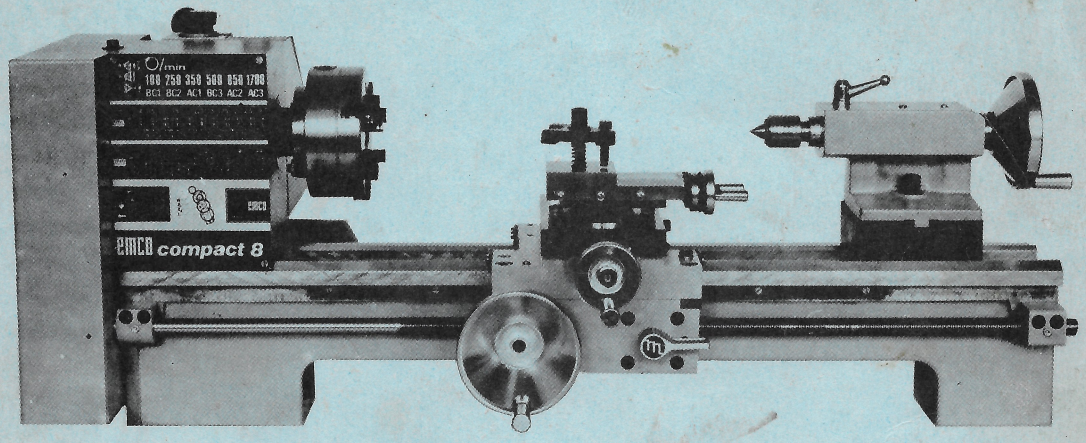
# Instruction book

## Service parts

# EMCO compact 8

BIB8210017




## ENGLISH

**Edition 76 04 Ref. Nr. EN2 490**

Maier + Co.
A-5400 Hallein/Austria

## SAFETY PRECAUTIONS WHEN TURNING

When using in workshop: Observe accident prevention instructions.

In private workplace: Safety plugs (prevention against starting up by children etc.)

Wear eye protection.

Have hair covered and do not have loose floppy sleeves.

Do not grip moving machine parts.

Only service the machine when it is isolated from electrical supply.

Do not remove the drive cover, and when working make sure it is always closed.

When working with bars, tubes etc. which extend beyond the tailstock, the protruding, rotating part must be covered by a stationary guard.

Always use a wire hook or similar implement for removal of swarf. Never use bare hands .(Information is given on WVS sheet No. 36 "Guard against injury from turnings and borings.")

Do not fit or remove turning tools when the spindle is rotating.

Never measure the work when it is rotating.

Always remove the chuck key (even when the machine is switched off).

Do not leave the machine when it is switched on.

Do not use your hand to slow down the workpiece or chuck.

# INDEX

**The Standard Equipment includes:**

Vee Bed

Headstock

Saddle-,Cross-,Top-Slides

Tailstock

Reduction Gear

Automatic feed with quadrant and 6 change wheels

Driving Pin with nut

Driver

Centre MT3

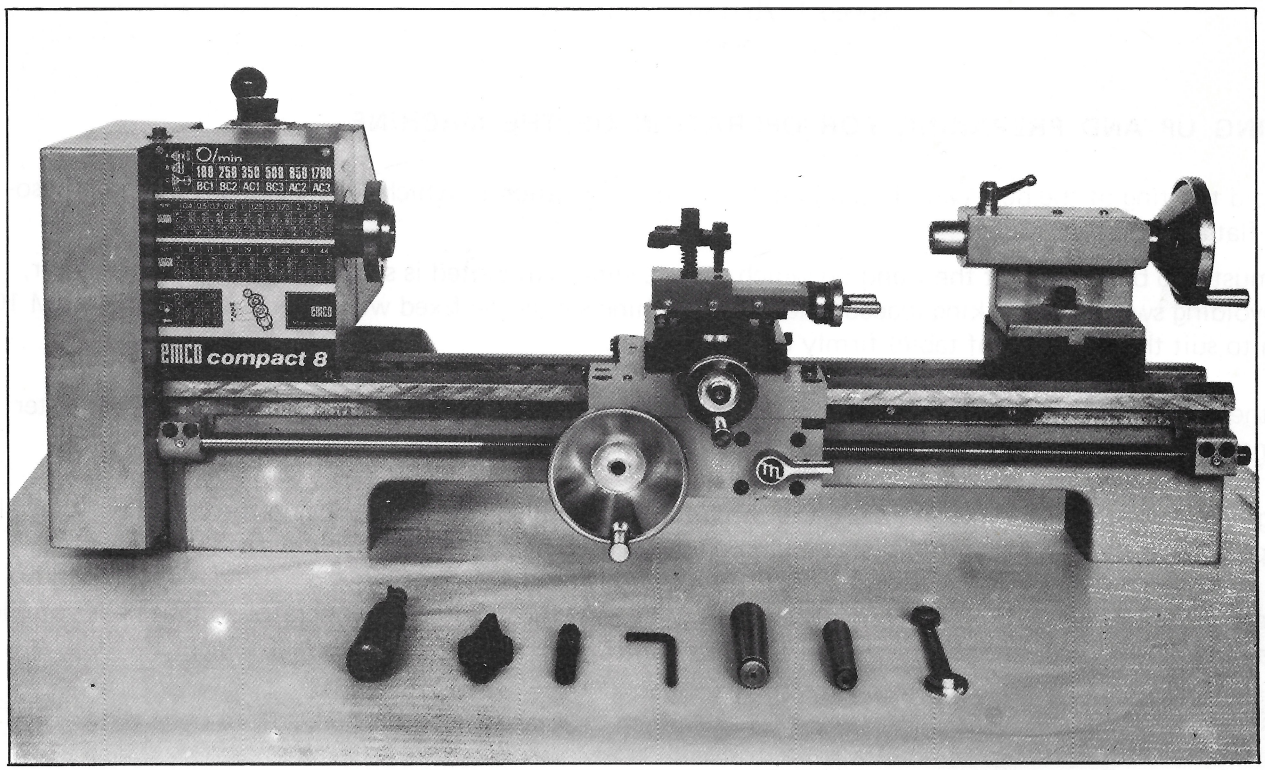
Centre MT2

Single Tool Holder (Clamp)

Electrical Equipment with motor etc.

Servicing Tools (Allen key SW 5, ring spanner 10 - 13, grease gun)

Service Manual



## TECHNICAL DATA OF THE COMPACT 8

| | |
|---|---|
| Centre height | 105 mm |
| Distance between centres | 450 mm |
| Max. dia. over slide | 118 mm |
| Required floor space | 940 x 500 mm |
| Weight | 58 kg |

**Headstock:** spindle nose DIN 55021
morse taper No. 3
hollow spindle (inside dia.) 20 mm
spindle bearings: 2 adjustable precision taper roller bearings

**Spindle speeds:** 100, 250, 350, 500, 850, 1700 revs/min.

**Feeds with leadscrew:** 0,09 mm/rev.
0,18 mm/rev.

**Thread pitches:** metric 0,4 - 3mm
inch 10 - 44 thread/inch
module 0,2 - 0,7

**Tailstock:** spindle diameter 26mm
spindle travel 40mm
morse taper MT2

**Tailstock travel:** forward 12 mm
backward 8 mm

**Motor:** single phase a. c.
speed 1375 rpm
capacity 0,5 PS

## SETTING UP AND PREPARING FOR OPERATION OF THE MACHINE

To avoid twisting of the bed, care should be taken that the location to which the machine is bolted is absolutely flat and level.

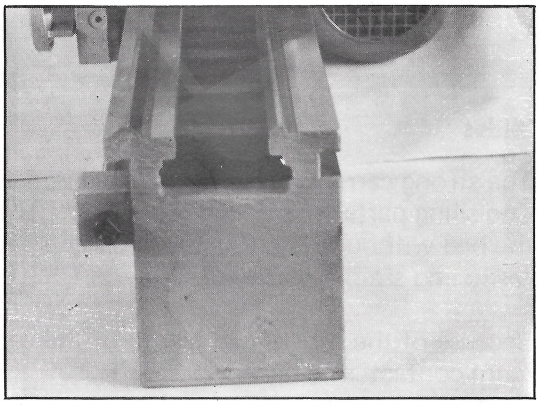
Care must also be taken that the stand on which the machine is mounted is securely fastened to the floor, thus avoiding swing and working inaccuracies. The machine should be fixed with 2 hex-headed screws (M 10, length to suit the thickness of table) firmly onto the stand.

Now the protecting oil film (for storage and transport) should be removed by washing with paraffin. After washing, clean with dry, soft cloth. Finally oil the slide ways with acid-free oil.

Owing to the variety of electric plugs, EMCO machines are supplied with bare ends on the cables,without plugs. Only plugs with built-in fuse protection should be used. The green/yellow wire is the earth connection!

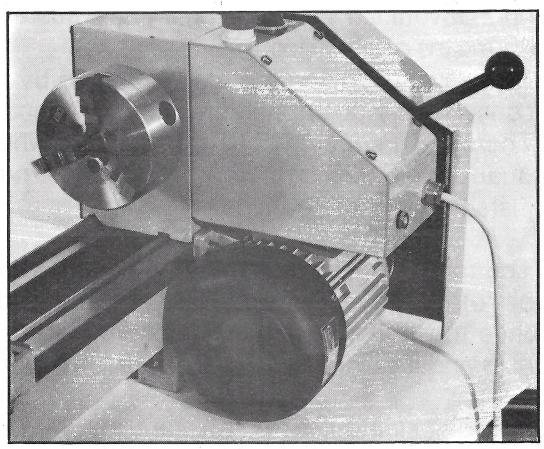
Before using the machine the instruction book should be read throughly by its operator so that he is completely familiar and confident with the machine and its controls.

## GENERAL DESCRIPTION



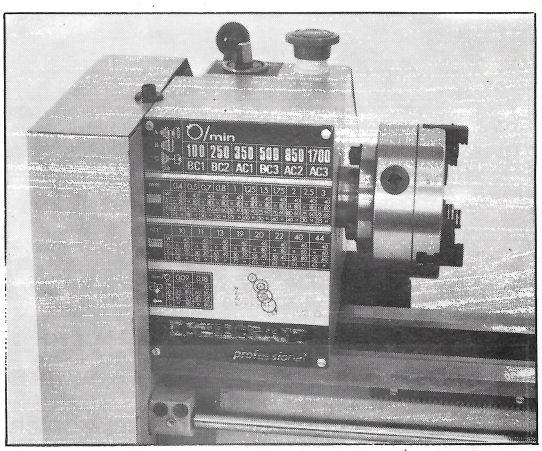
### Lathe Bed

The lathe bed is made of high-grade cast iron. By combining high Cheeks with strong cross ribs, a bed with low vibration and rigid qualities is produced.
The two precision-ground Vee slideways give an accurate guide for the carriage and the tailstock.The carriage and tailstock travel on individual Vees.The main drive motor is mounted to the rear of the bed. The quick traverse rack and the leadscrew are mounted on the front.



### Headstock

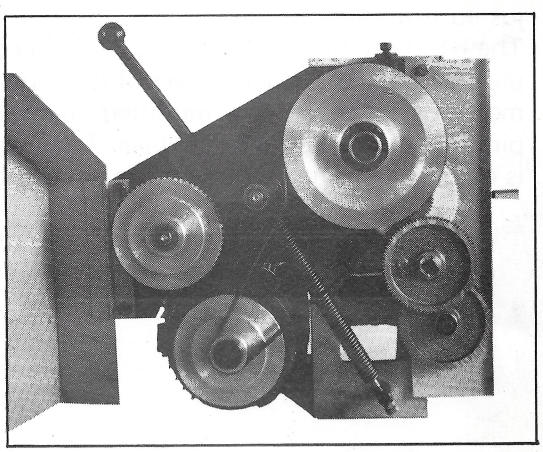
The headstock is cast from high-grade low-vibration cast iron. It is bolted to the bed. In the head the large-size main spindle is mounted on 2 precision taper roller bearings. On the rear end of the headstock the reduction gear base plate is fitted, on which the belt drive block and idler are mounted. The spindle is hollow with a 20mm bore.




