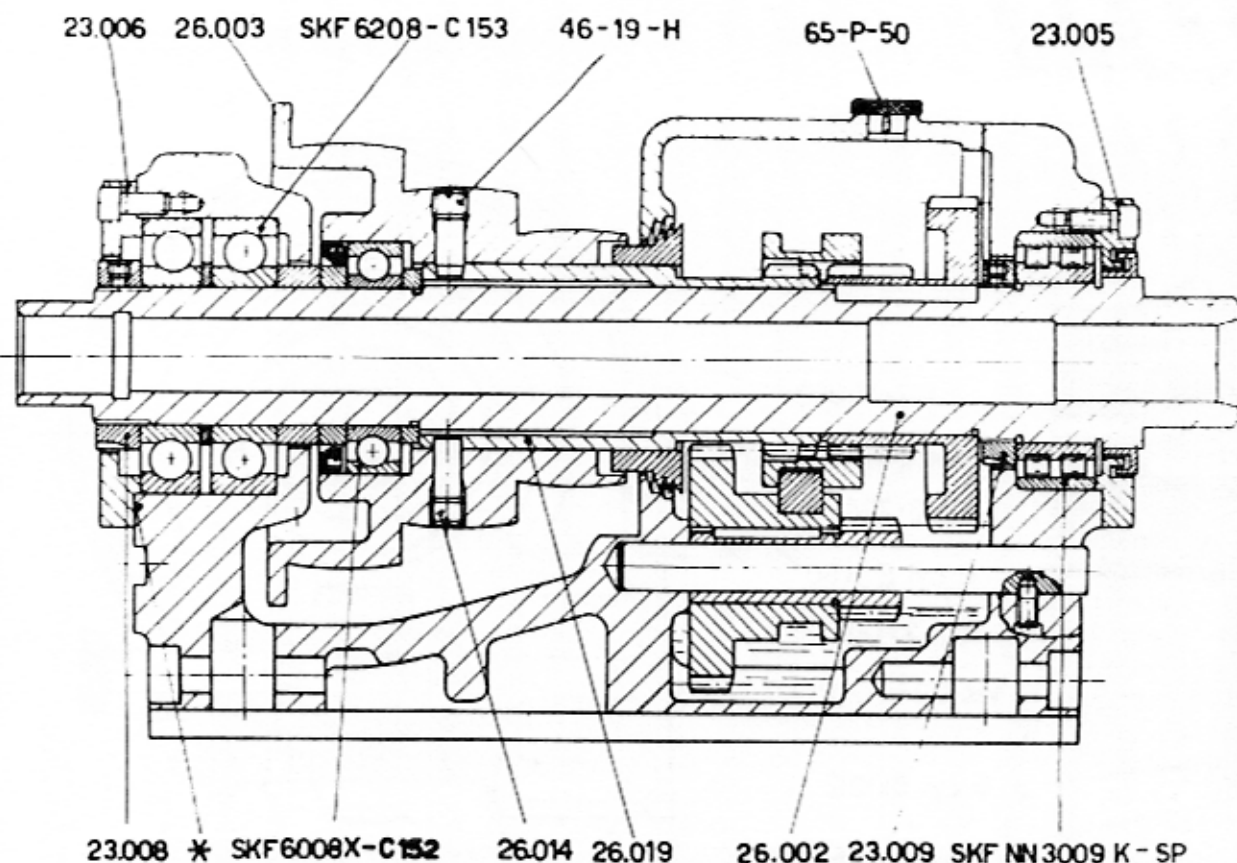


## BALL BEARING HEADSTOCKS 20W AND 25W WITH REDUCTION GEAR

102-26-27-32 &amp; 33

Enclosed and open design

**LUBRICATION OF BEARINGS**

Use a good mineral oil with a viscosity of  $3^{\circ}E$  at  $50^{\circ}C$ .

The front and rear spindle bearings are pressure lubricated through two nipples by means of the hand-operated oil pump supplied with the lathe. The lubricant and the method of lubrication exert a substantial influence on the friction and temperature of the bearings. The purpose of the lubricant is to prevent wear and corrosion, and at the same time to cool the bearings. An excess of lubricant may increase the temperature of the bearings. Frequent, but sparing lubrication is recommended.

**NEVER** use grease; grease pressed into the bearings may produce such great friction that the rollers or balls begin to slide in their races.

**GEARING OIL-BATH**

Use the same oil as for the bearings, i.e. a good mineral oil with a viscosity of  $4-5^{\circ}F$  at  $50^{\circ}C$ .

Remove cover 65-P-60 and fill up to centre of oil gauge. Once a year, empty the oil bath and, after rinsing it thoroughly with petroleum (Kerosen), refill with fresh oil.

**REDUCTION GEAR**

The change-over from direct drive to drive via the reduction gear is effected by means of a hand-operated lever. The latter must only be actuated when the spindle is stopped. The reduction ratio is 1 : 4.95. To facilitate lubrication of sleeve 26.019 and ball bearing SKF 6008X-C152, switch in the gear from time to time so as to circulate the oil.

