

# Engine Cooling System

See also Job No. 50 — 0

Job-No.

20 — 5

## Repair of Water Pump

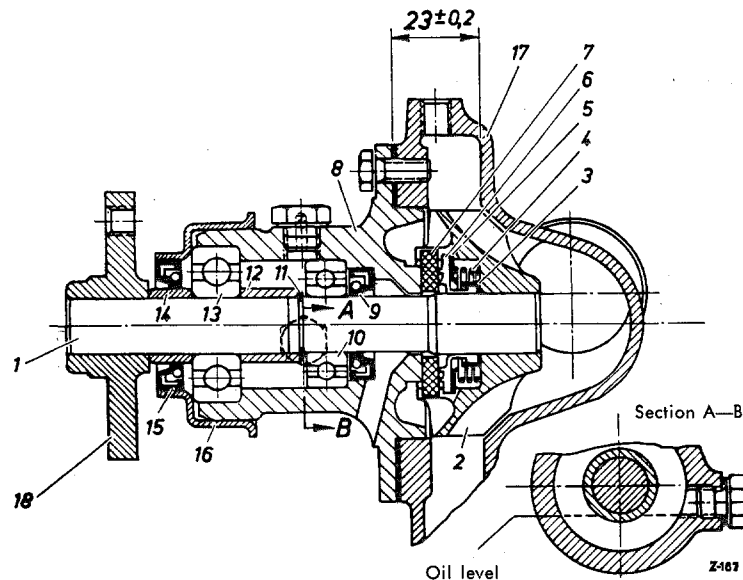


Fig. 20 — 5/1

- |                         |                            |                            |
|-------------------------|----------------------------|----------------------------|
| 1 Water pump shaft      | 7 Wearing ring             | 13 Annular grooved bearing |
| 2 Impeller              | 8 Bearing housing          | 14 Spacer ring             |
| 3 Cover                 | 9 Seal                     | 15 Seal                    |
| 4 Compression spring    | 10 Annular grooved bearing | 16 Seal retainer           |
| 5 Wearing ring retainer | 11 Retainer ring           | 17 Water pump housing      |
| 6 Sealing ring          | 12 Spacer sleeve           | 18 Hub                     |

### Disassembly:

1. Unscrew water pump housing (17) from bearing housing (8) (Fig. 20 — 5/1).
2. Pull the hub (18) off the shaft (1) using Puller 000 589 17 33. The shaft with the impeller (2) is held in a vise for this purpose (Fig. 20 — 5/2).
3. Now put the bearing housing (8) in the vise and pull off the seal retainer (16) together with the seal (15) using Puller 186 589 05 33 (Fig. 20 — 5/3). Then press the seal out of the retainer.
4. Tap the water pump shaft (1) out of the housing, using a plastic hammer for this purpose (Fig. 20 — 5/1).