A quick change of the belt can be made by easing the tension on the idler. The idler can be moved easily from outside by means of a strong lever.

The type of drive shown has the great advantage that it is noiseless at all speeds.
The complete drive unit is totally enclosed for safety reasons by a cover.

On the rear of the headstock the E-housing is mounted. It contains the forward and reverse switch for the motor and the condenser, completeley wired and enclosed.



## Slides

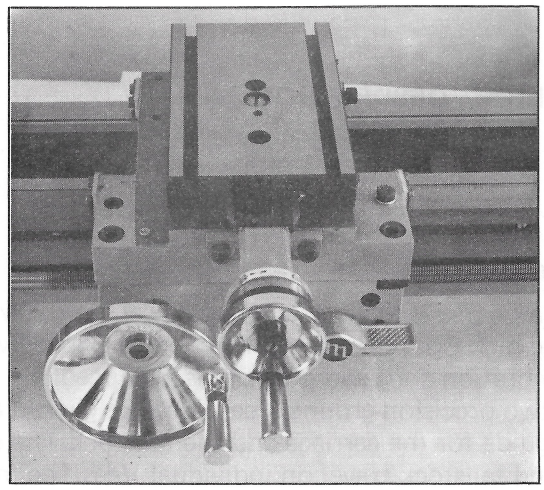
The strong carriage is made from high-quality cast iron. The siling parts are smooth ground. It fits the Vee on the bed without play. The lower sliding parts can be easily and simply adjusted.

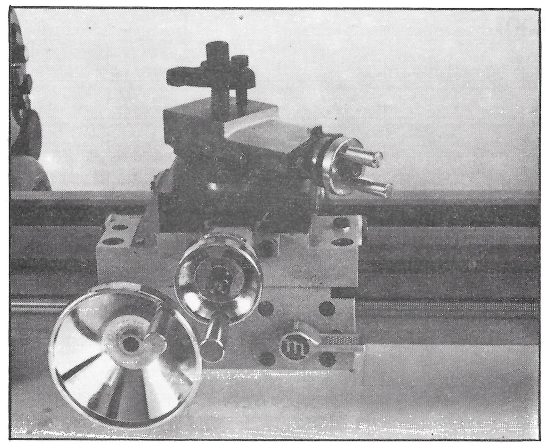
Because of the substantial length of the carriage, maximum contact is obtained.

The cross-slide is mounted on the carriage and moves on a dovetailed slide which can be adjusted for play by means of gibstrips.
The travel of the cross slide is effected by means of the conveniently positioned cross spindle handwheel. There is a graduated collar on the handwheel (1 graduation = 0,025 mm). The cross spindle nut is adjustable from the outside.

The top slide, which is mounted on the cross slide, can be rotated through 360°. The top slide and the cross slide travel in a dovetail slide and have gibs, adjustable nuts and a graduated collar (1 graduation = 0,025mm).

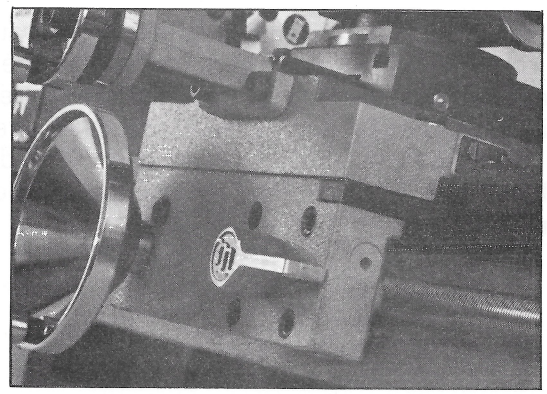
A strong clamp is fitted on the top slide.

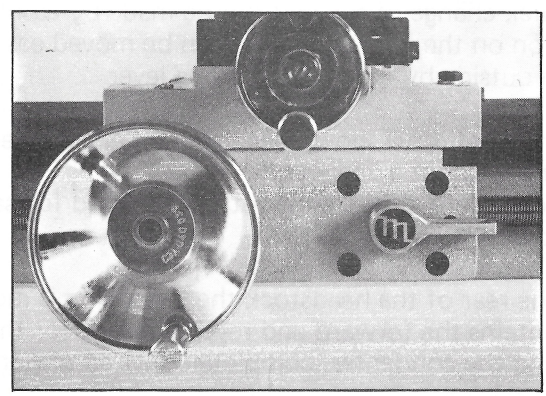




## Carriage Apron

The carriage apron is made of cast iron and mounted on the long slide. In the apron the two-piece half-nut is fitted (free of play). The half-nut guides can be adjusted from the outside.
The half-nut can be engaged by use of a conveniently placed lever. The quick- travel of the long slide is by means of a rack which is mounted on the bed, and a pinion, operated by a handwheel. The large handwheel is mounted on the carriage and is within easy reach.

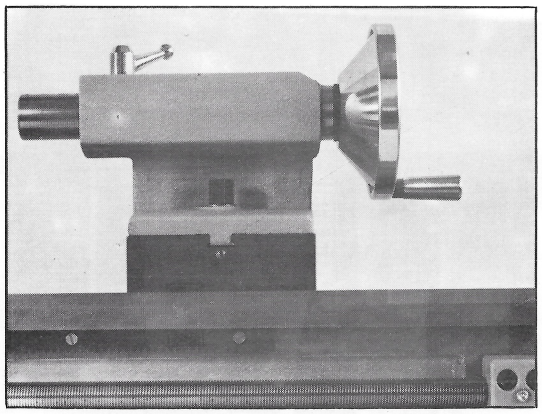




## Tailstock

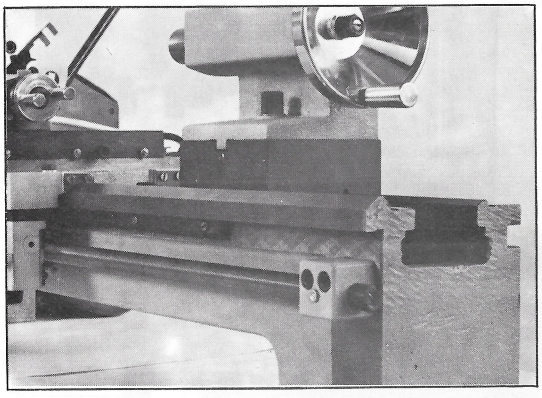
The tailstock slides on a Vee and can be clamped in any position by means of a heavy screw. The tailstock is made from a vibration-free ribbed iron casting. The slideways are fine ground. The tailstock has a heavy-duty barrel with inside taper socket MT2 and a graduated scale.

The barrel can be clamped in any position by means of a clamping lever. The barrel is moved axially by means of a handwheel mounted on the rear end of the tailstock.



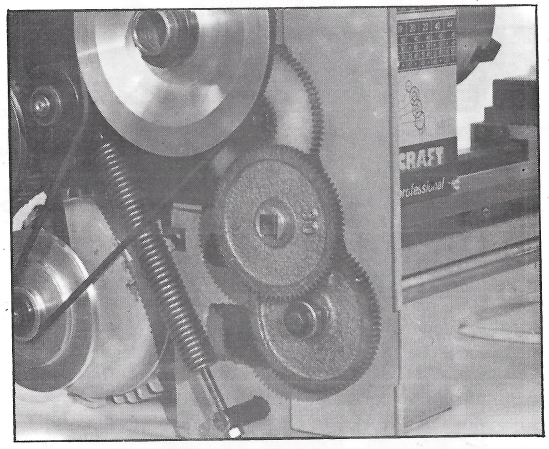
## Leadscrew

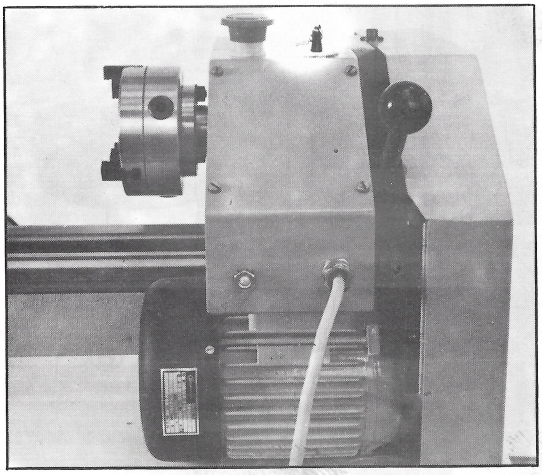
The strongly made leadscrew is carried in two bearings and is mounted on the front of the machine bed. The axial movement is controlled by the right hand bearing. By means of an accessible nut the bearings is easily adjustable. On the left hand end of the leadscrew there is a connection for an automatic feed and screw cutting attachment.



## Drive and Electrical Equipment

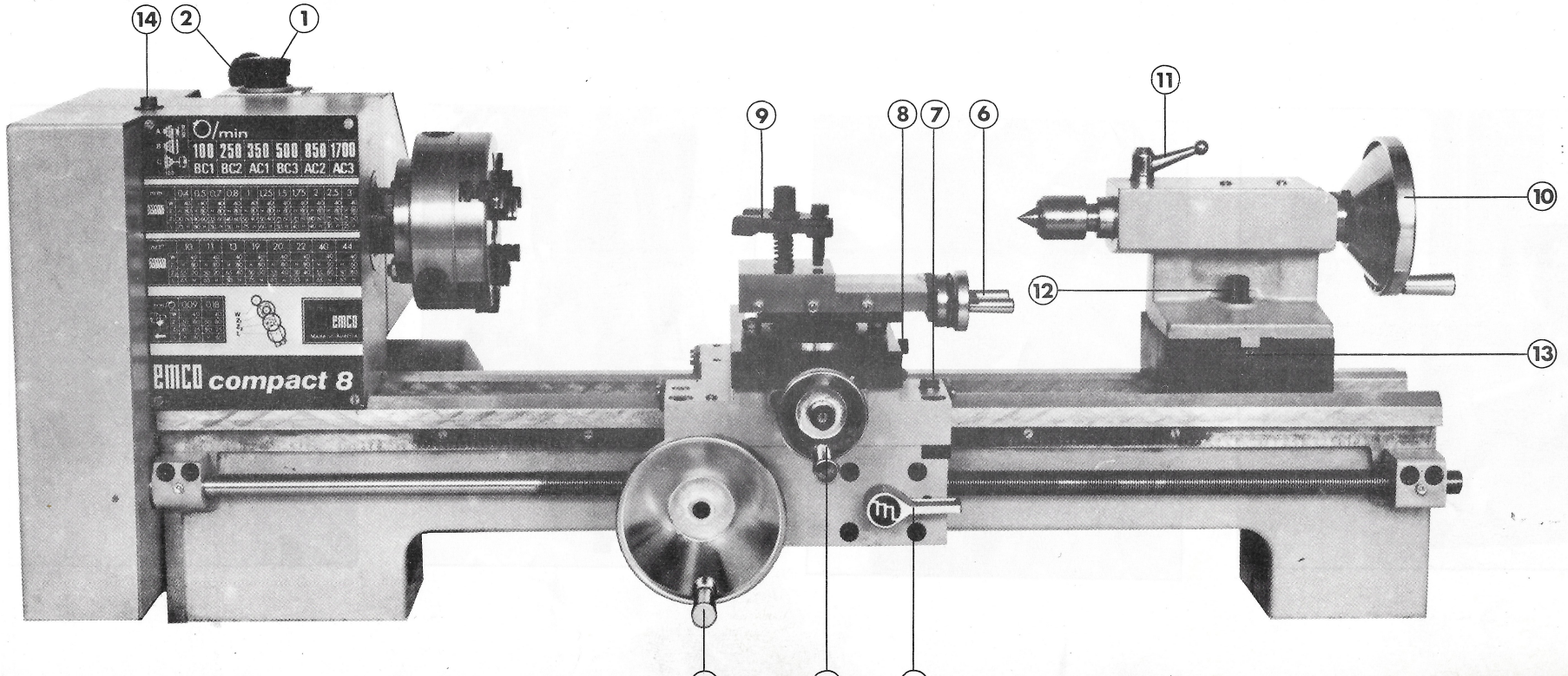
The main drive is by a single phase a. c. motor, mounted at the rear of the lathe bed. The power is transmitted by a special Vee belt to the main spindle. For the main spindle speed 100 rpm a slipping clutch is fitted to the pulley on the reduction gear spindle, to protect the drive and the motor against overload. The necessary condenser and motor switch are fitted in an E-housing mounted at the rear of the headstock casting.