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**USE OF THE DIVIDING HOLES**

Belt pulley 26.003 is secured to sleeve 26.019 by means of screw 46-19-H; screw 26.014 is not locked while the spindle is running. If dividing holes 12, 38, 60 and 100 on the edge of belt pulley are used, the latter must be locked by means of screw 26.014 so as to eliminate play on the tooth flanks of the gear wheels.

Loosen screw 26.014 again before reverting to normal operation with or without reduction gear.

**SPINDLE BEARINGS**

The two spindle bearings are adjusted when the headstock is assembled. Readjustment is only necessary after a comparatively long running time.

Only an experienced technician should be entrusted with the following readjustments, which must be carried out with the greatest care.

**DISMANTLING THE SPINDLE**

1. Undo the three screws of cover 23.005
2. Remove cover 23.006 secured with four screws
3. Undo nut 23.008 after loosening its lock-screw
4. Drive out spindle 26.002 carefully by tapping its rear end with a lead hammer.

**TAKING UP RADIAL PLAY IN THE FRONT BEARING**

1. Measure amount of radial play to be taken up accurately with a dial indicator showing one thousandths of a mm.
2. Dismantle spindle 26.002 (see above).
3. Loosen lock-screw and tighten nut 23.009 in accordance with the amount of radial play to be taken up.

The fact that the inner race of the roller bearing SKF NN 3009-K-SP is only slightly tapered makes it difficult to tighten nut 23.009 evenly. To achieve this end, the nut must be driven forward a little with the aid of a tube placed over the spindle and arranged concentrically; this will slightly displace the inner race of the bearing on the cone of the spindle 23.002. If this operation is repeated several times, it will be possible to turn nut 23.009 through the desired angle. Watch the forward displacement of nut 23.009 carefully, for once the inner race of the roller bearing has been pushed too far along the spindle cone, it is difficult to move it back again.

Advance of nut 23.009 - radial play to be taken up in mm x 14  
Pitch of nut - 1 mm

Example : A radial play of 0.01 mm has to be taken up.

Advance of nut 23.009 - 0.01 x 14 mm or a turn of  $\frac{0.14 \times 360}{1} = 50^{\circ} 24'$ , which corresponds to a length of  $\frac{60 \times \pi \times 50.4}{360} = 26.4$  mm, measured on the external diameter (60 mm) of nut 23.009

4. Firmly tighten nut 23.009 and lock-screw
5. Replace spindle 26.002 and check radial play of front bearing again; it should be 0.002 mm, if perfect running conditions are to be achieved. This check should only be carried out with the ball bearings SKF 6206 C-153 in position and roller bearings SKF NN 3009-K-SP completely dry.

**TAKING UP RADIAL AND AXIAL PLAY IN THE REAR BEARING**

1. Measure amount of axial play to be taken up accurately with a dial indicator showing one-thousandths of a mm
2. Remove cover 23.006 secured by means of four screws
3. Remachine the surface marked \* of cover 23.006 in accordance with the amount of play to be taken up. This work must be done with the greatest care
4. Replace cover 23.006 and check axial play of rear bearing again; it should be 0.003 to 0.005 mm if perfect conditions of running are to be obtained. This test should only be performed with the ball bearing SKF 6206-C153 completely dry.

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## COMPOUND SLIDE REST 102-45

## LUBRICATION OF SLIDEWAYS, NUTS AND FEED SCREWS

The compound slide rest has two nipples through which oil can be injected by means of the hand-operated pump supplied with the lathe. An advantage of this system of lubrication is that the oil is positively circulated under pressure and at the same time cleans the slideways and nuts, 4-5 shots of oil twice a week are sufficient.

Use a good mineral oil with a viscosity of  $3^{\circ}\text{E}$  at  $50^{\circ}\text{C}$ .

## LUBRICATION OF FEED SCREW BEARINGS

This patented bearing contains a ball bearing provided with adequate consistent grease to last for about five years. To renew the filling, proceed as follows, using a good ball-bearing grease:-

1. Knock out pin 45.513.
2. Pull back handle 45.512 and vernier 45.506.
3. Loosen lock-screw of nut 45.502 and undo the latter.
4. After thorough cleaning with petrol or petroleum (Kerosen), the fresh grease can be pressed between the balls of ball-bearing 102-CH-170 and into the hollow space marked \*.

## ADJUSTMENTS

The adjustment of the following members, although very simple to perform, should only be entrusted to a competent person.

## ADJUSTMENT OF FEED SCREW BEARING

The play on the ball-bearing can be taken up without any dismantling.

1. Loosen lock-screw of nut 45.502.
2. Tighten nut 45.502 on sleeve 45.503 in accordance with the amount of play to be taken up.
3. Firmly tighten lock-screw of nut 45.502 again.

## TAKING UP PLAY IN THE SLIDEWAYS

The ways of the cross and longitudinal slides are provided with taper strips to take up the play caused by wear and tear. Adjustment is effected by means of screw 11-33.

## ADJUSTMENT OF RESETTING DEVICE

The tiltable longitudinal slide is quickly returned to zero position by means of a patented, retractable stop, the position of which is adjusted as follows:

1. Loosen screw D M5x6.
2. Turn knob 45.007 according to the amount of adjustment required.
3. Firmly tighten screw D M5x6.

