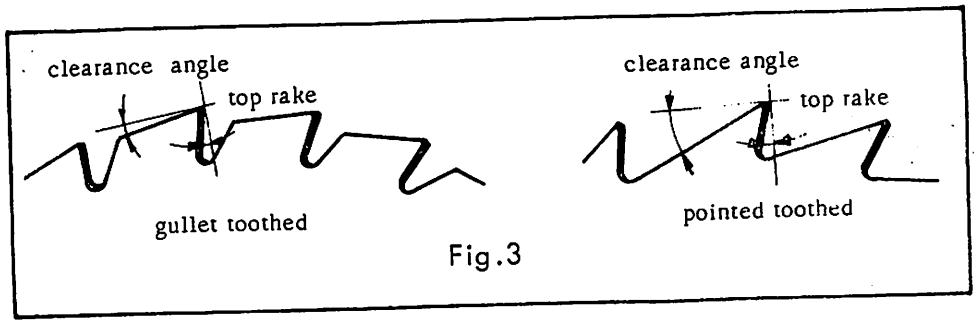


Fig.3

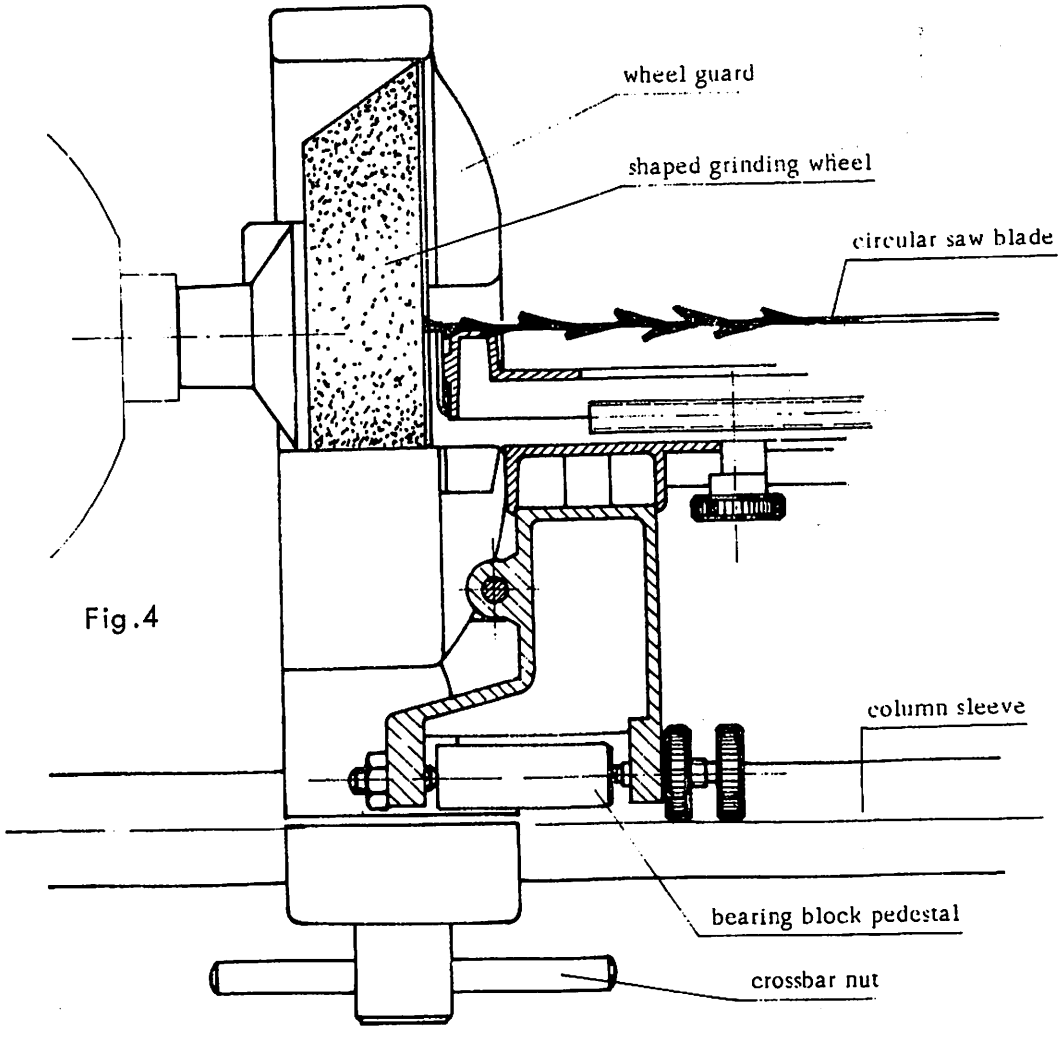
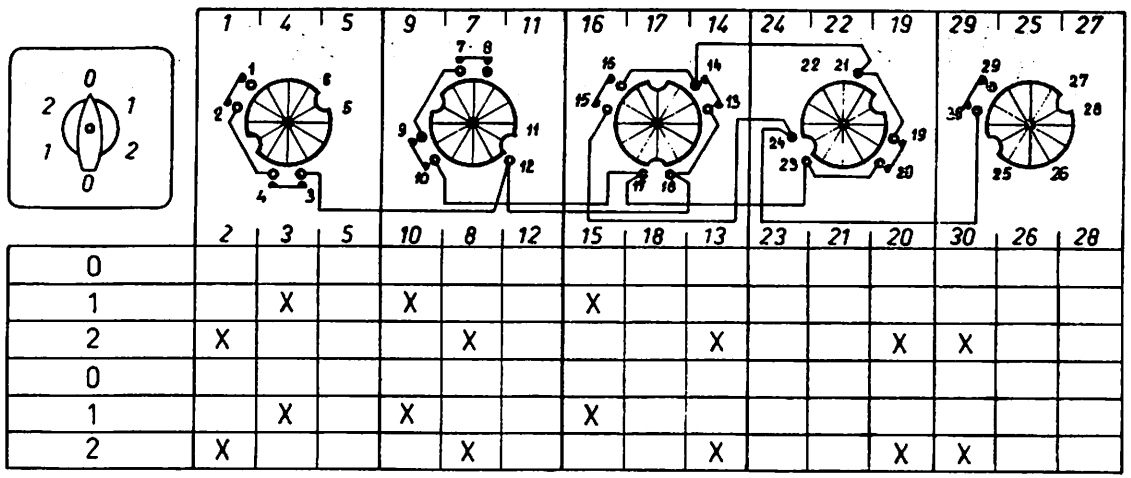
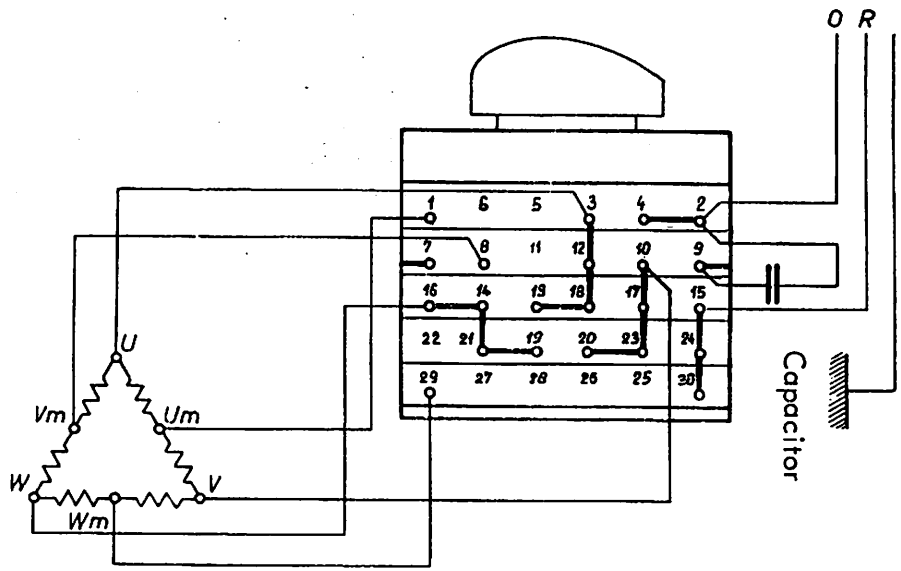


Fig.4

M 6 Wiring diagram for single-phase motor



	2	3	5	10	8	12	15	18	13	23	21	20	30	26	28
0															
1		X		X			X								
2	X				X				X			X	X		
0															
1		X		X			X								
2	X				X				X			X	X		



Dahlander switch B16 A443 E
Rotary switching and reversing lock
from 2 to 1 and 0 to 2

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machine tools

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EMCO STAR SWITCH CONNECTION

SWITCH ZA 4823

MOTOR CONNECTION
$U^1 = 1$
$V^1 = 16$
$W^1 = 3$

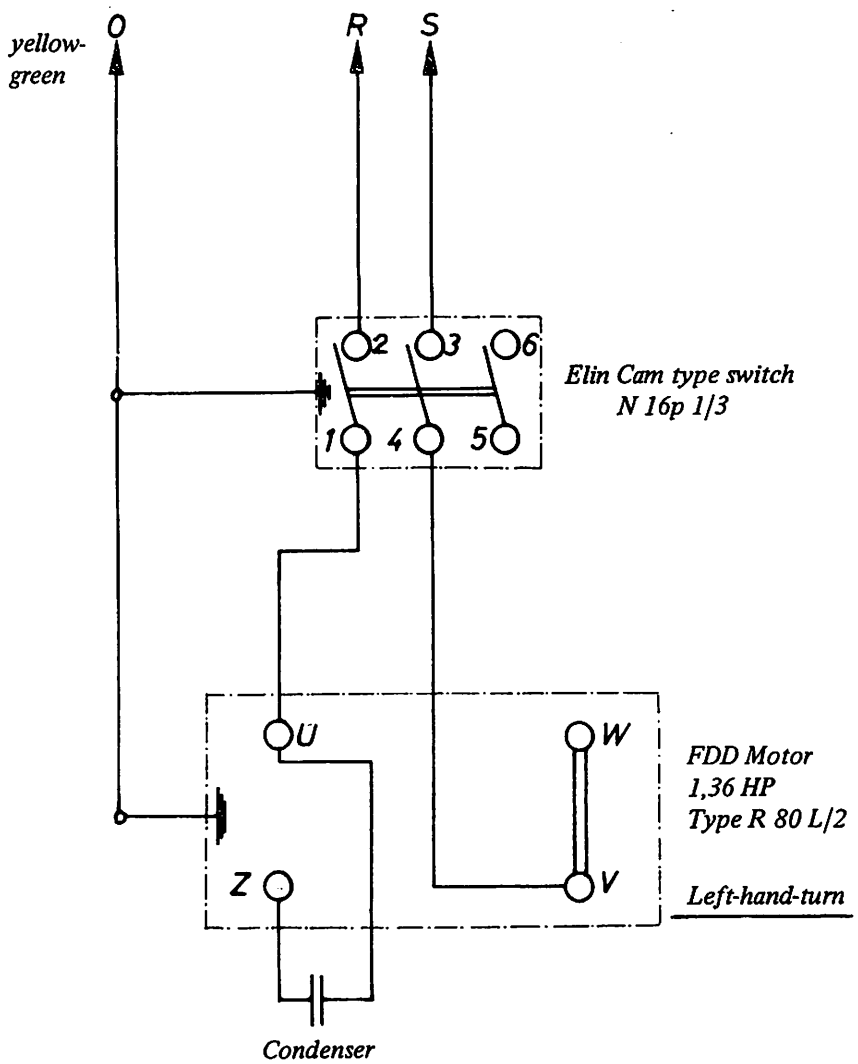
U = 5
V = 7
W = 10

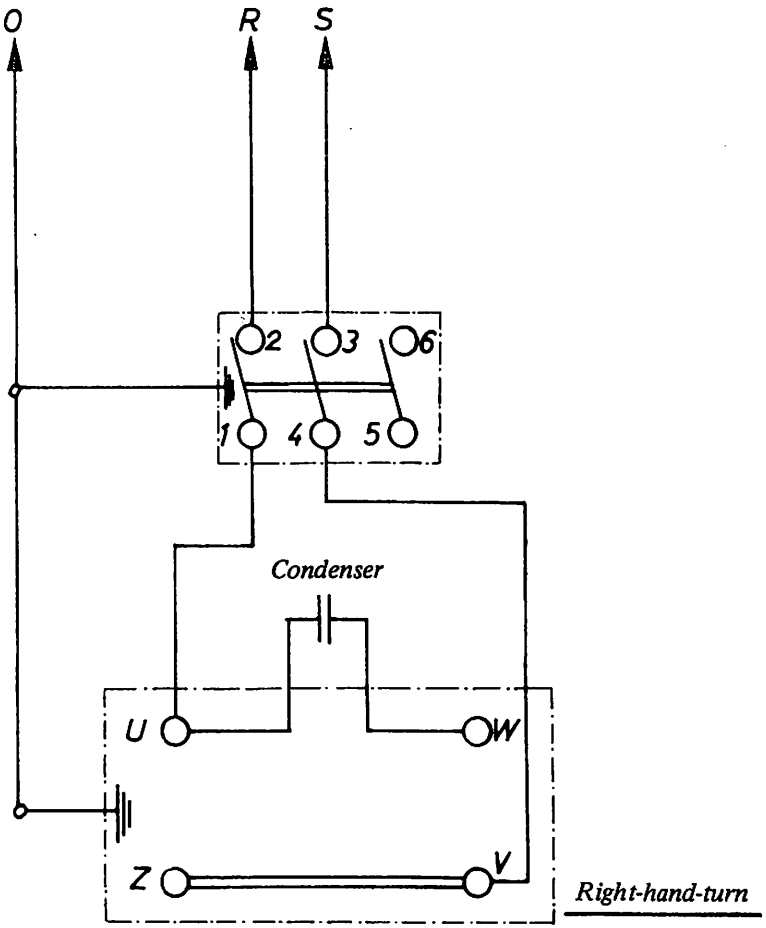
CAP CONNECTION
BLUE = 4
BROWN = 16

SWITCH 220 VOLT

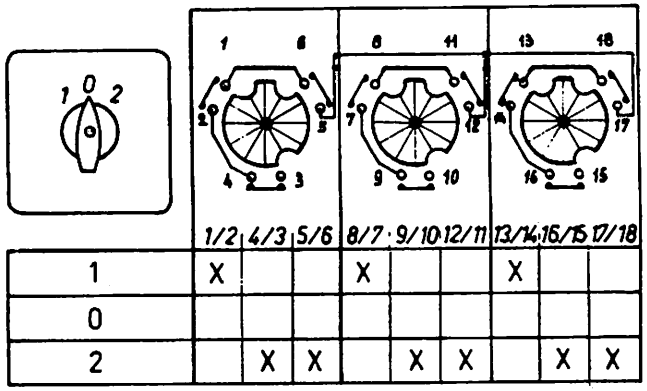
BLUE = 4
BROWN = 2
EARTH = BASE

WIRING DIAGRAM FOR ONE PHASE MOTOR EMCO-REX

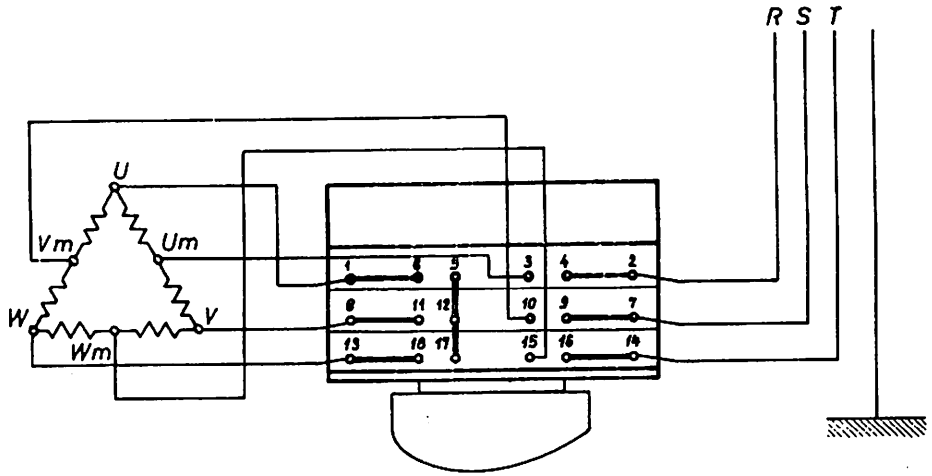




M 6 Wiring Diagram for three-phase motor

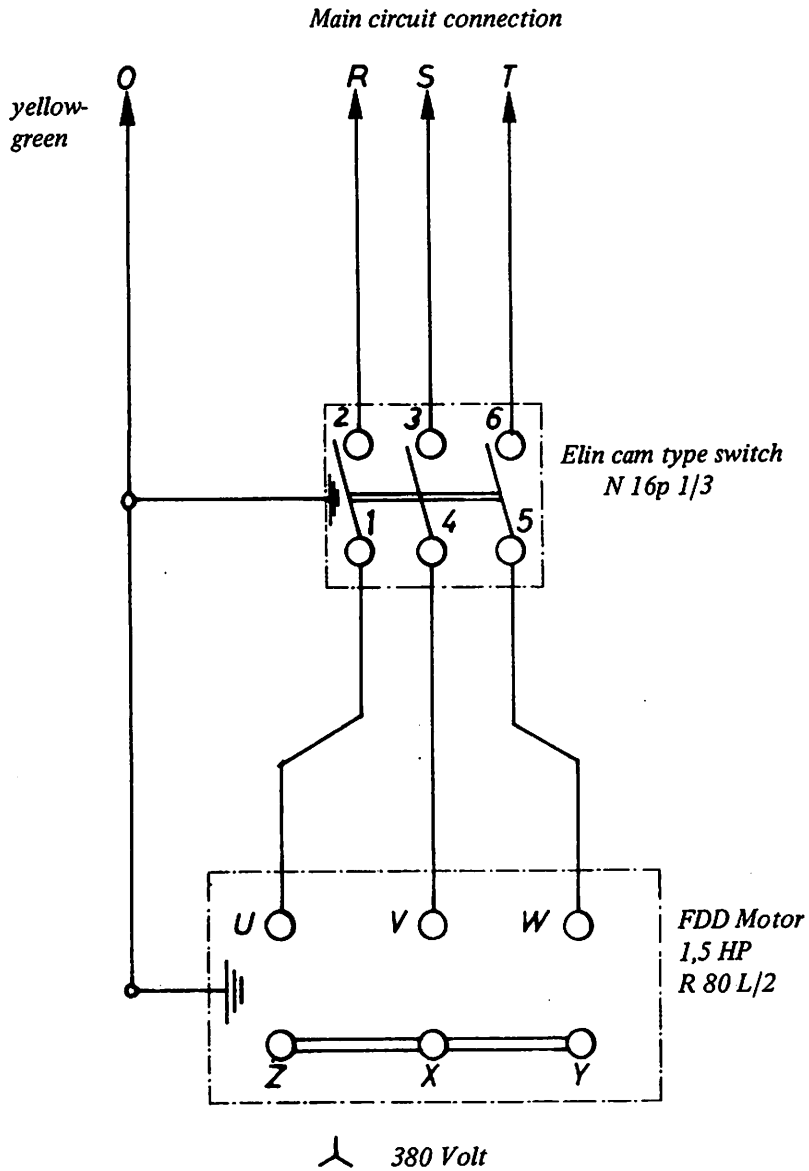


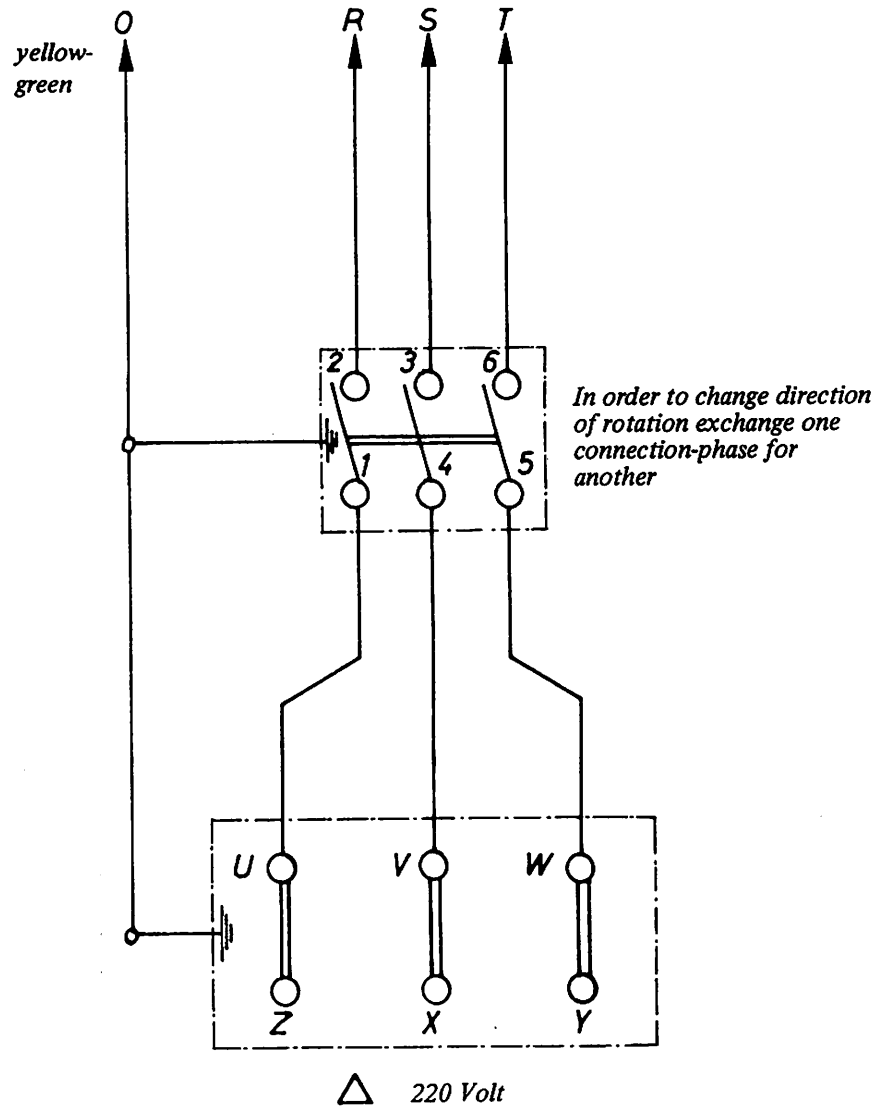
	1/2	4/3	5/6	8/7	9/10	12/11	13/14	16/15	17/18
1	X			X			X		
0									
2		X	X		X	X		X	X