## CONTROLS

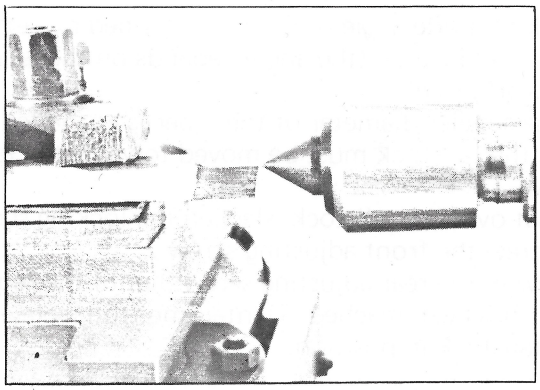
1 Main switch for motor (forward and reverse)
2 Lever for tensioning and loosening the Vee belt
3 Long travel handwheel
4 Half-nut lever
5 Cross slide handwheel
6 Top slide handwheel
7 Long travel clamping screw
8 Cross travel clamping screw
9 Tool clamp
10 Tailstock barrel handwheel
11 Tailstock barrel clamping lever
12 Tailstock locking screw
13 Tailstock cross adjustment
14 Fixing screw for drive cover

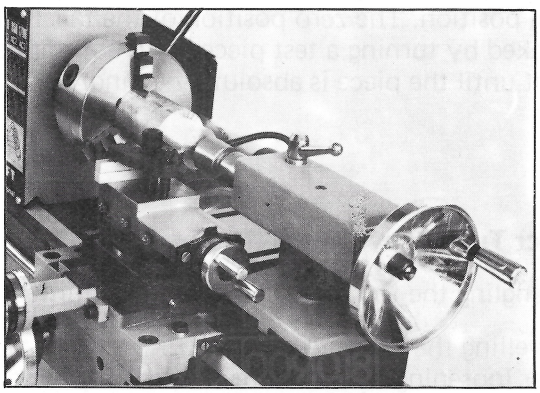


## WORKING WITH THE COMPACT 8

### Setting the Turning Tool

The cutting angle is only correct when the cutting edge is in line with the centre axis of the work piece. The correct height of the tool can be achieved by comparison with the point of the centre mounted in the tailstock. The correct height can be obtained by use of shims under the tool. When turning, the tool has a tendency to bend under pressure. The greater the overhang, the bending. For the best results, the overhang should be kept to a minimum of 10mm.



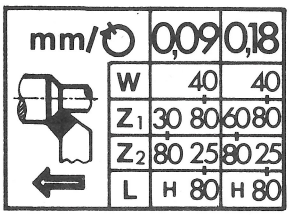


### Manual Turning

The long travel-, cross travel-, top slide-handwheels can be hand operated for longitudinal or cross feeding.

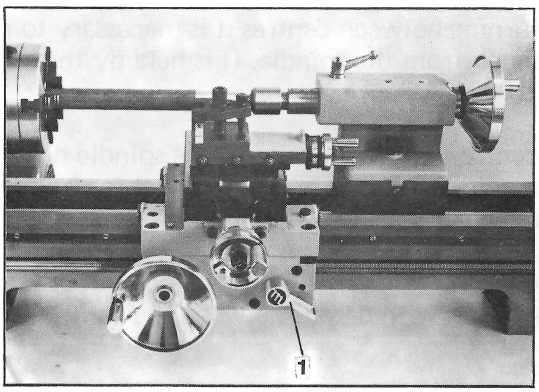
### Longitudinal Turning with Auto-Feed

Two automatic feeds are available (rough = 0,18mm/rev., fine= 0,09mm/rev.). These can be obtained by altering the gear wheel combinations (see Table).

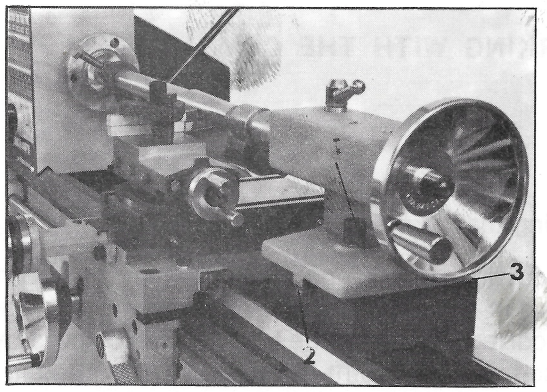


| mm/↻ | 0,09 | 0,18 |
|---|---|---|
| W | 40 | 40 |
| $Z_1$ | 30 80 | 60 80 |
| $Z_2$ | 80 25 | 80 25 |
| L | H 80 | H 80 |

By moving the half-nut lever 1 downward, the half-nut is engaged with the leadscrew and the automatic feed is in operation.



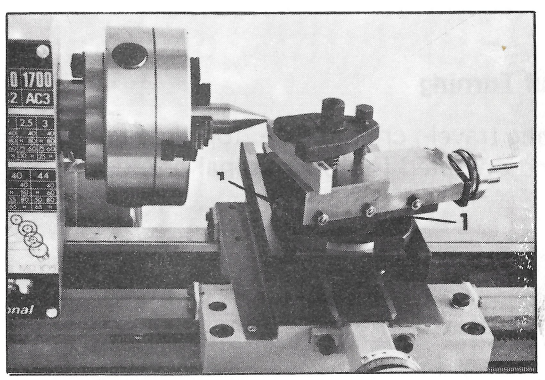
### Taper Turning Using Tailstock Set-Over




Work to a side angle of $5^{o}$ can be turned by setting over the tailstock (the angle depends on the length of the workpiece).
If the smaller diameter of the taper is at the tailstock end, the tailstock must be moved towards the lead-screw.
To set over the tailstock, slacken the locking screw 1.
Unscrew the front adjusting screw 2.
Screw in the rear adjusting screw 3 until the required taper has been reached. Tighten the front screw to lock the tailstock in position.

The workpiece must be held between two centres and driven by driving plate and driver.
After taper turning the tailstock is returned to its original position. The zero position of the tailstock is checked by turning a test piece, with constant adjustment until the piece is absolutely cylindrical.

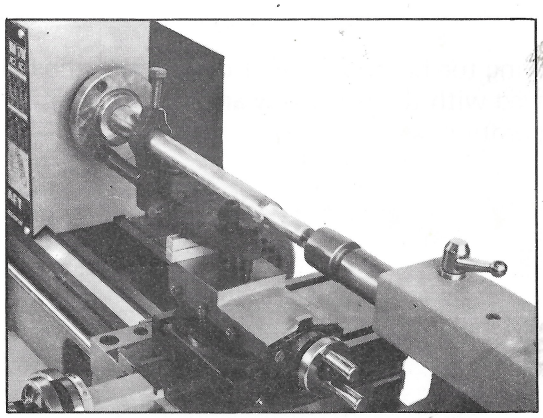
### Taper Turning by Setting the Top Slide




By angling the top slide, tapers can be turned.

Swivelling the top slide:
After loosening the two screws 1, the top slide can be swivelled.
A graduated scale permits accurate adjustment of the top slide. This method can only be used for short tapers.

### Turning Between Centres

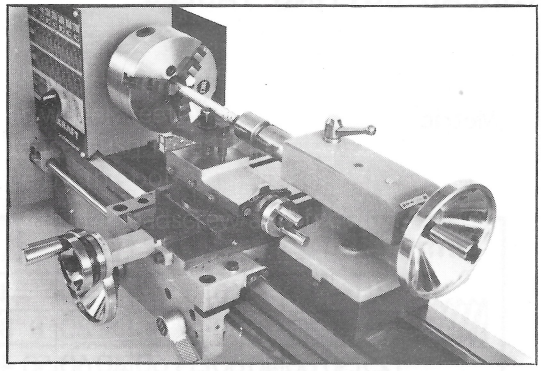


For turning between centres it is necessary to remove the chuck from the spindle. It is held by three hex-headed nuts M8.

The centre MT 3 is fitted into the spindle nose, the driving pin is inserted in one of the three holes and locked by a nut.

Fit revolving centre into the tailstock, mount workpiece, fitted with driver, between the centres.

## Screw Cutting (with change wheels)



By changing the combination of gear wheels, it is possible to cut metric, inch and module threads.

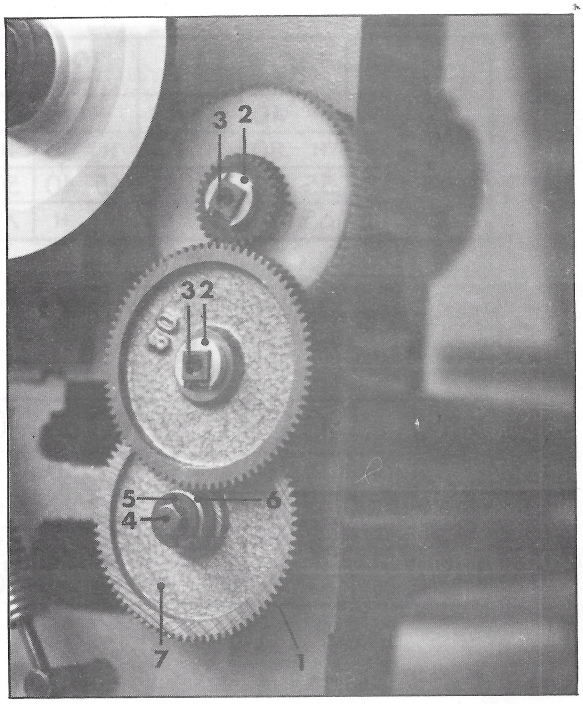
For R. H. threads it is necessary for the carriage to travel in the direction of the headstock (normal rotating direction of the workpiece with closed half-nut) during trial runs.

When fitting the change gears and the special bolt, make sure that the teeth mesh properly and do not bottom.

As an aid in mounting, a strip of paper should be placed between the meshing teeth and only removed when the special bolt is tightened. This will ensure that the wheels have the correct engagement.

It is essential that the half-nut should remain closed throughout the screwing operation, so that the tool always returns to the correct starting position. The tool should be withdrawn by use of the cross slide and the carriage returned to the starting position by reversing the motor.

An exeption is the cutting of metric threads, using the leadscrew. In this case, after each cut the half-nut can be opened and the carriage returned to the starting position by use of the handwheel, i. e. 1,5 - 0,5.




