

**Subsequent Installation of Injection Timing Device and
Removal and Installation of Pump
Drive Shaft Bearings OM 636**

Job No.

07-27

The engines of the type 636.930 for the model 180 D are serially equipped with an injection timing device, starting with Engine End No. 5514612. The subsequent installation of an injection timing device in older engines of this type is possible and will be done if so desired. For this purpose special consideration must be given to the bearings of the pump drive shaft.

The first bearing version for the pump drive shaft in the timing housing cover is installed in the engines up to the End No. 4500145. Starting with Engine End No. 4500146 the second reinforced version was installed, which is necessary for the subsequent installation of an injection timing device. The timing housing cover was also changed with the reinforced bearing and was equipped with a cast-in steel bushing.

If an injection timing device has to be installed in engines equipped with the old bearing, a new timing housing cover Part No. 636 010 16 17 must be installed.

All other parts necessary for the modification are listed in the following description on the removal and installation of the pump drive shaft bearings.

Removal:

1. Remove the fuel main filter and the protecting cover (20) of the timing housing cover (see Figure 07-27/4).
2. Set the piston of the 1st cylinder to ignition dead center. For this purpose crank the engine in direction of rotation, so that the marked teeth are engaged (see Figure 07-27/1).
3. If the belt pulley is not yet furnished with an OT-marking (TDC) and graduation (see Figure 07-25/2), then replace the belt pulley or make the marking for feed beginning (26 deg. before top dead center) (see Job No. 00-6, Section IV) or make the markings for feed beginning and TDC on the pulley with the Fixture Part No. 636 589 00 63 after removal of the pulley.

If the pulley has been removed, mount the new or the marked pulley on the crankshaft in such a way, that the point of the timing needle coincides with the OT-marking (TDC) on the pulley (see Figure 07-25/2).

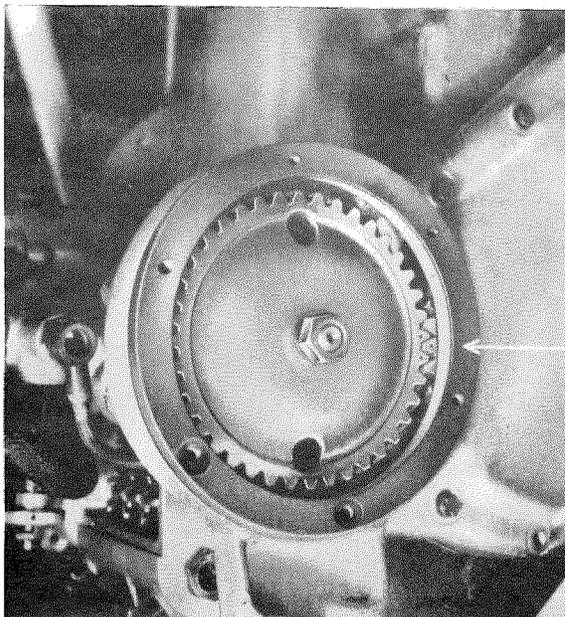


Figure 07-27/1

4. Unscrew the hexagon screw at the timing housing cover above the right-hand dowel pin and mount in its place the fixing screw with timing needle (1) Part No. 636 015 02 71 (see Figure 07-25/2).
5. Unscrew the fixing nut of the pump drive gear, extract the pump drive gear with the Extractor Part No. 636 589 02 33 (see Figure 07-27/2) and take the Woodruff key out of the groove.

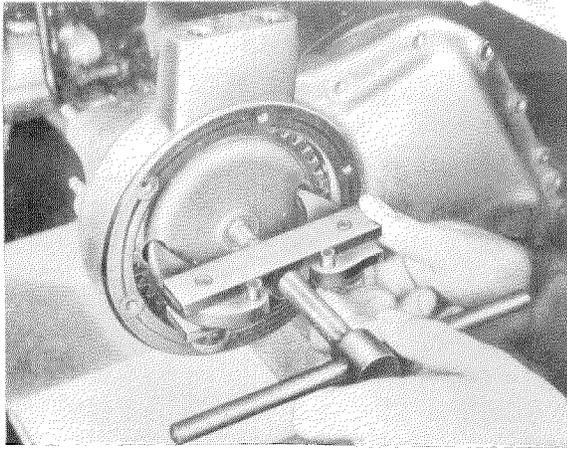


Figure 07-27/2

6. Remove the injection pump (see Job No. 07-11).
7. Drive out the driving shaft (9) towards the rear with a brass punch (see Figure 07-27/3 and 07-27/4).