Dahlander Switch B10 A441 E

WIRING DIAGRAM FOR THREE PHASE MOTOR OF EMCO-REX





emcostar

emco-pex

SERVICETEILE

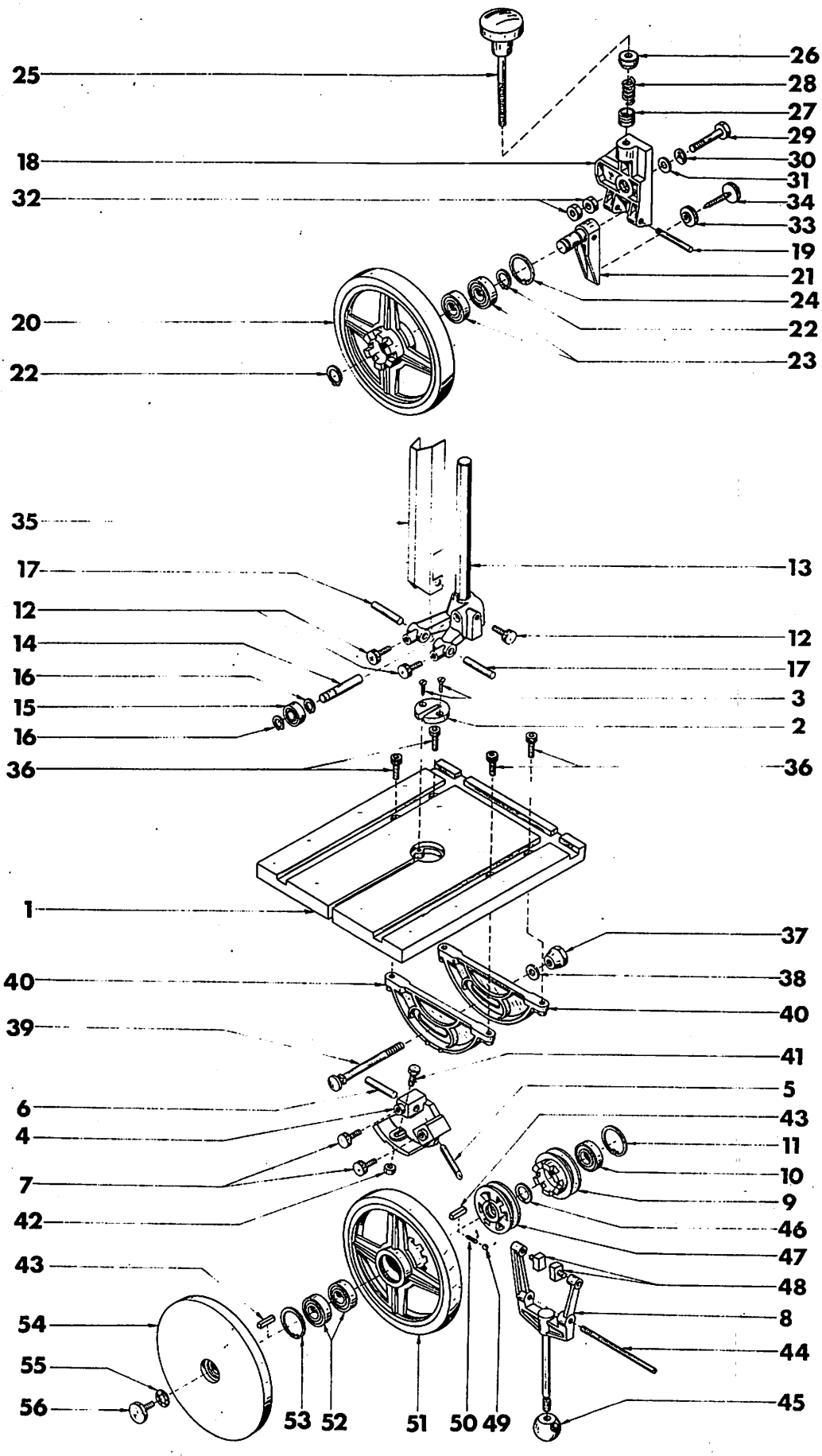
SERVICE PARTS

PIECES DE SERVICE

Ref.VS2 630 Auflage 7901

INDEX

				BEDIENUNGS–WERKZEUGE	TOOLS	CLES
Pos		DIN		Benennung	Description	Designation
1	H1A 000 240			Absteckstift	Locking pin	Goujon
2	H1A 000 300			Rohrsteckschlüssel	Tubular box spanner	Clé à douille
3	ZST 75 1110			Knebelkerbstift	Grooved pin	Goupille
	ZWZ 11 0500			Sechskantsteck-schlüssel	Hexagonal key	Clé six pans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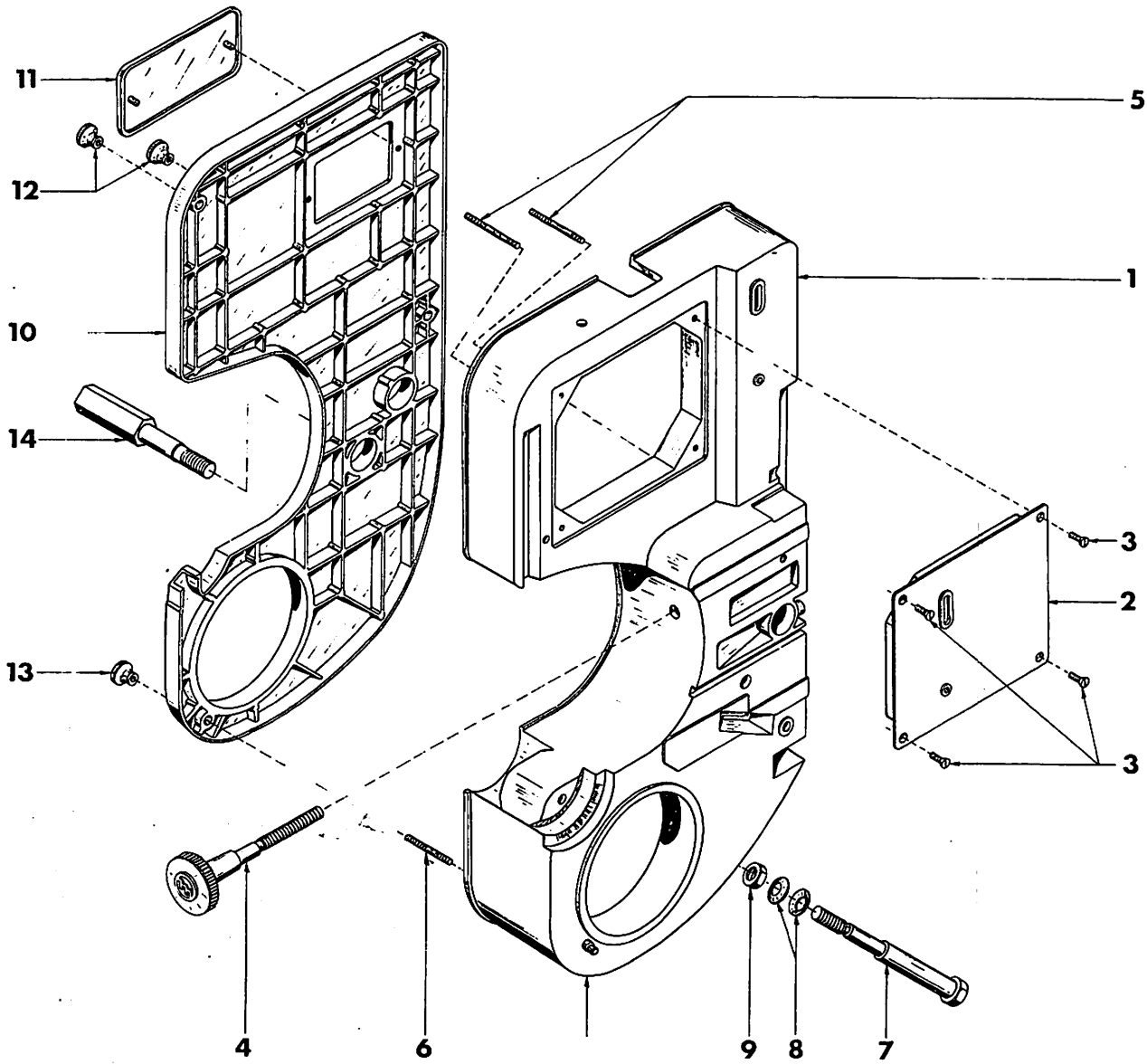
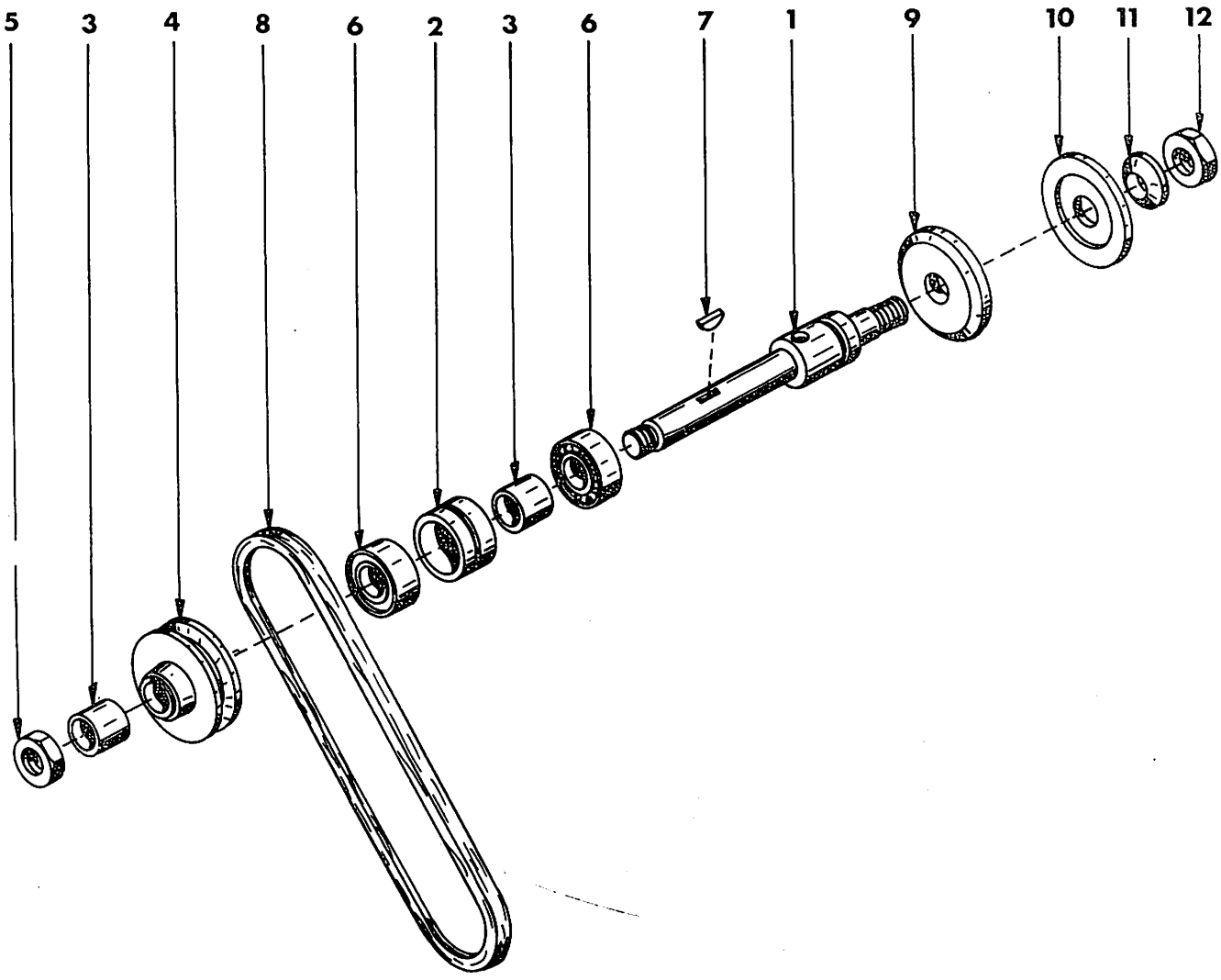
				Aufbaumontage	Assembly	Assemblage
Pos	Ref.No.	DIN		BENENNUNG	DESCRIPTION	DESIGNATION
	H1A 060 000			G.Bandsägetisch	Band saw tabl..[1]	Plateau de scie à ruban[1]
1	H1A 060 010			Bandsägetisch	Band saw table	Plateau de scie à ruban
2	H1A 060 020			Kunststoffeinlage	Insert	Pièce intercalaire
3	ZSR 63 0410	M4x10 DIN 963		Senkschraube	Countersunk screw	Vis noyée
	H1A 050 000			G.Bandsägeführung	Band saw guide[1]	Guidage de la scie à ruban[1]
4	H1A 050 010			Bandsägeführung	Band saw guide	Guidage de la scie à ruban
5	H1A 050 020			Führungsstift 45°	Guide pin 45°	Cheville de guidage 45
6	H1A 050 030			Führungsstift 33mm	Guide pin 33mm	Cheville de guidage 33mm
7	H1A 150 020			Rändelschraube	Knurled screw	Vis molete
8	H1A 040 000			G Schaltgabel	Fork lever[1]	Fourche d'embrayage[1]
	H1A 030 000			G.Kupplungsrad	Pulley[1]	Roue d'accouplement[1]
9	H1A 030 010			Kupplungsrad	Pulley	Roue d'accouplement
10	ZLG 60 0302	6003 - 2Z		Rillenkugellager	Ball bearing	Roulement à billes
11	ZRG 72 3515	35x1,5 DIN 472		Sicherungsring	Retaining ring	Anneau de retenue
	H1A 150 000			G.Führungskopf	Guide head[1]	Tête de guidage[1]
12	H1A 150 020			Rändelschraube	Knurled screw	Vis moletée
13	H1A 151 000			G.Bandsägekopf	Guide head[1]	Tête de scie à ruban[1]
	H1A 152 000			G.Anlauflager	Bearing[1]	Palier à recul[1]
	H1A 152 010			Bolzen	Bolt	Boulon
15	ZLG 60 0002	6000 - 2Z		Rillenkugellager	Ball bearing	Roulement à billes
16	ZRG 71 1010	10x1 DIN 471		Sicherungsring	Retaining ring	Anneau de retenue
17	H1A 050 030			Führungsstift 33mm	Guide pin 33mm	Cheville de guidage 33mm
	H1A 160 000			G.Bandsägeschlitten	Band saw slide[1]	Chariot[1]
18	H1A 160 010			Sägeschlitten	Saw slide	Chariot
19	H1A 160 020			Rändelstift 45	Knurled pin	Cheville moletée
20	H1A 161 000			G.Bandsägerolle	Band saw wheel[1]	Poulie de scie à ruban[1]
21	H1A 162 000			G.Schwenkhebel	Lever[1]	Levier[1]
22	ZRG 71 1510	15x1 DIN 471		Sicherungsring	Retaining ring	Anneau de retenue
23	ZLG 60 0201	6002 - Z		Rillenkugellager	Ball bearing	Roulement à billes
24	ZRG 72 3212	B32x1,2 DIN 472		Sicherungsring	Retaining ring	Anneau de retenue
25	ZGF 34 5078	50xM8x70 DIN6336		Sterngriff	Star handle	Poignée étoile
26	H1A 000 470			Oberer Federteller	Upper spring plate	Plaque supérieure
27	H1A 000 480			Unterer Federteller	Lower spring plate	Plaque inférieure
28	H1A 000 490			Druckfeder	Spring	Ressort
29	ZSR 31 0835	M8x35 DIN 931		Sechskantschraube	Hexagonal screw	Vis 6 pans
30	ZFD 93 1800	18x8 2x0,7 DIN 2093		Tellerfeder	Spring washer	Ressort Belleville
31	ZSB 25 0840	B8,4 DIN 125		Scheibe	Washer	Rondelle
	ZMU 34 0800	M8 DIN 934		Sechskantmutter	Hexagon nut	Ecrou 6 pans
33	ZMU 67 0600	M6 DIN 467		Rändelmutter	Knurled nut	Ecrou moletée
34	H1A 000 160			Rändelschraube	Knurled screw	Vis moletée
35	H1A 000 350			Bandsägeschutz	Band saw guard	Protecteur scie à ruban
36	Z 2 0616	M6x16 DIN 912		Zylinderschraube	Socket head screw	Vis 6 pans creux
37	H1A 000 330	M8		Mutter	Nut	Ecrou
38	ZSB 25 0840	B8,4 DIN 125		Scheibe	Washer	Rondelle
39	H1A 000 2 0			Flachrundschraube	Mushroom head screw	Boulon tête plate ronde
40	H1A 000 140			Segment	Locking section	Goupille de cisaillement
41	ZSR 33 0616	M6x16 DIN 933		Sechskantschraube	Hexagonal screw	Vis 6 pans
42	ZMU 34 0600	M6 DIN 934		Sechskantmutter	Hexagon nut	Ecrou 6 pans
43	H1A 000 050			Keil	Key	Lardon
44	H1A 000 090			Stiftschraube	Stud	Goujon
45	ZGF 19 3208	32xM8 DIN 319		Kugelknopf	Ball knob	Sphère
46	ZRG 12 1710	A 17x1		Seeger V-Ring	Seeger V-ring	Seeg V-bague
47	H1A 000 100			Schieberad	Gear	Engrenage coulissant
48	C3A 070 030			Gleitstein	Sliding pad	Patin
49	ZKG 00 1040	4GK3 DIN 5401		Stahlkugel	Ball	Bille acier
50	H1A 000 380			Rastenfeder	Spring	Ressort de compression
51	H1A 161 000			G.Bandsägerolle	Band saw wheel[1]	Poulie de scie à uban[1]
	ZLG 60 0201	6002 - Z		Rillenkugellager	Ball bearing	Roulement a billes
53	ZRG 72 3212	B32x1,2 DIN 472		Sicherungsring	Retaining ring	Anneau de retenue
54	H1A 000 260			Schleifteller	Sanding disc	Plateau à rectifier
55	ZSB 37 1021	B10x21 DIN137		Federscheibe	Spring washer	Rondelle à ressort
56	H1A 000 450			Ansatzschraube	Screw	Boulon à oreilles

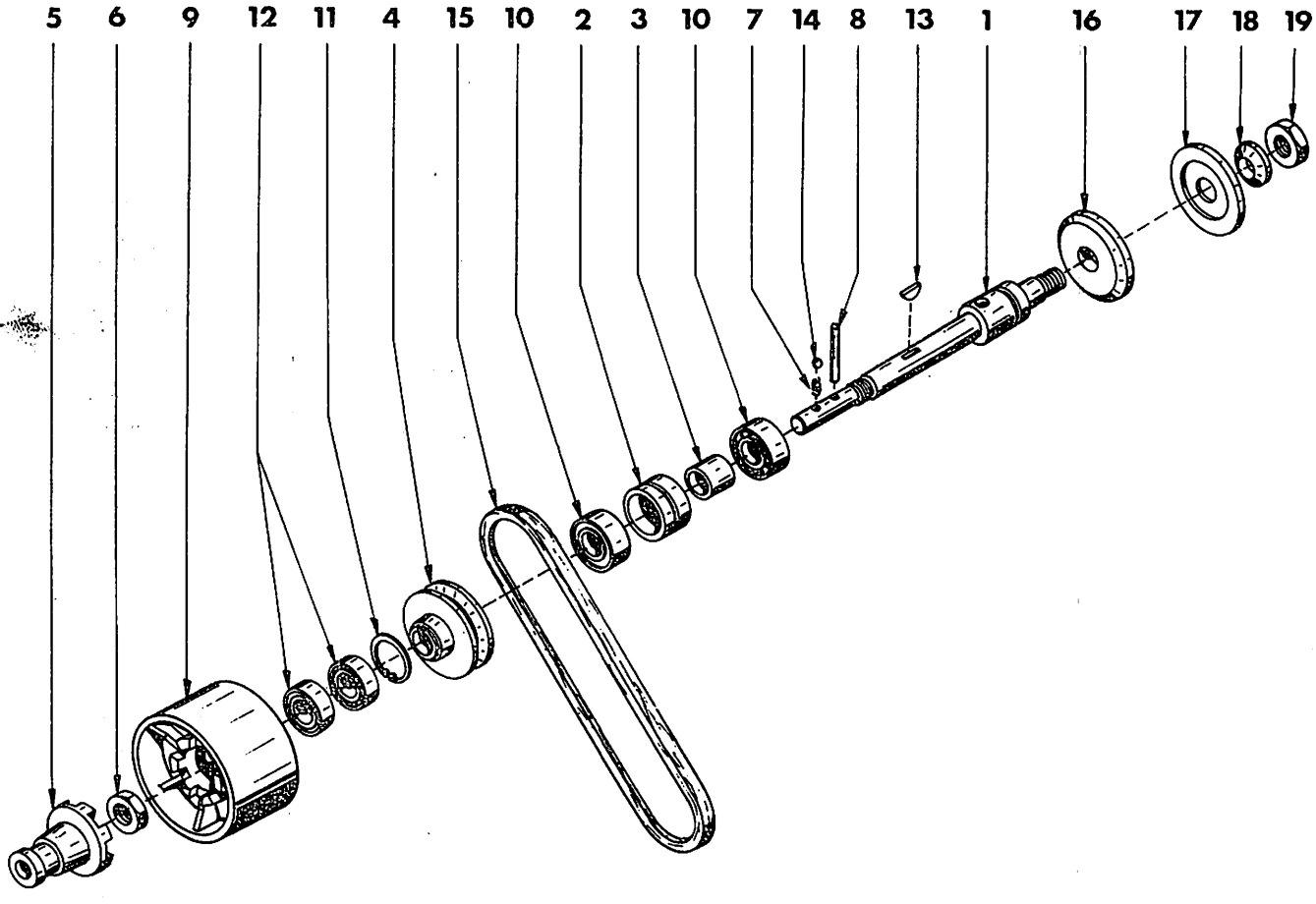


				Aufbaumontage	Assembly	Assemblage
Pos	Ref.No.	DIN		BENENNUNG	DESCRIPTION	DESIGNATION
	H1A 070 000			G Gehäuse	Housing	Corps
1	H1A 071 000			G. Gehäusekasten	Casing	Carter
2	H1A 072 000			G. Gehäuseplatte	Casing plate	Plaque de carter
3	ZSR 63 0615	M6x15 DIN 963		Senkschraube	Countersunk screw	Vis noyée
4	H1A 130 000			G. Handrad 65	Handwheel 65	Volant 65
5	H1A 000 410	M6x60		Stiftschraube	Stud	Goujon
6	H1A 000 400	M6x46		Stiftschraube	Stud	Goujon
7	H1A 000 060	M14x165		Schraube	Screw	Vis
8	ZFD 93 2801	28x14,2x1 DIN 2093		Tellerfeder	Spring washer	Ressort Belleville
9	H1A 000 070	M14		Mutter	Nut	Ecrou
10	H1A 000 200			Gehäusedeckel	Cover	Couvercle du corps
11	H1A 000 500			Firmenschild	Name plate	Ecusson
12	ZMU 66 0600	M6 DIN 466		Rändelmutter	Knurled nut	Ecrou moletée
13	H1E 000 030			Rändelmutter	Knurled nut	Ecrou moletée
14	H1A 000 250	M14 x 145		Schraube	Screw	Vis



	H1Z 080 000			G. Kreissägewelle NL	Circular saw spindle NL[1]	Arbre de la scie circulaire NL[1]
Pos	Ref. No.	DIN		BENENNUNG	DESCRIPTION	DESIGNATION
1	H1C 080 010			Kreissägewelle NL	Circular saw spindle NL	Arbre de la scie circulaire NL
2	H1A 080 020			Ring 35	Ring 35	Bague 35
3	H1A 080 030			Ring 20	Ring 20	Bague 20
4	H1A 080 040			Riemenscheibe 60	Belt pulley 60	Poulie 60
5	C3Z 310 070			Mutter	Nut	Ecrou
6	ZLG 62 0201	6202 - Z		Rillenkugellager	Ball bearing	Roulement à billes
7	ZFD 88 0350	3x5 DIN 6888		Scheibenfeder	Circlip	Clavette denu - lune
8	ZRM 08 0630	630x8x5		Keilriemen	V-belt	Courroie trapézoidale
9	H1A 000 210			Gegenscheibe M	Washer M	Contre - poulie M
	H1A 000 220			Spannscheibe	Clamping disc	Plateau de serrage
11	H1A 000 230			Ballenscheibe M	Spherical-type washer M	Plateau biseauté M
	ZMU 34 1400	M14 DIN 934		Sechskantmutter	Hexagon nut	Ecrou

1 complete/ensemble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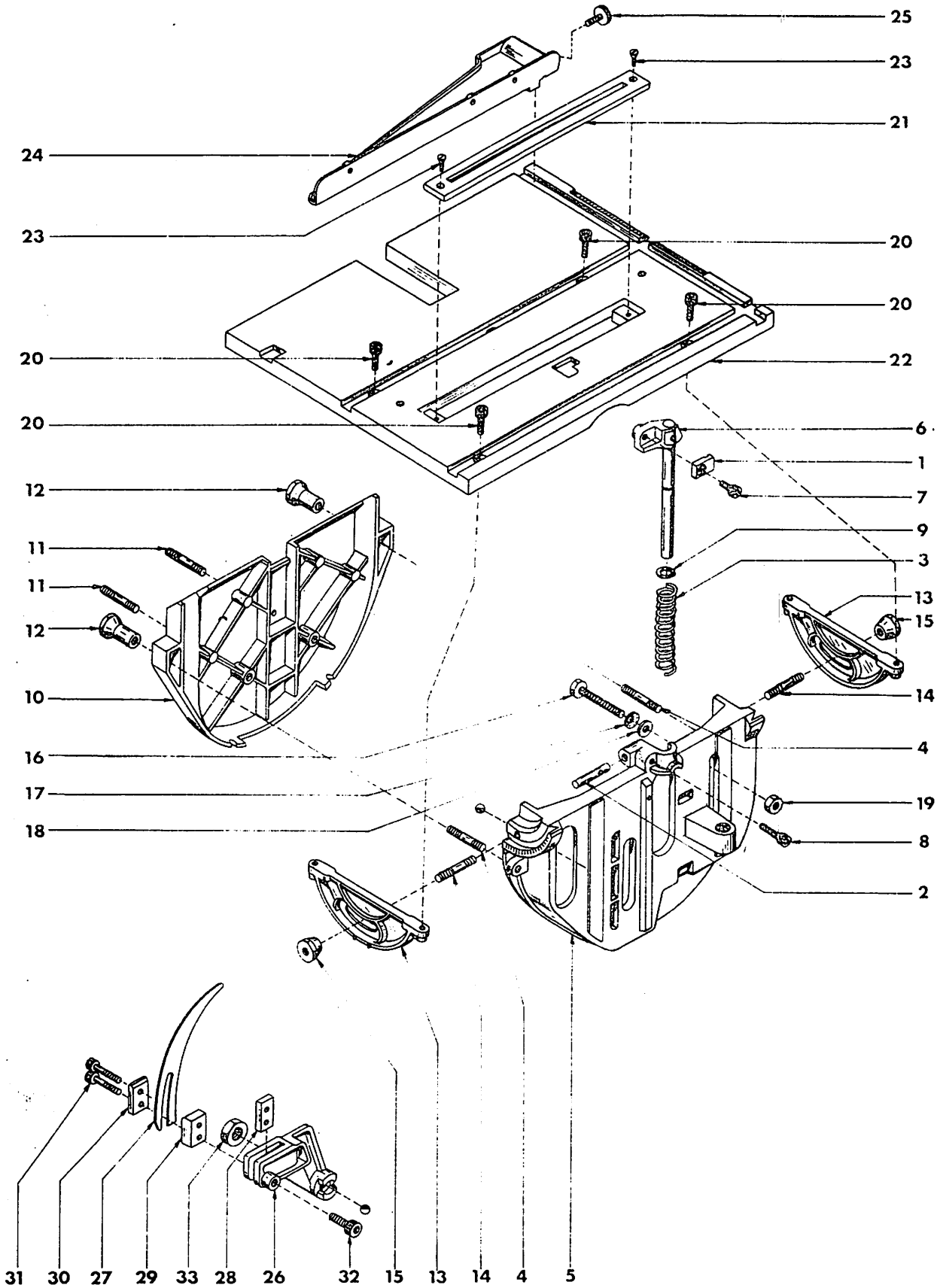
	H1A 080 000 H1B 080 000			G. Kreissägewelle M G. Kreissägewelle Ww	Circular saw spindle M[1] Circular saw spindle Ww[1]	Arbre de la scie circulaire M[1] Arbre de la scie circulaire Ww[1]
Pos	Ref. No.	DIN		BENENNUNG	DESCRIPTION	DESIGNATION
1	H1A 080 010			Kreissägewelle M	Circular saw spindle M	Arbre de la scie circulaire M
	H1B 080 010			Kreissägewelle Ww	Circular saw spindle Ww	Arbre de la scie circulaire Ww
2	H1A 080 020			Ring 35	Ring 35	Bague 35
3	H1A 080 030			Ring 20	Ring 20	Bague 20
4	H1A 080 040			Riemenscheibe 60	Belt pulley 60	Poulie 60
5	H1A 080 050			Kupplung	Coupling	Accouplement
6	C3Z 310 070			Mutter	Nut	Ecrou
7	C3A 160 080			Rastenfeder	Spring	Ressort
8	H1A 080 060	5x36		Knebelkerbstift	Pin	Tenon à encoche
	H1A 181 000			G. Schleifbandrolle	Sanding belt pulley[1]	Poulie à ruban émerisé[1]
9	H1A 181 010			Schleifbandrolle	Sanding belt pulley	Poulie à ruban émerisé
10	ZLG 60 0201	6002 - Z		Rillenkugellager	Ball bearing	Roulement à billes
11	ZRG 72 3212	32x1,2DIN 472		Sicherungsring	Retaining ring	Anneau de retenue
12	ZLG 62 0201	6202 - Z		Rillenkugellager	Ball bearing	Roulement à billes
13	ZFD 88 0350	3x5 DIN 6888		Scheibenfeder	Circlip	Clavette denu-lune
14	ZKG 00 1040	4,0 GK3 DIN5401		Stahlkugel	Ball	Bille acier
15	ZRM 08 0630	630x8x5		Keilriemen	V-belt	Courroie trapézoidale
16	H1A 000 210			Gegenscheibe M	Washer M	Contre-poulie M
	H1B 000 010			Gegenscheibe Ww	Washer Ww	Contre-poulie Ww
17	H1A 000 220			Spannscheibe	Clamping disc	Plateau de serrage
18	H1A 000 230			Ballenscheibe M	Spherical-type washer M	Plateau biseauté M
18	H1B 000 020			Ballenscheibe Ww	Spherical-type washer Ww	Plateau biseauté Ww
19	ZMU 34 1400	M14 DIN 934		Sechskantmutter	Hexagon nut	Ecrou