### Example of mounting the gear wheels for 1mm metric thread

1. After loosening the screw 1, swing the quadrant forward.
2. Remove both washers 2 and loosen the special bolt 3.
3. Remove the hex-headed screw and the safety washer 5 from the leadscrew. Now take off the distance bush 6 and gear wheel 7.
4. Fit the bush and gear wheel (teeth = 75) on the leadscrew, secure with hex—headed screw and safety washer.
5. Mount the gear wheel, teeth = 40, on the bottom bolt and gear wheel, teeth = 80, on the top bolt. Next the gear wheel teeth = 50 is fitted to the bottom bolt and the distance bush fitted to the top bolt.The gears are brought into mesh as previously described and secured in place by the bolt and washer.
6. Swing the quadrant backward until it is correctly positioned with the leadscrew and fix with the screw 1.

## THREAD CUTTING TABLES

### Metric

| mm | | 0,4 | 0,5 | 0,7 | 0,8 | 1 | 1,25 | 1,5 | 1,75 | 2 | 2,5 | 3 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
|  | W | 40 | 40 | 40 | 40 | 40 | 40 | 40 | 40 | 40 | 40 | 40 |
| | $Z_1$ | H 80 | H 80 | H 80 | H 80 | H 80 | H 80 | H 80 | H 80 | H 80 | H 80 | H 80 |
| | $Z_2$ | 30 60 | 40 60 | 35 60 | 40 60 | 50 40 | 50 40 | 75 60 | 70 60 | 80 60 | 75 60 | 75 60 |
| | L | 75 H | 80 H | 50 H | 50 H | 75 H | 60 H | 50 H | 40 H | 40 H | 30 H | 25 H |

### Inch

| n/1" | | 10 | 11 | 13 | 19 | 20 | 22 | 40 | 44 |
|---|---|---|---|---|---|---|---|---|---|
|  | W | 40 | 40 | 40 | 40 | 40 | 40 | 40 | 40 |
| | $Z_1$ | H 80 | H 80 | H 80 | H 80 | H 80 | H 80 | H 50 | H 60 |
| | $Z_2$ | 55 20 | 50 20 | 65 40 | 50 30 | 55 40 | 50 40 | 55 80 | 50 80 |
| | L | 65 H | 65 H | 50 H | 75 H | 65 H | 65 H | 65 H | 65 H |

### Module

| Mod | | 0,2 | 0,25 | 0,3 | 0,5 | 0,6 | 0,7 |
|---|---|---|---|---|---|---|---|
|  | W | 40 | 40 | 40 | 40 | 40 | 40 |
| | $Z_1$ | H 60 | H 75 | H 80 | H 80 | H 80 | H 80 |
| | $Z_2$ | 55 75 | 55 60 | 55 50 | 55 30 | 55 25 | 55 20 |
| | L | 70 H | 70 H | 70 H | 70 H | 70 H | 75 H |

### Explanation of the Thread Cutting Tables

The gearwheels and distance bushes shown on the right-hand row, are always fitted first, i. e. before the left row. The crossing lines show the gearwheels which mesh.

mm = threads metric
mod = threads module
W = main spindle
$Z_1$ = 1st intermediate shaft
$Z_2$ = 2nd intermediate shaft
L = leadscrew
H = distance bush

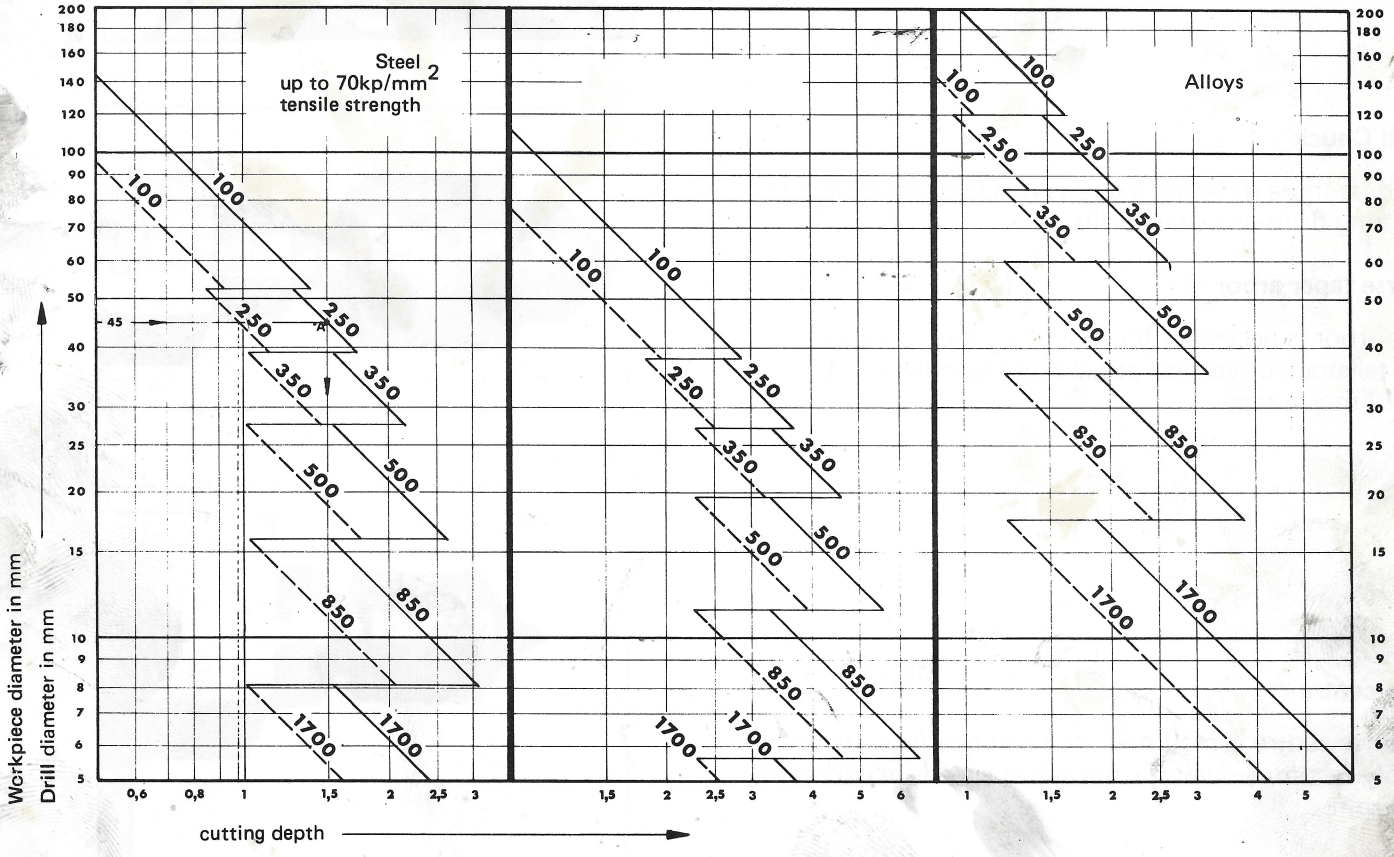
**Choosing the correct operating speed**

**Example:**

Rough turning of a steel shaft 70kp/mm$^2$, shaft diameter 45mm, chosen feed 0,09mm/rev.
With these values one can find from the diagram the speed and the maximum permissible cutting depth to be used. The cutting depth is the amount that the cross slide can be fed relative to the suface of shaft.
In the diagram for "Steel up to 70kp/mm$^2$ tensile strength", going along the line "workpiece diameter 45mm" to the right until the point where the heavy 45$^o$ line crosses (Point "A"), the figure 250 gives the speed - 250revs/min. By taking a vertical line from Point A downwards, the maximum cutting depth of approx. 1,5 mm is obtained.
The dotted lines in the diagram give the equivalent depth of cut when using the 0,18mm/rev. feed. (For the above example the cutting depth would be 0,97mm).
The heading "drill diameter in mm" is for boring.
As an example:
A bore of 10mm (drill fitted in tailstock, the workpiece in the chuck) requires a spindle speed of 850revs/min.

**! NOTE !** The values of depth of cut shown in the diagram are the results of long trials and experience.

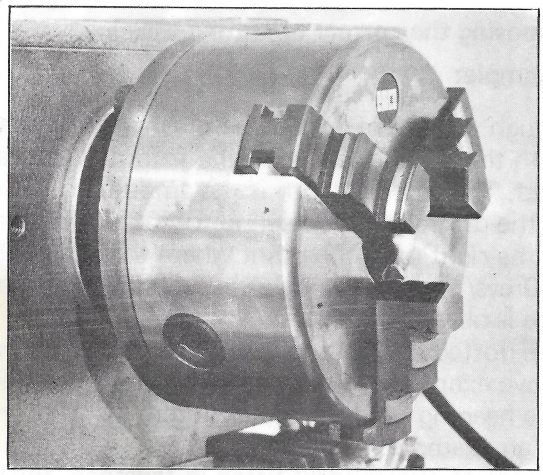
**Slipping Clutch:** To avoid the overloading of the drive, a safety - slipping clutch is fitted.
Overloading the drive (rattling noise) means the depth of cut is too deep and should be reduced (check with the values given in the table).

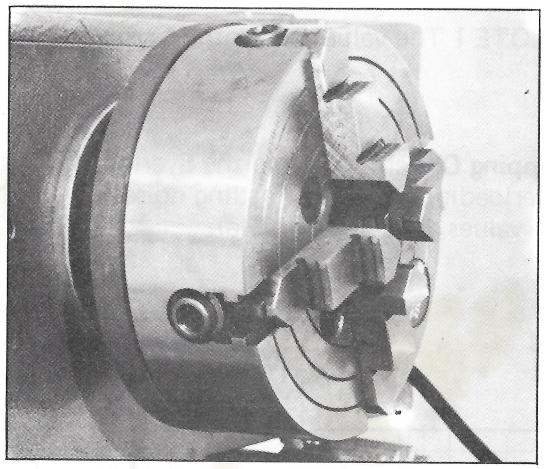


## LATHE ACCESSORIES

### Universal Lathe Chuck, 3 or 4 jaw design

Using these Universal Chucks, cylindrical or symmetrically profiled work pieces (round stock, triangular, square, hexagonal, octagonal or twelve-cornered stock) can be clamped.
NOTE: New lathe chucks have very tightly fitting jaws. This is of vital necessity to ensure accurate clamping and a long service life. Due to repeated opening and closing the jaws adjust themselves automatically and their operation becomes progressively smoother. For greasing, we recommend Molykote Paste G.



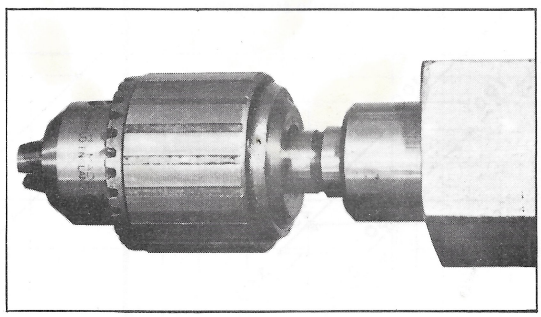


### 4-Jaw Independent Chuck (Ø 150mm)

This special chuck has 4 independently adjustable chuck jaws. These permit the holding of asymmetrical components and enable the accurate setting up of cylindrical components.

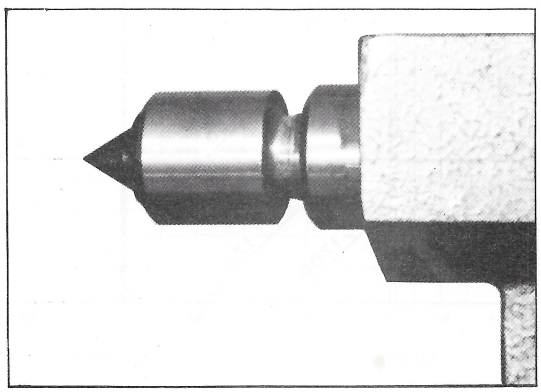
### Drill Chuck

With its three self-centring jaws it is used for holding centring drills and twist drills.



