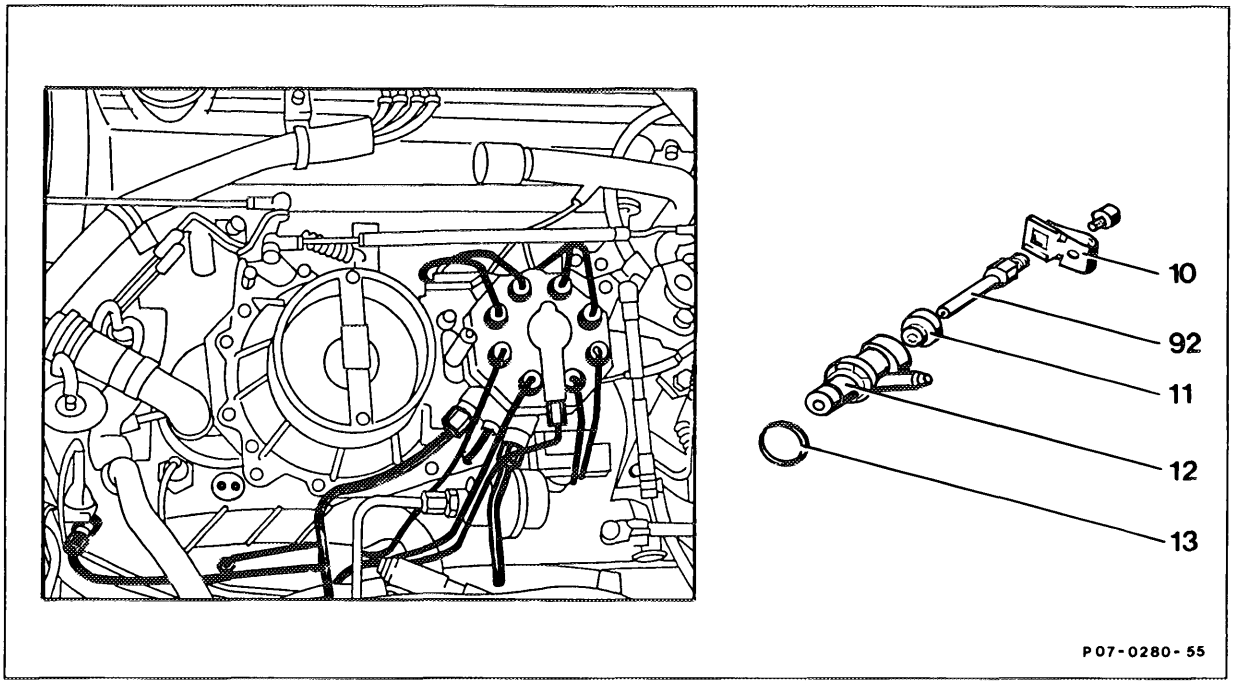
07.3-135 Checking injection valves

Preceding operation:
Removal, reinstallation of injection valves (07.3-215)



Injection valves (92) . . . . . check.

Rough leak test . . . . . a) Connect removed injection valves to tester. Bleed pressure line with opened shut-off valve and opened union nut. Then tighten union nut.

b) Shut-off valve open, slowly actuate hand lever (4 s/stroke) and build up pressure to a maximum of 1.5 bar pressure. If a leak is detected on the injection valve, the injection valve must be renewed.

Checking opening pressure	With new injection valves, 4.3–4.6 bar pressure. On used injection valves, at least 3.7 bar pressure. Close shut-off valve. Flush injection valve by rapidly actuating the hand lever several times. Open the shut-off valve and check opening pressure with slow movement of the hand lever.
Fine leak test	close shut-off valve. Flush injection valve by rapidly actuating the hand lever several times, open shut-off valve and slowly build up pressure to 0.5 bar below the previously established opening pressure and hold. No drop must form on the injection valve within 15 seconds.
Buzzing test, evaluation of spray pattern	close shut-off valve and flush injection valve by actuating the hand lever several times (0.5 s/stroke). Then reduce lever speed to approx. 1 s/stroke. When doing so the valve must emit a buzzing sound. No drops must form on the valve mouth. A concentrated stream is not permissible. One sided, atomized spray pattern within an overall spraying angle of approx. 35° is permissible. Spray pattern evaluation see figures.

Test values

Opening pressure of injection valves[1)]	with new injection valves	4.3–4.6 bar pressure
	with used injection valves	at least 3.7 bar pressure

1) Renew injection valves which are outside the tolerance.
The injection valves can be individually changed within a set.

Tightening torques	Nm
Injection lines to fuel distributor (reference value)	10–12
Injection lines to injection valves (reference value)	10–15

Commercially available testers and accessories (observe note)

Valve tester Bosch KDJE-P 400	Bosch order designation KDJE-P 400
Nozzle tester EFEP 60 H[1])	Bosch No. 0 684 200 700
Pressure gauge 0-6 bar pressure housing dia. 100 mm Quality class 1.0	Bosch No. 1 687 231 000
Piping	Bosch No. 1 680 750 001
Adapter [2])	Bosch No. KDJE-P 400/7

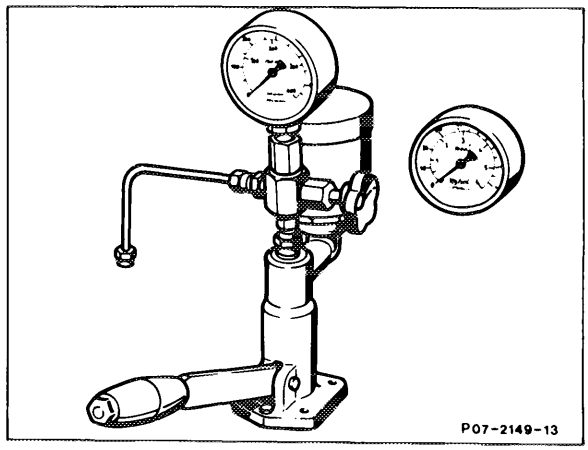
1) Corresponds to the previous nozzle tester. The listed pressure gauge or the pressure gauge of the pressure measuring device 100 589 13 21 00 is necessary to test the injection valves.

