

## Removal and Installation of Operating Time Indicator and Subsequent Installation of same, OM 636

Job No.

01-11

The engines of the type 636.914, 636.917-300 and 636.917-350 of the Model OM 636 are equipped with an operating time indicator to determine the running time. The subsequent installation of the operating time indicator is possible on all engines without injection timing device.

The operating time indicator has a reduction ratio of 66 000 :1, so that 132 000 revolutions of the engine are counted as one operating hour, e. g. the engine would have been in operation for one hour at a speed of 2200 rpm.

The operating time indicator is installed in the protecting cover of the timing housing cover and is driven by the injection pump driving shaft via a worm drive.

On the type 636-914 (Unimog) up to the Engine End No. 65 02 650 the operating time indicator Part No. 000 542 03 14 was installed, which has a ratio of 60 000 :1.

With the increase of output and speed of the engines the reduction ratio of the operating time indicator was changed to 66 000 :1, starting with the Engine End No. 65 02 651. In case of repair the operating time indicator with a ratio of 66 000 :1 Part No. 000 542 10 14 can in any case be installed in the engines with the Engine End No. 55 00 514 to Engine End No. 65 02 650.

No operating time indicator was installed in the type 636.914 (Unimog) up to the Engine End No. 55 00 513. A subsequent installation of an operating time indicator is possible for these engines (see Subsequent Installation of Operating Time Indicator).

**Note:** Damaged operating time indicators must not be repaired; they must be forwarded to the firm VDO Frankfurt/M or one of their agencies for repairing.

### Removal:

1. Disconnect the fuel overflow line at the fuel main filter, remove the fuel main filter from the timing housing cover and put it towards the rear. The fuel hoses must not be removed.
2. Remove the seal wire and unscrew all fixing screws of the protecting cover. Remove the operating time indicator from the fit bores of the timing housing cover. Make sure that the dowel pins are not damaged during this operation.
3. Check the drive gears and worm drive of operating time indicator for wear and the

train of wheels for operating ease before reinstallation of the protecting cover.

### Installation:

Protecting covers with distorted contact surface must be reconditioned or replaced.

4. Apply a few drops of oil to the drive gears and the worm gear and attach the protecting cover with operating time indicator with a new paper gasket to the timing housing cover. Do not force the dowel pins of the protecting cover into the fit boreholes and make sure that the drive pinion of the operating time indicator becomes engaged with the worm gear on the pump shaft.

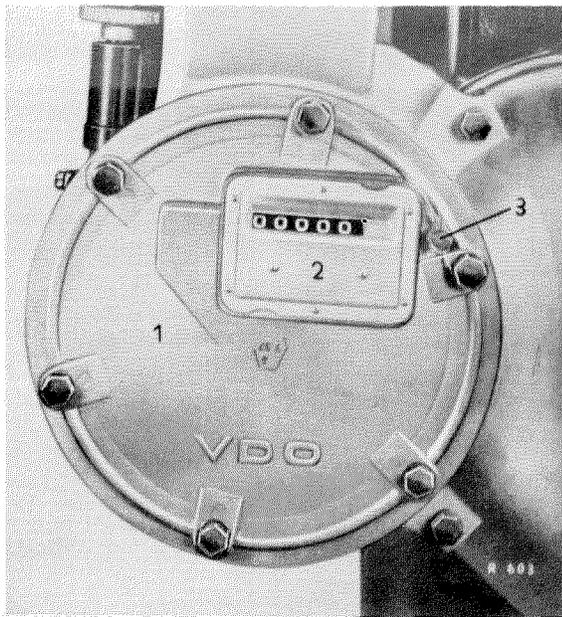


Figure 01-11/1

- 1 Protecting cover
- 2 Counting device
- 3 Wire lead seal

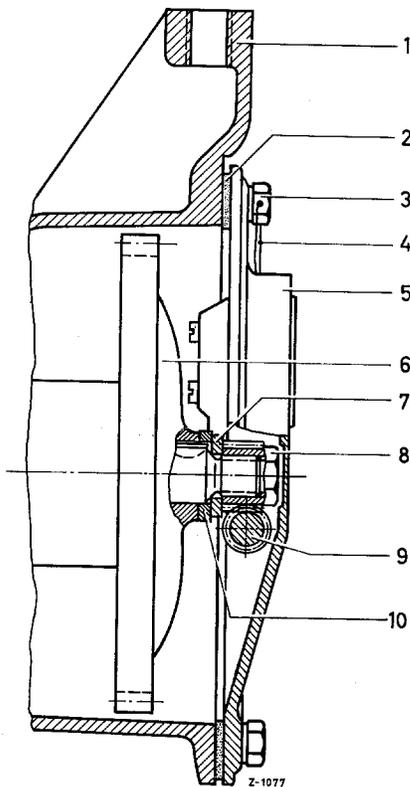


Figure 01-11/2

- 1 Timing housing cover
- 2 Gasket
- 3 Hex nut M 6x15
- 4 Seal wire
- 5 Protecting cover with operating time indicator
- 6 Pump drive gear
- 7 Lock washer
- 8 Worm for operating time indicator and also fixing nut of the pump drive gear (6) Part No. 000 542 00 31
- 9 Drive of operating time indicator
- 10 Washer with groove

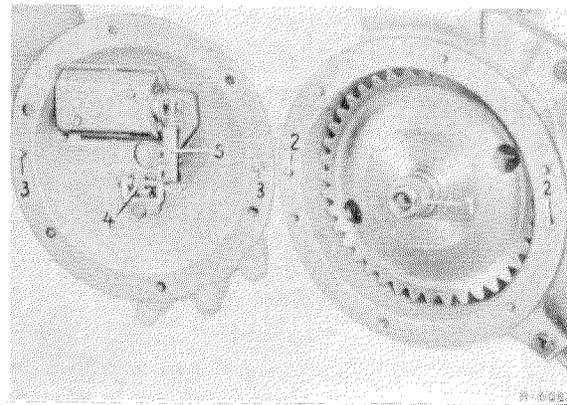


Figure 01-11/3

- 1 Worm of operating time indicator and also fixing nut of pump driving shaft
- 2 Fit boreholes in timing housing cover
- 3 Dowel pins in protecting cover
- 4 Drive pinion at counting device
- 5 Reduction drive in the pinion and worm gears

5. Secure the protecting cover with the fixing screws and guard the two screws with seal wire and lead seal (see Figure 01-11/1).