### Morse taper arbor

The arbor is necessary for mounting the drill chuck in the tailstock or vertical attachment spindle. It has a No. 2 morse taper.

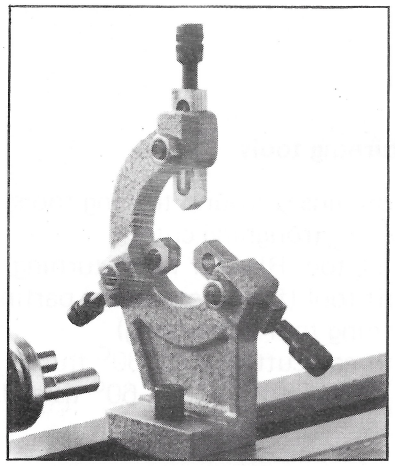


### Live centre

The live centre is mounted on 3 ball bearings. Its use is highly recommended for turning at speeds in excess of 500 rpm.

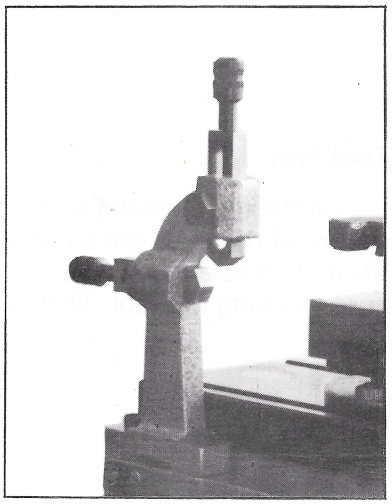
### Fixed steady

The fixed steady serves predominantly as a support for shafts on the free tailstock end. For many operations the tailstock cannot be used as it obstructs the turning tool or the drilling tool, and therefore must be removed from the machine. It is then the fixed steady which functions as end support ensuring a chatter-free running of the machine. The fixed steady is mounted on the bedway and secured from below in the desired position by means of a locking plate. The sliding fingers require continuous lubrication at the contact points with the workpiece to prevent their premature wear.



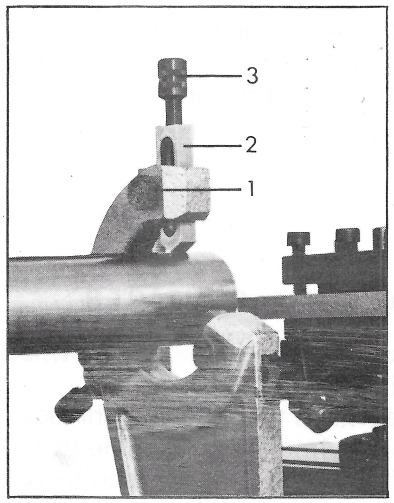
### Travelling steady

The travelling steady is mounted on the saddle and thus follows the movement of the turning tool. As the centre part of the travelling steady is always level with the height of the tool, only two sliding fingers are required, as the place of the third is taken by the turning tool. The travelling steady is used for turning operations on long, slender workpieces. It prevents "springing" of the workpiece under the pressure of the turning tool.
The sliding fingers are set similarly to those of the fixed steady, free of play, but not binding. They should be adequately lubricated during the operation.



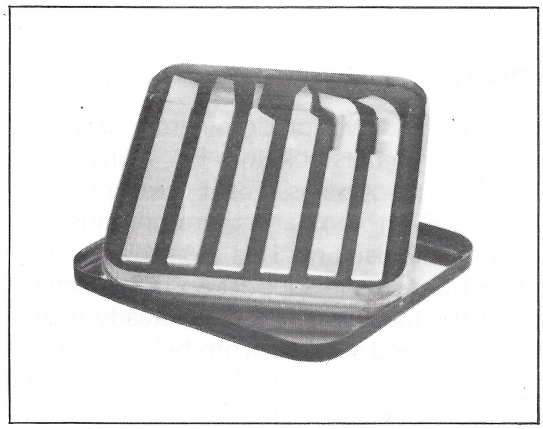
### Setting the steady

1. Slacken the three laterally located hexagonal nuts 1.
2. Unscrew the knurled screws 3 and advance the sliding fingers 2 by hand. Open the sliding fingers sufficiently wide until the fixed steady can be moved with its fingers around the workpiece. Secure the fixed steady in its position.
3. By turning the knurled screws into position, the sliding fingers can be set to the workpiece. They must be applied free of play but must not be too tight. Tighten the hexagonal nuts. Lubricate the sliding points with machine oil.
4. When after prolonged operating time the jaws show wear, the tips of the fingers can be remilled or filed.



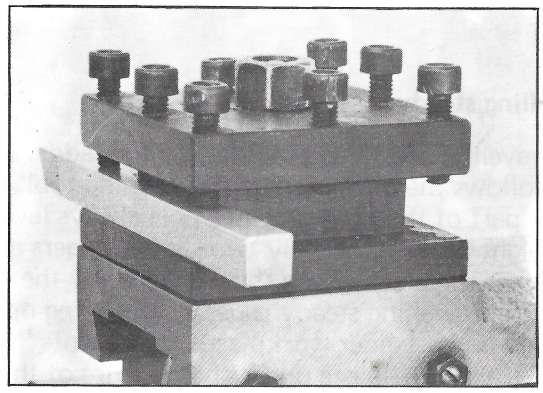
### Box with turning tools

This box contains 6 ground turning tools:
1 roughing tool (roughing cuts)
1 side cutting tool RH (for finish turning)
1 parting-off tool (for grooving and parting-off)
1 inside turning tool (for boring)
1 internal thread cutting tool, $60^{o}$ thread angle
1 external thread cutting tool, $60^{o}$ thread angle



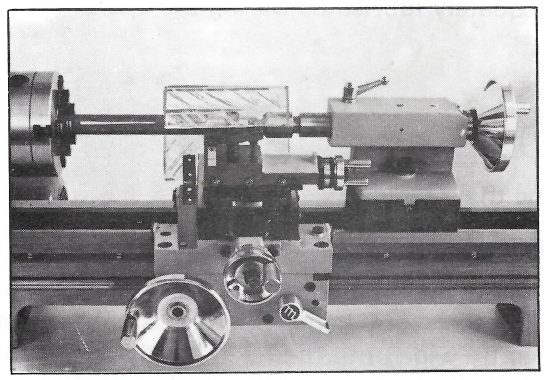
### Four-way Tool Post

It is mounted on the top slide and allows four tools to be clamped. Any of the tools can be swung into the cutting position. It is essential to loosen the hex headed nut before swinging the tool. Thereafter tighten.



### Chip Guard

Travels with the tool and protects the operator from flying turnings. It is also sufficient protection against damage from a tool breaking in use.



### Change Gears for the COMPACT 8

This accessory consists of **8** gear wheels and a distance ring.
With these wheels the following threads can be cut: Metric from 0,4mm-3mm, module from M 0,2 - 0,4, and inch from 44 threads per inch to 10 threads per inch.
For detailed instructions of mounting and using see pages 11 and 12.

## Cabinet stand

Assembly of cabinet stand:

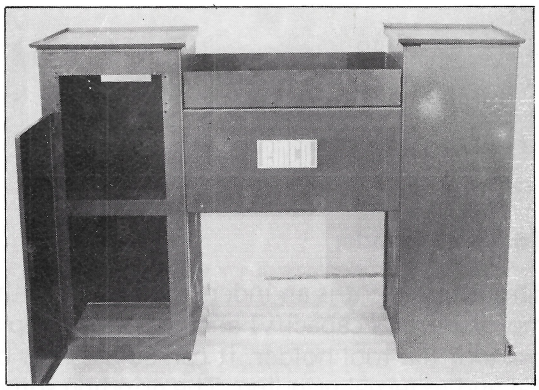
Put up left(A) and right (B) stand. Screw both angle irons (C) with 2 bolts each (M8 x 12 DIN 933) to stand A respectively B.

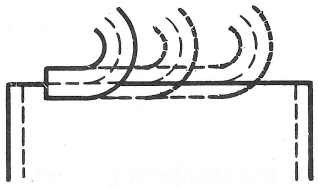
Bolt steel flats (D) and mid-portions (E) together (4 nuts M8). Bolt assembled mid-portions (E) to both stands (A and B) (8 nuts M8, DIN 934 and 8 lock washers DIN 127).
Screw supporting bolts for inserts (J) in place (2 bolts M5 x 8, 2 bolts M8 x 12 DIN 933, nuts on inside of stand).

Put on rubber pads (F), rubber packings (G) and trays (H). Bolt both cover plates (I) to left stand (2 nuts each).
Fit inserts (J) into left stand (A). Mount cabinet door on hinges. Mount machine in position and bolt it with 2 bolts M 10 x 35 DIN 933 to cabinet stand.

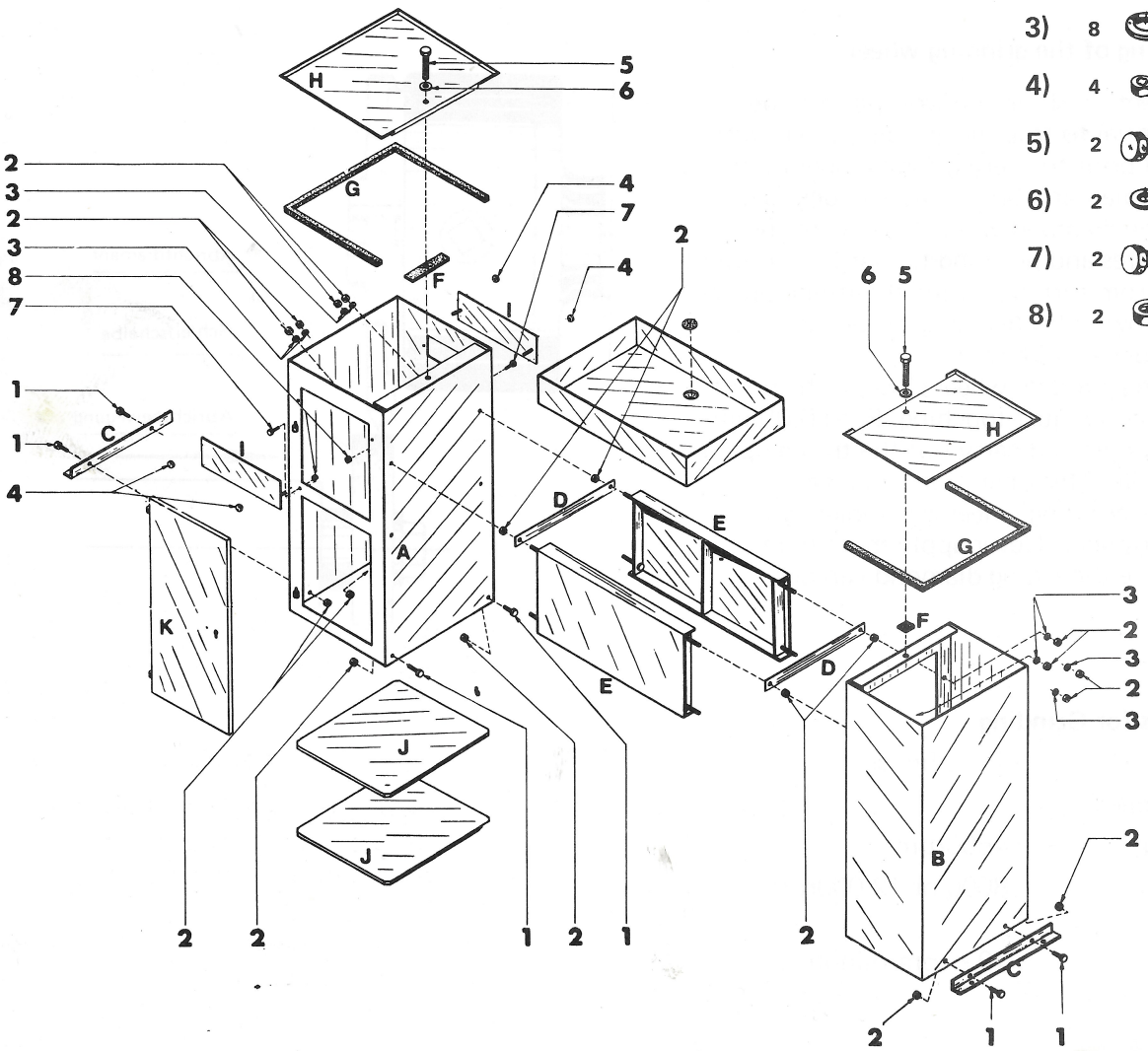
Hold down rubber packing with left hand.