1 complete/ensemble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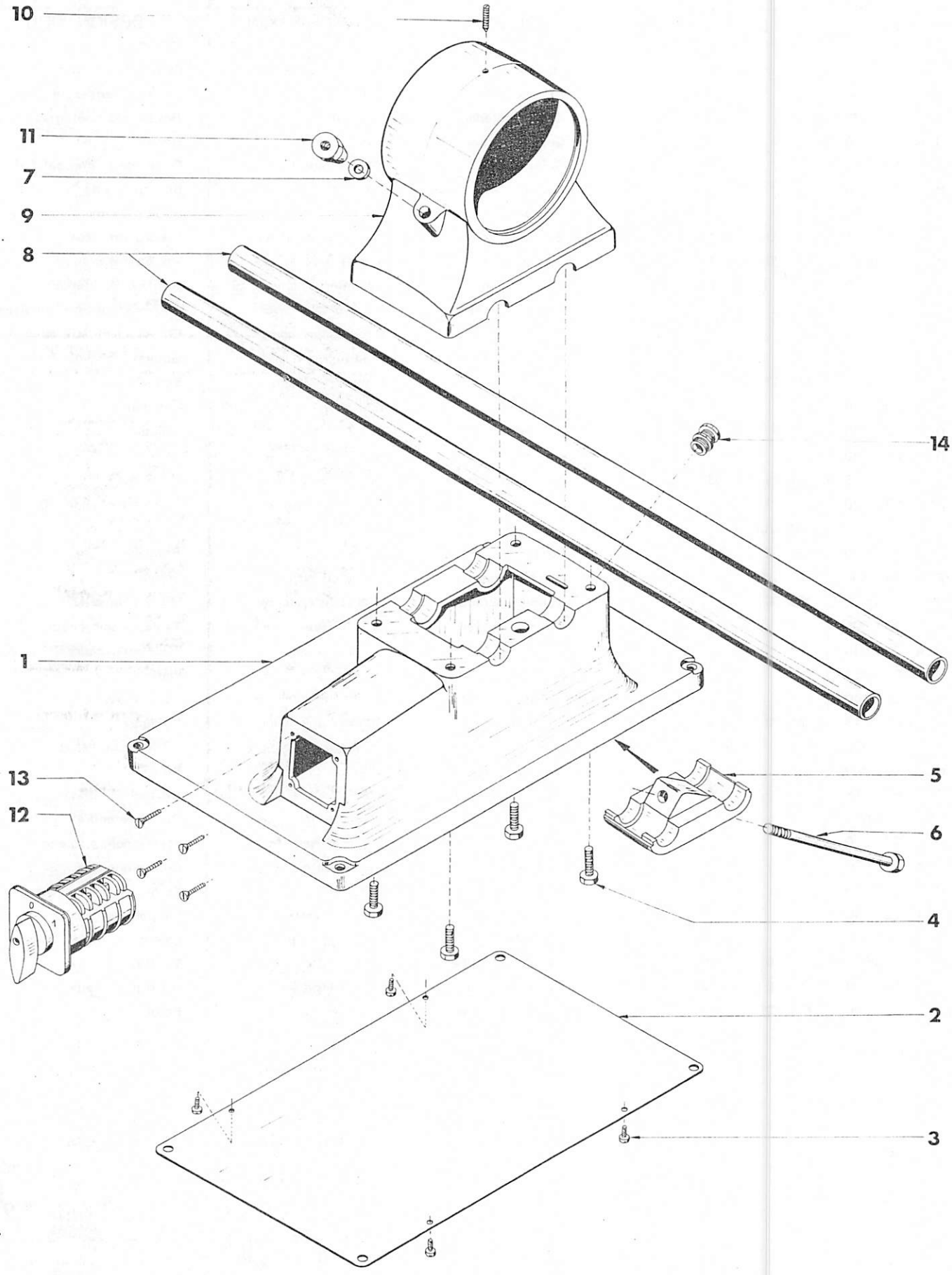
	H1A 120 000			G. Kreissägekasten	Circular saw box[1]	Carter de scie ciculaire[1]
Pos	Ref. No.	DIN		BENENNUNG	DESCRIPTION	DESIGNATION
1	H1A 120 010			Spannstück	Clamping pad	Petite plaque de serrage
2	A2Z 452 030			Anschlagbolzen	Stop pin	Doigt de fermeture
3	H1A 120 030			Zugbolzenfeder	Set bolt spring	Ressort du boulon tiraut
4	H1A 120 040			Gewindestift	Stud	Goujon
5	H1A 121 000			G.Sägekasten	Circular saw box[1]	Carter de scie circulaire[1]
	H1A 122 000			G.Zugbolzen	Set bolt[1]	Boulon tiraut[1]
6	H1A 122 010			Zugbolzen	Set bolt	Boulon tiraut
7	ZSR 12 0612	M6x12 DIN 912		Zylinderschraube	Socket head screw	Vis 6 pans creux
8	ZSR 12 0620	M6x20 DIN 912		Zylinderschraube	Socket head screw	Vis 6 pans creux
9	ZRG 71 1210	12x1 DIN 471		Sicherungsring	Retaining ring	Anneau de retenue
	H1A 210 000			G.Kreissägedeckel	Circular saw cover[1]	Couvercle de scie circulaire[1]
	H1A 211 001			G.Sägedeckel	Circular saw cover[1]	Couvercle de scie circulaire[1]
11	H1A 120 040			Gewindestift	Stud	Goujon
12	H1A 000 370	M8x30		Mutter	Nut	Ecrou
13	H1A 000 140			Segment	Segment	Segment
14	H1A 120 040			Gewindestift	Stud	Goujon
15	H1A 000 330	M8		Mutter	Nut	Ecrou
16	ZSR 33 0845	M8x45 DIN 933		Sechskantschraube	Hexagonal screw	Vis 6 pans
17	ZFD 93 1800	18x8,2x0,7 DIN 2093		Tellerfeder	Spring washer	Ressort Belleville
18	ZSB 25 0840	B8,4 DIN 125		Scheibe	Washer	Rondelle
19	ZMU 34 0800	M8 DIN 934		Sechskantmutter	Hexagon nut	Ecrou
20	ZSR 12 0616	M6x16 DIN 912		Zylinderschraube	Socket head screw	Vis 6 pans creux
	H1A 200 000			G.Kreissägetisch	Circular saw table[1]	Table de scie circulaire[1]
21	H1A 200 010			Einlage	Insert	Pièce intercalaire
22	H1A 201 000			G.Tischplatte M	Table M[1]	Plateau M[1]
22	H1B 201 000			G.Tischplatte Ww	Table Ww[1]	Plateau Ww[1]
23	ZSR 63 0412	M4x12 DIN 963		Senkschraube	Countersunk screw	Vis noyée
	H1A 230 000			G.Anschlagwinkel	Stop bracket[1]	Regle de butée[1]
24	H1A 231 000			G.Anschlag	Stop[1]	Butée[1]
25	ZSR 53 0615	M6x15 DIN 653		Fl.Rändelschraube	Knurled screw	Vis moletée plate
	H1A 220 000			G.Spaltkeil	Riving knife[1]	Coin à refendre[1]
26	H1A 220 010			Spaltkeilträger	Riving knife holder	Porte - coin à refendre
27	H1A 220 020			Spaltkeil	Riving knife	Coin à refendre
28	H1A 220 030			Doppelmutter	Plate	Ecrou double
29	H1A 220 040			Keilauflage	Spline support	Support de coin
30	H1A 220 050			Keilbeilage	Clamping strip	Cale du coin
31	ZSR 12 0630	M6x30 DIN 912		Zylinderschraube	Socket head screw	Vis 6 pans creux
32	ZSR 12 0820	M8x20 DIN 912		Zylinderschraube	Socket head screw	Vis 6 pans creux
33	ZMU 34 1400	M14 DIN 934		Sechskantmutter	Hexagon nut	Ecrou

1 complete/ensemble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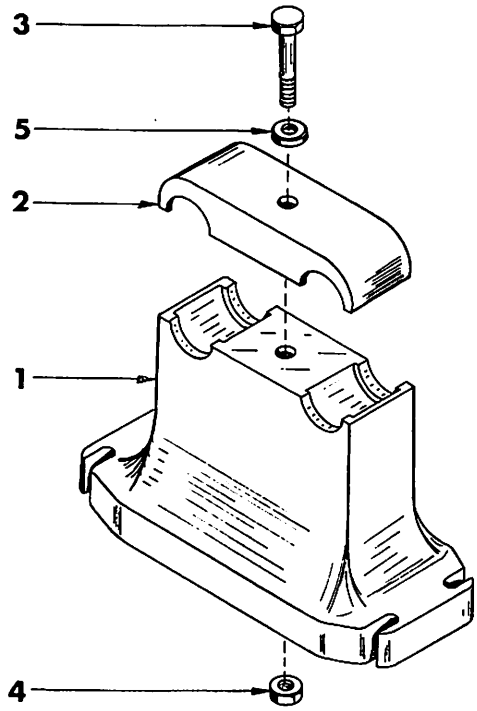
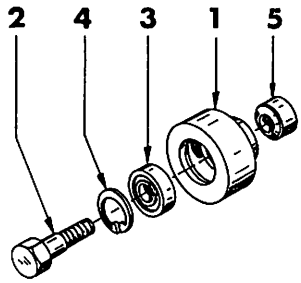
				Aufbaumontage	Assembly	Assemblage
Pos	Ref. No.	DIN		BENENNUNG	DESCRIPTION	DESIGNATION
1	H1A 000 022			Sockel	Pedestal	Socle
2	H1A 000 170			Bodenplatte	Base plate	Plaque de plancher
3	ZSR 14 0408	M4x8 DIN 7513		Gewindeschneidschraube	Self tapping screw	Boulon filetée
4	ZSR 33 0820	M8x20 DIN 933		Sechskantschraube	Hexagonal screw	Vis 6 pans
5	H1A 000 030			Schelle	Clamp	Bride
6	ZSR 31 1113	M10x130 DIN 931		Sechskantschraube	Hexagonal screw	Vis 6 pans
7	ZSB 25 1050	B10,5 DIN 125		Scheibe	Washer	Rondelle
8	H1A 000 310			Säule 850	Column 850	Colonne 850
9	H1A 020 000			G. Motorgehäuse	Motor casing[1]	Carter de moteur[1]
10	ZST 53 0620	M6x20 DIN 553		Gewindestift	Set screw	Goujon
11	H1A 000 340	M10		Mutter	Nut	Ecrou
12	ZEL 20 0443			1-phasen Schalter	Switch single — phase	Commutateur monophasé
12	ZEL 21 0441			3-phasen Schalter	Switch three — phase	Commutateur triphasé
13	ZSR 63 0615	M6x15 DIN 963		Senkschraube	Countersunk screw	Vis noyée
14	ZPG 10 0004			Kabelverschraubung	Screw-type conduit fitting	Presse - étoupe

1 complete/ensemble

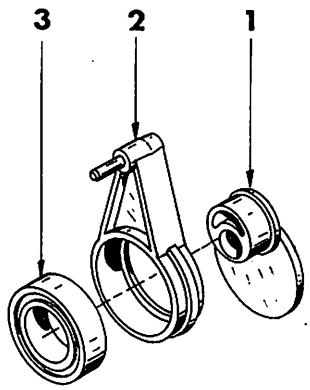


	H1A 270 000			G.Säulenfuß	Column base[1]	Base de colonne[1]
Pos	Ref.No.	DIN		BENENNUNG	DESCRIPTION	DESIGNATION
1	H1A 270 010			Säulenfuß	Column base	Base de colonne
2	H1A 270 030			Klemmplatte	Clamping plate	Plaque de fixation
3	ZSR 31 0840	M8x40 DIN 931		Sechskantschraube	Hexagonal screw	Vis 6 pans
4	ZMU 34 0800	M8 DIN 934		Sechskantmutter	Hexagon nut	Ecrou
5	ZSB 25 0840	B 8,4 DIN 125		Scheibe	Washer	Rondelle

1 complete/ensemble

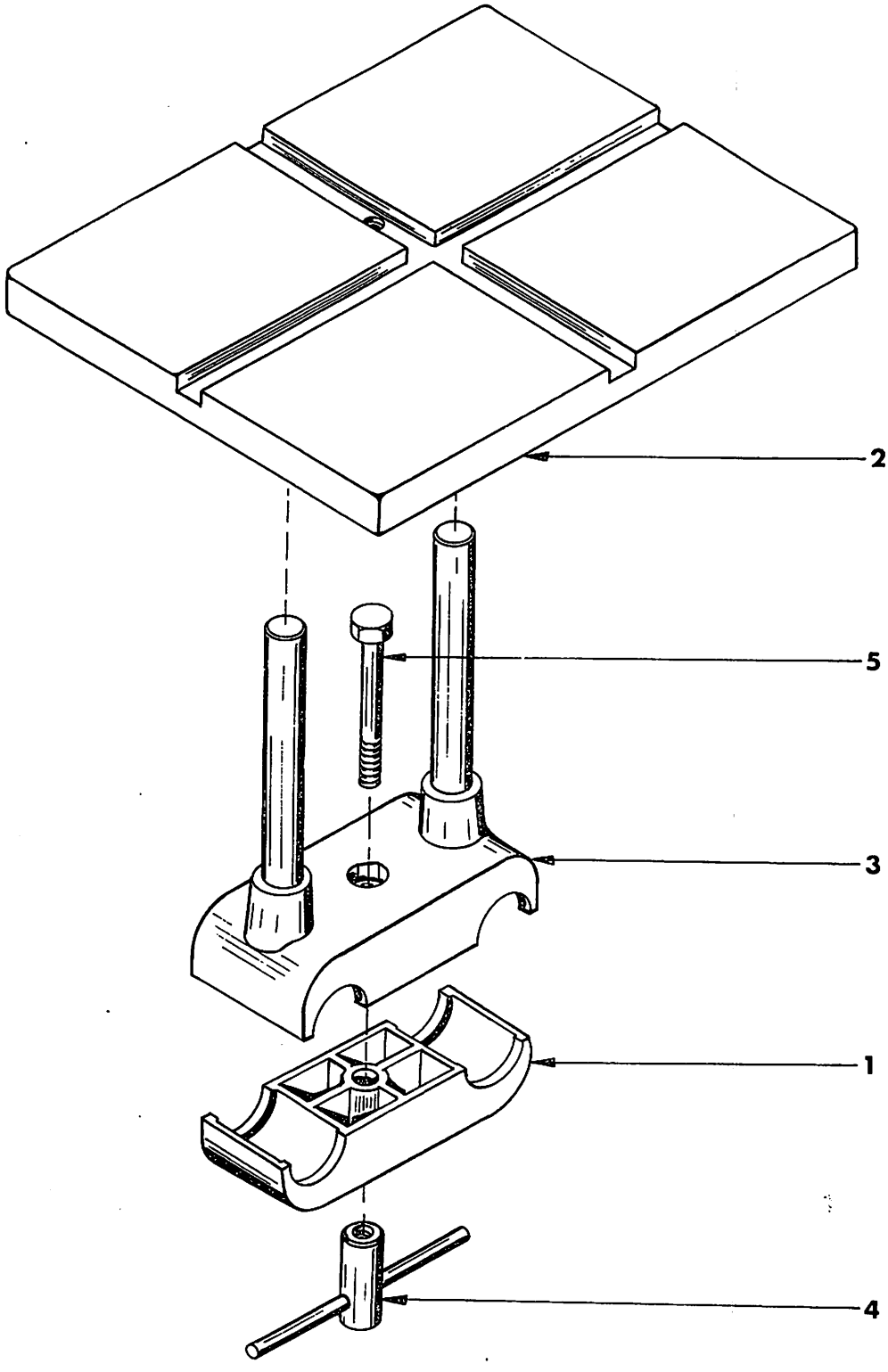


	H1A 090 000			G. Riemenspanner	Belt tensioninig device[1]	Tendeur de courroie[1]
	Ref.No.	DIN		BENENNUNG	DESCRIPTION	DESIGNATION
1	H1A 090 010			Spannrolle	Roller	Rouleau
2	H1A 090 020			Bolzen	Bolt	Boulon
3	ZLG 60 0002	6000 - 2Z		Rillenkugellager	Ball bearing	Roulement à billes
4	ZRG 72 2612	26x1,2 DIN 472		Sicherungsring	Retaining ring	Anneau de retenue
5	H1A 090 030			Distanzhülse	Spacer sleeve	Douille d'écartement



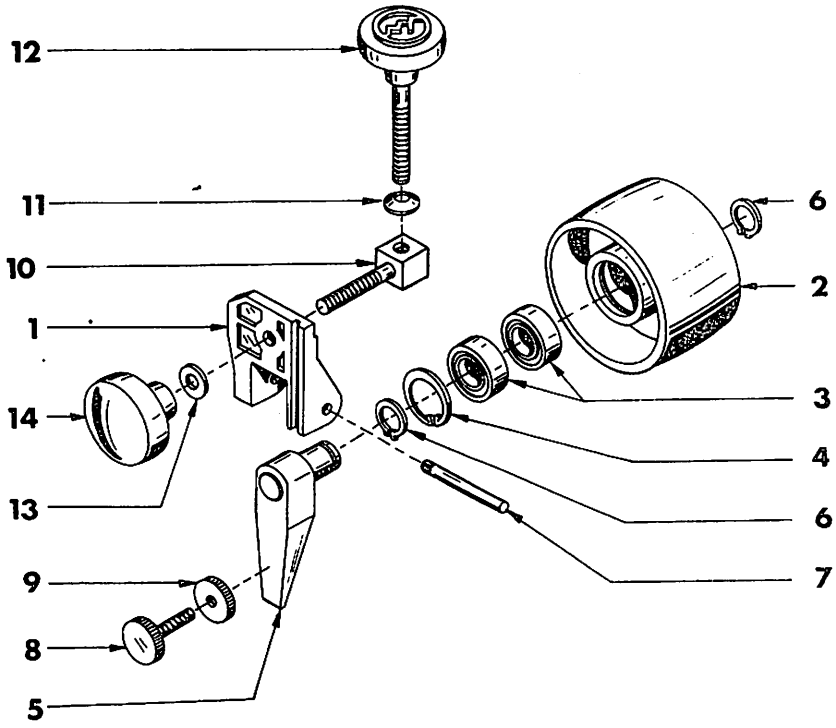
	H1A 140 000 H1B 140 000			G. Pleuel M G. Pleuel Ww	Connecting rod M[1] Connecting rod Ww[1]	Bielle M[1] Bielle Ww[1]
Pos	Ref.No.	DIN		BENENNUNG	DESCRIPTION	DESIGNATION
1	H1A 140 010			Auswuchtscheibe M	Balance weight M	Rondelle équilibreuse M
1	H1B 140 010			Auswuchtscheibe Ww	Balance weight Ww	Rondelle équilibreuse Ww
2	H1A 141 000			G. Pleuelarm	Connecting rod[1]	Bielle[1]
	ZLG 60 0602	6006 - 2Z		Rillenkugellager	Ball bearing	Roulement à billes

1 complete/ensemble



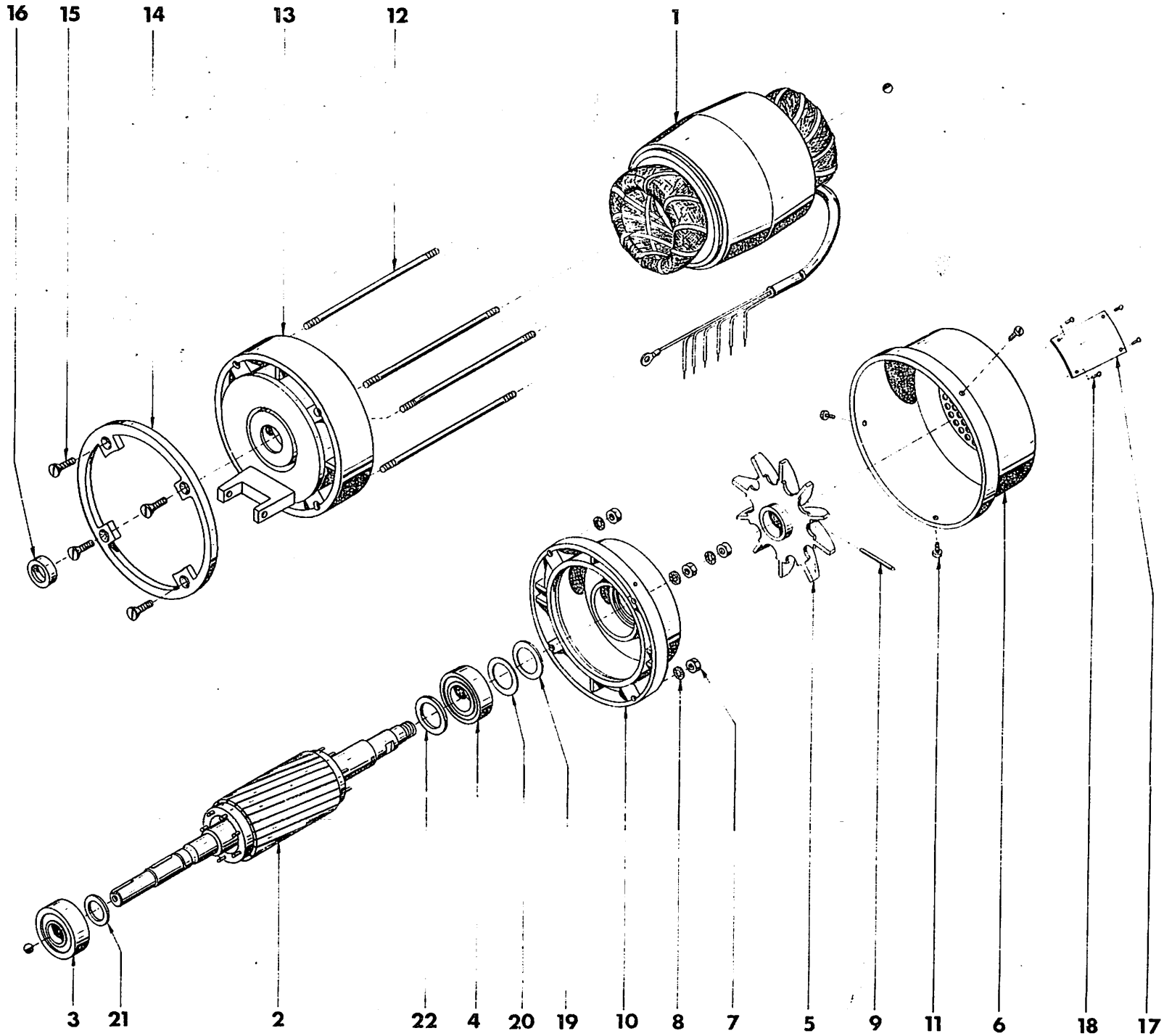
	H1A 300 000			SCHLEIFTISCH	SANDING TABLE	TABLE
Pos		DIN		Benennung	Description	Designation
1	H1A 270 030			Klemmplatte	Clamping cap	Plaque de fixation
2	H1A 300 010			Schleiftisch	Sanding table	Table
3	H1A 301 000			Gr. Schleiftischträger	Sanding table support	Support de table
4	H1A 302 000			Gr. Knebelmutter	Adjusting nut	Ecrou à oreilles
5	ZSR 31 0855	M8x55 DIN 931		Sechskantschraube	Hexagon head screw	Boulon hexagonal

1 complete/ensemble



	H1A 180 000			G.Schleifschlitten	Sanding slide[1]	Chariot de rectification[1]
Pos.	Ref.No.	DIN		BENENNUNG	DESCRIPTION	DESIGNATION
1	H1A 180 010			Schleifschlitten	Sanding slide	Chariot de rectification
	H1A 181 000			G.Schleifbandrolle	Sanding belt pulley[1]	Rouleau ruban émerisé[1]
2	H1A 181 010			Schleifbandrolle	Sanding belt pulley	Rouleau ruban émerisé
3	ZLG 60 0201	6002 - Z		Rillenkugellager	Ball bearing	Roulement à billes
4	ZRG 72 3212	32x1,2 DIN 472		Sicherungsring	Retaining ring	Anneau de retenue
5	H1A 162 000			G. Schwenkhebel	Rocking lever[1]	Levier pivotant[1]
6	ZRG 71 1510	15x1 DIN 471		Sicherungsring	Retaining ring	Anneau de retenue
7	H1A 160 020			Rändelstift	Grooved pin	Tenon à encoche
8	H1A 000 160			Rändelschraube	Knurled screw	Vis moletée
9	ZMU 67 0600			Rändelmutter	Knurled nut	Ecrou moletée
10	H1A 000 280			Spannbolzen	Stud	Cheville de serrage
11	ZFD 93 1800	18x8,2x0,7		Tellerfeder	Spring washer	Ressort Belleville
12	ZGF 34 5058	50xM8x50		Sterngriff	Star knob	Poignée étoile
13	ZSB 25 0840	B8,4 DIN 125		Scheibe	Washer	Rondelle
14	H1A 240 000			Sterngriff	Star knob	Poignée étoile

