

Replacing Valve Stem Seal

Job No.

05-16

A. OM 636

The inlet and exhaust valves are equipped with a valve stem sealing device in the form of a sleeve, which is soldered to the valve spring retainer (3) and covers the valve guide. In addition, a sealing ring (6) is installed between the valve spring retainer (3) and the valve stem (see Figure 05-16/2). The sleeve soldered to the valve spring retainer (3) prevents spray oil from reaching the valve stem. The sealing ring (6) prevents the oil accumulating in the recess of the valve spring retainer from reaching the combustion chamber by running downwards along the valve stem. The valve stem sealing can be subsequently installed without difficulties in engines of the former production if there are complaints about excessive smoking and high oil consumption.

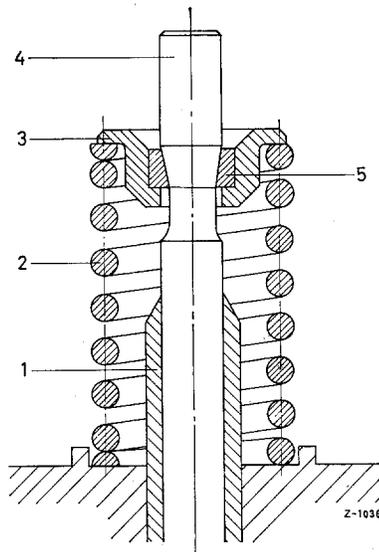


Figure 05-16/1

1st version
without valve sealing

- 1 Valve guide
- 2 Valve spring
- 3 Valve spring retainer
- 4 Valve
- 5 Valve cone half

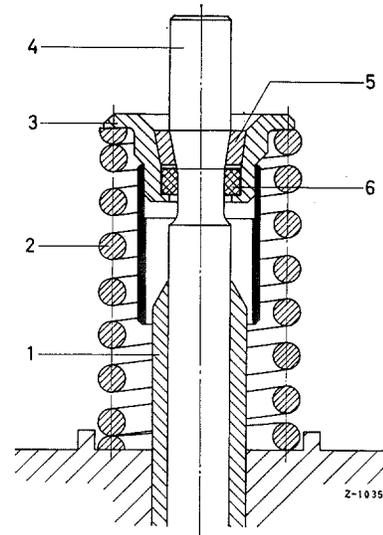


Figure 05-16/2

2nd version
with valve sealing

- 1 Valve guide
- 2 Valve spring
- 3 Valve spring retainer with sleeve
- 4 Valve
- 5 Valve cone half
- 6 Sealing ring

Replacing or Subsequent Installation of Valve Stem Sealing

1. Remove the cylinder head cover (or covers) after loosening the fixing nuts.
2. Unscrew the fixing nuts of the rocker brackets and remove rocker shafts with rocker brackets and rockers (see Figure 05-1/1).
3. Set the piston of the 1st and 4th cylinder to top dead center. The pistons 1 and 4

are in the top dead center position during valve overlap of the valves 1 and 2 and/or 7 and 8 (observe the push rods).

Note: The pistons must be set to top dead center, so that the valves cannot fall through during removal and installation of the valve spring retainers and valve cone halves.

- Compress the valve springs of the valves 1, 2, 7 and 8 with the Valve Lifter Part No. 636 589 03 31, so that the valve cone halves can be removed.

To do this, place the clamping jaws (2) of the valve lifter over the valve stem and fasten the screw (3) tightly. Then compress the valve spring by clockwise turning of the crank (1) and remove the valve cone halves (4) see Figure 05-16/3).

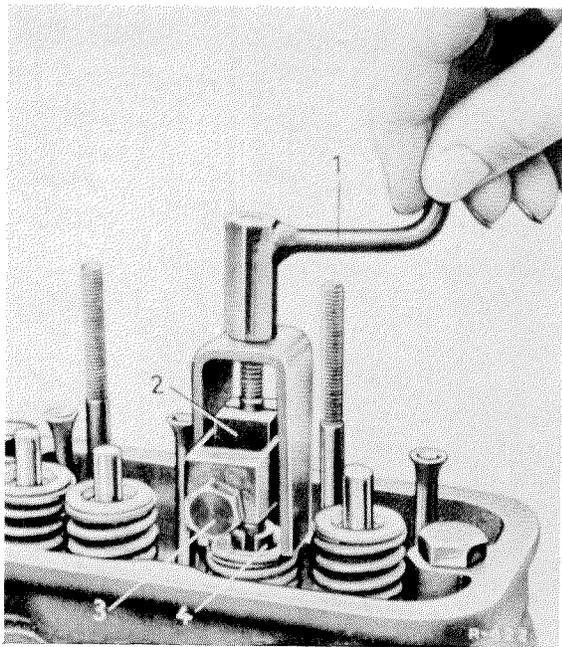


Figure 05-16/3

- Crank to tension the valve spring
- Clamping jaws
- Screw to clamp the valve lifter to the valve stem
- Valve cone halves

Now release the valve spring, then loosen the screw (3) by half a turn, remove the valve lifter and take off the valve spring retainer.

