

Measuring Suction and Discharge Action of the Fuel Feed Pump and Checking the By-Pass Valve

Job No.

00-9

Change: Fuel noise and muffler added

The fuel feed pump has the task to deliver the fuel with a certain pressure but without bubbles to the suction space of the injection pump. Insufficient output of a pump causes engine trouble. Especially an engine operated in the full load range and at high speeds demands a certain charging pressure to maintain a satisfactory fuel supply to the pump elements. This charging pressure is kept at a constant rate by the by-pass valve which is installed in the main fuel filter with the OM 636 and at the end of the suction space of the injection pump with the OM 621, opening at a pressure of 1 to 1.5 atm.

The discharge pressure can be checked in a simple way without any means as follows, provided that the by-pass valve is adjusted correctly:

Disconnect the return line at the return line connector of the tank and put the end of the hose in a suitable container. Start engine. If fuel flows out while the engine is in operation, then the discharge pressure is higher than the opening pressure of the by-pass valve of 1 to 1.5 atm. The checking of the discharge pressure and/or opening pressure is more difficult at by-pass valves which are furnished with a groove and/or hole in the valve disk to eliminate a ticking in the fuel lines from and to the tank (see Page 09-3/4). In this case, the fuel jet leaving the end of the hose must be stronger.

However, such a check is not sufficient in all cases. A more exact testing is possible by employing the Feed Pump Tester 000 589 49 21 (see Figure 00-9/1). With the help of this instrument the testing of the peak pressure during the discharge stroke, the vacuum during the suction stroke and also the exact opening pressure of the by-pass valve has been made possible. Furthermore, a glass tube installed in the instrument allows the observation of the fuel during the above tests, so that it can be seen whether the fuel is delivered without air.

Testing Discharge Rate with the Feed Pump Tester Part No. 000 589 49 21

replaced if necessary (see Job No. 09-3, Section c, Checking by-pass valve).

1. Disconnect the pressure line between the fuel feed pump and the main fuel filter and connect the instrument (see Figure 00-9/1).
2. Bleed instrument and the fuel main filter at the bleeder screw of the fuel main filter and operate engine (also see Job No. 00-10, items 1 and 2).
3. The opening pressure of the by-pass valve indicated by the instrument should be 1 to 1.5 atm.
4. Check the peak pressure of the feed pump. The highest discharge pressure of the feed pump will be indicated by squeezing the hose between the instrument and the fuel main filter. The pressure should at least be 2.0 atm. for a feed pump in satisfactory working order.
5. Check the vacuum during suction stroke. Connect the connectors of the instrument to the suction end of the feed pump. The suction vacuum should at least be 0.5 atm.

If the indicated pressure is higher than 1.5 atm. or lower than 1 atm., then the by-pass valve has to be checked and

Repair or exchange faulty feed pumps (also see Job No. 07-14, Checking and Repairing Fuel Feed Pump).

00-9/1

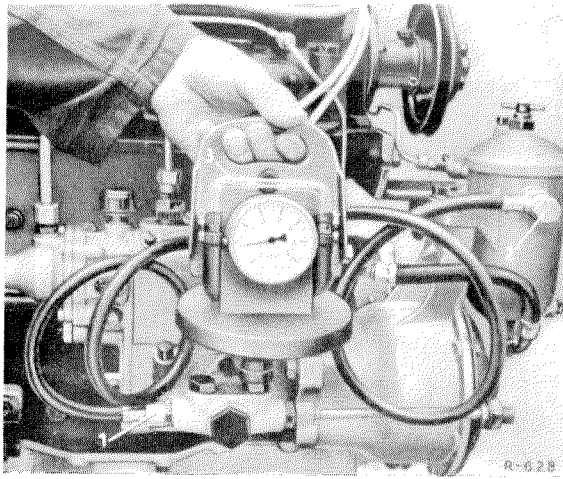


Fig. 00-9/1

- 1 Connection at the discharge end of the feed pump
- 2 Connection at the fuel main filter
- 3 Glass tube

6. Watch the glass tube of the instrument during the testing of suction and discharge action, whether there is air contained in

the fuel. In order to determine the point where infiltrated air is sucked into the system, the instrument is first connected to the suction end of the feed pump and then to the discharge end.

If air bubbles can already be observed while the instrument is connected to the suction end, the leak is between the fuel tank and the fuel feed pump.

7. In addition to the above tests, the instrument can also be exploited to check the throughput of the filter. To make this test, connect the instrument between the fuel main filter and the injection pump. The pressure obtained here should only be slightly less than the indicated pressure before the filter.

Very fouled filter cartridges cause a reduction of pressure and possibly engine trouble.

Fuel Noises (Ticking in the Lines)

To dampen the fuel noises in the lines a muffler (Part No. 189 070 05 68 or Part. No. 198 070 00 68) can be installed into the fuel return line between injection pump or by-pass valve and fuel main filter or crosspiece, respectively.

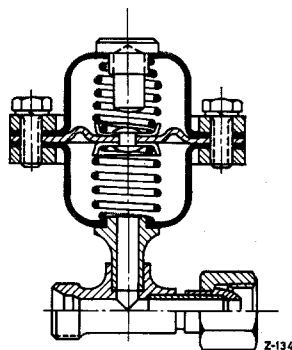


Fig. 00-9/2
Muffler

Muffler

If in spite of an installed muffler there are still fuel noises in the lines, the diaphragm of the muffler should be checked. A torn and damaged diaphragm should be replaced (Fig. 00-9/2). When screwing together the upper and lower portion of the muffler, press diaphragm toward the top (Part No. 189 070 00 52).