1 complete/ensemble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Pos	Ref.No.	DIN		Motor BENENNUNG	Motor DESCRIPTION	Moteur DESIGNATION
1	ZMW ..... *			Ständer	Stator	Stator
2	ZML ..... *			Läufer	Rotor	Rotor
3	ZLG 62 0502	6205 - 2Z		Rillenkugellager	Ball bearing	Roulement à billes
4	ZLG 63 0402	6304 - 2Z		Rillenkugellager	Ball bearing	Roulement à billes
5	H1A 000 040			Lüfterrad	Fan	Ventilateur
6	H1A 000 290			Lüfterhaube	Fan shield	Bague de ventilateur
7	ZMU 34 0600	M6 DIN 934		Sechskantmutter	Hexagon nut	Ecrou à 6 pans
8	ZSB 98 0640	A6,4 DIN 6798		Fächerscheibe	Spring washer	Rondelle éventail
9	ZHL 81 0436	4x36 DIN 1481		Spannhülse	Grooved pin	Manchon
10	H1A 000 010			Lagerschild	Bearing bracket	Flasque
11	ZSR 14 0408	M4x8 DIN 7513		Gewindeschneidschraube	Self-tapping screw	Boulon filetée
	H1A 010 000			G.Motordeckel	Motor casing end cover	Corps du moteur
12	H1A 010 010			Stiftschraube	Stud	Goujon
13	H1A 011 000			G.Motorschild	Bearing bracket	Ens. plaque du moteur
14	H1A 000 080			Bundring	Collar	Epaulement
	ZSR 63 0615	M6x15 DIN 963		Senkschraube	Countersunk screw	Vis noyée
16	H1A 000 430			Distanzring	Spacing ring	Bague d'épaisseur
17	H1A ..... *			Leistungsschild	Rating plate	Plaque indicatrice
18	ZNA 76 0144	1,4x4 DIN 1476		Kerbnagel	Rivet	Rivet de fixation
19	ZSB 12 4202	PS42x52x0,2		Paßscheibe	Washer	Rondelle
19	ZSB 12 4205	PS42x52x0,5		Paßscheibe	Washer	Rondelle
20	ZSB 00 6205	6205/K2		Ausgleichscheibe	Packing ring	Disque compensateur
21	ZSB 10 0282	SS20x28x2		Stützscheibe	Washer	Rondelle
22	ZSB 10 5352	SS25x35x2		Stützscheibe	Washer	Rondelle

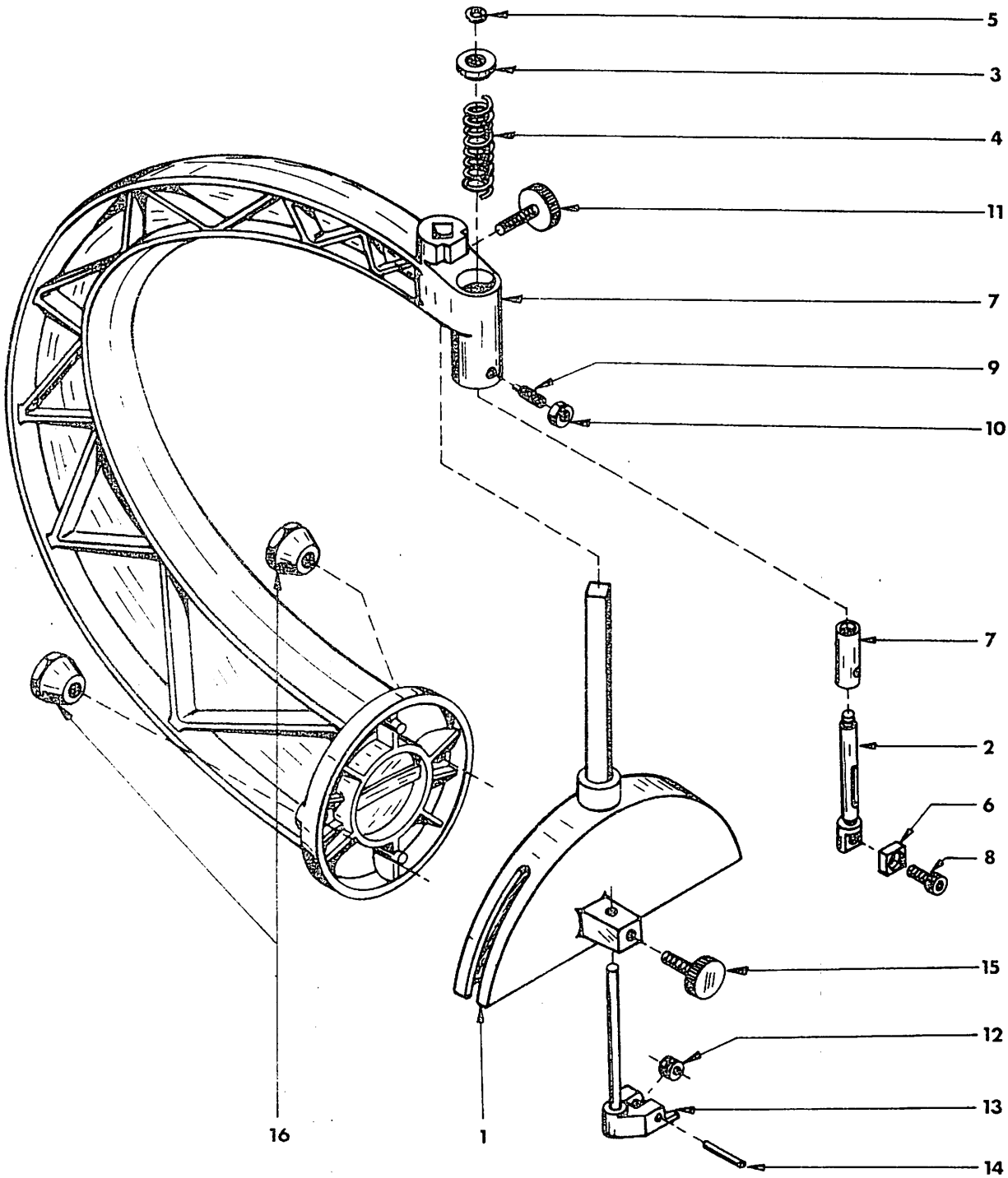
* Ref. Nr. siehe Tabelle
* Ref. Nr. see table
* Ref. Nr. voir tableau

Wechselstromausführung
Single phase equipment
Equipment monophase

Spannung Voltage (V) Tension	Frequenz Frequency Frequence	Ref. Nr. für Ständer Ref. Nr. for stator Ref. Nr. stator	Ref. Nr. für Läufer Ref. Nr. for rotor Ref. Nr. rotor	Ref. Nr. für Kondensator Ref. Nr. for condenser Ref. Nr. condensateur	Ref. Nr. für Leistungsschild Ref. Nr. for rating plate Ref. Nr. plaque indicatrice
110	50	ZMW 65 1110	ZML 14 1001	ZKO 15 0100	H1A 100 051
220	50	ZMW 65 1220	ZML 14 1000	ZKO 16 4447	H1A 100 021
230	50	ZMW 65 1230	ZML 14 1000	ZKO 16 4447	H1A 100 031
240	50	ZMW 65 1240	ZML 14 1000	ZKO 16 4447	H1A 100 051
250	50	ZMW 65 1250	ZML 14 1000	ZKO 16 4447	H1A 100 051
115	60 (CSA)	ZMW 64 1115	ZML 14 1001	ZKO 14 0100	H1A 100 061
115	60 (USA)	ZMW 66 1115	ZML 14 1001	ZKO 15 0100	H1A 100 051
220	60	ZMW 66 1220	ZML 14 1000	ZKO 16 4447	H1A 100 051
250	60	ZMW 66 1250	ZML 14 1000	ZKO 16 4447	H1A 100 051

Drehstromausführung
Three phase equipment
Equipment triphase

Spannung Voltage (V) Tension	Frequenz Frequency Frequence	Ref. Nr. für Ständer Ref. Nr. for stator Ref. Nr. stator	Ref. Nr. für Läufer Ref. Nr. for rotor Ref. Nr. rotor	Ref. Nr. für Leistungsschild Ref. Nr. for rating plate Ref. Nr. plaque indicatrice
220	50	ZMW 65 3220	ZML 14 1000	H1A 100 051
440	50	ZMW 65 3440	ZML 14 1000	H1A 100 051
380	50	ZMW 65 3380	ZML 14 1000	H1A 110 031
220	60	ZMW 66 3220	ZML 14 1000	H1A 100 051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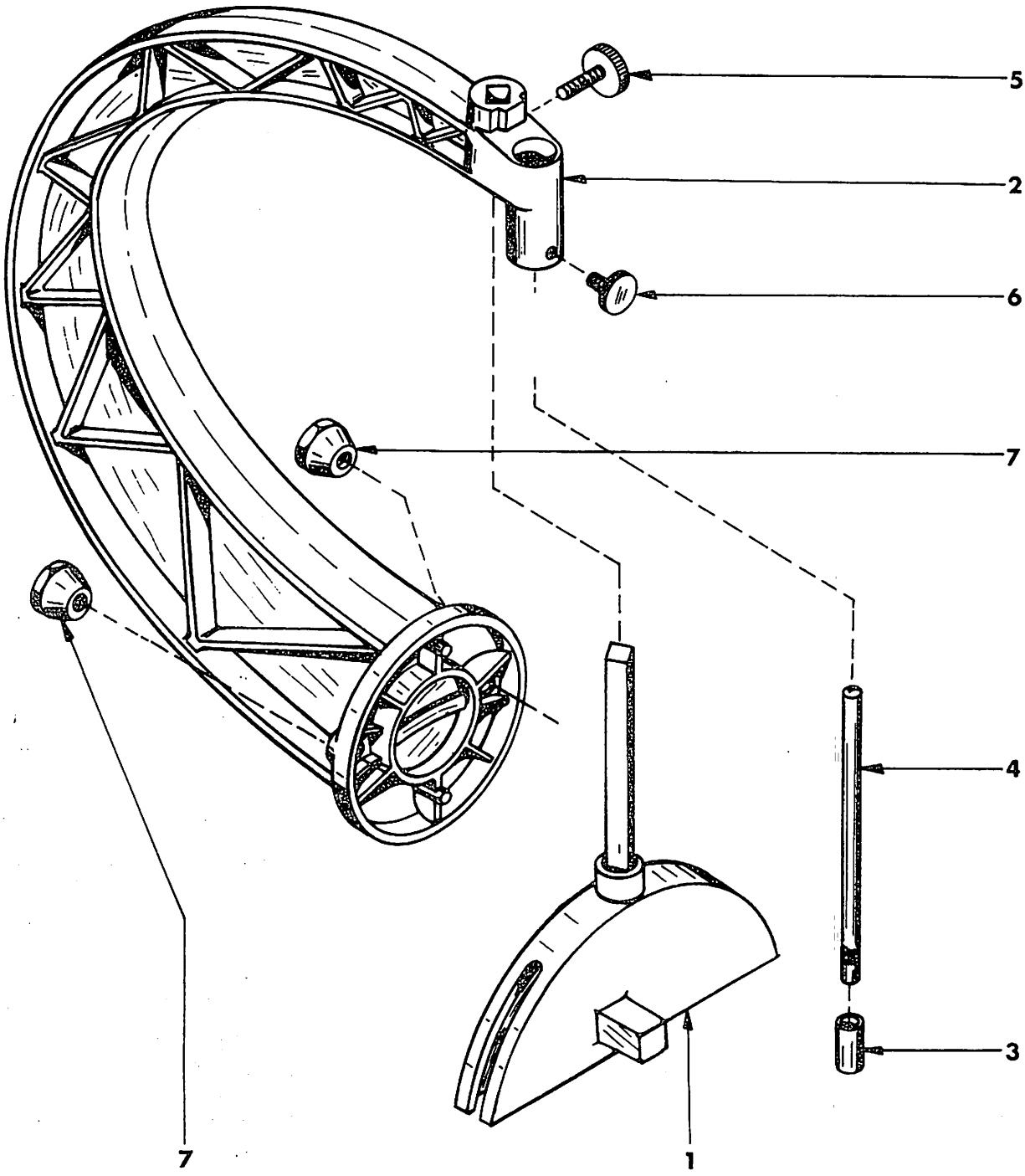
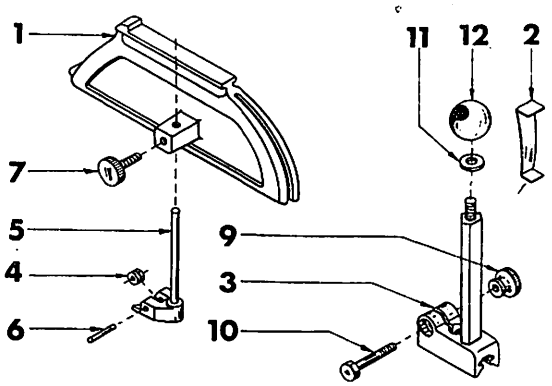
	H1A 190 000			G. Kreissägeschutz	Circular saw safety equipment[1]	Dispositif de protection de la scie circulaire[1]
	Ref.No.	DIN		BENENNUNG	DESCRIPTION	DESIGNATION
1	H1A 191 000			G.Sägeschutz	Circular saw guard[1]	Protection scie circulaire[1]
	H1A 192 000			G.Kreissägearm	Circular saw arm[1]	Bras de scie[1]
2	H1A 192 010			Federbolzen	Bolt for spring	Boulon de suspension
3	H1A 192 020			Federteller	Spring ring	Cuvette de ressort
4	H1A 192 030			Feder	Spring	Ressort
5	H1A 192 040			Springring	Circlip	Rondelle segment
6	H1A 192 050			Spannstück	Clamping block	Petite cale de serrage
7	H1A 193 000			G.Sägearm	Saw arm[1]	Bras de scie[1]
8	ZSR 12 0610	M6x10 DIN 912		Zylinderschraube	Socket head screw	Vis 6 pans creux
9	ZST 17 0515	5x15 DIN 417		Gewindestift	Grub screw	Cheville filetée
10	ZMU 34 0500	M5 DIN 934		Sechskantmutter	Hexagonal nut	Ecrou 6 pans
11	ZSR 53 0615	M6x15 DIN 653		Fl. Rändelschraube	Knurled - head screw	Vis moletée plate
	H1A 194 000			G. Niederhalter	Clamping pad[1]	Presse ôle[1]
12	H1A 194 010			Rolle	Roller	Rouleau
13	H1A 195 000			G.Halter	Bracket[1]	Support[1]
14	ZST 06 0320	3M6x20 DIN 7		Zylinderstift	Pin	Cheville
	ZSR 53 0615	M6x15 DIN 653		Fl. Rändelschraube	Knurled - head screw	Vis moletée plate
16	H1A 000 330	M8		Mutter	Nut	Ecrou

1 complete/ensemble

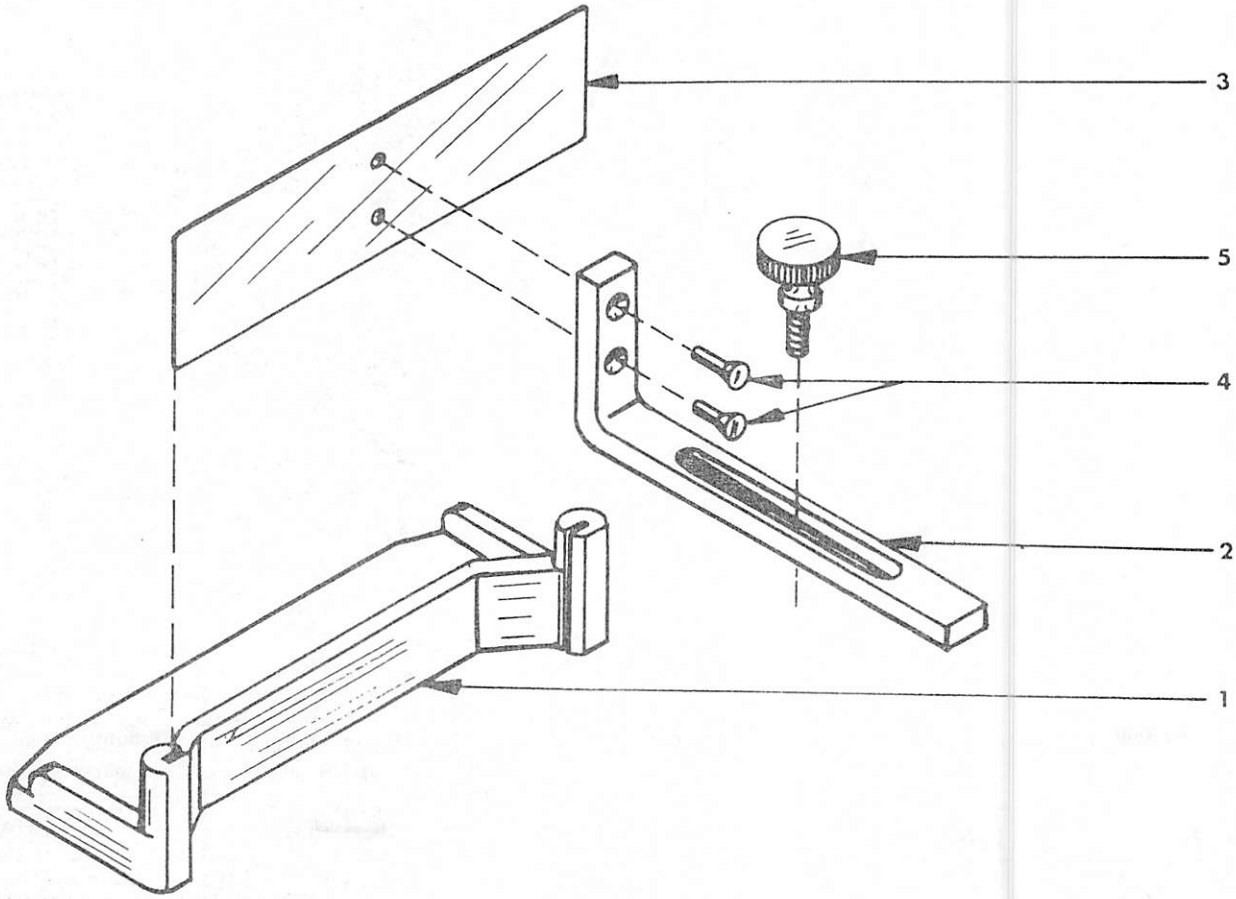


	H1E 190 000			G. Kreissägeschutz D	Circular saw safety equipment D[1]	Dispositiv de protection de la scie circulaire D[1]
Pos	Ref. No.	DIN		BENENNUNG	DESCRIPTION	DESIGNATION
1	H1E 191 000			G.Sägeschutz	Circular saw guard[1]	Protection scie circulaire[1]
2	H1A 193 000			G.Sägearm	Saw arm[1]	Bras de scie[1]
	H1E 196 000			G.Sägeführung	Saw guide[1]	Guidage de la scie[1]
3	H1E 196 010			Hülse	Sleeve	Douille
4	H1E 196 020			Sägeführung	Saw guide	Guidage de la scie
5	ZSR 53 0615	M6x15 DIN 653		Rändelschraube	Knurled screw	Vis moletée
6	ZSR 53 0512	M5x12 DIN 653		Rändelschraube	Knurled screw	Vis moletée
7	H1A 000 330	M8		Mutter	Nut	Ecrou



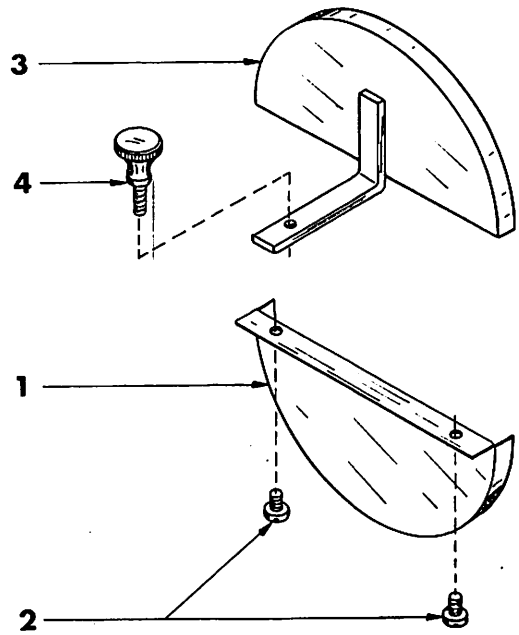
	H1C 190 000			G. Kreissägeschutz CH, NL	Circular saw safety equipment CH, NL[1]	Dispositif de protection de la scie circulaire CH, NL[1]
Pos	Ref. No.	DIN		BENENNUNG	DESCRIPTION	DESIGNATION
	H1C 190 010			Kreissägeschutz	Circular saw guard	Protection scie circulaire
2	H1C 190 020			Federblech	Spring plate	Tôle ressort
3	H1C 191 000			G.Sägeschutz	Guard carrier pillar [1]	Porte - protection[1]
	H1A 194 000			G. Niederhalter	Clamping pad [1]	Presse - tôle[1]
4	H1A 194 010			Rolle	Roller	Rouleau
5	H1A 195 000			G. Halter	Bracket [1]	Support[1]
6	ZST 06 0320			Zylinderstift	Pin	Cheville
7	ZSR 53 0615	M6x15 DIN 653		Rändelschraube	Knurled screw	Vis moletée
8	ZSR 64 0620	M6x20 DIN 464		Rändelschraube	Knurled screw	Vis moletée
9	ZMU 66 0600	M6 DIN 466		Rändelschraube	Knurled screw	Vis moletée
10	ZSR 33 0630	M6x30 DIN 933		Sechskantschraube	Hexagonal screw	Vis 6 pans
11	ZSB 25 0840	B 8,4 DIN 125		Scheibe	Washer	Rondelle
12	ZGF 19 3208	32xM8 DIN 319		Kugelknopf	Ball knob	Sphère star

1 complete/ensemble



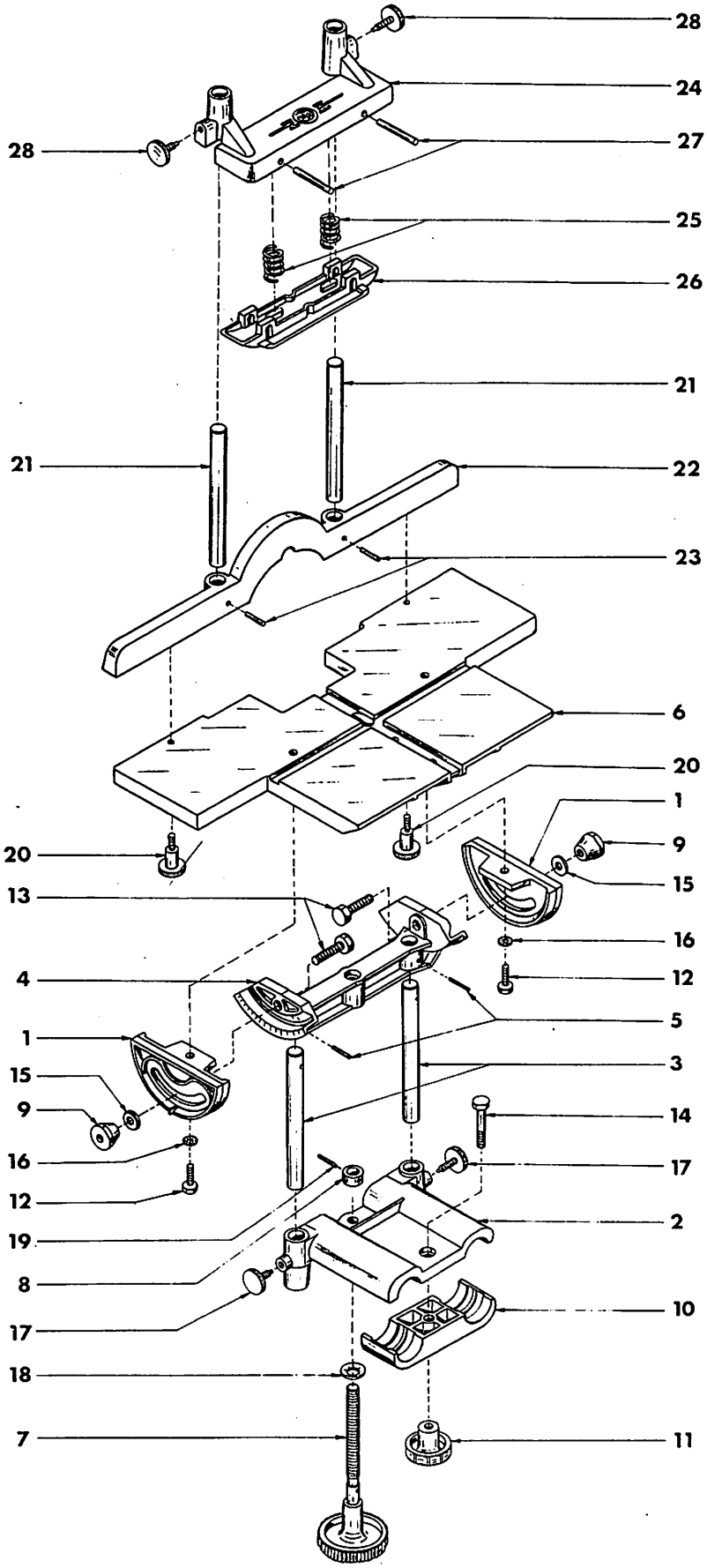
	H1Z 180 000			G. Seitenschutz	Lateral guard[1]	Protection latérale[1]
Pos	Ref. No.	DIN		BENENNUNG	DESCRIPTION	DESIGNATION
1	H1Z 180 010			Seitenschutz	Lateral guard	Protection latérale
	H1Z 181 000			G. Führungswinkel	Guide angle bracket[1]	Equerre de guidage[1]
2	H1Z 181 010			Führungswinkel	Guide angle bracket	Equerre de guidage
3	H1Z 181 020			Federblatt	Spring sheet	Ressort à lames
4	ZNI 61 0512	5x12 DIN 661		Senkniet	Countersunk head rivet	Rivet
5	A2Z 990 030			Rändelschraube	Knurled - head screw	Vis moletée plate

1 complete/ensemble



	H1A 250 000			G. Schleiftellerschutz	Grinding wheel guard[1]	P otecteur du disque de pon age
Pos	Ref.No.	DIN		BENENNUNG	DESCRIPTION	DESIGNATION
1	H1E 250 010			Schutzblech	Guard	Ecrou protecteur
2	ZSR 84 0608	M6x8 DIN 84		Zylinderschraube	Socket head screw	Vis cylindrique
	H1E 251 000			G. Schleiftellerab - deckung	Protection cover[1]	Protecteur[1]
3	H1E 252 000			G.Schleiftellerhaube	Protection hood[1]	Protecteur[1]
4	A2Z 990 030			Rändelschraube	Knurled screw	Vis moletée