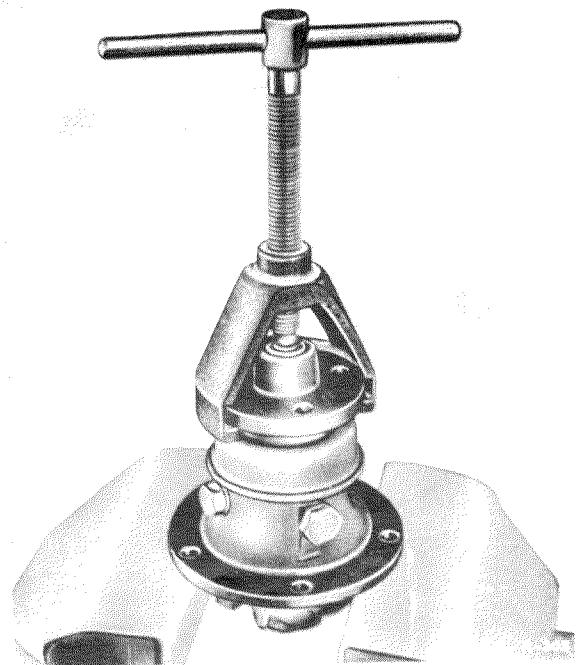


Fig. 20 — 5/2

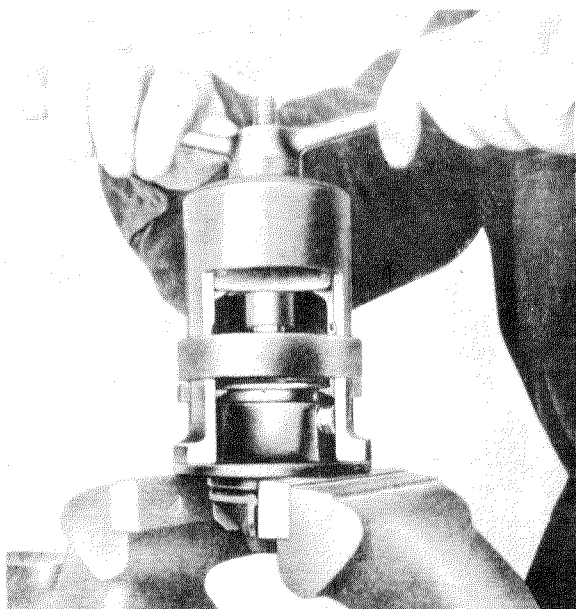


Fig. 20 — 5/3

5. Knock out the two annular grooved bearings (13) and (10) and the seal (9), using a suitable drift (Fig. 20 — 5/1).
6. Slip the wearing ring (7), the sealing ring (6), the wearing ring retainer (5), the compression spring (4) and the cover (3) off the shaft (Fig. 20 — 5/5).
7. If necessary, force the water pump shaft (1) out of the impeller (2), using Forcing Sleeve with Drift 187 589 01 35 (Fig. 20 — 5/4).

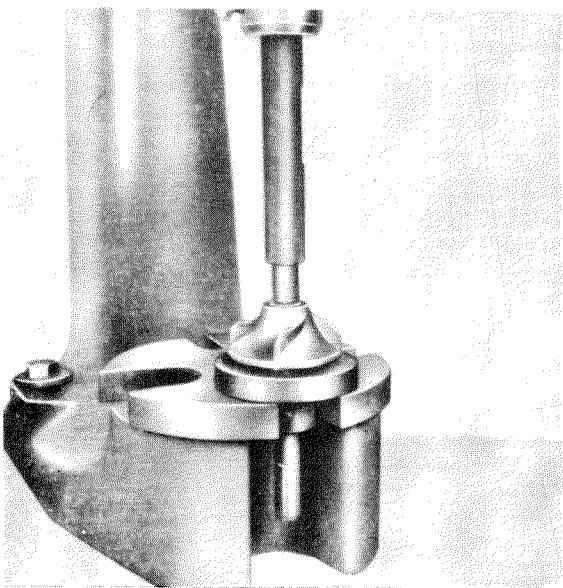


Fig. 20 — 5/4

8. Clean and check all parts. The shaft and the ball-bearings in particular should be examined for signs of wear.

**Note:** The seals, the retainer ring, the sealing ring and the wearing ring should always be replaced.

#### Reassembly:

9. Force the water pump shaft (1) into the impeller (2) so that the end of the shaft is flush with the impeller (Fig. 20 — 5/1).
10. Fit the cover (3), the compression spring (4), the wearing ring retainer (5), the sealing ring (6) and the wearing ring (7) onto the shaft (Fig. 20 — 5/5).

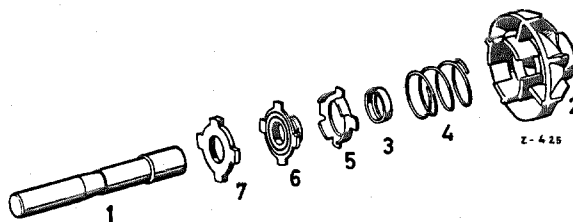


Fig. 20 — 5/5

- 1 Water pump shaft
- 2 Impeller
- 3 Cover
- 4 Compression spring
- 5 Wearing ring retainer
- 6 Sealing ring
- 7 Wearing ring

11. Press the seal (9) into the bearing housing (8), using Fitting Sleeve 187 589 07 39 (Fig. 20 — 5/1).

**Note:** To enable the seals to slide more smoothly when they are forced into the housing, the edges of the seals and the appropriate bores should be lightly smeared with oil.