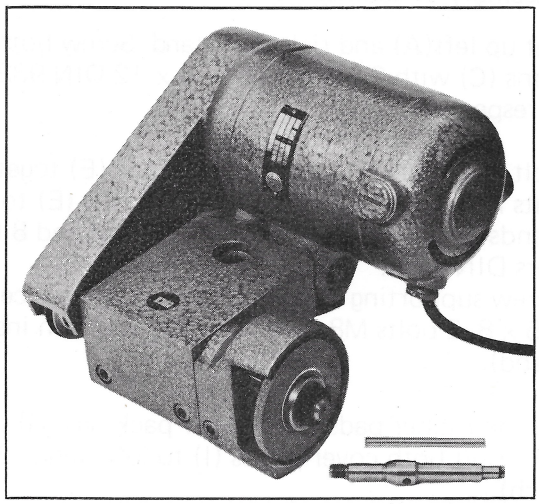
Then bend rubber packing with right hand upward and press it bit by bit onto the rim of the cabinet stand.
NOTE: When mounting the rubber packing, do not stretch it!





| | | | |
|---|---|---|---|
| 1) | 6 | M8 x 12 | DIN 933 |
| 2) | 18 | M8 | DIN 934 |
| 3) | 8 | A8 | DIN 127 |
| 4) | 4 | M6 | DIN 934 |
| 5) | 2 | M10x35 | DIN 933 |
| 6) | 2 | B10,5 | DIN 125 |
| 7) | 2 | M5x8 | DIN 933 |
| 8) | 2 | M5 | DIN 934 |





## Toolpost Grinder

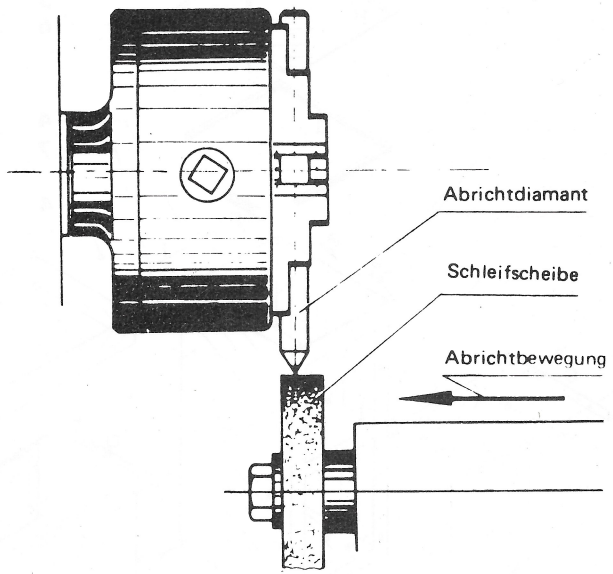
This attachment is an independent unit with its own motor (150 W capacity) and fits on the top slide in place of the tool holder. It can be used for both internal and external grinding. The grinding spindle runs on precision bearings. Care should be taken to avoid damaging this spindle.
Shifting of the belt gives three speeds, 4500, 8000 and 12.000 rpm.

## Working with the toolpost grinder

The motor and grinding wheel spindle have three belt pulleys each. By shifting the belt, 3 speeds can be obtained: 4500, 8000 and 12.000 rpm. The belt should only be moderately tightened to avoid unnecessary power consumption and wear.

## Dressing and truing of the grinding wheel

To obtain a perfect finish on the workpiece to be ground, it is essential to true the grinding wheel with a truing diamond prior to every grinding operation. Clamp the truing diamond on the lathe chuck (see sketch) so that the diamond will be level with the height of the centres and pointing forward. To prevent the lathe chuck from turning during the truing operation, engage the lowest headstock gear. Set and run the toolpost grinder at 4500rpm.
Move the revolving grinding wheel close to the point of the truing diamond - just touching. Feed 0,05mm with the cross support and carry out the truing operation with the saddle. This operation should be repeated until the grinding wheel is completely clean over its entire periphery. Never apply more than 0,05mm, otherwise the truing diamond can be damaged.

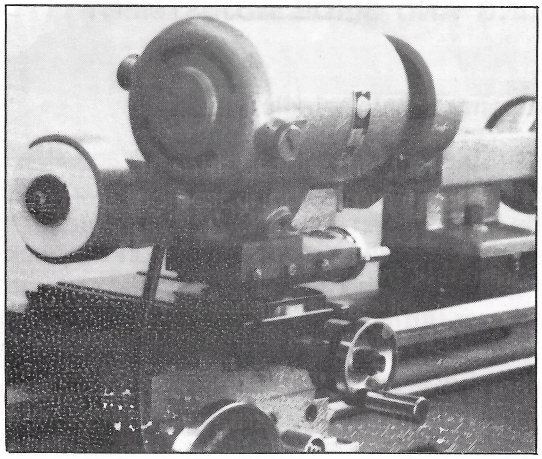



## Feeds and Speeds for Grinding

| | |
|---|---|
| Cutting Speed: | 15 - 25m/sec |
| Grinding wheel speed: | |
| External grinding: | 4500rpm |
| Internal grinding: | 8000 or 12.000rpm |
| Surface speed of the workpiece: | 10 - 15m/minute |

### Mounting on the lathe

The toolholder is removed and the grinder set up on the top slide so that the fixing screws on the top slide are through the slots; when the grinder is correctly adjusted it is tightened in place with washers and nuts.



### External grinding

For most external grinding the 60mm dia. grinding wheel, grain 80, hardness grade M, is used. The grinding wheel is bolted to the arbor at the toolpost grinder, trued and should remain in this position until it becomes worn out. The locating arbor with the mounted grinding wheel is clamped in the spindle by means of a draw-in tube. To grind the workpiece, the toolpost grinder with rotating grinding wheel (4500 rpm) is fed in to the slowly revolving workpiece until a slight grinding spark formation occurs. The longitudinal slide rest of the toolpost grinder is then moved into the initial position. Apply a feed of maximum 0,1mm with the cross slide and engage the automatic feed. The grinding operation will proceed automatically.

### Internal grinding

Replace the external grinding arbor by the internal grinding arbor. Smaller grinding wheels can be mounted on the front end of the grinding arbor (6mm dia.) and secured by means of an M3 screw. Very small grinding wheels (below 15mm) have a cast-in M3 type screw and can be screwed direct into the grinding arbor. If they are equipped with cylindrical shanks, a suitable Lorch-Schmidt watchmaker's collet of type B8 can be inserted into the spindle and clamped. These small grinding wheels also require dressing by the truing diamond. Adjust for a spindle speed of 8000 or 12.000rpm internal grinding. The grinding operation is similar to that of external grinding.

### Taper grinding

For taper grinding move the toolpost grinder with the top slide into the desired angular position. Adjust with the cross slide. The feed for the longitudinal movement is controlled by turning the top slide handwheel.

### NOTE!

An increase in operating temperature can occur during the first few hours, but this will not harm the spindle. The temperature will automatically drop after a few hours.

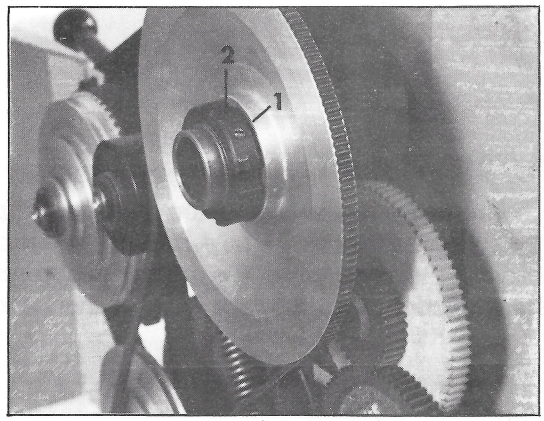
### Cleaning and servicing

The quill is of a dust-tight design and all bearings are lubricated for life. In spite of this, the dust clinging to the toolpost grinder should be wiped off after use. When re-setting the toolpost grinder from external to internal grinding or viceversa, the taper socket must be cleaned meticulously.

## BEARING AND SLIDE ADJUSTMENT

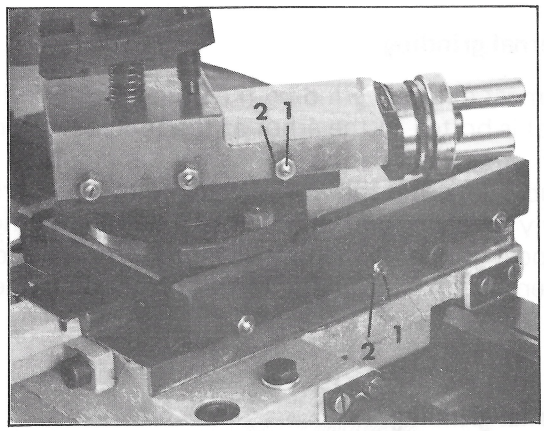
### Adjustment of main spindle bearings

The mainspindle bearings are correctly adjusted at the works. If end play becomes evident after considerable use, the bearings can be adjusted by slackening the grub screw (1) in the slotted nut (2) on the back end of the spindle and tightening the slotted nut with a "C" spanner until all end play is taken up, but with the spindle still revolving freely. (Excessive preloading will damage the bearings). Tighten grub screw.



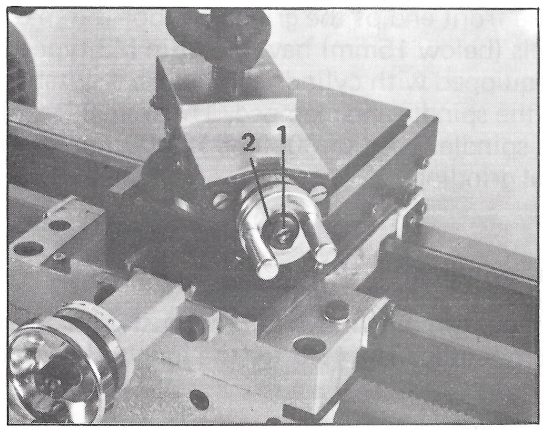

### Adjustment of cross and top slides

Each slide is fitted with a gib strip which can be adjusted with 3 screws (3) fitted with lock nuts. The gib strip is adjusted with the screws until the slide moves freely without play, after which the lock nuts are tightened.




### Adjustment of feed screw end float

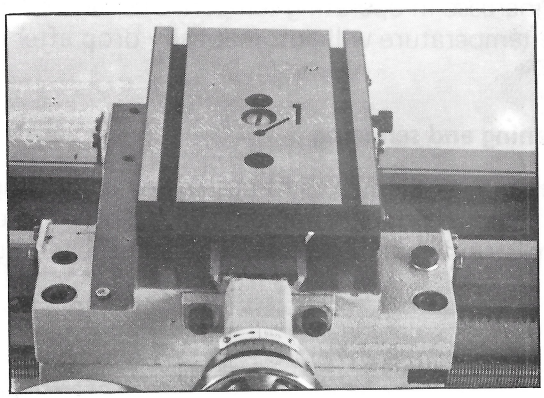
When one of the two slides develops end float, slacken the screw (1) in the relevant handwheel and adjust the nut until all play has been taken up.
Re-lock the nut with the screw.