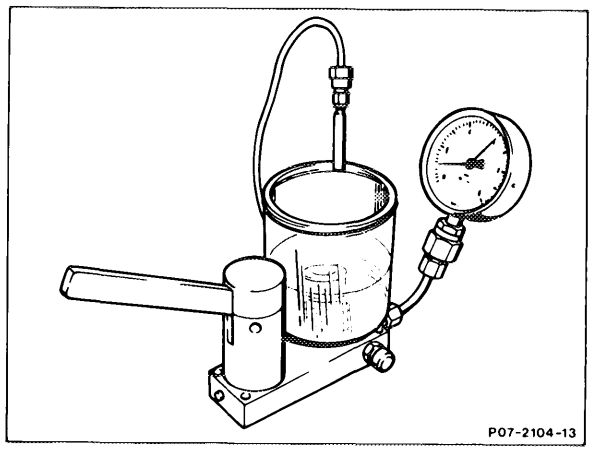
2) An adapter is required due to the changed connection thread M10 x 1 of the injection valves.

Note

The nozzle or valve tester is used to check the opening pressure, the buzzing, the jet and the tightness of the injection valves.

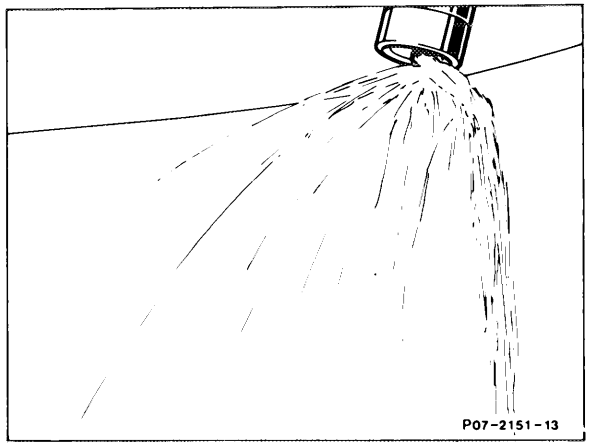
Before starting the injection valve test, the tank of the tester must be filled and the device bled. Only petroleum must be used for testing.



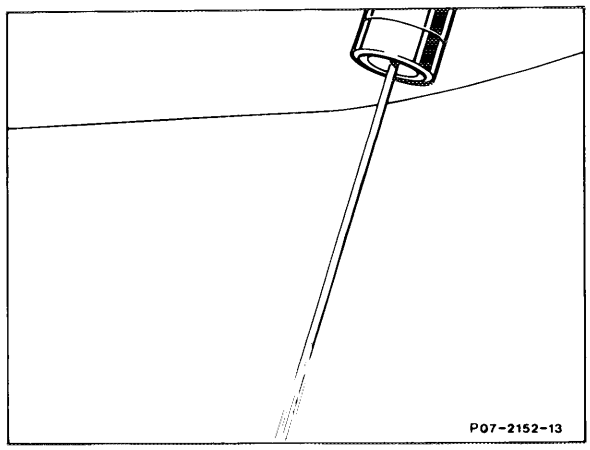


Spray pattern evaluation

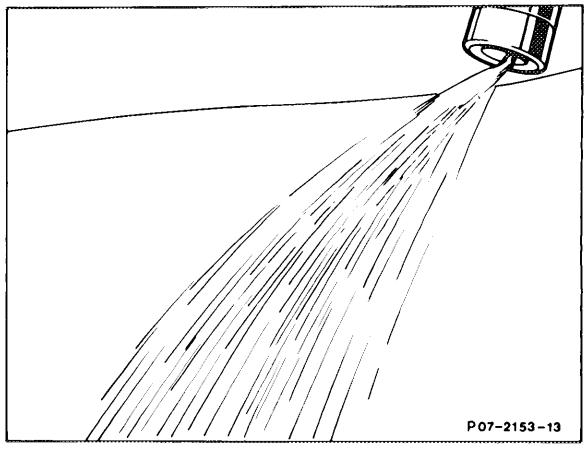
Faulty injection valves



Drop formation

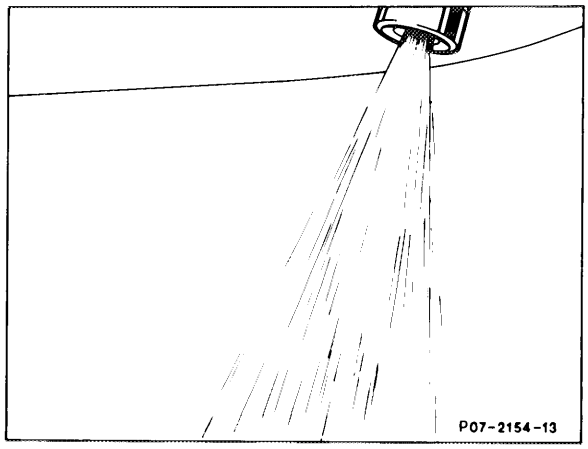


Stream



Spreading spray pattern

Good injection valves



Good spray pattern

Slightly one-sided atomization