1 complete/ensemble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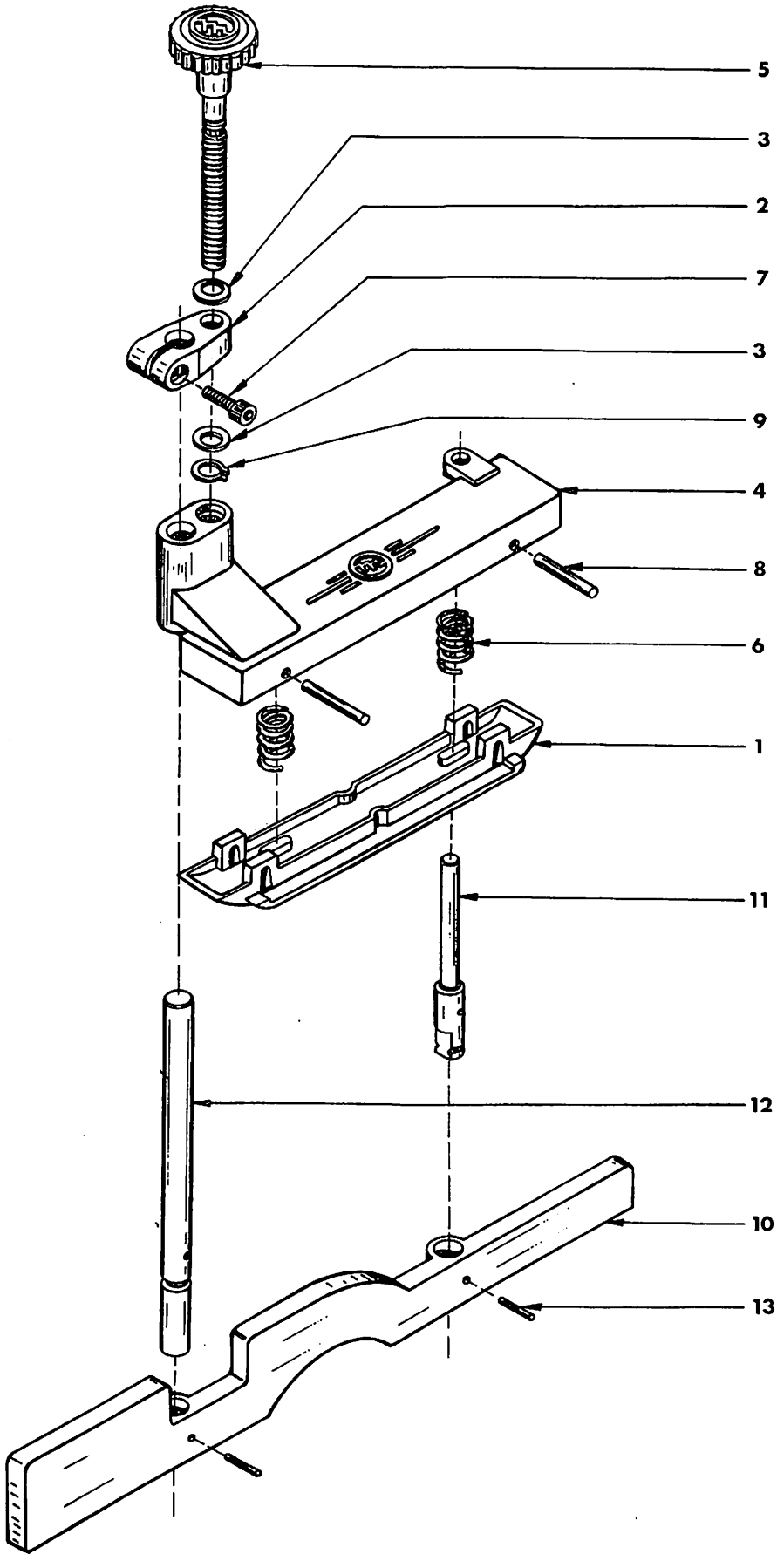
	H1Z 050 000			G. Frästisch	Milling table[1]	Table de fraisage[1]
Pos	Ref.No.	DIN		BENENNUNG	DESCRIPTION	DESIGNATION
1	H1Z 050 010			Segment	Segment	Segment
2	H1Z 050 020			Frästischträger	Milling table support	Support table de fraisage
	H1Z 051 000			G.Frästischführung	Milling table guide[1]	Guidage de table[1]
3	H1Z 051 010			Säule 138	Column 138	Colonne 138
4	H1Z 052 000			G.Tischführung	Table guide[1]	Guidage de table[1]
	ZHL 81 0320	3x20 DIN1481		Spannhülse	Grooved pin	Manchon
6	H1Z 053 000			G.Tisch	Table[1]	Table[1]
7	H1Z 054 000			G.Handrad 48	Hand wheel[1]	Volant[1]
8	H1A 000 130			Distanzring	Spacing ring	Anneau d'ecartement
9	H1A 000 330	M8		Mutter	Nut	Ecrou
10	H1A 270 030			Klemmplatte	Clamping plate	Plaque de serrage
11	H1A 240 000	M8		G.Sterngriff	Star handle[1]	Poignee - etaile[1]
12	ZSR 33 0616	M6x16 DIN 933		Sechskantschraube	Hexagonal screw	Vis 6 pans
13	ZSR 33 0830	M8x30 DIN 933		Sechskantschraube	Hexagonal screw	Vis 6 pans
14	ZSR 31 0840	M8x40 DIN 931		Sechskantschraube	Hexagonal screw	Vis 6 pans
15	ZSB 25 0840	B8,4 DIN 125		Scheibe	Washer	Rondelle
16	ZSB 98 0640	A6,4 DIN 6798		Fächerscheibe	Washer	Rondelle éventail
17	ZSR 53 0615	M6x15 DIN 653		Fl.Rändelschraube	Knurled screw	Vis moletée plate
18	ZFD 93 2501	25x12,2x0,9 DIN 2093		Tellerfeder	Spring ring	Ressort Belleville
19	ZHL 81 0320	3x20 DIN 1481		Spannhülse	Grooved pin	Manchon
	H1Z 060 000			G.Fräsaufsatz	Milling attachment[1]	Assemblage à fraiser[1]
	H1Z 060 010			Rändelschraube	Knurled screw	Vis moletée plate
	H1Z 061 000			G.Fräsanschlag	Milling stop[1]	Butée de fraisage[1]
21	H1Z 051 010			Säule 138	Column 138	Colonne 138
22	H1Z 062 000			G.Anschlag	Stop[1]	Butée[1]
23	ZHL 81 0320	3x20 DIN 1481		Spannhülse	Grooved pin	Manchon
	H1Z 063 000			G.Handschutz	Hand guard[1]	Pare - main[1]
24	H1Z 063 010			Handschutz	Hand guard	Pare - main
25	H1Z 063 020			Druckfeder	Compression spring	Ressort à pression
26	H1Z 063 030			Druckschuh	Pressure shoe	Coussinet à pression
27	ZST 61 0542	A5H11x42 DIN7341		Nietstift	Pin	Rivet à tige sans tête
28	ZSR 53 0615			Fl.Rändelschraube	Knurled screw	

1 complete/ensemble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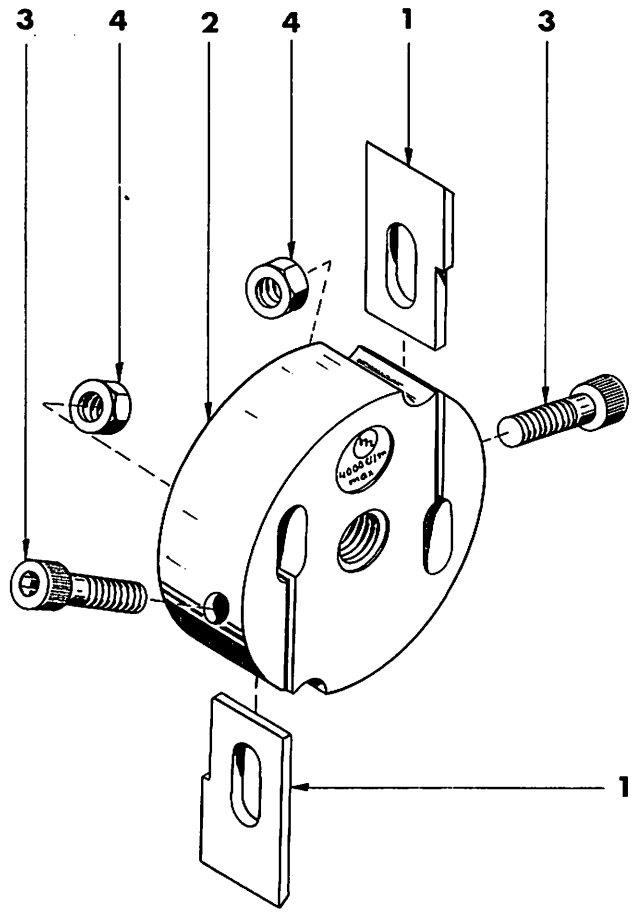
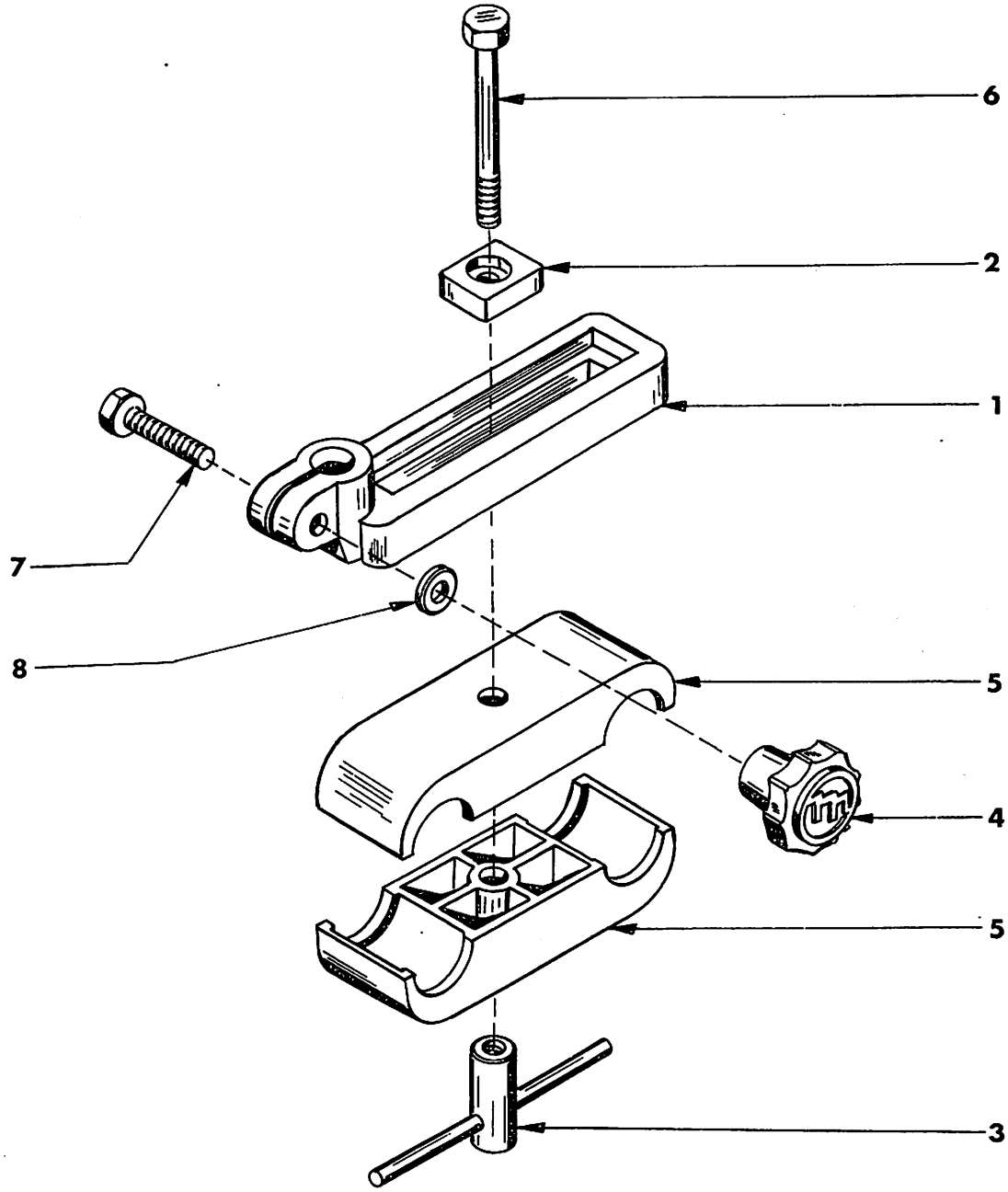
	H1Z 250 000			G. Fräsaufsatz	Milling attachment [1]	Assemblage à fraiser [1]
~~s	Ref.No.	DIN		BENENNUNG	DESCRIPTION	DESIGNATION
	H1Z 251 000			G. Handschutz	Hand guard [1]	Pare - main [1]
1	H1Z 251 010			Druckschuh	Pressure shoe	Coussinet à pression
2	H1Z 251 020			Klemme	Clamp	Bridge
3	H1Z 251 040			Tellerfeder	Disc spring	Ressort Belleville
4	H1Z 252 000			G. Schutz	Guard [1]	Protecteur [1]
5	H1Z 253 000			G. Handrad 48	Hand wheel [1]	Volant [1]
6	H1Z 063 020			Druckfeder	Compression spring	Ressort à pression
7	ZSR 12 0620	M6x20 DIN 912		Zylinderschraube	Socket head screw	Vis 6 pans creux
8	ZST 61 0542	A5H11x42 DIN7341		Nietstift	Pin	Rivet à tige sans tête
9	ZRG 71 1210	12x1 DIN 471		Sicherungsring	Retaining ring	Anneau de retenue
	H1Z 254 000			G. Fräsanschlag	Milling stop [1]	Butée de fraisage [1]
10	H1Z 254 010			Fräsanschlag	Milling stop	Butée de fraisage
11	H1Z 254 020			Säule 110	Column 110	Colonne 110
12	H1Z 245 020			Säule 200	Column 200	Colonne 200
13	ZHL 81 0322	3x22 DIN 1481		Spannhülse	Grooved pin	Manchon

[1] complete/ensemble



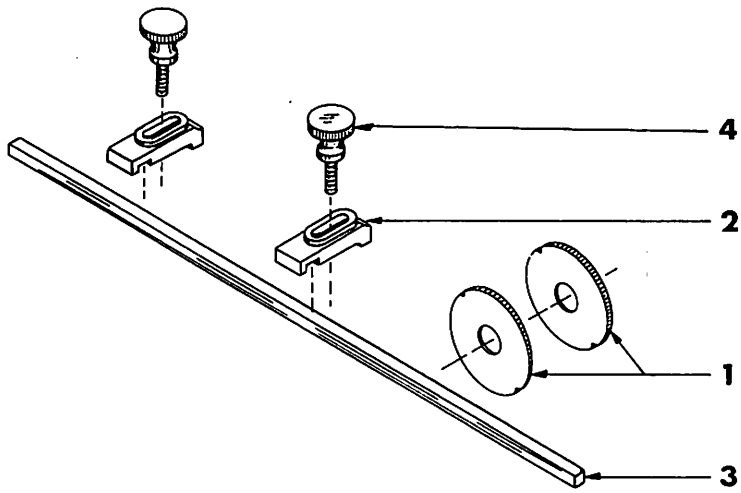
	H1Z 070 000			G. Fräskopf	Milling cutter [1]	Tête porte-fraise [1]
Pos	Ref. No.	DIN		BENENNUNG	DESCRIPTION	DESIGNATION
1	H1Z 301 000			G. Flachmesser	Cutter blade [1]	Lame plate [1]
2	H1Z 071 000			G. Messerkopf	Milling cutter body [1]	Fraise à plaquettes perdues [1]
3	ZSR 12 0820	M8x20 DIN 912		Zylinderschraube	Socket head screw	Vis 6 pans creux
4	ZMU 34 0800	M8 DIN 934		Sechskantmutter	Hexagon nut	Ecrou 6 pans

1 complete/ensemble



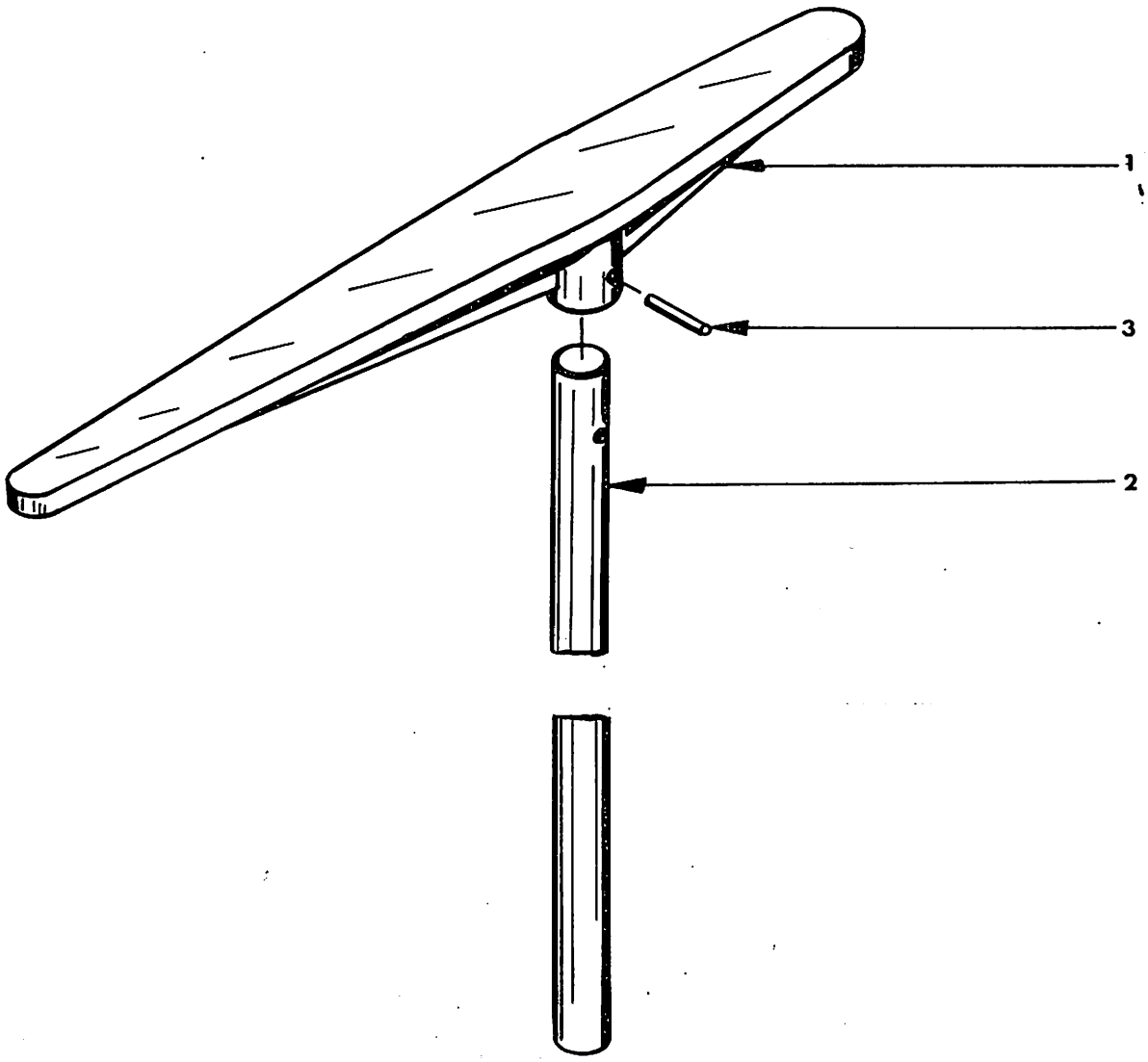
	H1Z 080 000			AUFLAGEHALTER	TOOLREST HOLDER	PORTE–SUPPORT
Pos		DIN		Benennung	Description	Designation
1	H1Z 080 010			Auflagehalter	Toolrest holder	Porte-support
2	H1A 090 040			Schraubenhalter	Retainer block for screw	Porte-vis
3	H1A 302 000			Gr. Knebelmutter	Adjusting nut	Ecrou à oreilles
4	H1A 240 000			Sterngriff	Locking nut	Poignée-étoile
5	H1A 270 030			Klemmplatte	Clamping plate	Plaque de serrage
6	ZSR 31 0870	M8x70 DIN 931		Sechskantschraube	Hexagon screw	Boulon hexagonal
7	ZSR 33 0830	M8x30 DIN 933		Sechskantschraube	Hexagon screw	Boulon hexagonal
8	ZSB 25 0840	B 8.4 DIN 125		Scheibe	Washer	Rondelle

1 complete/ensemble



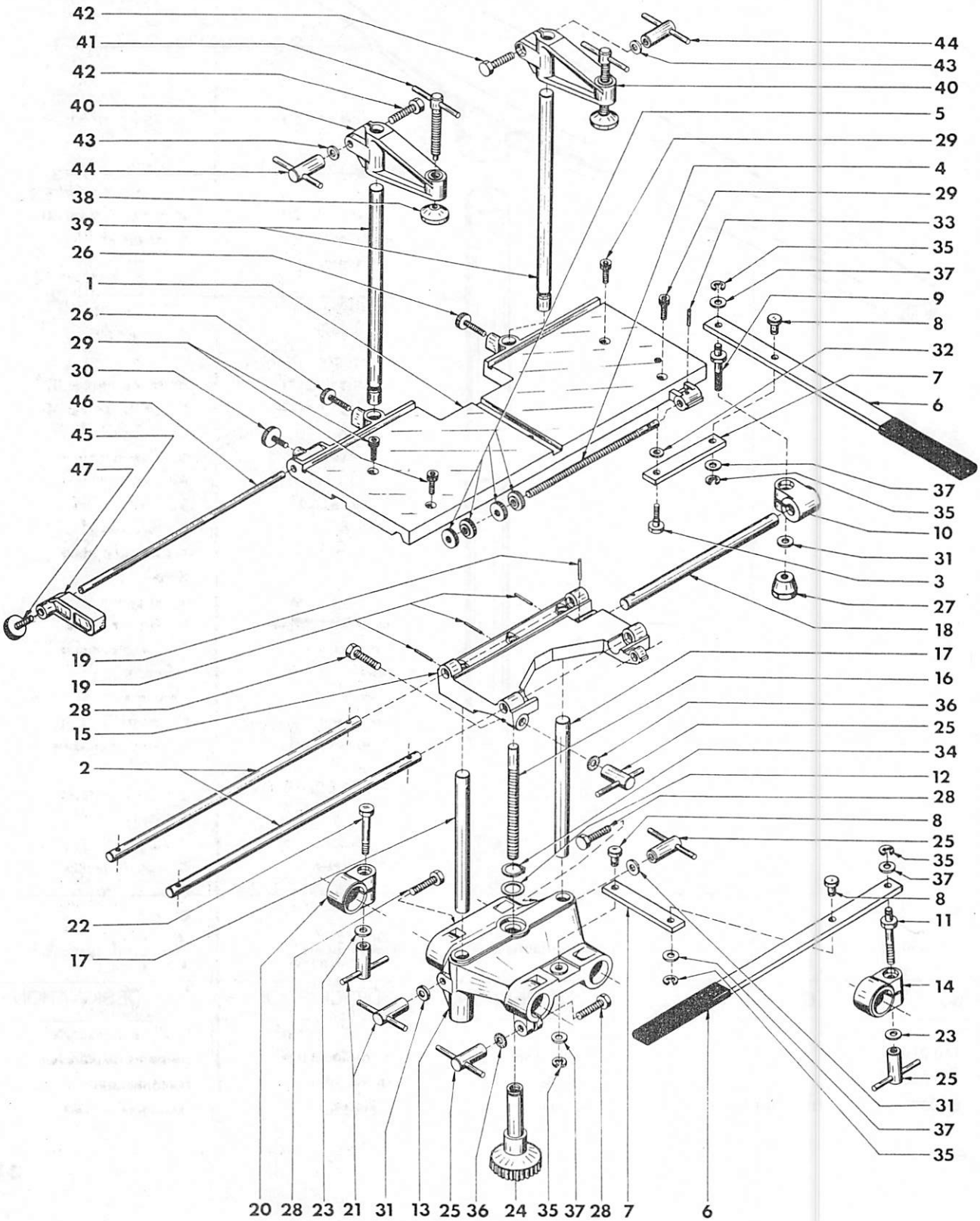
	H1Z 010 000 H1Z 020 000			G. Zinkeneinrichtung M G. Zinkeneinrichtung Ww	Dovetailing equipment M[1] Dovetailing equipment Ww[1]	Dispositif à tenonner M[1] Dispositif à tenonner Ww[1]
Pos	Ref.No.	DIN		BENENNUNG	DESCRIPTION	DESIGNATION
1	H1Z 010 010			Wanknutscheibe M	Wobble disc, M	Disques prismatiques M
1	H1Z 020 010			Wanknutscheibe Ww	Wobble disc, Ww	Disques prismatiques Ww
2	H1Z 010 020			Spannstück	Clamping piece	Pièce de serrage
3	H1Z 010 030			Zinkenleiste	Dovetailing bar	Languette queue d'aronde
4	ZSR 64 0620	M6x20 DIN 464		Rändelschraube	Knurled screw	Vis moletée

1 complete/ensemble



	H1Z 110 000			G. Brettauflage	Board support [1]	Support de plancher [1]
Pos	Ref. No.	DIN		BENENNUNG	DESCRIPTION	DESIGNATION
1	H1Z 110 010			Brettauflage	Board support	Support de plancher
2	H1Z 110 020			Säule 385	Column 385	Colonne 385
3	ZHL 81 0320	3x20 DIN 1481		Spannhülse	Grooved pin	Manchon