- Mount the valve spring retainer (3) with Sleeve Part No. 636 050 00 23 on the valve spring (2). Lightly oil a new sealing ring (6) Part No. 636 053 00 60 and slide it over the valve stem, so that it sits on the bottom of the valve spring retainer (see Figure 05-16/2).

- Clamp the Valve Lifter Part No. 636 589 03 31 with the clamping jaws (2) to the protruding end of the valve stem by securing the screw (3) (see Figure 05-16/3). Then compress the valve spring by clockwise turning of the crank (1) and push the sealing ring downwards, so that the valve cone halves can be installed. After inserting the valve cone halves (5) release again the valve spring (2) (see Figure 05-16/2) and after loosening the screw (3) remove the valve lifter (see Figure 05-16/3).

Check seating of valve cone halves and valve springs. The gap of the valve cone halves must be equal on both sides.

- Set the pistons of the 2nd and 3rd cylinder to top dead center. The pistons of the 2nd and 3rd cylinder are at top dead center during valve overlap of the valves 3 and 4 and/or 5 and 6 (watch the push rods).
- Also install sealing rings in the valves 3, 4, 5 and 6. Conduct operation as described in paragraph 4, 5 and 6.
- Place the rocker brackets with rocker shafts and rockers over the fixing studs of the cylinder head (see Figure 05-1/1 and Job No. 05-1).

Note: The contact surfaces must be clean. Poor and dirty contact surfaces cause loss of oil.

Mount the rocker brackets with lock washers and fixing nuts and tighten with a torque of 2 mkg.

- Adjust the valve clearance (see Job No. 00-3).
Valve clearance
of inlet valves = 0.20 mm
of exhaust valves = 0.15 mm.

- Operate the engine for a short period to check if sufficient splash oil leaves the grooves of all four rocker brackets.

Change: Third paragraph of item 4 and note following item 7 added.

12. Install the cylinder head cover with faultless gasket. Slide aluminum sealing rings over the fixing studs, screw on the fixing nuts and do not secure too tightly to prevent distortion of the cylinder head cover.
13. Operate the engine and check if oil penetrates at the cylinder head cover.

B. OM 621

The valve stem sealing is different with the intake and exhaust valves of models 190 D and 190 Db, type 621.910. With the exhaust valve, a seal ring holder is firmly attached to the valve spring retainer (9); this holder projects beyond the valve guide (13). There is a rubber seal ring (11) between the seal ring holder (9) and the valve stem (12). Further the seal ring holder serves as an additional oil screen (see Figure 05-11/4). The intake valve is sealed by a seal ring holder (6) with inserted Silicon seal ring (7), which is slid over the valve guide (8) and pressed on through the inner valve spring (see Figure 05-11/5).

For models 190 Dc, 180 Dc, and L and O 319 D, the intake and exhaust valve seals are the same (refer to Fig. 05-16/4).

Replacing valve stem sealing

1. Remove the cylinder head cover. To do this, loosen the mounting screws, the venting pipe and the bracket for the additional control.
2. Loosen the necked-down bolts for the rocker arm bracket mounting and remove the brackets including the rocker arms. To do this, turn the camshaft in such a way that the rocker arms are unloaded.
3. Turn the crankshaft in such a way that the piston of the respective valve stem seal is in top dead centre. This prevents the valves from falling into the cylinders.
4. Loosen the cap nut (7) of the respective exhaust valve, retaining the conternut (8). Then unscrew the two nuts and remove the valve spring retainer including seal ring holder (9). Insert a new rubber seal ring (11) into the seal ring holder and remount the conternut and the cap nut (see Figure 05-11/4).
With the intake valves remove the valve spring retainer (3), the valve springs (4) and (5), the seal ring holder (6) and the Silicon seal ring (7) after loosening the cap nut (1) and the conternut (2). Apply oil to a new seal ring (7) and slide it over the valve stem until it contacts the valve guide. Then mount the seal ring holder, the valve springs, the valve spring retainer and the conternut and cap nut (Figure 05-11/5). When installing valves for **models 190 Dc, 180 Dc, and L and O 319 D**, be sure to replace valve seal (5) (Fig. 05-16/4). Seals for intake and exhaust valves are the same. First insert valve rotating device (6) or, for 180 Dc, filler piece (Fig. 05-16/4). **Place assembly sleeve 000 589 16 61 00 over respective valve** to prevent damaging the Teflon sealing ring in valve seal by threads on valve stem. Slide valve seal over lubricated assembly sleeve until valve seal snaps into valve guide groove, then assemble valve spring (4), valve spring retainer (3), hex. nut (2) and cap nut (1) (refer to Fig. 05-16/4).
5. Mount the rocker arm brackets, turning the camshaft so that the rocker arms are unloaded. The necked-down bolts of the brackets are tightened with a torque of 3.75 mkg.
6. Adjust the valve clearance (see Job No. 00-3, Section B).
7. Mount the cylinder head cover. Observe correct seat of the gasket and also check the wire cable (18) for free movement in the slot of the stop angle on the angular lever (24) (see Figure 00-11/2).

Note: Supplementary installation of Teflon valve stem sealing for models 190 D and 190 Db (type 621.910).

For supplementary installation remove cylinder head, disassemble valves and replace intake and exhaust valve guides (refer to Job No. 01-6).

Install valves with new valve seal (refer to item 4).