### Adjustment of feed screw backlash in nuts

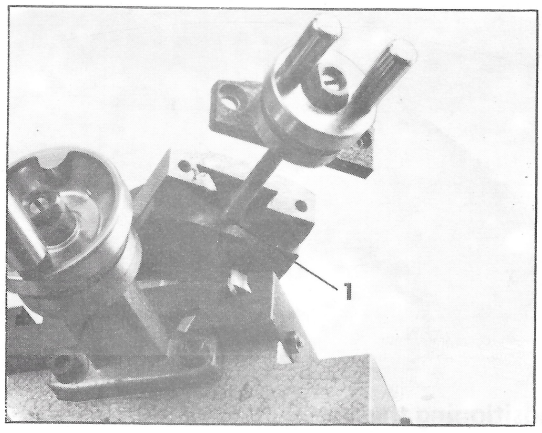
### Cross slide spindle

Remove the top slide and adjust screw 1 until the backlash between the spindle and nut is eliminated.



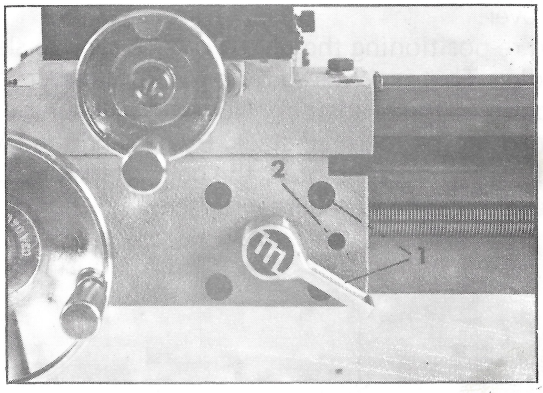
### Top slide spindle

Remove the 2 screws holding the spindle bracket in position and unscrew the spindle. Adjust the screwed ring (1) until all backlash has been eliminated.



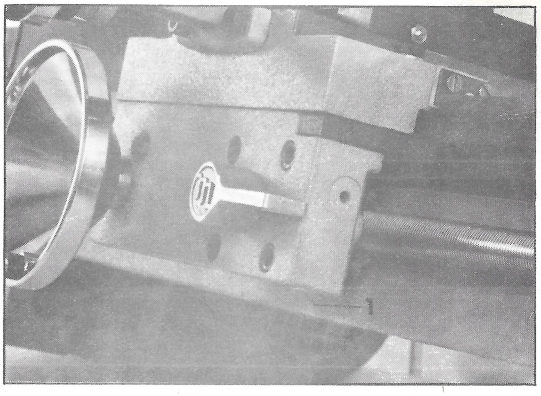

### Adjustment of half-nut guide

Loosen the two screws (1) on the right hand side of the apron and adjust the control screw (2) until both half-nuts move freely without play. Tighten both screws again.




### Adjustment of leadscrew backlash

Loosen the grub screw No. 1 which is on the underside of the apron until - with the half-nuts engaging the lead screw-backlash is eliminated.

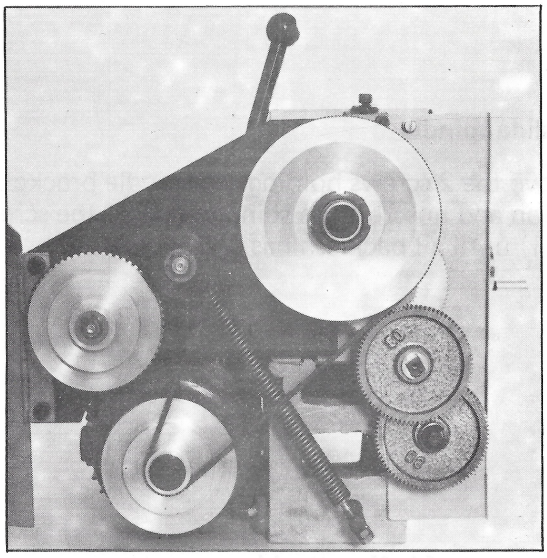



### Replacing the shear pin in the leadscrew

If the shear pin breaks due to overoad or abuse, it must be replaced.

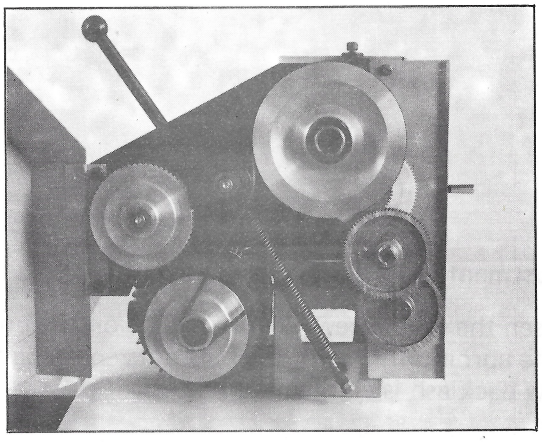
**NOTE!** Make sure that only EMCO shear pins are fitted.

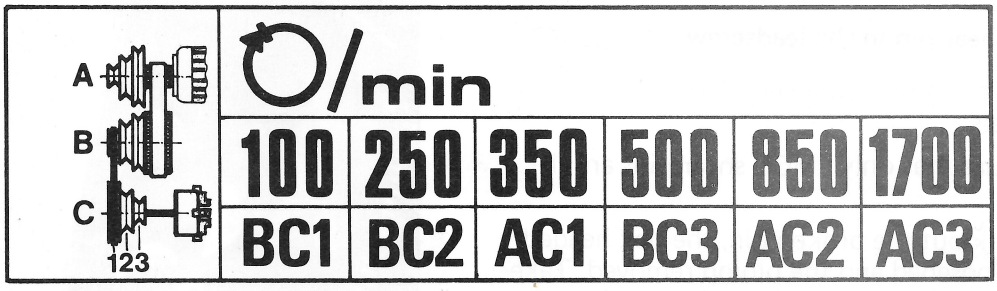
Inorder to knock out the broken pin, the hex headed screw must be loosened and the pinion removed. Take off the sleeve and knock the broken pin out of the sleeve and leadscrew. Replace the sleeve, line up the holes and fit new pin. Reassemble.



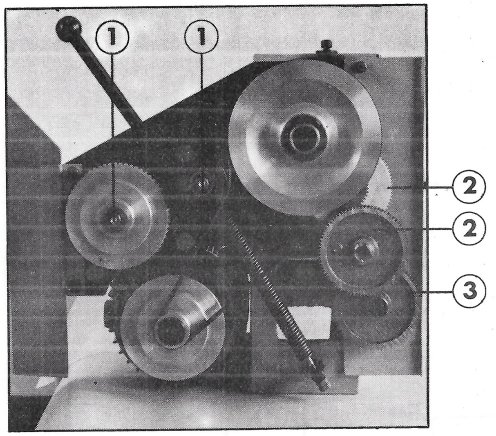
**Re-positioning the Vee-Belt**

Loosen the screw on top of the headstock and open the cover.
When re-positioning the belt it is necessary to slacken the idler. That is achieved by moving the lever in the direction of the headstock. Now the belt can be positioned on the required stage. By moving the lever in the direction of the motor, the belt is tensioned.
Close the cover and secure with screw.

