

Warning : (The left-hand angular holder must not touch against the tension ring of the lathe chuck - see Diagram 28.)

Push the guide rod from the tailstock side through the right-hand angular holder to the height of the support - place the complete cutting arm on the guide rod - push the guide rod through the left-hand angular holder - place the guide arm on the left-hand end of the guide rod and tension firmly with the clamping screw. Slide the spring on to the right-hand end of the guide rod and secure in place with the clamping ring.

As the cutting arm and guide arm move towards the left during thread cutting, the spindle on the cutting arm must be located at the right-hand end of the support in the starting position. Move the support accordingly.

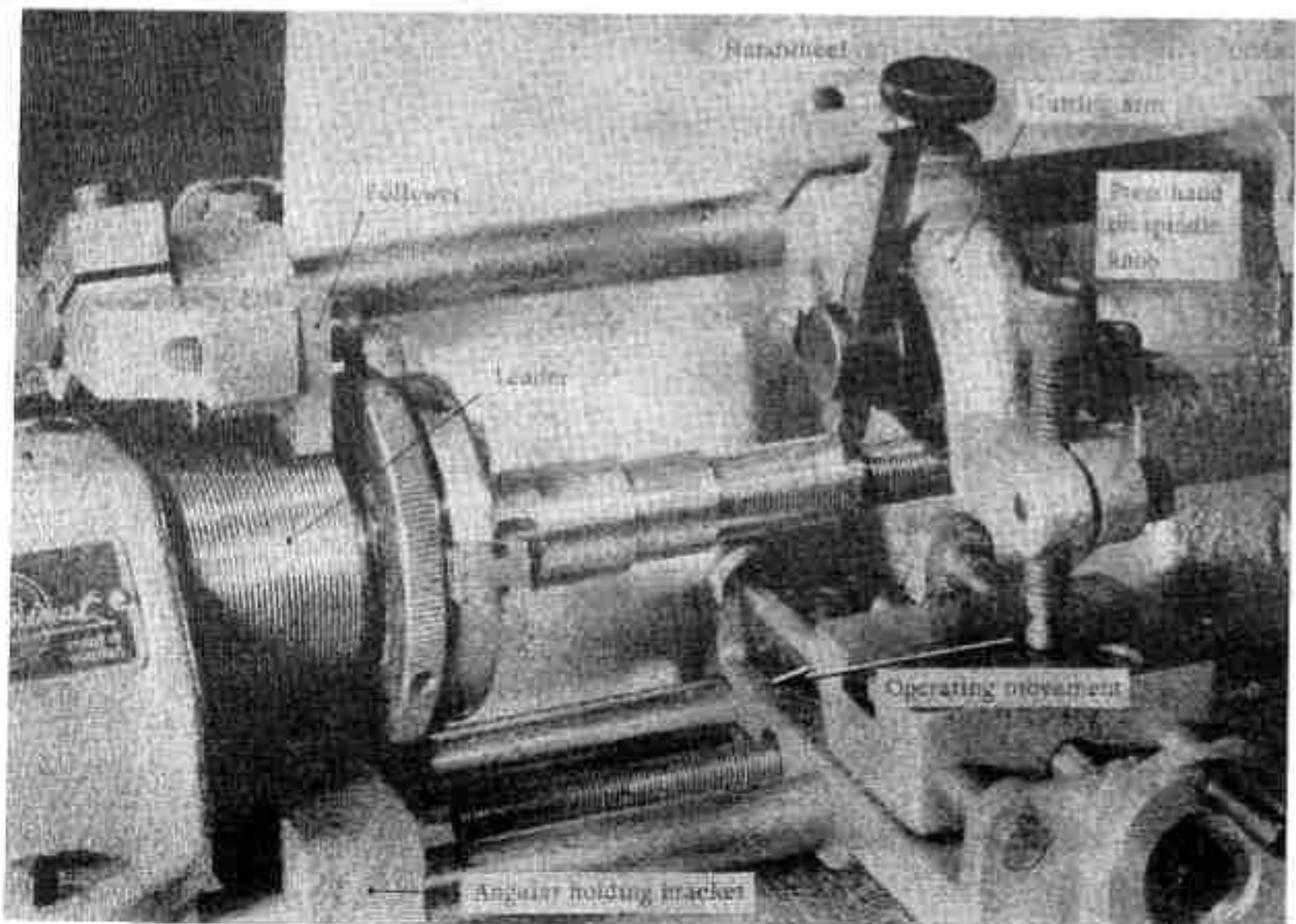
The spindle on the cutting arm serves to adjust for the various workpiece diameters. By rotating the spindle to the right (slacken clamp beforehand and tighten again afterwards) the cutting arm is lifted, so that larger workpieces can be processed.