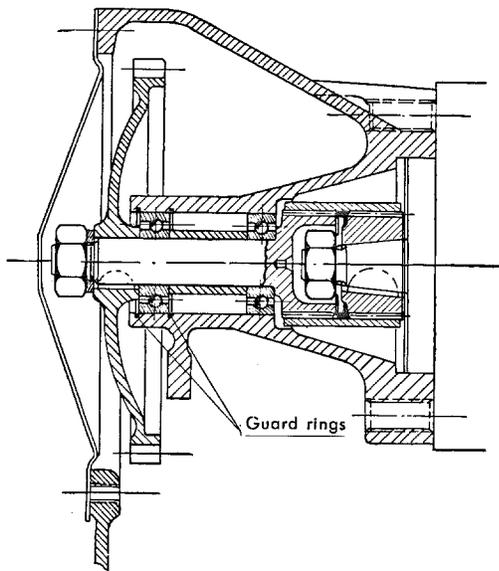


Figure 07-27/3

8. Remove the rear annular grooved-bearing (7) from the driving shaft (9), if it should stay on the shaft while the driving shaft (9) is punched out. However, if the bearing stays in the timing housing cover (3), drive out the annular grooved-bearing (7) towards the rear with a suitable punch (see Figure 07-27/4).

Take the spacer out of the timing housing cover.

9. Take the front guard ring (12) out of the groove and drive out the front annular

grooved-bearing (11) towards the front (see Figure 07-27/4).

Note: On the engines with the Engine No. 636.930 45 00001 to 636.930 45 00145 the installed timing housing cover must be replaced by the new timing housing cover Part No. 636 010 16 17 (see Job No. 01-15).

10. Clean and check all parts (see Job No. 01-16). If necessary replace the annular grooved-bearings.

Modification parts for the subsequent installation of an injection timing device, starting with Engine No. 636.930 45 00146:

1 Injection timing device	Part No. 636 070 00 45
1 Thrust washer	Part No. 636 075 00 62
1 Driving shaft	Part No. 636 077 05 05
1 Protecting cover	Part No. 636 015 05 30
1 Washer	13 DIN 125
1 Spacer	Part No. 636 092 04 20
2 Hexagon screws	M 12 x 52 DIN 931-8G
1 Fixing screw with timing needle	Part No. 636 015 02 71

The parts are to be ordered under the collective number 636 070 00 99.

Note: For the modification of the engines from Engine No. 636.930 45 00001 to 636.930 45 00145 the following parts are in addition necessary:

1 Timing housing cover	Part No. 636 010 16 17
1 Paper gasket	Part No. 181 015 00 20
2 Annular grooved-bearings	Part No. 6202 DIN 625
2 Guard rings	35x1.5 DIN 472
1 Spacer 24.2 mm long	Part No. 636 077 01 53

Installation:

11. Oil the front annular grooved-bearing (11) and press it into the timing housing cover.

Note: If a new timing housing cover is installed, insert first the inner guard ring (10).

12. Insert the guard ring (12) in the front annular groove.

13. Press the rear annular grooved-bearing (7) onto the new longer driving shaft (9) Part No. 636 077 05 05.

14. Put the spacer (8) with a length of 24.2 mm on the driving shaft (9) and install the driving shaft in the timing housing cover (see Figure 07-27/4).