1 complete/ensemble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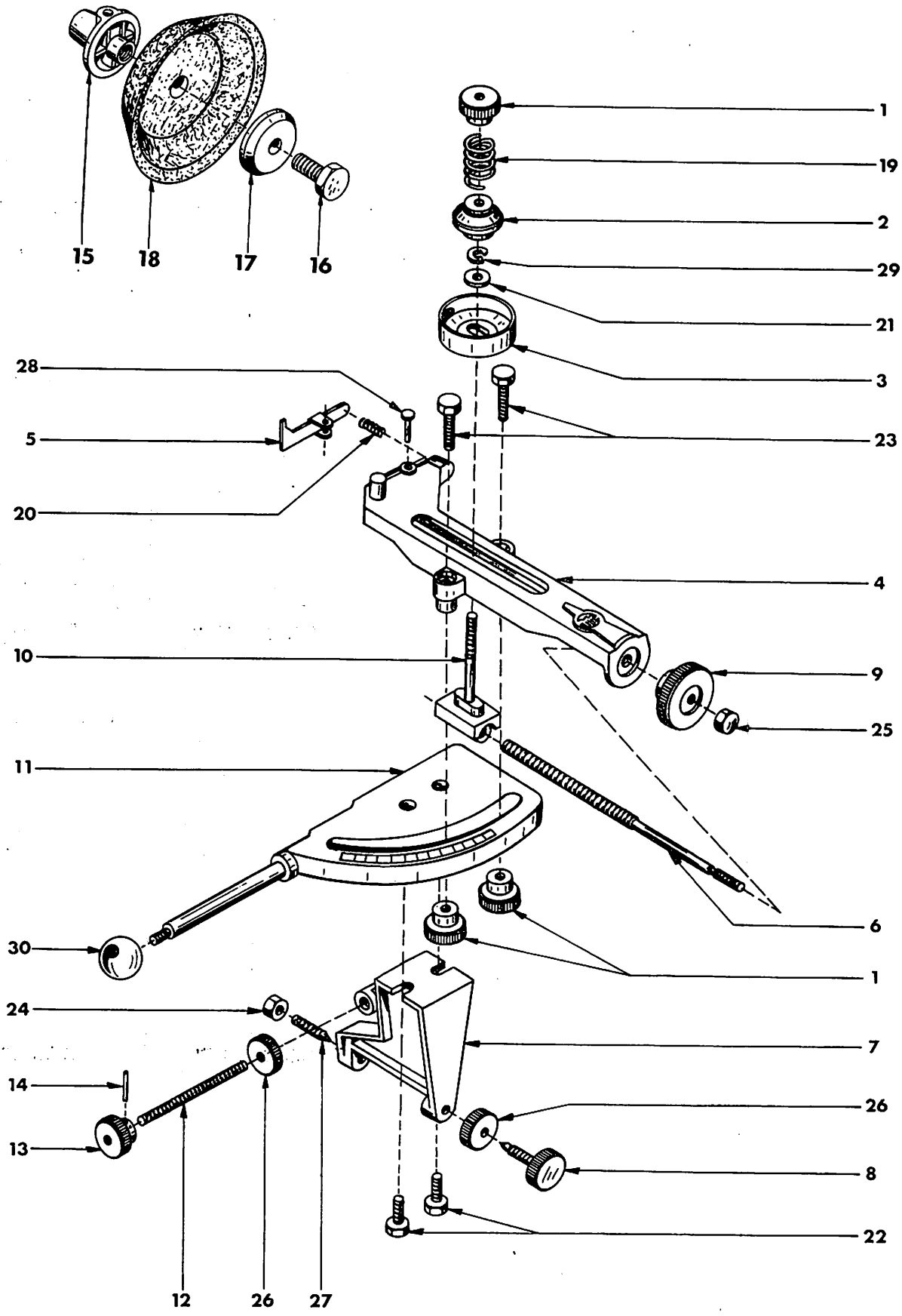
	H1Z 240 000			G. Langlochbohr-einrichtung	Mortising attachment [1]	Mortaiseuse assemblée [1]
Pos	Ref. No.	DIN		BENENNUNG	DESCRIPTION	DESIGNATION
1	H1Z 240 010			Bohr- und Frästisch	Bore and milling table	Table de fraisage et perçage
2	H1Z 240 020	12x330		Säule	Column	Colonne
3	H1Z 240 030			Ansatzschraube	Screw	Boulon à oreilles
4	H1Z 240 040			Gewindestange	Threaded rod	Barre filetée
5	H1Z 240 050			Rändelmutter	Knurled nut	Ecrou moletée plate
6	H1Z 240 060			Hebel	Lever	Levier
7	H1Z 240 070			Leiste	Bar	Liteau
8	H1Z 240 080			Bolzen	Bolt	Boulon
9	H1Z 240 090			Bundschraube 51	Screw 51	Vis 51
10	H1Z 240 100			Klemmring 14	Clamping ring 14	Bague de serrage 14
11	H1Z 240 110			Bundschraube 61	Screw 61	Vis 61
12	H1Z 240 120	25x18x0,5		Scheibe	Washer	Rondelle
13	H1Z 240 130			Längsschlitten	Carriage	Chariot longitudinal
	H1Z 240 140			Klemmring 30	Clamping ring 30	Bague de serrage 30
	H1Z 241 000			G. Bohrtischträger	Table support [1]	Porte-table [1]
15	H1Z 241 010			Bohrtischträger	Table support	Porte-table
16	H1Z 241 020	130-M12x3LI		Spindel	Spindle	Broche
17	H1Z 241 030			Säule 158	Column 158	Colonne 158
18	H1Z 241 040			Säule 202	Column 202	Colonne 202
19	ZHL 81 0322	3x22 DIN 1481		Spannhülse	Grooved pin	Manchon
	H1Z 242 000			G. Klemmring 30	Clamping ring 30 [1]	Bague de serrage 30 [1]
20	H1Z 240 140			Klemmring 30	Clamping ring 30	Bague de serrage 30
21	H1Z 244 000			G. Knebelmutter	Lever nut [1]	Ecrou à levier [1]
22	ZSR 31 0845			Sechskantschraube	Hexagonal screw	Vis 6 pans
23	ZSB 25 0840	B8,4 DIN 125		Scheibe	Washer	Rondelle
24	H1Z 243 000			G. Handrad 60	Hand wheel 60 [1]	Volant 60 [1]
25	H1Z 244 000			G. Knebelmutter	Lever nut [1]	Ecrou à levier [1]
26	H4B 214 060			Rändelschraube	Knurled screw	Vis moletée plate
27	H1A 000 330	M8		Mutter	Nut	Ecrou
28	ZSR 33 0830	M8x30 DIN 933		Sechskantschraube	Hexagonal screw	Vis 6 pans
29	ZSR 12 0616	M6x16 DIN 912		Zylinderschraube	Socket head screw	Vis 6 pans creux
30	ZSR 53 0615	M6x15 DIN 653		Fl. Rändelschraube	Knurled screw	Vis moletée plate
	ZSB 25 0840	B8,4 DIN 125		Scheibe	Washer	Rondelle
32	ZSB 25 0640	B6,4 DIN 125		Scheibe	Washer	Rondelle
33	ZHL 81 0316	3x16 DIN 1481		Spannhülse	Grooved pin	Manchon
34	ZRG 71 1812	18x1,2 DIN 471		Sicherungsring	Retaining ring	Anneau de retenue
35	ZSB 99 0600	6 DIN 6799		Sicherungsscheibe	Washer	Rondelle
36	ZSB 37 0815	B8 DIN 137		Federscheibe	Spring washer	Rondelle à ressort
37	ZSB 14 0800	8 DIN 1440		Scheibe	Washer	Rondelle
	H1Z 245 000			G. Schraubenzwinge	Clamp [1]	Clame [1]
38	H1Z 245 010			Tellerscheibe	Spring washer	Ressort Belleville
39	H1Z 245 020			Säule 200	Column 200	Colonne 200
40	H1Z 246 000			G. Zwinge	Clamp [1]	Clame [1]
41	H1Z 247 000			G. Knebelschraube	Lever screw [1]	Vis à levier [1]
42	ZSR 33 0830	M8x30 DIN 933		Sechskantschraube	Hexagonal screw	Vis 6 pans
43	ZSB 25 0840	B8,4 DIN 125		Scheibe	Washer	Rondelle
44	H1Z 244 000			G. Knebelmutter	Lever nut [1]	Ecrou à levier [1]
	H1Z 248 000			G. Längsanschlag	Longitudinal stop [1]	Butée longitudinale [1]
45	H1Z 030 020			Längsanschlag	Longitudinal stop	Butée longitudinale
46	H1Z 030 030			Anschlagstange	Stop bar	Barre de butée
47	ZSR 53 0615	M6x15 DIN 653		Fl. Rändelschraube	Knurled screw	Vis moletée plate

1 complete/ensemble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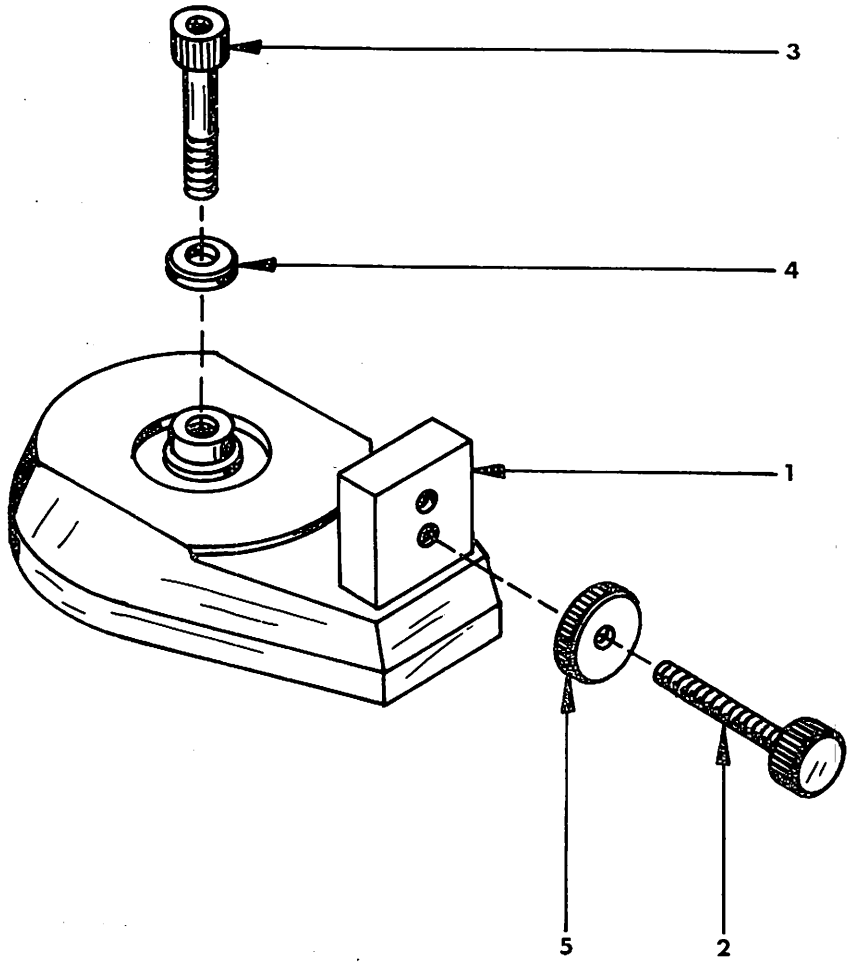
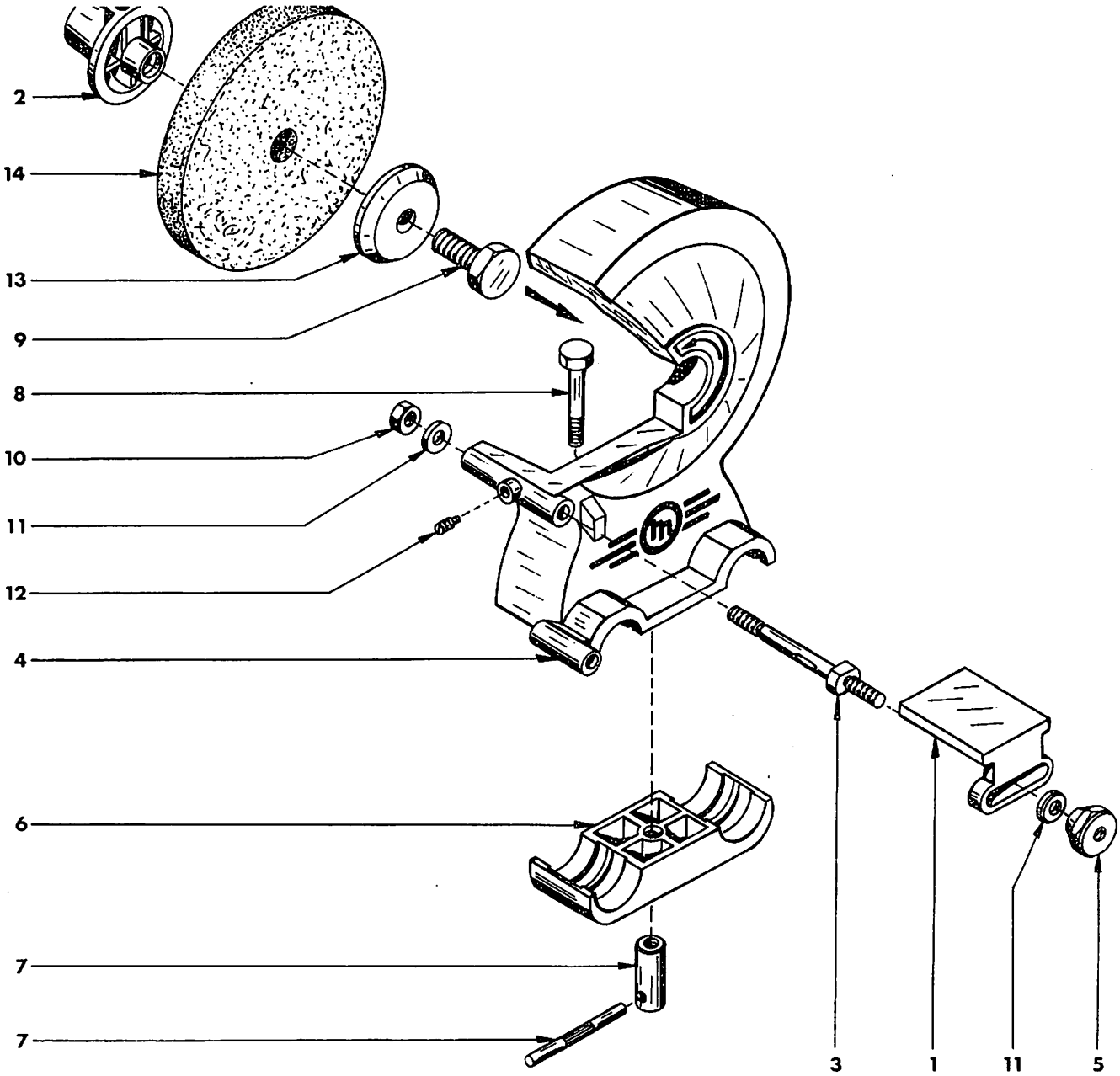
	H1Z 200 000			G.Sägeschärfeinrichtung	Sharpening device for circular saw blades [1]	Dispositif d'affûtage pour lames circulaire [1]
Pos	Ref. No.	DIN		BENENNUNG	DESCRIPTION	DESIGNATION
1	H1Z 200 010			Drehkopf	Knob	Bouton
2	H1Z 200 020			Zentrierkonus	Centering cone	Cône de centrage
3	H1Z 200 030			Sägeauflage	Blade support	Porte - lame
4	H1Z 200 040			Stellschlitten	Adjusting slide	Chariot d'ajustage
5	H1Z 200 050			Sperrhebel	Locking lever	Levier de blocage
	H1Z 200 060			Vorschubspindel	Feed spindle	Vis d'avance
7	H1Z 200 070			Grundplattenträger	Base plate carrier	Support de plaque
8	H1Z 200 080			Rändelschraube	Knurled screw	Vis moletée plate
9	H1Z 200 090			Handrad	Hand wheel	Volant
10	H1Z 201 000			G.Vorschubmutter	Feed nut [1]	Ecrou d'avance [1]
11	H1Z 202 000			G.Grundplatte	Base plate [1]	Plaque de base [1]
	H1Z 203 000			G.Stoppschraube	Stop screw [1]	Vis d'arrêt [1]
12	H1Z 203 010			Gewindestift	Grub screw	Cheville filetée
13	H1Z 200 010			Drehkopf	Knob	Bouton
14	ZHL 81 0316	3x16 DIN 1481		Spannhülse	Grooved pin	Manchon
	H1Z 204 000			G.Topfscheibe	Cup grinding wheel [1]	Meule à boisseau cilt [1]
15	H1Z 040 030			Schleifscheibenflansch	Flange for grinding disc	Collet disque
16	ZSR 33 1430	M14x30 DIN 933		Sechskantschraube	Hexagonal screw	Vis 6 pans
17	H1A 000 219			Gegenscheibe	Washer	Contre - poulie
18				Topfscheibe 150	Cup grinding wheel	Meule à boisseau cilt
19	H1Z 063 020			Druckfeder	Compression spring	Ressort à pression
20	H1A 000 380			Rastenfeder	Spring	Ressort
	A2A 060 050	14x6,4x0,5		Scheibe	Washer	Rondelle
22	ZSR 33 0616	M6x16 DIN 933		Sechskantschraube	Hexagonal screw	Vis 6 pans
23	ZSR 33 0625	M6x25 DIN 933		Sechskantschraube	Hexagonal screw	Vis 6 pans
24	ZMU 34 0600	M6 DIN 934		Sechskantmutter	Hexagonal screw	Vis 6 pans
25	ZMU 17 0500	M5 DIN 917		Hutmutter	Nut	Ecrou
26	ZMU 67 0600	M6 DIN 467		Rändelmutter	Knurled nut	Ecrou moletée plate
27	ZST 53 0620	M6x20 DIN 553		Gewindestift	Grub screw	Cheville filetée
28	ZNI 38 0415	B4x15 DIN 7338		Belagniet	Rivet	Rivet
29	ZRG 15 0060	G 6x1		Seeger Greifring	Ring	Entraineur
30	ZGF 19 2506	25xM6 DIN 319		Kugelknopf	Spherical knob	Sphère Star

1 complete/ensemble



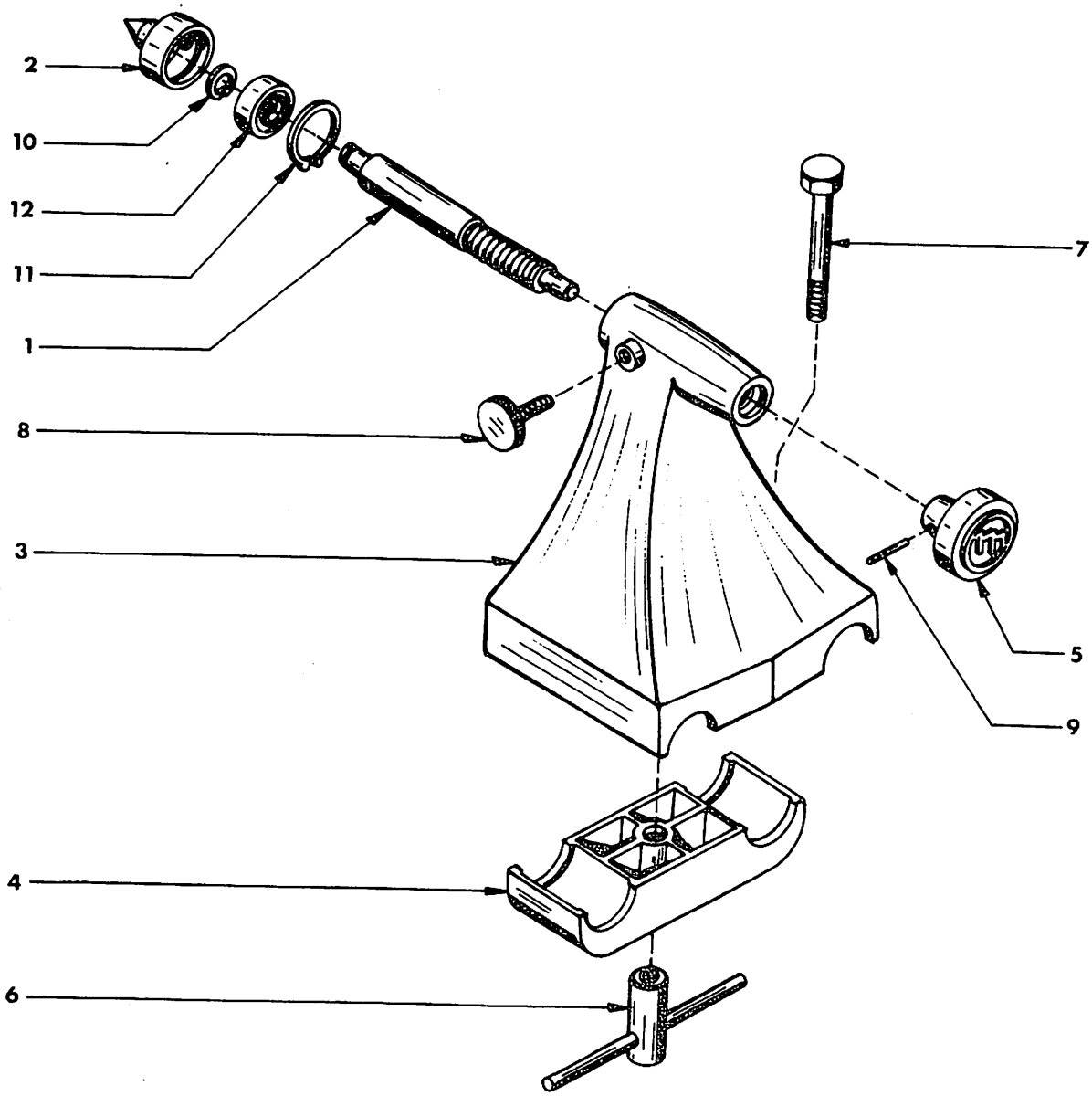
	H1Z 190 000			G. Einstellehre	Setting gauge [1]	Jauge d'ajustage [1]
Pos	Ref.No.	DIN		BENENNUNG	DESCRIPTION	DESIGNATION
1	H1Z 190 010			Einstellplatte	Setting plate	Plaque de ajustage
2	H1Z 190 020			Stellschraube	Knurled screw	Vis moletée plate
3	ZSR 12 0835	M8x35 DIN 912		Zylinderschraube	Socket head screw	Vis 6 pans creux
4	ZSB 25 0840	B8,4 DIN 125		Scheibe	Washer	Rondelle
5	ZMU 67 0600	M6 DIN 467		Rändelmutter	Knurled nut	Ecrou moletée plate

1 complete/ensemble



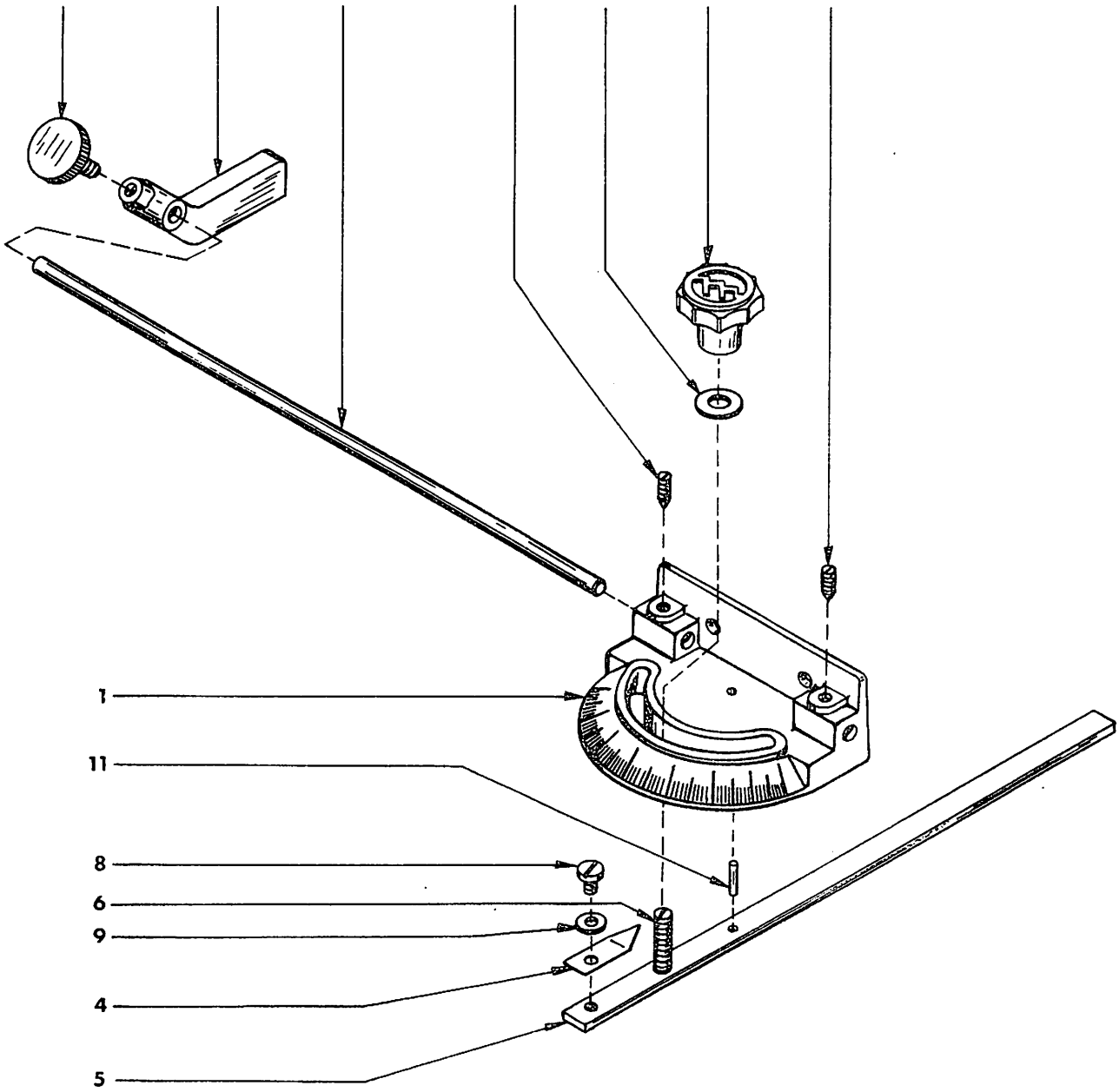
	H1Z 040 000			G. Schleifeinrichtung	Tool grinding attachment[1]	Affûteuse[1]
Pos	Ref.No.	DIN		BENENNUNG	DESCRIPTION	DESIGNATION
1	H1Z 040 020			Schleifauflage	Rest plate	Support à rectifier
2	H1Z 040 030			Schleifscheibenflansch	Flanged disc	Collet disque
3	H1Z 040 040			Fixierbolzen	Bolt	Boulon
4	H1Z 041 000			G. Scheibenschutz	Wheel guard[1]	Protecteur disque[1]
5	H1A 000 330	M8		Mutter	Nut	Ecrou
6	H1A 270 030			Klemmplatte	Clamping plate	Plaque de serrage
7	H1Z 244 000			G. Knebelmutter	Nut[1]	Ecrou à oreilles[1]
8	ZSR 31 0845	M8x45 DIN 931		Sechskantschraube	Hexagonal screw	Vis 6 pans
9	ZSR 33 1430	M14x30 DIN 933		Sechskantschraube	Hexagonal screw	Vis 6 pans
10	ZMU 34 0800	M8 DIN 934		Sechskantmutter	Hexagon nut	Ecrou
11	ZSB 25 0840	B8,4 DIN 125		Scheibe	Washer	Rondelle
	ZST 17 0612	M6x12 DIN 417		Gewindestift	Grub screw	Cheville filetée
13	H1A 000 219			Gegenscheibe	Washer	Contre - poulie
14				Schleifscheibe 150	Grinding wheel	Meule