When adjusting the spindle the thread cutter must be set in the external tool holder so that its tip locates at the centre of the workpiece.

Please note further :

The follower must engage in the leader without any play whatsoever, as otherwise irregularities will occur in cutting the thread. Check the correct engagement of the follower by pressing it firmly into the leader with the clamp of the cutting arm slackened, whereby the spindle must lie snugly on the support and only then should the cutting arm be reclamped.

The operating speeds for thread cutting should be taken from the tabulation of speeds.



The actual work will now be explained in brief phrases:

Clamp thread cutting tool in external tool holder - flap the cutting device back - start the machine - swing in the cutting device, until spindle lies snugly on support (follower now engages in leader and carries cutting arm to the left) - press with the hand on the knob of the spindle, so that it does not lift from the support, but glides over it - after completing the thread groove lift up the cutting device - spring pulls cutting device to the right again. After cutting through by means of handwheel, set to cutting depth of approx. 0.004" - repeat process until maximum thread depth has been attained.

Check the finished thread with thread gauge or try screwing into thread of nut.

To cut external threads between the two lathe centres (without clamping in the lathe chuck) the procedure is as follows :

The jaws of the lathe chuck are removed - a centre is inserted in the hole of the headstock the lathe dog secured to the workpiece is taken up by one of the jaw guide grooves.

Cutting of Internal threads :

Clamp workpiece (pipe, ring, etc.) in Universal-Lathe-Chuck - in place of thread cutter clamp internal tool holder with internal thread cutting tool (point downwards) in cutting arm. By moving the internal tool holder in the external tool holder set height of internal tool in relation to internal diameter of workpiece roughly - tension tool as short as possible (move cutting arm as near as possible to the headstock and clamp firmly to guide rod). Fit on internal cutting tool (see Diagram 30), set feed of cut with handwheel on guide arm. The work then proceed exactly as when cutting external threads, but care must be exercised when lifting the cutting device after completing the cut that the internal cutting tool does not hit on the opposite internal wall and damage the thread.

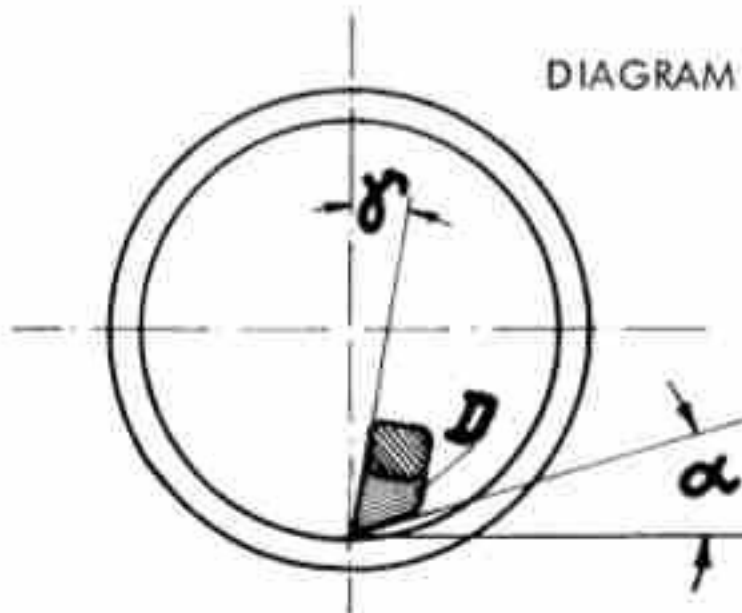


DIAGRAM 30

- δ = cutting angle
- α = clearance angle
- D = cutting tool

The automatic feed attachment. Order No. 1290:

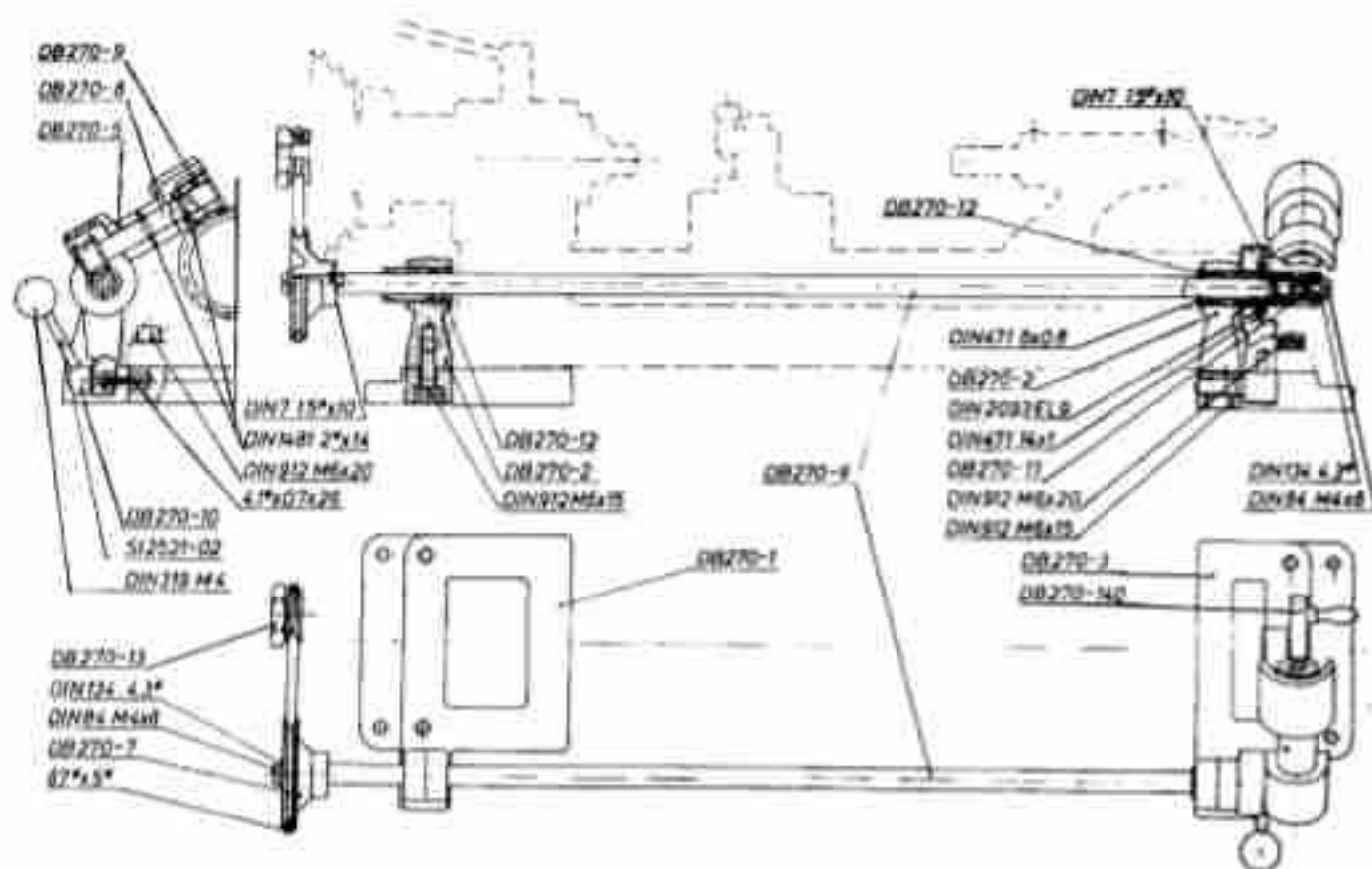


DIAGRAM 31

The UNIMAT - Feed attachment is an auxiliary device that may be mounted subsequently on to any machine. Once mounted it can remain permanently on the machine and need not be removed for any kind of work or conversion.