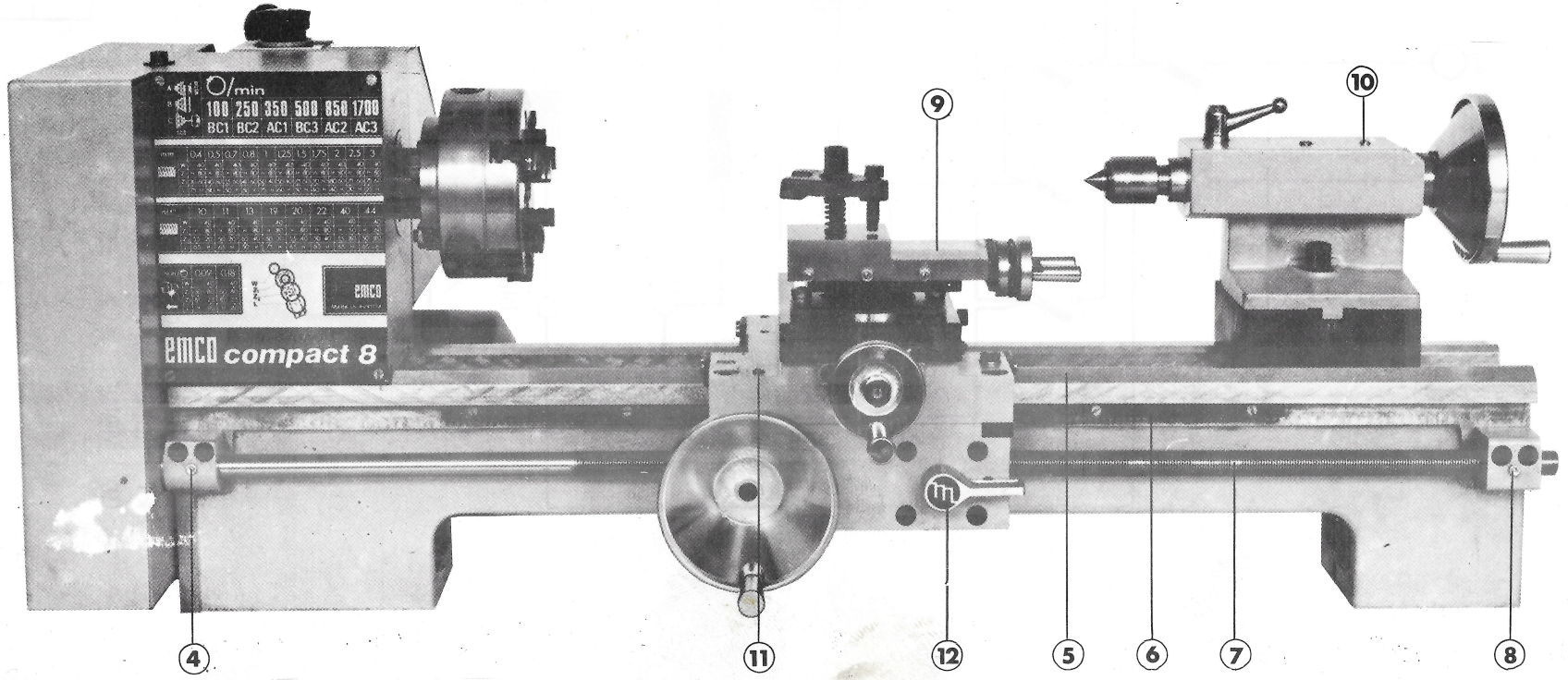




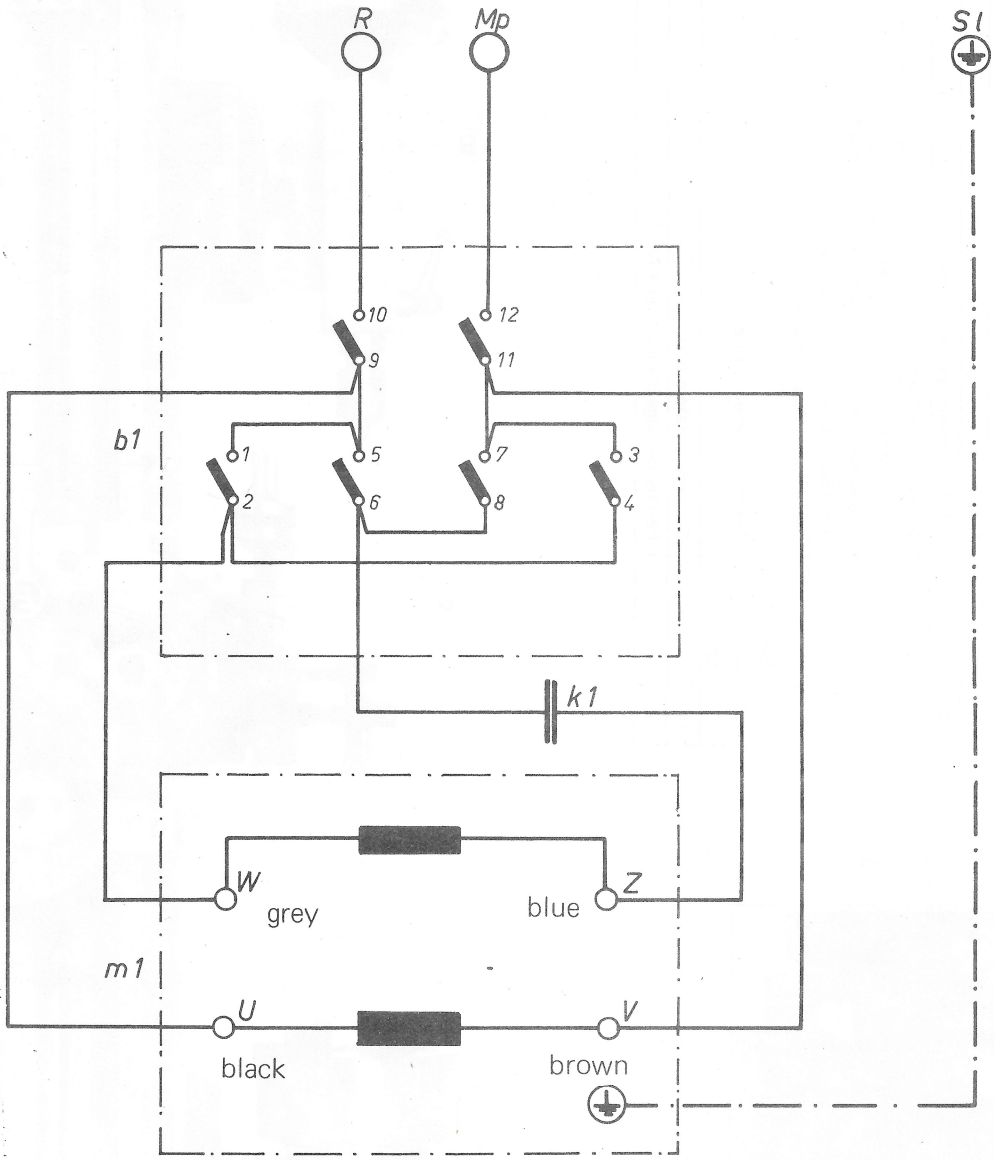
## LUBRICATION PLAN




| No. | Interval | Position | Grease | Oil |
|---|---|---|---|---|
| | Prior to starting up | | | |
| 1 | " | Grease nipple | ● | |
| 2 | " | Feed gear: change gears | | ● |
| 3 | " | Teeth - oil | | ● |
| 4 | " | Left hand bearing of leadscrew | ● | |
| 5 | " | Bed ways: clean and oil | | ● |
| 6 | " | Rack: grease over complete length | ● | |
| 7 | " | Leadscrew: clean and oil over complete length | | ● |
| 8 | " | Right hand bearing of leadscrew | ● | |
| 9 | " | Top slide: guides and screw | | ● |
| 10 | Every 1000 working hours | Tailstock barrel (grease nipple) | ● | |
| 11 | " | Carriage: grease nipple | ● | |
| 12 | " | Fed by carriage grease nipple No.11 | | |



Wiring Diagram "EMCO COMPACT 8"




b1 Motor switch
k1 Condenser
m1 Motor

Motor switch diagram

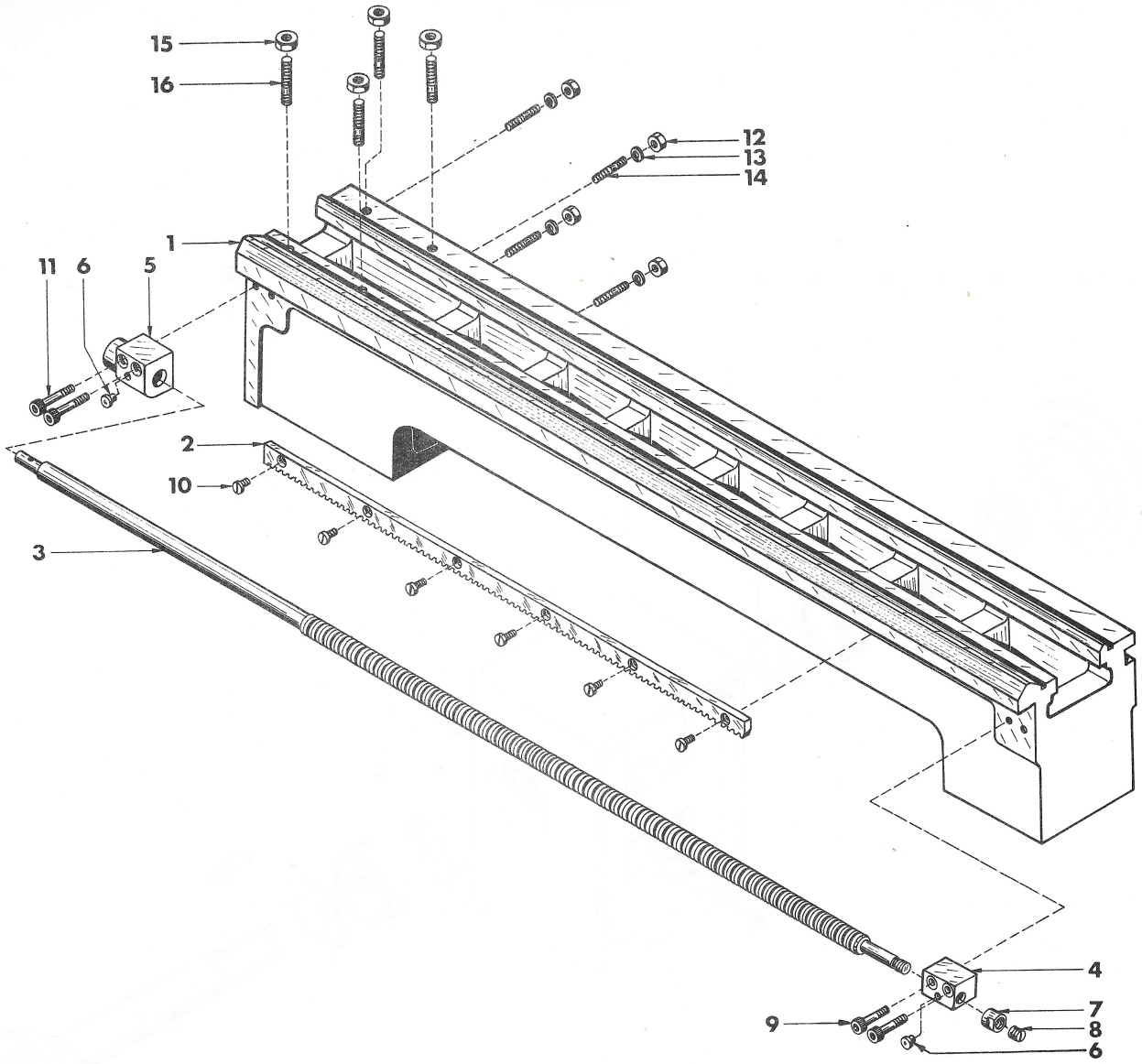
| b1 | 1 2 | 3 4 | 5 6 | 7 8 | 9 10 | 11 12 |
|---|---|---|---|---|---|---|
| forward | – | × | × | – | × | × |
| – | – | – | – | – | – | – |
| 0 | – | – | – | – | – | – |
| – | – | – | – | – | – | – |
| reverse | × | – | – | × | × | × |

# SERVICETEILE

# SERVICE PARTS

# PIECES DE SERVICE

| | | | | Grundausstattung | Tools | Equipement de base |
|---|---|---|---|---|---|---|
| Pos | Ref.No. | DIN | | BENENNUNG | DESCRIPTION | DESIGNATION |
| 1 | ZWZ 11 0500 | | | Sechskantstiftschlüssel | Hexagonal key | Clé coudée pour 6 pans creux |
| 2 | B2A 000 470 | | | Ring - Maulschlüssel | Key wrench | Clé combinée plate et à oeil |
| 3 | ZWZ 99 0012 | | | Kleinfettpresse | Grease gun | Petite pompe à graisse |
| | B1A 140 000 | | | G. Mitnehmer | Holding bolt | Ensemble pousse-toc |
| 4 | B1A 140 010 | | | Mitnehmerbolzen | Holding bolt | Pousse-toc |
| 5 | ZMU 34 0800 | M8 DIN 934 | | Sechskantmutter | Nut | Ecrou hexagonal |
| | B2A 130 000 | | | G. Drehherz | Lathe dog | Toc de tour complet |
| 6 | B2A 130 010 | | | Drehherz | Lathe dog | Toc de tour seul |
| 7 | ZSR 33 0840 | M8x40 DIN 933 | | Sechskantschraube | Hexagon screw | Vis tête hexagonale |
| 8 | B2Z 200 070 | | | Wechselrad z = 60 | Change gear | Engrenage |




| | | | | Drehmaschinenbett | Lathe bed | Banc |
|---|---|---|---|---|---|---|
| Pos | Ref. No. | DIN | | BENENNUNG | DESCRIPTION | DESIGNATION |
| 1 | B1A 000 030 | | | Bett | Bed | Banc nu |
| 2 | B2A 000 020 | | | Zahnstange | Rack | Crémaillère |
| 3 | B1A 000 070 | | | Leitspindel metr. | Lead screw metr. | Vis-mère metr. |
| | B1B 000 070 | | | Leitspindel USA | Lead screw USA | Vis-mere USA |
| 4 | B1A 000 221 | | | Spindelträger | Bearing block | Paliersupport de vismère (droite) |
| 5 | B2A 000 030 | | | Leitspindelträger | Bearing block | Palier-support de vis-mère (gauche) |
| 6 | ZNP 01 1000 | | | Schmiernippel | Grease fitting | Graisseur |
| 7 | B2A 000 100 | | | Mutter | Nut | Écrou à 2 pans |
| 8 | ZST 51 0806 | M8x6 DIN 551 | | Gewindestift | Set screw | Contre-vis |
| 9 | ZSR 12 0630 | M6x30 DIN 912 | | Innensechskantschraube | Allen head screw | Vis tête cylindrique |
| 10 | ZSR 84 0410 | M4x10 DIN 84 | | Zylinderschraube | Flat head screw | Vis tête cylindrique |
| 11 | ZSR 12 0630 | M6x30 DIN 912 | | Innensechskantschraube | Allen head screw | Vis 6 pans creux |
| 12 | ZMU 34 0600 | M6 DIN 934 | | Sechskantmutter | Nut | Écrou hexagonal |
| 13 | ZRG 28 0060 | B6 DIN 127 | | Federring | Clip | Rondelle grover |
| 14 | ZSR 39 0620 | M6x20 DIN 939 | | Stiftschraube | Stud | Goujon |
| 15 | ZMU 34 0800 | M8 DIN 934 | | Sechskantmutter | Nut | Écrou hexagonal |
| 16 | ZSR 39 0825 | M8x25DIN 939 | | Stiftschraube | Stud | Goujon |