12. Slide the bearing housing onto the shaft. Caution! When doing this, do not damage the lips of the seal.

Then fit the annular grooved bearing (10) on the shaft and use Fitting Sleeve 187 589 04 39 to press it into the housing (Fig. 20 — 5/6).

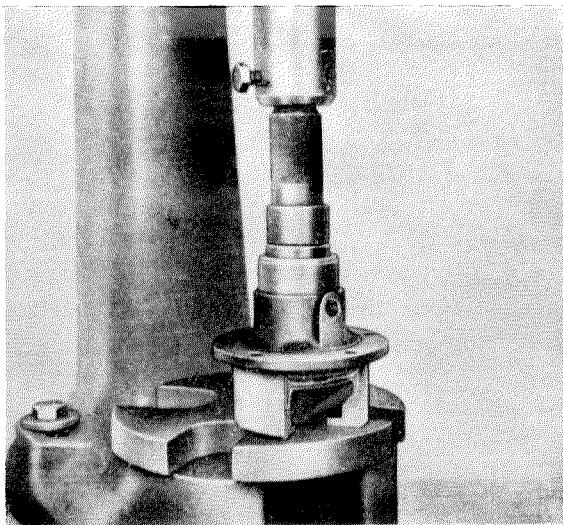


Fig. 20 — 5/6

13. After the annular grooved bearing has been forced into the housing, the distance from the bearing housing flange to the oblique face of the impeller must be checked. It should be  $= 23 \pm 0.2$  mm (see Fig. 20 — 5/1).

14. Fit the retainer ring (11) in the shaft, fit the spacer sleeve (12) and use Fitting Sleeve 187 589 04 39 to force the annular grooved bearing (13) into the bearing housing (Fig. 20 — 5/7).

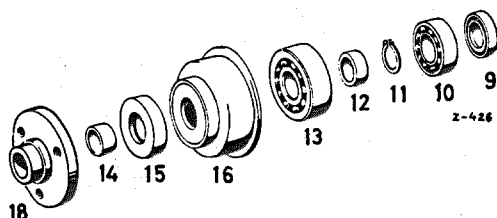


Fig. 20 — 5/7

- 9 Seal
- 10 Annular grooved bearing 6202 DIN 625
- 11 Retainer ring
- 12 Spacer sleeve
- 13 Annular grooved bearing 6302 DIN 625
- 14 Spacer washer
- 15 Seal
- 16 Seal retainer
- 18 Hub

**Note:** It is advisable to use Fitting Sleeve 187 589 08 39 to fit the retainer ring.

15. Use Fitting Sleeve 180 589 09 39 to press the seal (15) into the seal retainer (16) and to press the seal retainer onto the bearing housing.
16. Press the spacer washer (14) and the hub (18) onto the shaft, using Fitting Sleeve 187 589 09 39 for the former. The hub must be flush with the end of the shaft.
17. Once more check the distance from the flange of the bearing housing to the oblique face of the impeller ( $23 \pm 0.2$ ), then screw the water pump housing (17) onto the bearing housing (8). Use a new gasket (19) when doing this (Fig. 20 — 5/8).

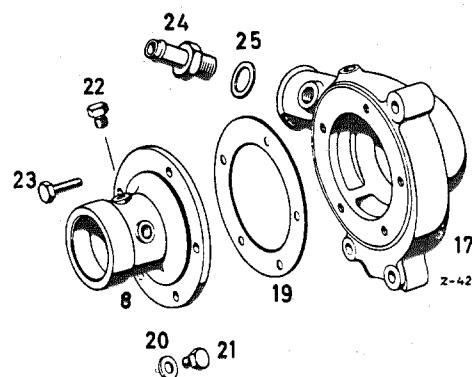


Fig. 20 — 5/8

- 8 Bearing housing
- 17 Water pump housing
- 19 Gasket
- 20 Seal
- 21 Closing plug
- 22 Closing plug with vent hole
- 23 Hexagon screw
- 24 Threaded union
- 25 Seal

18. Screw the closing plug (21), together with a new seal (20), into the bearing housing. Put 10 ccs of Hypoid Oil SAE 90 into the water pump and then screw in the vent plug (22).

**Note:** Water pumps which are new or which were obtained through our replacement scheme do not contain any oil.

19. Test the pump for leakage on a test stand or in the engine. The water pump must not lose either water or oil.