It is mounted as a complete unit and is supplied ready for mounting. The belt nut DB270-13 and the toothed handwheel DB270-140, as well as 4 internal hexagon headed screws are included as separate parts.

Assembling the belt nut :

The sleeve is removed from the spindle head after extracting the pinion and slackening the two clamping screws. The clamping screw of the motor bracket is then loosened and the latter together with the motor drawn from the sleeve. To unscrew the nut from the large pulley shaft the pulley is held face side in a vice between cardboard or wood packing. The standard nut can then be unscrewed with an SW 19 spanner and the new belt nut screwed on with an SW22 spanner. The sleeve is then refitted to the headstock in the reserve sequence.

Assembling the toothed handwheel :

The standard handwheel on the longitudinal spindle is firmly held by hand by its knurled rim and the hexagon nut (Cap nut) unscrewed with an SW 9 spanner. The standard handwheel is then unscrewed and the toothed handwheel mounted in the reverse sequence. Care should be taken to ensure that the handwheel is screwed home until there is no play axially on the longitudinal spindle, still permitting it, however, to rotate freely.

Assembling of the feed mechanism:

The two base plates are moved aside until the fixing holes in the bed of the supermounted UNIMAT coincide with the screw holes in the two base plates. With the 4 internal hexagon headed screws supplied the two base plates are screwed in this position to the UNIMAT and tightened up until the feed shaft lies in front of the machine below the support and rotates freely in its position. Should the feed shaft jam the two bearing blocks must be loosened.

and reset. (Fixing screws are located on the underside of the base plates.) The sleeve is displaced axially in the headstock to the extent that the two recesses for the rubber ring are in alignment in the belt pulley nut and in the feed belt pulley, whereupon the rubber ring is laid on.

To switch on the feed the lever is swung to the top, whereupon the gearing on the handwheel engages under spring pressure and the longitudinal spindle and the support are set in motion. If on switch-on the gearing locates tooth on tooth, these mesh automatically. To switch off the feed the lever is pressed backwards and downwards. To switch back the support to the original starting position the feed is switched off and turned backwards by the geared handwheel. If the feed device is not being used, the driving belt should be removed. When the feed gear is used the bearing points should be lubricated with sewing machine oil.

The Double Reduction Motor Bracket. Order No. 1280:

With the double reduction gear the minimum speed (365 r.p.m.) can be reduced even further to a minimum speed of 155 r.p.m.

Assembly of the Double Reduction Gearing :

Remove the motor pulley after slackening the M4 cylindrical screws, undo the two motor fixing screws and remove motor. Withdraw spindle sleeve after slackening the clamp screws and removing the pinion. (Unscrew the set screw on the upper side of the headstock right out.) Take off standard gear and reassemble new gearing in reverse sequence. Mount motor pulley, so that the largest step faces motor.



DIAGRAM 32

Live Centres:

We distinguish between 2 types : Single ball-bearing. Order No. 1220
Double ball-bearing. Order No. 1220a

The use of the conjointly running centre is particularly advantageous, where workpieces are being machined at high speed. Whilst fixed centres tend to spread by rubbing when running fast, despite good lubrication, this is avoided in the case of the conjointly running centre by the incorporated ball-bearings. The co-running centre can be pressed firmly on to the workpiece, without having to run it in, as with a fixed centre. The co-running centre tip can easily be ejected and changed by inserting a drift in the centric bore of the device. Also from time to time thick oil or grease should be pumped into the same drill hole.

Live centre



The Polishing Spindle. Order No. 1030:



DIAGRAM 34

The polishing spindle is a conical threaded arbor, designed to take felt plates, fabric covered plates, round brushes and all other rotating plates for polishing and grinding (plates with soft cores). The advantage of a polishing spindle lies therein that all the aforesaid plates of hole diameters from $1/4''$ to $5/8''$ can be accommodated.

Flanging on:

The associated flange is screwed on to the spindle nose of the UNIMAT and machined in the same way as the lathe chuck. The actual polishing spindle can then be screwed firmly to the flange with the 3 cylindrical screws supplied.