1 complete/ensemble

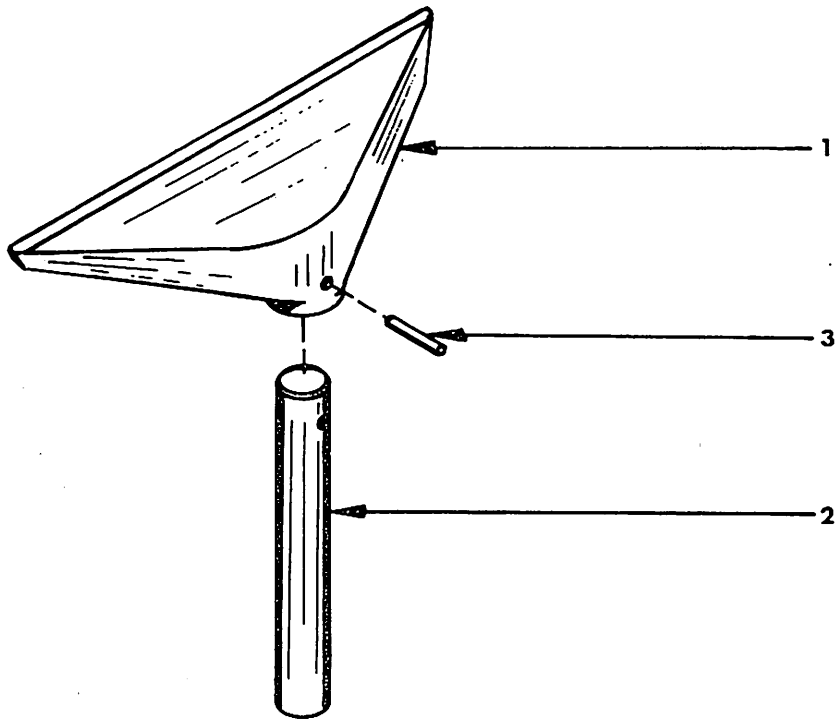


	H1Z 120 000			G. Reitstock	Tailstock[1]	Contre - poupée[1]
Pos	Ref.No.	DIN		BENENNUNG	DESCRIPTION	DESIGNATION
1	H1Z 120 010			Spindel M14	Spindle	Broche
2	H1Z 120 020			Körnerspitze	Revolving centre	Contre - pointe
3	H1Z 121 000			G. Reitstockgehäuse	Tailstock housing[1]	Corps de la poupée[1]
4	H1A 270 030			Klemmplatte	Clamping plate	Contre-plaque de blocage
5	H1A 291 000			G.Sterngriff	Star handle[1]	Poignée - etoile[1]
6	H1A 302 000			G. Knebelmutter	Adjusting nut[1]	Ecrou à oreilles[1]
7	ZSR 31 0860	M8x60 DIN 931		Sechskantschraube	Hexagonal screw	Boulon 6 pans
8	ZSR 53 0615	M6x15 DIN 653		Fl. Rändelschraube	Knurled - head screw	Vis moletée plate
9	ZHL 81 0320	3x20 DIN 1481		Spannhülse	Spring pin	Cheville de blocage
10	ZRG 71 1010	10x1 DIN 471		Sicherungsring	Retaining ring	Circlips
11	ZRG 72 2612	26x1,2 DIN 472		Sicherungsring	Retaining ring	Circlips
12	ZLG 60 0001	6000 - Z		Rillenkugellager	Ball bearing	Roulement à billes

1 complete/ensemble

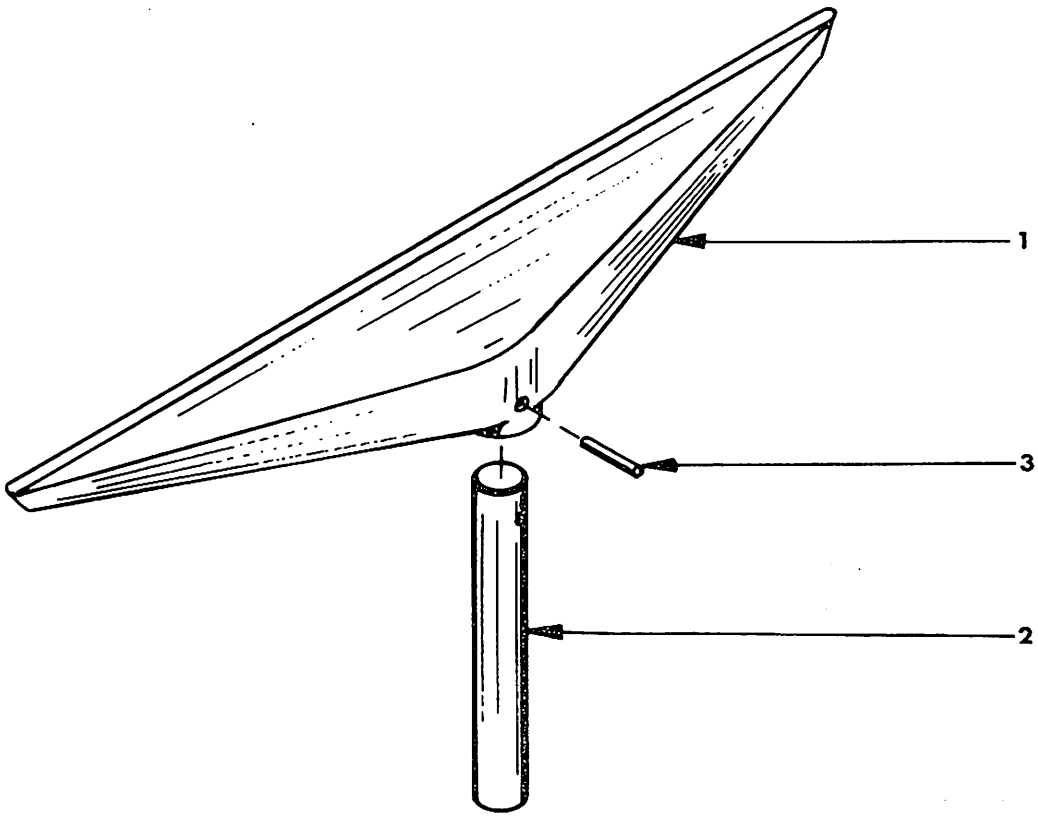


	H1Z 030 000			G.Gehrungslineal	Mitre ruler[1]	Règle d'onglet[1]
Pos	Ref.No.	DIN		BENENNUNG	DESCRIPTION	DESIGNATION
1	H1Z 030 010			Gehrungsanschlag	Graduated scale	Règle d'onglet
2	H1Z 030 020			Längsanschlag	Longitudinal stop	Butée longitudinale
3	H1Z 030 030			Anschlagstange	Stop bar	Barre de butée
4	H1Z 030 040			Zeiger	Indicator	Index
	H1Z 031 000			L. Lineal	Ruler	Règle
5	H1Z 031 010			Lineal 300	Ruler 300	Règle 300
6	ZST 51 0830	M8x30 DIN 551		Gewindestift	Grub screw	Cheville filetée
7	H1A 240 000			G. Sterngriff	Star handle[1]	Poignée - étoile[1]
8	ZSR 84 0506	M5x6 DIN 84		Zylinderschraube	Socket head screw	Vis 6 pans creux
9	ZSB 25 0530	B5,3 DIN 125		Scheibe	Washer	Rondelle
10	ZSB 25 0840	B8,4 DIN 125		Scheibe	Washer	Rondelle
	ZST 72 0416	4x16 DIN 1472		Paßkerbstift	Grooved adjusting pin	Tenon à encoche d'ajustage
12	ZST 53 0608	M6x8 DIN 553		Gewindestift	Grub screw	Cheville filetée
13	ZSR 53 0615	M6x15 DIN 653		Fl. Rändelschraube	Knurled screw	Vis moletée plate



	H1Z 090 000			G. Handstahlauflage 150	Tool rest 150 [1]	Support à main en acier 150 [1]
Pos	Ref. No.	DIN		BENENNUNG	DESCRIPTION	DESIGNATION
1	H1Z 090 010			Handstahlauflage 150	Tool rest 150	Support à main en acier 150
2	H1Z 090 020			Säule 100	Column 100	Colonne 100
3	ZHL 81 0320	3x20 DIN 1481		Spannhülse	Grooved pin	Manchon

1 complete/ensemble



	H1Z 100 000			G.Handstahlauflage 300	Tool rest 300[1]	Support à main en acier 300[1]
Pos	Ref.No.	DIN		BENENNUNG	DESCRIPTION	DESIGNATION
1	H1Z 100 010			Handstahlauflage 300	Tool rest 300	Support à main en acier 300
2	H1Z 090 020			Säule 100	Column 100	Colonne 100
3	ZHL 81 0320	3x20 DIN 1481		Spannhülse	Grooved pin	Manchon

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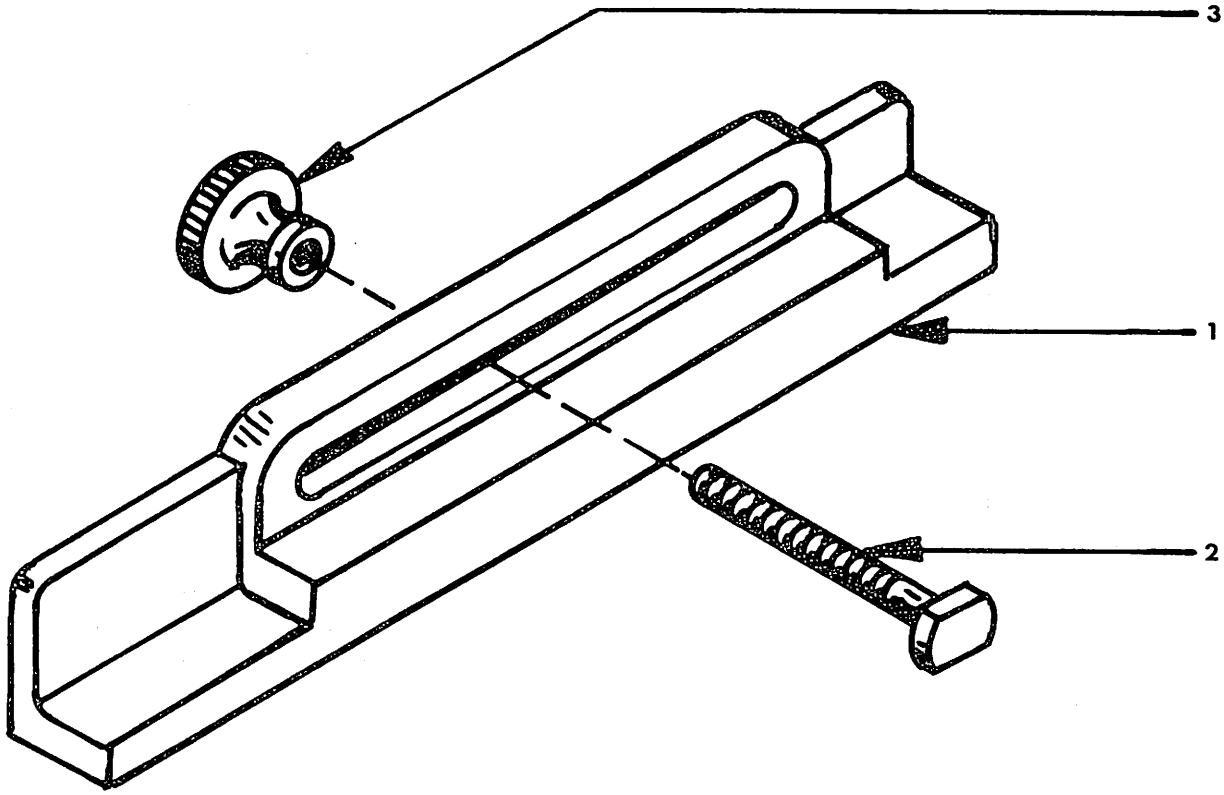

	H1Z 150 000			G. Vorsatzlineal	Adjustable ruler [1]	Règle additionelle [1]
Pos.	Ref. No.	DIN		BENENNUNG	DESCRIPTION	DESIGNATION
1	H1Z 150 010			Vorsatzlineal	Adjustable ruler	Règle additionelle
2	A2Z 352 000			Gruppe Spannschraube	Tensioning screw	Vis de tension
3	ZMU 66 0600	M6 DIN 466		Rändelmutter	Knurled nut	Ecrou moletée plate

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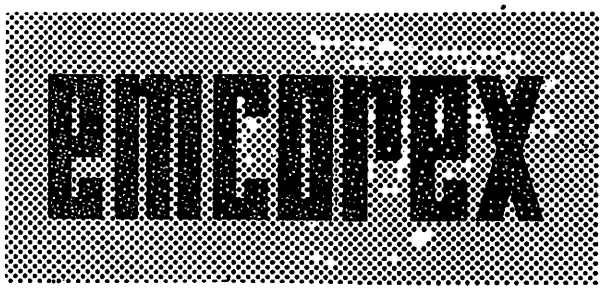
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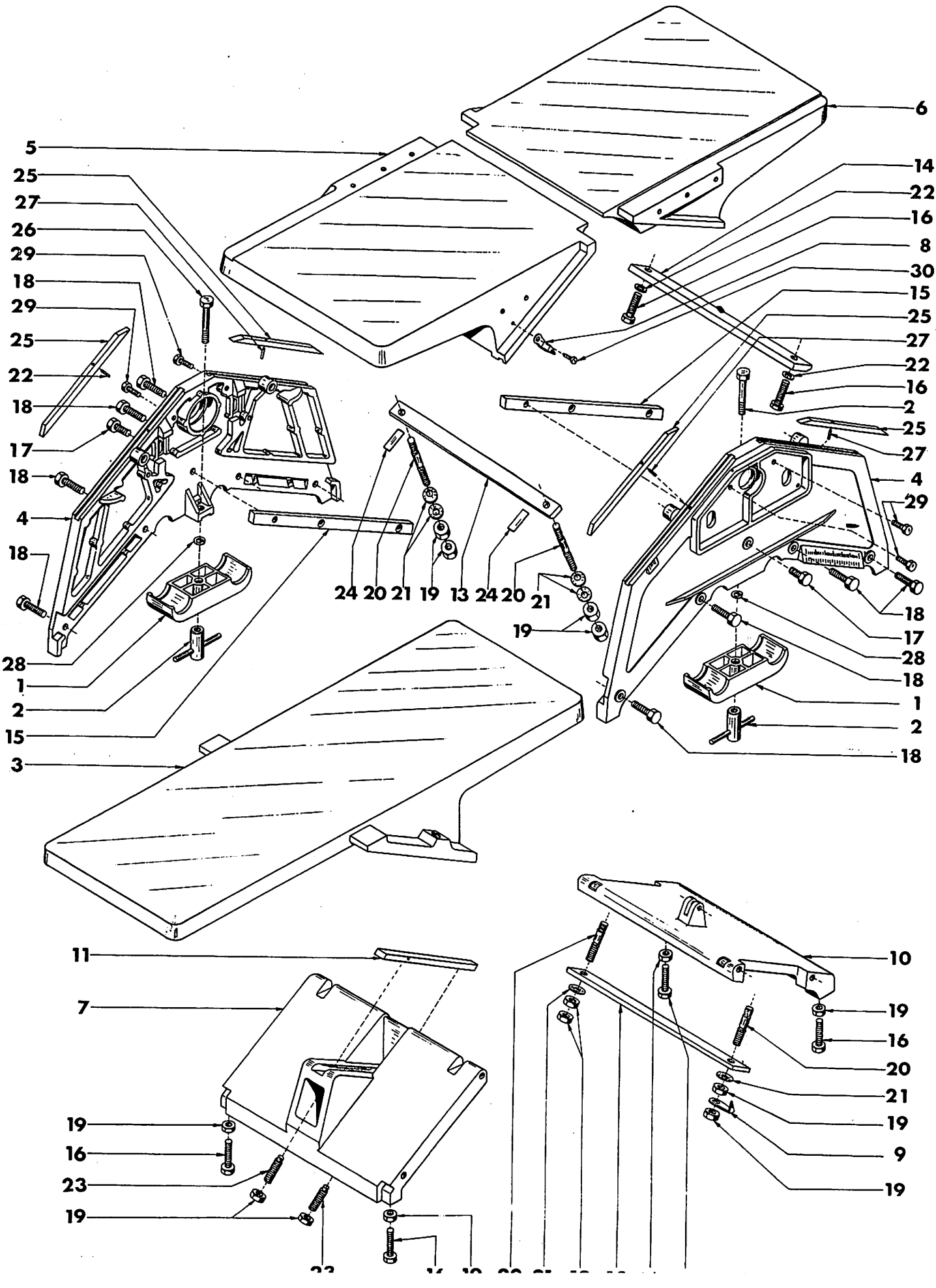
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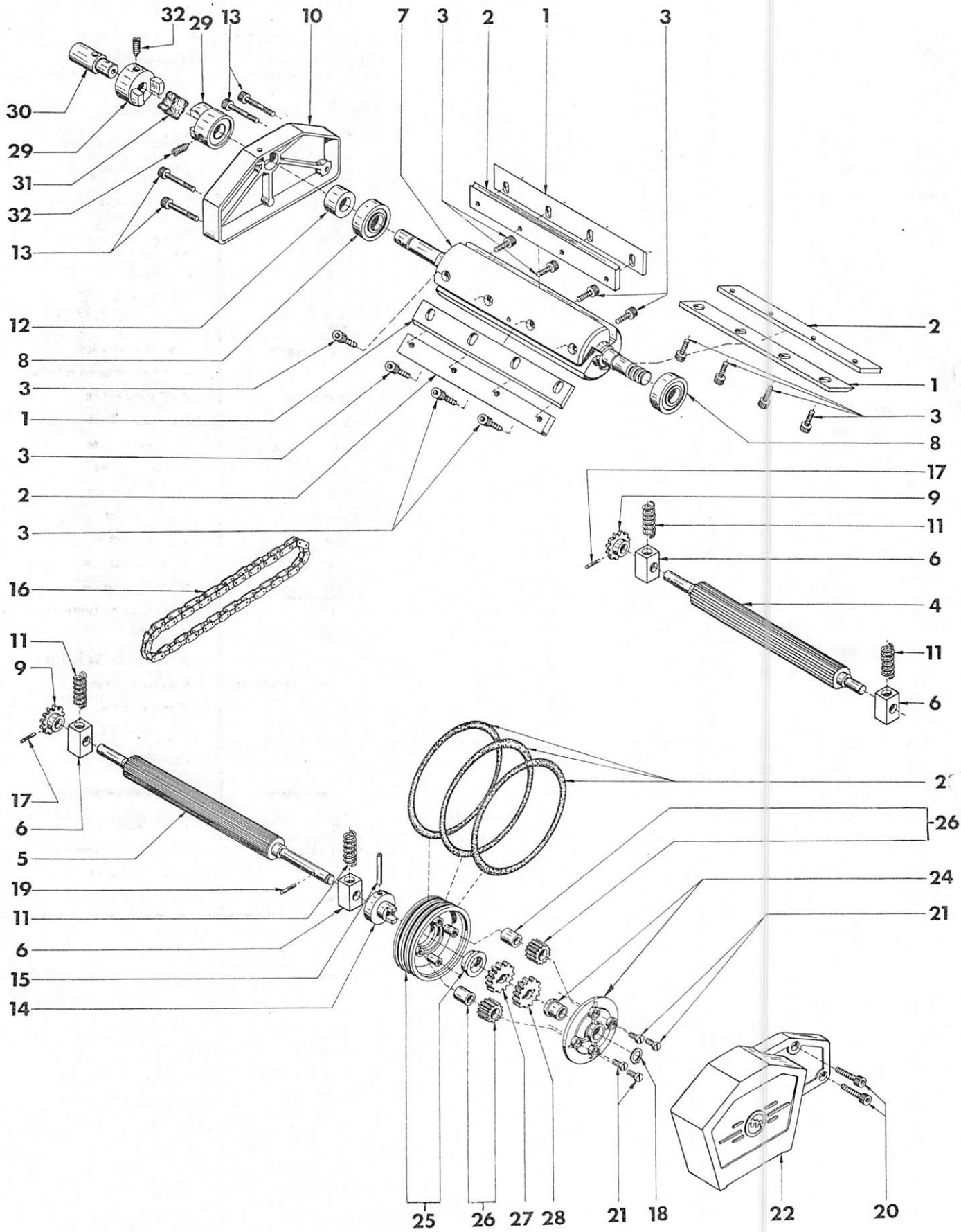
Pos.		DIN		Benennung	Description	Designation
				Anbaumontage	**Assembly**	**Assemblage**
1	H1A 270 030			Klemmplatte	Clamping plate	Plaque de fixation
2	H12 244 000			Gr. Knebelmutter	Adjusting nut complete	Ensemble ecrou à levier
3	H4A 000 010			Dickentisch	Thicknessing	Table d'épaisseur
4	H4A 000 020			Seitenteil	Side part	Partie lateral
	H4A 000 041			Aufgabetisch	Feed table	Table de chargement
6	H4A 000 051			Abgabetisch	Discharge table	Table de distribution
7	H4A 000 070			Auflagebrücke	Toolrest bridge	Pont support
8	H4A 000 220			Abrichtzeiger	Truing indicator	Indicateur de dressage
9	H4A 000 230			Dickenzeiger	Thickness indicator	Indicateur d'épaisseur
10	H4A 000 060			Spindelbrücke	Spindle bridge	Pont broches
11	H4A 000 250			Leiste	Bar	Languette
12	H4A 000 170			Tischleiste	Gib	Listel de table
13	H4A 000 180			Tischführung 5mm	Table guide 5mm	Guidage de table 5mm
14	H4A 000 330			Tischführung 8mm	Table guide 8mm	Guidage de table 8mm
15	H4A 000 210			Dickenleiste	Bed bar	Languette d'épaisser
16	ZSR 33 0830	M8x30 DIN 933		Sechskantschraube	Hexagon head screw	Vis hexagonale
17	ZSR 33 0816	M8x16 DIN 933		Sechskantschraube	Hexagon head screw	Vis hexagonale
18	ZSR 33 0825	M8x25 DIN 933		Sechskantschraube	Hexagon head screw	Vis hexagonale
19	ZMU 34 0800	M8 DIN 934		Sechskantmutter	Hexagon nut	Ecrou à six pans
20	H4A 000 200			Stiftschraube	Stud bolt	Goujon
21	ZFD 93 1800	18x8,2x0,7 DIN 2093		Tellerfeder	Disc spring	Ressort belleville
	ZSB 25 0840	B8,4 DIN 125		Scheibe	Washer	Rondelle
23	ZST 17 0830	M8x30 DIN 417		Gewindestift	Set screw	Vis pointeau
24	H4A 000 190			Einlage	Insert	Pièce intercalaire
25	H4A 000 270			Keil	Spline	Coin
26	ZSR 31 0845	M8x45 DIN 931		Sechskantschraube	Hexagon head screw	Vis hexagonale
27	ZHL 81 0210	2x10 DIN 1481		Spannhülse	Lock pin	Goupille fendue
28	ZRG 15 0080	68x1		Seeger Greifring	Seeger lock washer	Anneau seeger
29	ZSR 84 0512	M5x12 DIN 84		Zylinderschraube	Flat head screw	Vis tête cylindrique
30	ZSR 14 0408	BM4x0,8 DIN 7513		Gewindeschneidschraube	Threading screw	Vis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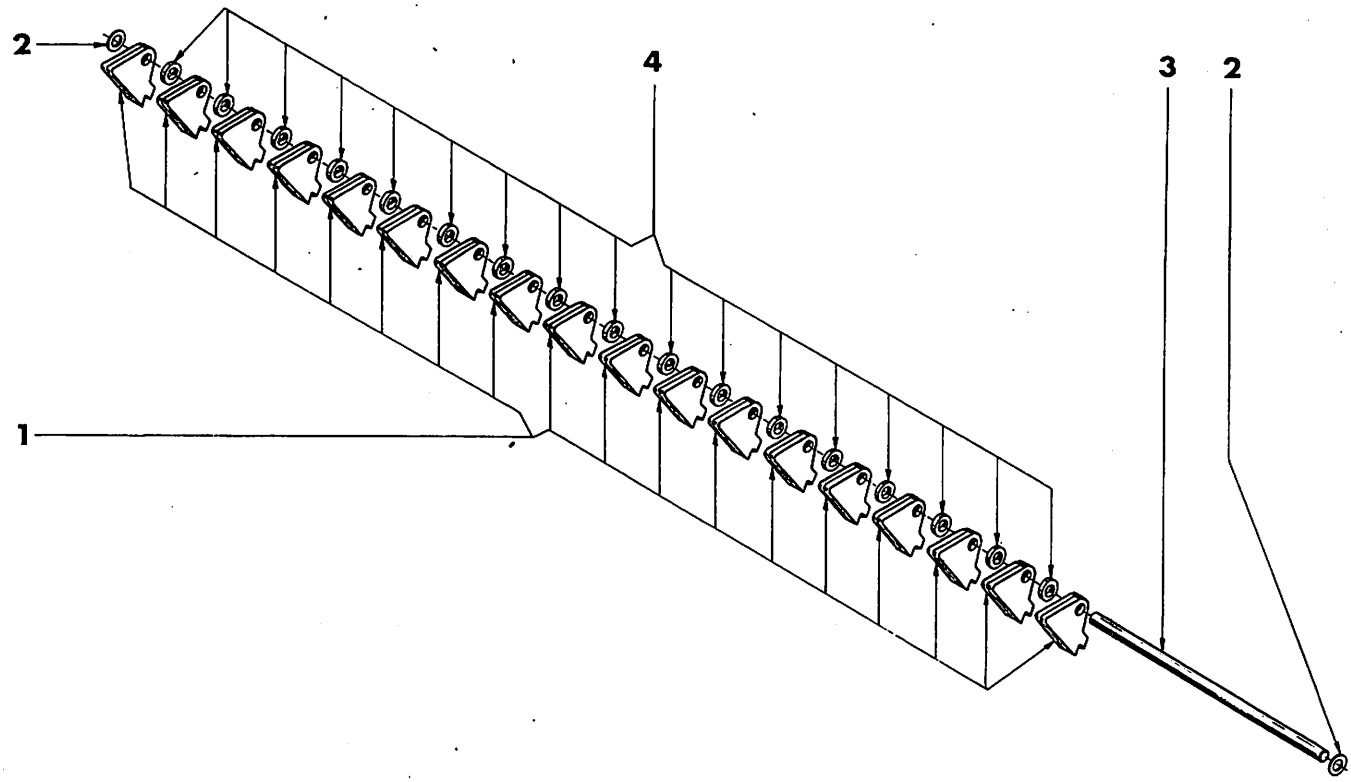
Pos	Ref. Nr.	DIN		Benennung	Description	Designation
1	H4A 000 090			Hobelmesser	Cutter	Fer
2	H4A 000 100			Druckleiste	Pressure bar	Languette de pression
3	ZSR 12 0616	M6x16 DIN912-6.9		Zylinderschraube	Allen head screw	Vis 6 pans creux
4	H4A 000 110			Riffelwalze	Grooved roller	Cylindre cannele
5	H4A 000 120			Transportwalze	Transport roller	Cylindre de transport
	H4A 000 130			Sinterlager	Carbide bearing	Coussinet fritte
7	H4A 000 290			Hobelwelle	Planing spindle	Axe du rabot
8	ZLG 62 0402	6204 – 2Z		Rillenkugellager	Ball bearing	Roulement
9	H4A 000 280			Kettenrad	Sprocket	Roue à chaine
10	H4A 000 030			Kettenkasten	Chain box	Carter de chaines
11	H4A 000 140			Druckfeder	Compression spring	Ressort à pression
12	H4A 000 240			Anlaufrolle	Roller	Poulie de mise en marche
13	ZSR 12 0635	M6x35 DIN912-6.9		Zylinderschraube	Allen head screw	Vis 6 pans creux
14	H4A 000 360			Getriebelager	Bearing	Palier de boîte à vitesses
15	ZHL 81 0636	3x36 DIN 1481		Spannhülse	Lock pin	Goupille fendue
16	ZKE 18 8400	DIN 8180		Rollenkette	Roller chain	Chaine à rouleau
17	ZHL 81 0318	3x18 DIN 1481		Spannhülse	Lock pin	Goupille fendue
18	ZRG 71 1210	12x1 DIN 471		Sicherungsring	Circlip	Bague de sécurité
19	ZST 08 0418	4h8x18 DIN 7		Zylinderstift	Dowel pin	Tige de serrage
20	ZSR 12 0625	M6x25 DIN 912		Zylinderschraube	Allen head screw	Vis 6 pans creux
21	ZSR 84 0512	M5x12 DIN 84		Zylinderschraube	Allen head screw	Vis 6 pans creux
22	H4A 000 380			Getriebeschutz	Gear guard	Protecteur de boîte à vitesses
[illegible]	ZOR 50 6238			O-Ring	Rubber belt	Courroie
[illegible]	H4A 050 000			Getriebedeckel	Gear box cover	Couvercle boîte à vitesses
25	H4A 040 000			Planetengetriebe	Planetry gearing system	Engrenage plan
26	H4A 060 000			Zahnrad 15	Gear 15	Engrenage 15
27	H4A 000 340			Zahnrad 24	Gear 24	Engrenage 24
28	H4A 000 350			Zahnrad 22	Gear 22	Engrenage 22
	H4A 090 000			**Gruppe Kupplung**	**Coupling complete**	**Ensemble embrayage**
29	H4A 090 010			Kupplung	Coupling	Embrayage
30	H4A 090 020			Kupplungsdorn	Coupling arbor	Broche d'embrayage
31	ZKP 20 4000			Gummistern	Rubber star	Etoile plastique
32	ZST 16 0808	8x8 DIN916-10.9		Gewindestift	Set screw	Vis pointeau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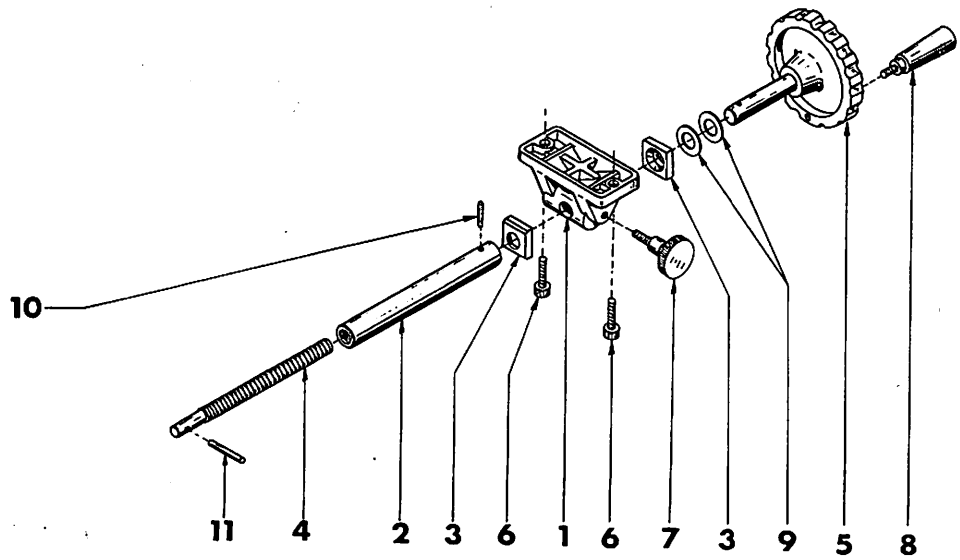
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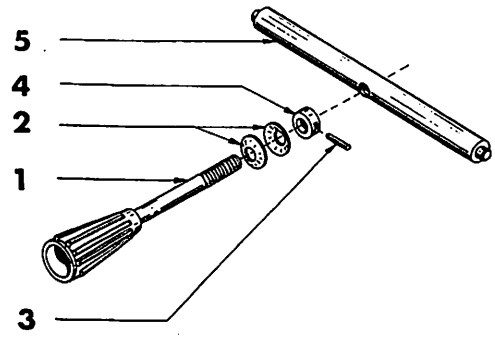
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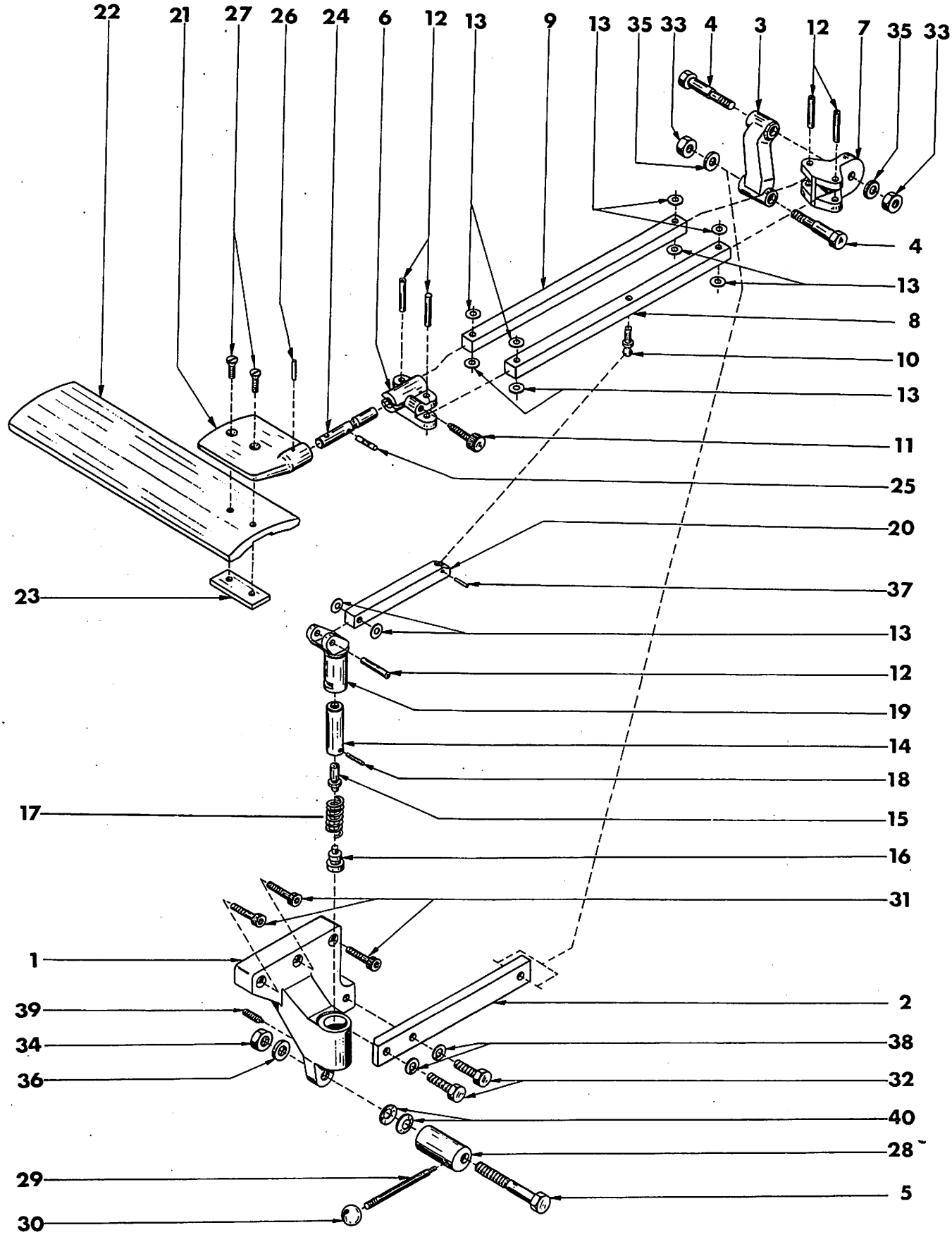
Pos		DIN		Benennung	Description	Designation
				Rückschlagsicherung	**Kickback guard**	**Sûreté retour arrière**
1	H4A 000 470			Rückschlagsicherung	Kickback guard	Sûreté retour arrière
2	ZSB 10 0161			Seeger-Stützscheibe	Seeger disc	Rondelle seeger
3	H4A 000 160			Stift	Pin	Cheville
4	H4A 000 300			Zwischenring	Intermediate	Entretoise