6. Mount the fuel main filter on the timing housing cover and connect the fuel overflow line.

### Subsequent Installation of Operating Time Indicator

The installation procedure depends on the different bearings of the pump driving shaft in the timing housing cover.

The modification parts listed under group II must be used for the design shown in Figure 01-11/2, that is **with** spacer (10) between lock washer (7) and pump drive gear (6); the modification parts listed under group I must be used for the version

### Required Modification Parts to Group I

Number	Designation	Part No.
1	Operating time indicator	000 542 10 14
1	Worm	636 077 00 21
3	Gaskets	636 015 03 80
4	Screws M 6 x 18	DIN 933-8 G
2	Screws M 6 x 18 SK	DIN 933-8 C
1	Seal wire 240 mm long	066 988 05 71
1	Lead seal	000 988 02 70

shown in Figure 01-11/4, that is **without** spacer between the lock washer (7) and the pump drive gear (6).

### Required Modification Parts to Group II

Number	Designation	Part No.
1	Operating time indicator	000 542 10 14
1	Worm	000 542 00 31
1	Gasket	636 015 03 80
2	Screws M 6 x 15 SK	DIN 933 - 8 C
1	Seal wire 240 mm long	066 988 05 71
1	Lead seal	000 988 02 70

1. After unscrewing the fuel overflow line remove the fuel main filter and put it towards the rear. The fuel hoses must not be removed.
2. Unscrew the protecting cover of the timing housing cover (the cover is not used again).
3. Unscrew the hex nut M 12 fixing the pump drive gear to the shaft and install the worm gear (8). In group I make sure that the worm gear is installed with the lock washer (7) (see Figure 01-11/4) and in group II the worm gear is mounted with spacer (10) and lock washer (7) (see Figure 01-11/2).

**Caution!** The worm gear Part No. 636 077 00 21 (length 17.5 mm) is used for the engines of the group I and the worm gear Part No. 000 542 00 31 (length 15 mm) is used for the engines of the group II.

4. If the installed timing housing cover is without fit boreholes (2) (see Figure 01-11/3), carefully grind off the two dowel pins (3) in the protecting cover (see Figure 01-11/3). During this operation the drive gear of the operating time indicator must be protected against dirt.
5. Before installing the protecting cover put a few drops of oil to the driving gears. **Caution!** On the engines of the group I three gaskets (2) 1.5 mm thick each must be used (see Figure 01-11/4), and on the engines of the group II only one gasket (2) 1.5 mm thick, so that the proper distance is obtained between the operating time

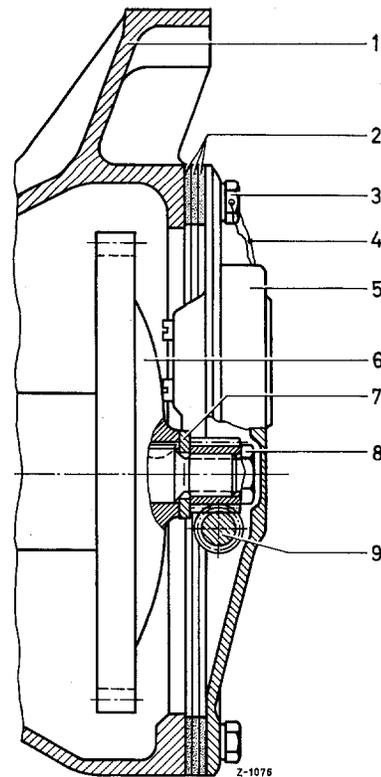


Figure 01-11/4

- |  |                                     |
|--|-------------------------------------|
| 1 Timing housing cover                           | 6 Pump drive gear                   |
| 2 Gasket   | 7 Lock washer                       |
| 3 Hex nut M 6x15                                 | 8 Worm gear                         |
| 4 Seal wire                                      | Part No. 636 077 00 21              |
| 5 Protecting cover with operating time indicator | 9 Drive of operating time indicator |

indicator and the worm gear. On engines of the group I the protecting cover must be fixed with 18 mm long screws, because the sealing is 3 mm thicker. Standard screws 15 mm long can be used for the engines of the group II. The two screws with the holes for the seal wire are installed on top and at the right-hand side in both cases (see Figure 01-11/1).

6. Carefully mount the protecting cover and make sure that the drive gear is engaged with the worm gear. Secure the fixing screws only lightly.
7. Adjust by feeling the mesh of the drive gear (only at group I). Push the protecting cover upwards, so that the drive gear is well pressed against the worm gear. Now move the protecting cover downwards again approx. 1/2 mm and tighten all screws in this position.

**Note:** The adjusting of the mesh and the grinding of the dowel pins on the protecting cover is not applicable if the timing housing cover without fit boreholes is exchanged for a new one according to Part No. 636 010 20 17 or 636 010 16 17 with fit boreholes and reinforced bearing. The proper gearing is guaranteed by the dowel pins of this version (see Figure 01-11/3).

8. Guard the two fixing screws with seal wire and lead-seal (see Figure 01-11/1).
9. Mount the fuel main filter on the timing housing cover and connect the fuel overflow line to the filter.