Fitting on the plates:

The individual plates or round brushes are fitted on to the running spindle. By the increasing diameter of the thread the plates or brushes screw themselves on firmly and align themselves facially by their own centrifugal force. It is, however, recommended that no plates with hard centres be used, as this will damage the conical thread and may render it unserviceable.

Removal of plate:

The spindle pulley of the UNIMAT is firmly held with the left hand and the plate or brush loosened on the threaded cone by a small left-hand turn with the right hand, whereupon it can easily be removed. To remove the polishing spindle from the UNIMAT the tension pin is inserted into one of the three radial holes and by simultaneous countergripping of the pulley unscrewed from the UNIMAT spindle. In the case of all operations with the polishing spindle it is desirable to swing the headstock through an angle of 90° . This permits free manipulation of the workpiece. The operating speeds may be read off the speed tabulations.

The Truing Diamond. Order No. 1160:

The truing diamond is used for the truing up of grinding wheels and to obtain the smoothest top surfaces.



Truing up a grinding wheel:

The truing diamond is clamped in the tool holder and fine shavings ground off the grinding wheel at approx 2000 r.p.m., until the grinding wheel again runs concentrically and face-true. Perfectly smooth top surfaces are attained by linear and face turning with the truing diamond. It is clamped in the same way as a turning cutter and operated at a speed of twice that for steel turning. Adjust for shaving only with the workpiece in motion and very fine shavings with small feed (shaving depth 0.004").

A further use of the truing diamond is in the turning of plastics such as Bakelite, hard rubber and fibre-glass substances, where clean surfaces can only be achieved with difficulty with the usual turning tools.

The Collet Attachment. Order No. 1020 :

The purpose of this is to clamp round material with smooth, cylindrical surfaces of from 1/16" to 5/16" diameter, by using the collet chucks of the same diameter supplied by us. But also for the precise clamping of shank tools such as milling cutters, grinding pins, drills, counter-sinks and hones (or reamers). It permits strong and short clamping without damage to the workpiece surface, and in addition true, concentric running.

The special advantage of the double-cone collet chuck as against other collet chucks lies therein that workpiece of any desired length up to 1/4" in diameter can be fed through the spindle centre hole.

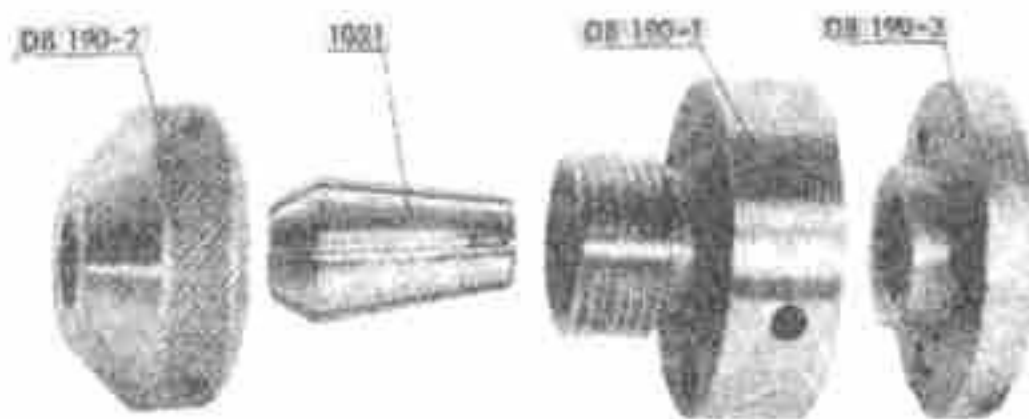


DIAGRAM 36

The collet chuck device consists of the collet chuck holder, the tension nut, the flange for fixing the complete device to the machine, also 3 sunk screws M4, 2 tension pins for tightening the appliance and the slotted double-cone collet chuck of optional clamping diameter (The type E 16). Flanging on of the collet chuck device is carried out in exactly the same manner as in the case of the three-jaw Universal-Lathe-Chuck. It must, however, be done very carefully, as otherwise the high degree of accuracy which favours the use of the collet chuck in place of other appliances would be impaired.