Pos		DIN		Benennung	Description	Designation
				Gr. Handradlager	**Handwheel bearing complete**	**Ensemble support volant**
1	H4A 010 020			Handradlager	Handwheel bearing complete	Ensemble support volant
2	H4A 010 010			Spindelführung	Spindle guide	Guidage de la broche
-	H4A 010 030			Lagerschale	Bearing cup	Coussinet
-	H4A 000 260	M12x3		Spindel	Spindle	Broche
5	H4A 011 000			Gr. Handrad	Handwheel complete	Ensemble support
6	ZSR 12 0620	M6x12 DIN 912		Innensechskantschraube	Allen head screw	Vis six pans creux
7	H12 060 010			Rändelschraube	Knurled head screw	Vis moletée
8	ZGF 38 0219			Kegelgriff schwarz	Handle black	Poignée noir
9	ZFD 94 2301	23,7x14,3x0,4		Tellerfeder	Disc spring	Resort belleville
10	ZHL 81 0320	3x20 DIN 1481		Spannhülse	Lock pin	Goupille fendue
11	ZST 61 0630	A6H 11x30 DIN 7341		Nietstift	Pin	Rivet à tige

Pos		DIN		Benennung	Description	Designation
				Aufbaumontage	**Assembly**	**Assemblage**
1	H4A 020 000			Gr. Handgriff	Handle complete	Ensemble manette
2	ZFD 93 2501	25x12,2x0,9 DIN 2093		Tellerfeder	Disc spring	Ressort delleville
-	ZHL 81 0320	3x20 DIN 1481		Spannhülse	Lock pin	Goupille fendue
4	H1A 000 130			Distanzring	Spacer	Anneau d'écartement
5	H4A 000 150			Einstellbolzen	Adjusting bolt	Boulon de réglage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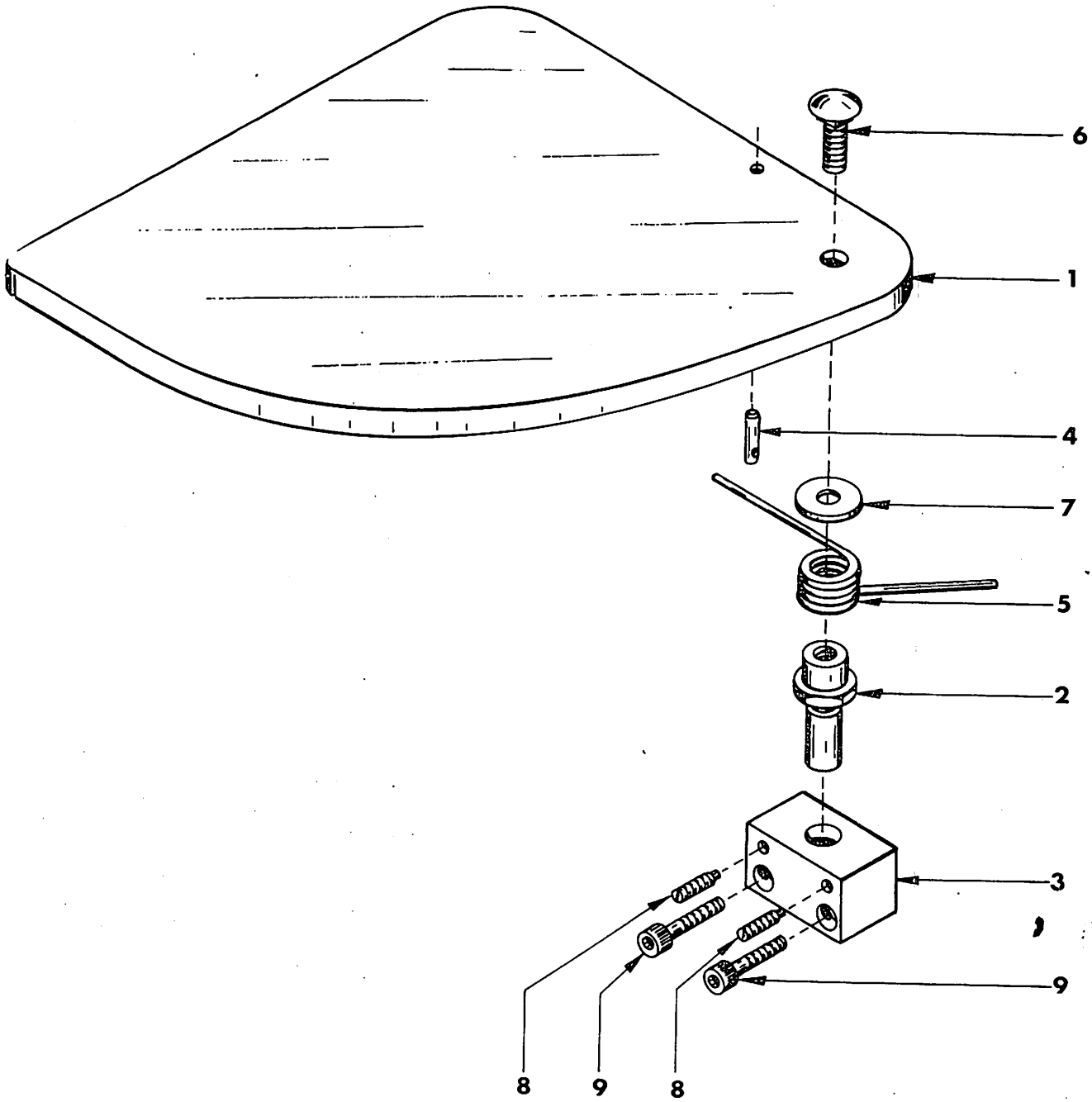
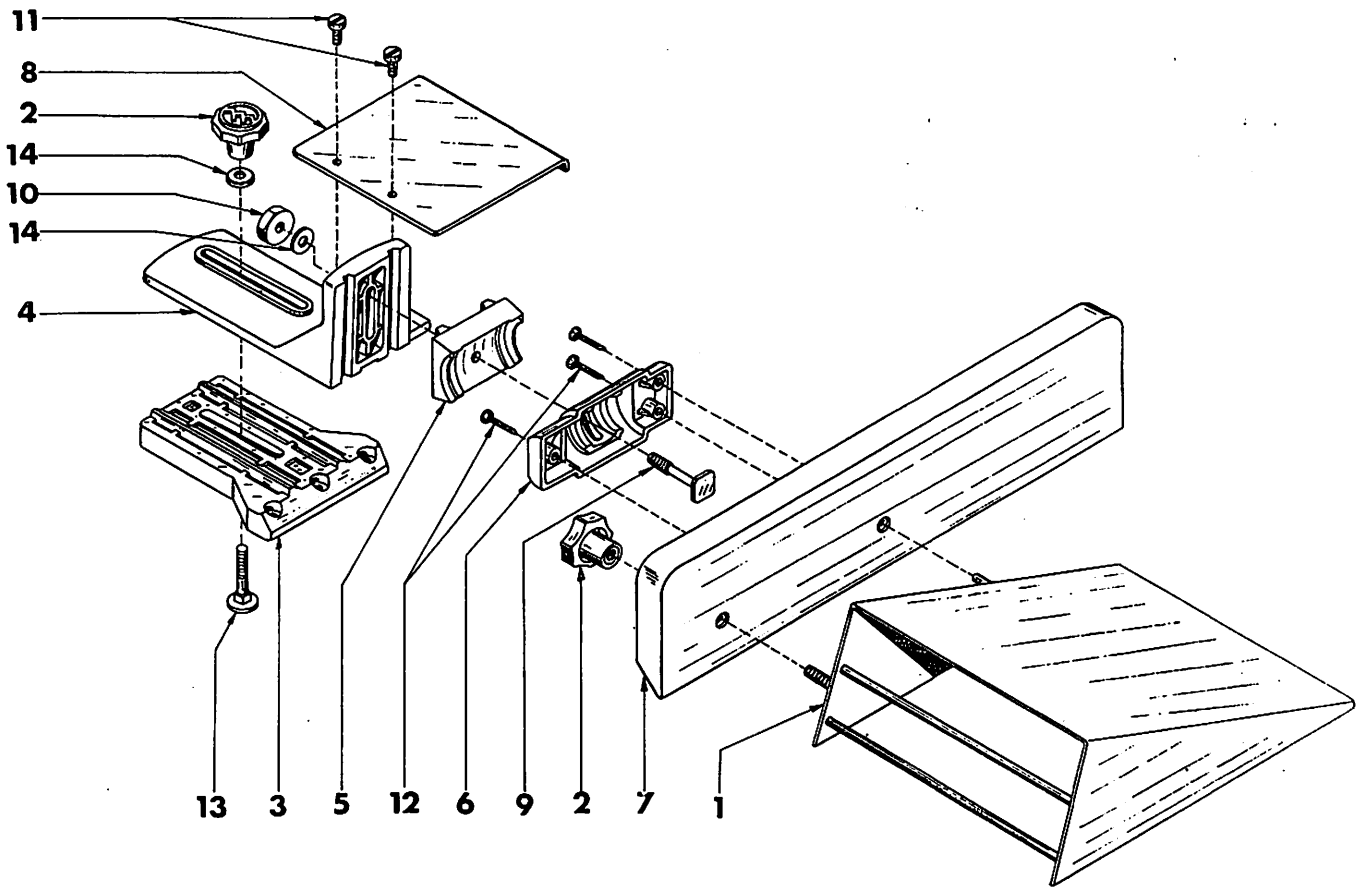
Pos		DIN		Benennung	Description	Designation
	H4B 210 000			**Suva Schutz**	**Suva guard complete**	**Ensemble protecteur suva**
1	H4B 210 010			Schutzträger	Guard bracket	Support du protecteur
2	H4B 210 020			Ausleger	Arm	Bras—bleche
3	H4B 210 030			Gelenkhebel	Swivel arm	Bras de levier
4	H4B 210 040			Paßschraube M8	Fitting bolt M8	Boulon M8
5	H4B 210 050			Paßschraube M10	Fitting bolt M10	Boulon M10
	H4B 214 000			Gr. Gelenk	Swivel complete	Ensemble articulation
6	H4B 214 010			Gelenkkopf	Swivel head	Tête d'articulation
7	H4B 214 020			Gelenk	Swivel	Articulation
8	H4B 214 030			Gelenkarm	Swivel arm	Bras articule
9	H4B 214 040			Parallelarm	Parallel fence	Bras parallèle
[illegible]	H4B 214 050			Kugelzapfen	Privot	Cheville tête spherique
	H4B 214 060			Rändelschraube	Knurled screw	Vis tête moletée
12	ZST 61 0628	A6H11x28 DIN7341		Nietstift	Pin	Rivet à tige
13	A2A 060 050			Scheibe	Washer	Rondelle
	H4B 211 000			Gr.Federhülse	Spring housing complete	Ensemble douille de ressort
14	H4B 211 010			Federhülse	Spring housing	Douille de ressort
15	H4B 211 020			Federbolzen	Bolt for spring	Cheville du ressort
16	H4B 211 030			Stopfen	Plug	Bochon-arrêt
17	H4A 000 140			Druckfeder	Compression spring	Ressort à pression
18	ZHL 81 0316	3x16 DIN 1481		Spannhülse	Lock pin	Goupille fendue
	H4B 212 000			Gr.Gelenkbolzen	Swivel bolt complete	Ensemble axe d'articulation
19	H4B 212 010			Gelenkbolzen	Swivel bolt	Axe d'articulation
20	H4B 212 020			Federhebel	Spring lever	Levier de ressort
	H4B 213 000			Gr.Plattenträger	Guard holder complete	Ensemble support du protège-lame
21	H4B 213 010			Plattenträger	Guard holder	Support du protège-lame
22	H4B 213 020			Deckplatte	Guard	Protège-lame
23	H4B 213 030			Schraubblech	Fixing plate	Contre-plaquette de fixation
24	H4B 213 040			Drehstift	Shaft	Tige de tournante
[illegible]	H4B 213 050			Rändelstift	Knurled pin	Cheville moletée
[illegible]	ZHL 81 0420	4x20 DIN 1481		Spannhülse	Disc spring	Ressort belleville
27	ZSR 63 0515	M5x15 DIN 963		Senkschraube	Countersunk screw	Vis tête fraisée
	H4B 215 000			Gr.Exzenter	Eccentric bush complete	Ensemble excentrique
28	H4B 215 010			Exzenter	Eccentric bush	Excentrique
29	H4B 215 020			Exzenterhebel	Eccentric lever	Levier d'excentrique
30	ZGF 19 2005	C20xM5 DIN 319		Kugelknopf	Ball knob	Sphère
31	ZSR 12 0625	M6x25 DIN 912		Zylinderschraube	Allen head screw	Vis à six pans creux
32	ZSR 33 0825	M8x25 DIN 933		Sechskantschraube	Hexagon head screw	Vis hexagonale
33	ZMU 34 0800	M8 DIN 934		Sechskantmuttet	Hexagon nut	Ecrou à six pans
34	ZMU 34 1000	M10 DIN 934		Sechskantmutter	Hexagon nut	Ecrou à six pans
35	ZSB 25 0840	B8,4 DIN 125		Scheibe	Washer	Rondelle
36	ZSB 25 1050	B10,5 DIN 125		Scheibe	Washer	Rondelle
37	ZML 81 0212	2x12 DIN 1481		Spannhülse	Lock pin	Goupille fendue
38	ZRG 27 0080	A8 DIN 127		Federring	Clip	Rondelle
39	ZST 17 0618	M6x18 DIN 417		Gewindestift	Set screw	Vis pointeau
40	ZFD 93 2001	20x10,2x0,9 DIN 2093		Tellerfeder	Disc spring	Ressort belleville



Pos		DIN		Benennung	Description	Designation
	H4A 140 000			**Gr. Schwingenschutz**	**Swing-away safety guard, complete**	**Ensemble protection pirotante**
1	H4A 140 010			Deckplatte	Cover	Couvercle
2	H4A 140 020			Gelenkbolzen	Swivel bolt	Axe d'articulation
3	H4A 140 030			Lagerbock	Bearing block	Support de palier
4	H5A 140 040			Federbolzen	Bolt	Boulon
5	ZFD 40 1903			Biegefeder	Torsion spring	Ressort de flexion à boudin
6	ZSR 03 1025	M10x25 DIN603		Flachrundschraube	Mushroom head screw	Boul. tête plate ronde
7	ZSB 21 1050	A10,5 DIN9021		Scheibe	Washer	Rondelle
8	ZST 17 0615	M6x15 DIN 417		Gewindestift	Set screw	Vis pointeau
9	ZSR 12 0630	M6x30 DIN 912		Zylinderschraube	Allen head screw	Vis tête cylindrique



Pos		DIN		Benennung	Description	Designation
				Aufbaumontage	**Assembly**	**Assemblage**
	H4A 150 000			Gr. Späneauswurfhaube	Chip evacuator complete	Ensemble capot d'ejection des copeaux
2	H1A 240 000			Gr. Sterngriff	Lock screw complete	Ensemble poignée-étoile
	H4A 070 000			Gr. Anschlag	Fence complete	Ensemble butée
3	H4A 070 010			Anschlagträger	Fence carrier	Porte butée
4	H4A 070 020			Anschlagwinkel	Fence bracket	Cornière de butée
5	H4A 070 030			Anschlagschlitten	Fence slide	Chariot de butée
6	H4A 070 040			Anschlagsegment	Fence segment	Segment de butée
7	H4A 070 050			Anschlag	Fence	Butée
8	H4A 070 060			Schutzblech	Guard plate	Tôle de protection
9	H4A 070 070			Vierkantschraube	Screw	Vis à 4 pans
10	H4A 070 080			Sechskantmutter	Hexagon nut	Ecrou à 6 pans
11	ZSR 840 608	M6x8 DIN 84		Zylinderschraube	Flat head screw	Vis tête cylindrique
12	ZSR 84 0608			Spannplattenschraube	Screw	Vis
13	ZSR 97 3525	M8x35 DIN 603		Flachrundschraube	Mushroom head screw	Boulon tête plate ronde
	ZSR 03 0835	B8,4 DIN 125		Scheibe	Washer	Rondelle
	ZSB 25 0840					