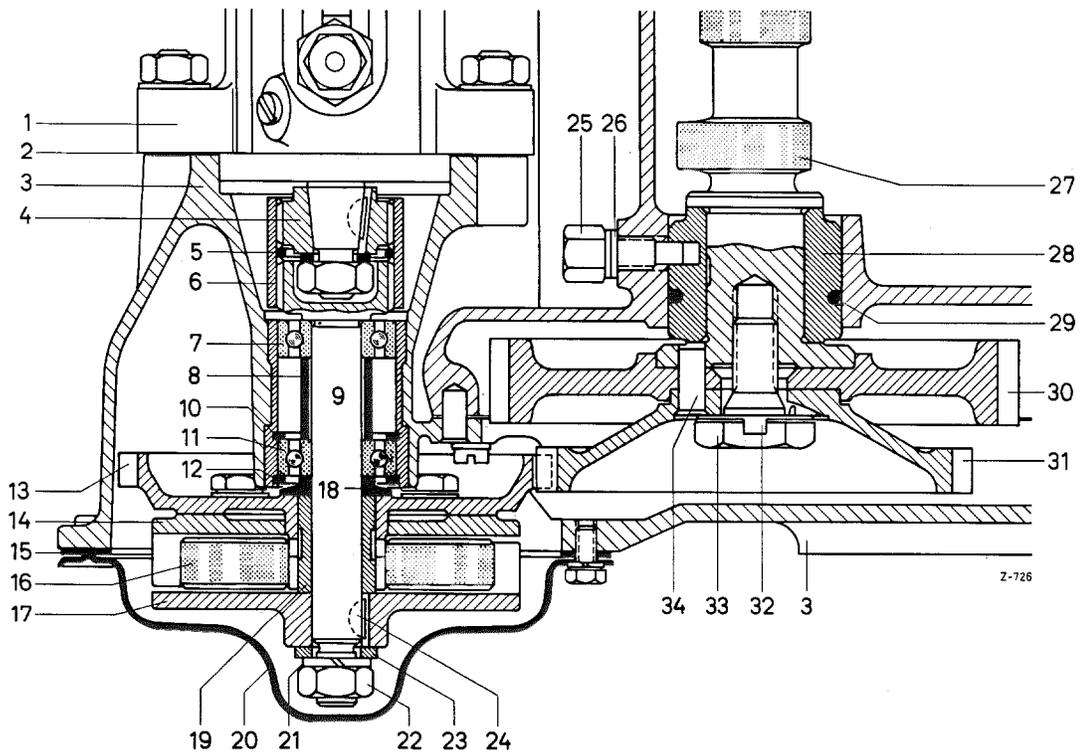


Figure 07-27/4

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|--|--|---|
| 1 Injection pump | 13 Injection pump drive gear | 25 Connector for oil line to lubricate |
| 2 Gasket between injection pump and timing housing cover | 14 Segment flange of injection timing device | rockers and to locate the front camshaft bearing |
| 3 Timing housing cover | 15 Gasket | 26 Sealing ring |
| 4 Engaging dog on the injection pump shaft | 16 Centrifugal roller weight | 27 Camshaft |
| 5 Retaining ring in the coupling sleeve | 17 Segment plate of injection timing device | 28 Camshaft bearing (lapped bearing) |
| 6 Coupling sleeve | 18 Thrust washer | 29 Locating ring |
| 7 Annular grooved-bearing, rear | 19 Bushing | 30 Camshaft gear wheel |
| 8 Spacer | 20 Protecting cover of timing housing cover | 31 Intermediate gear wheel |
| 9 Driving shaft | 21 Lock washer | 32 Locking plate |
| 10 Guard ring, inner | 22 Hex nut | 33 Fixing screw of camshaft and intermediate gear wheel |
| 11 Annular grooved-bearing, front | 23 Washer | 34 Carrier bolt of camshaft and intermediate gear wheel |
| 12 Guard ring, outer | 24 Woodruff key | |

15. The thrust washer (18) Part No. 636 075 00 62 must be mounted on the driving shaft in such a way, that the small collar presses against the inner race of the annular grooved-bearing (11). **Make sure that this thrust washer is installed correctly**, because otherwise the pressure produced during tightening of the injection timing device is transmitted to the guard ring (12) instead of the inner race of the bearing (see Figure 07-27/4).

16. Oil the sleeve (19) having a length of 28.8-0.1 mm and check if the sleeve can be turned easily in the injection timing device. Then slide the sleeve onto the driving shaft (9) and insert the Woodruff key (24) in the groove of the driving shaft (9) (see Figure 07-27/4).

17. Oil the injection timing device and mount it on the driving shaft, so that the marked teeth are engaged (1) (see Figure 07-25/1).

18. Mount the washer (23) and the lock washer (21) on the driving shaft and tighten injection timing device with the hex nut (22) (see Figure 07-27/4).

Note: While the engine is stopped the proper performance of the injection timing device can be determined as follows: Unscrew the 2 hex nuts at the pump shaft end opposite to the driving end. Then turn the shaft with spanner in direction of rotation. If the shaft returns to its former position after releasing, then the springs of the injection timing device function properly. If

this is not the case, the injection timing device must be replaced or it has to be checked whether the centrifugal weights return to their former position after having been pressed towards the center.

19. Check with a feeler gauge the gear backlash between the pump drive gear and the intermediate gear wheel at several places. Checking by touching is generally also sufficient.

The Backlash should be 0,05 to 0.07 mm.

If necessary, the pump drive gear must be exchanged for a different size (see Job No. 05-31).

20. Install the injection pump (see Job No. 07-11, Paragraph 8 to 24).

21. Install the protecting cover (20) with the paper gasket (15), mount the fixing screws with lock washers (see Figure 07-27/4).

22. Install the fuel main filter. For this purpose, a 20 mm thick spacer Part No. 636 092 04 20 must be installed between the filter and the timing housing cover.

This is necessary, because the higher protecting cover would otherwise come in contact with the fuel main filter. Two longer screws M 12 × 52 DIN 931-8G must also be used for the mounting of the filter.

23. The fuel overflow line must be fitted correspondingly by slight bending.

24. Bleed the fuel system (see Job No. 00-10).