The Clockmaker's Sleeve. Order No. 1022:

This ancillary device permits the most precise lathe turning operations on the UNIMAT and is suitable for the direct reception of clockmaker's collet chucks of type B8.

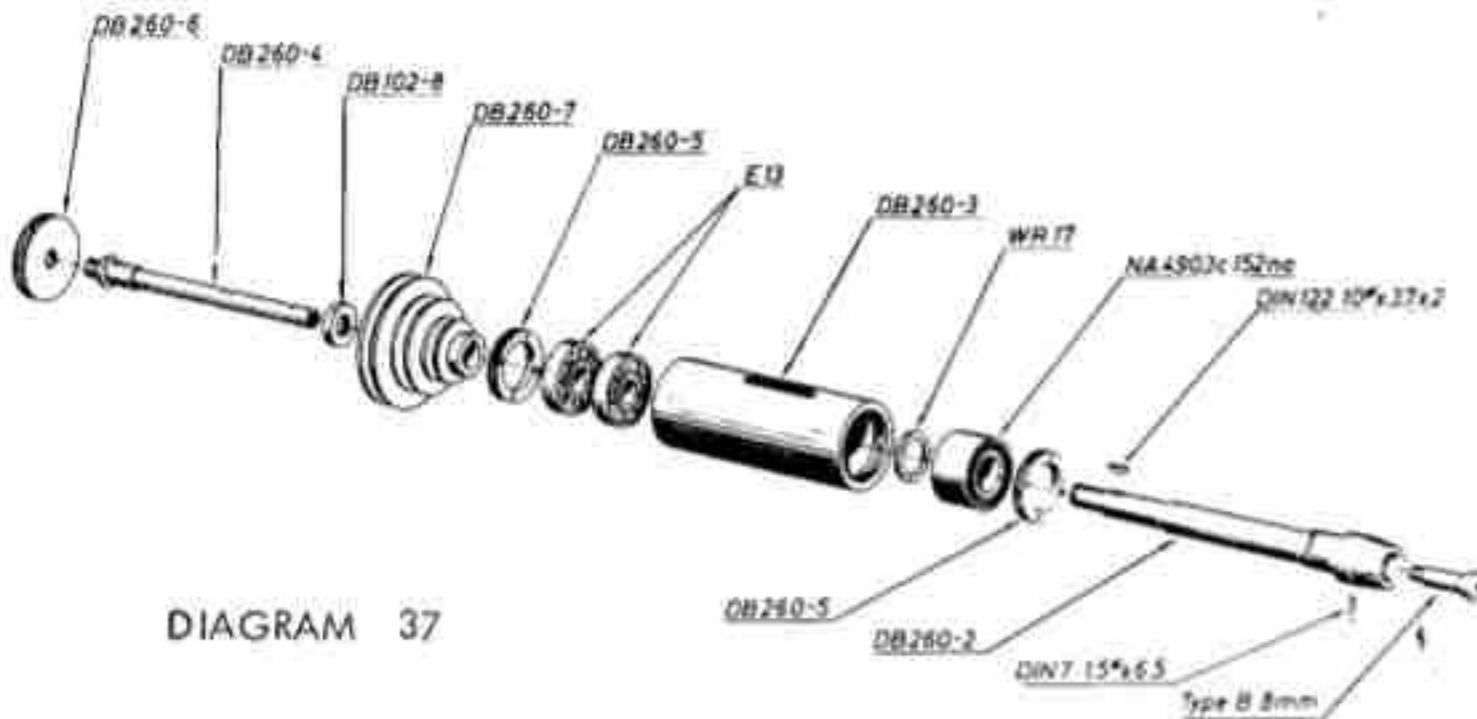


DIAGRAM 37

Installation of Sleeve:

Slacken the two clamping screws and remove the pinion on the headstock. Unscrew the set screw on the upper side of the headstock so far that the spindle sleeve can be withdrawn. The motor holding plate is drawn off by slackening the clamping screw. Then a collet chuck sleeve is installed again in the reverse sequence.

Warning: When screwing in the set screw care must be taken to ensure that the cylindrical or shoulder rim of the pin rest inside the special recess for it in the sleeve (linear groove). Tighten up the set screw and then slacken again half a turn.

Tool Box. Order No. 1099:

