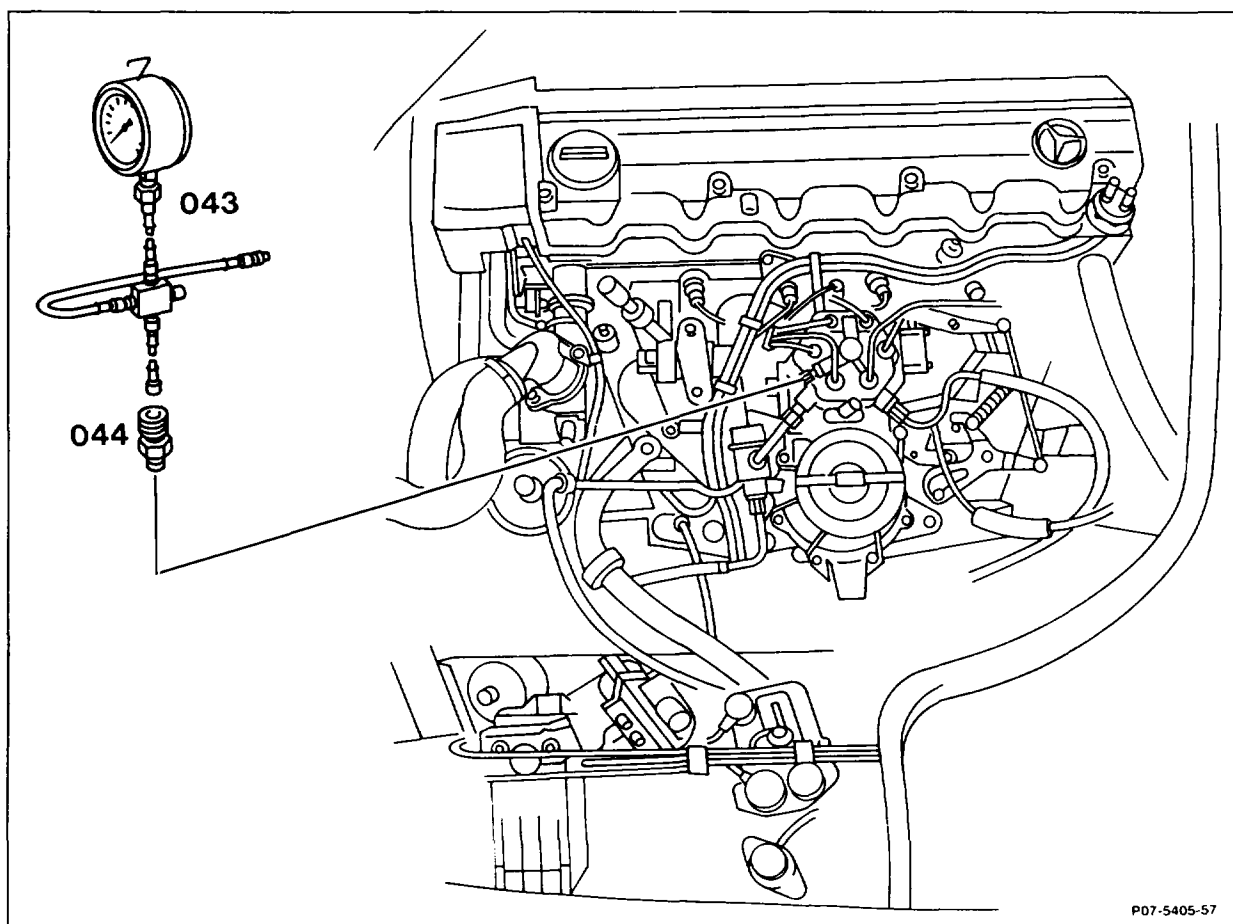


07.3-1603 Testing fuel pressures and internal leaktightness

Preceding work:
Testing, adjusting engine (07.3-1100).

Operation no. of operation texts and work units or standard texts
and flat rates:
07-1603.

Basic and national versions



P07-5405-57

All fuel connections	check for leaks.
Ease of operation of air flow deflector plate and control plunger	check.
Control plunger	check for leaks.
Pressure measuring device (043), double union (044)	connect. Special tools 103 589 00 21 00, 102 589 06 63 00
System pressure	test.
Lower chamber pressure	test.

- Decel fuel shutoff test.
- Full load enrichment test.
- Acceleration enrichment test.
- Fuel distributor and fuel pump check for leaks.

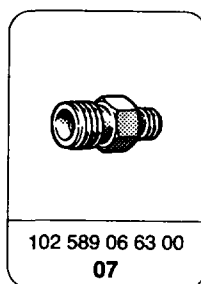
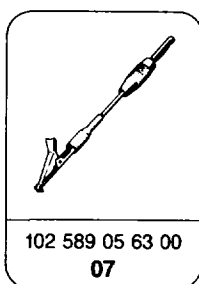
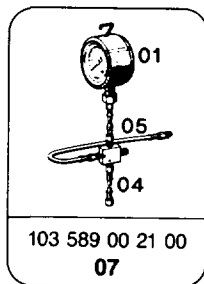
Test and adjustment data

Fuel pressures (in bar gauge)

Engine		103
System pressure when engine cold or at normal operating temperature		5.3–5.5
Fuel holding pressure after > 30 minutes		≥ 2.8
Lower chamber pressure	when engine at normal operating temperature	approx. 0.4 ¹⁾
	at coolant temperature of +20 °C	vehicle stationary or engine idling approx. 0.5 ¹⁾
		and acceleration enrichment ≥ 3.8
	at decel fuel shutoff	5.3–5.5 ²⁾

1) Below previously measured system pressure.
 2) Lower chamber pressure equal to system pressure.

Special tools



Note

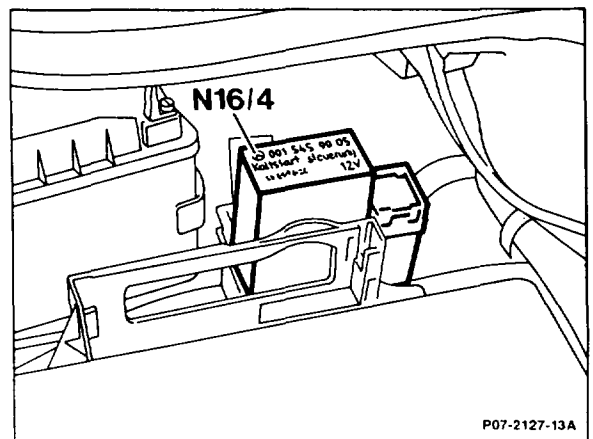
Perform the leaktightness test only if complaints are received regarding starting hot engine.

After switching off engine, the fuel pressure must still be 2.5 bar after 30 minutes.

If no reaction is obtained when performing the pressure test of the additional functions, test overvoltage protection (07.3-0121).

Visual inspection

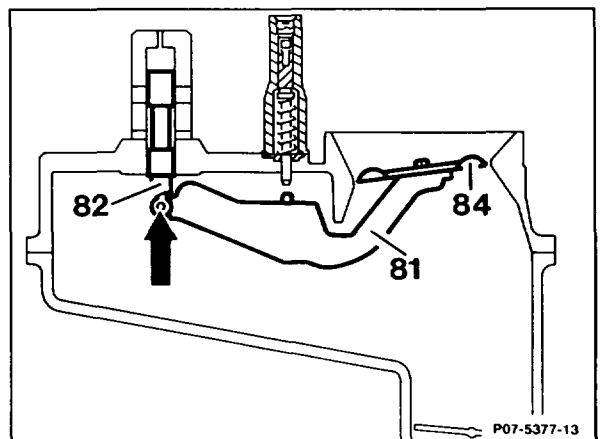
- 1 Take off air cleaner.
- 2 Check all fuel connections for leaks.
- 3 Detach fuel pump relays (N16/1 to N16/4) and briefly bridge the two contacts 7 and 8, on model 129 engine systems control unit MAS between contacts 1 and 2, for (J) (USA) as of model year 1990 at the KE control unit (N3) between contacts 11 and 20, in order to build up pressure.



- 4 Check ease of operation of control lever (81) in the air flow sensor and of the control plunger (82) in the fuel distributor.

An even resistance must be felt over the entire travel.

No resistance must be felt when making a rapid upward movement as the more sluggish control plunger lifts off from the control lever. During a slow upward movement, the control plunger must follow the control lever and always make contact.



5 Check control plunger in fuel distributor for leaks.

Briefly press air flow sensor plate (84) down fully and hold tight in this position; a slight leak quantity is permissible when this is done.

Connecting pressure measuring device

Pressure measuring device, version 1

Connection 1

Hose line to fuel distributor (lower chamber)

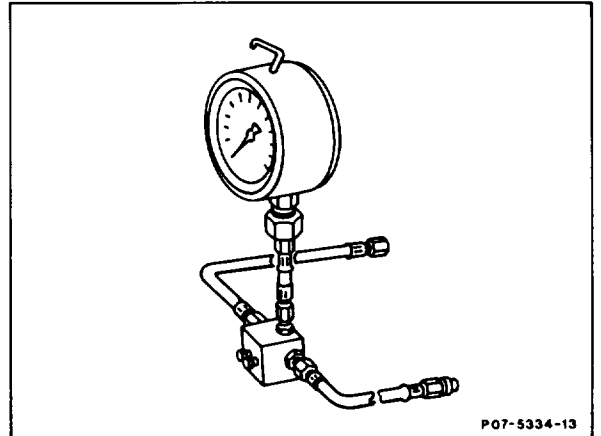
Connection 2

Hose line to pressure gauge

Connection 3

Hose line to fuel distributor

(upper chamber, cold start valve connection)



Pressure measuring device, version 2

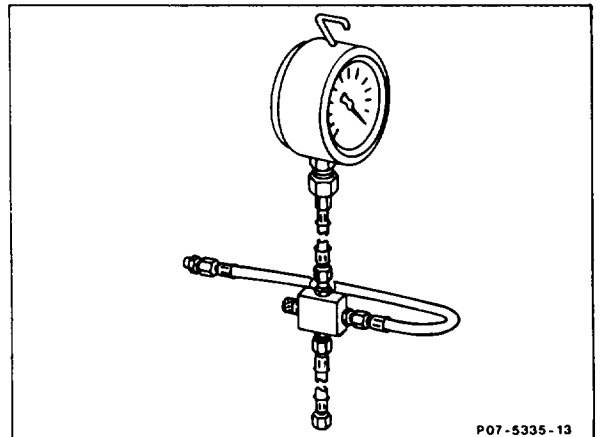
Connection A

Hose line to fuel distributor (lower chamber)

Connection B

Hose line to fuel distributor

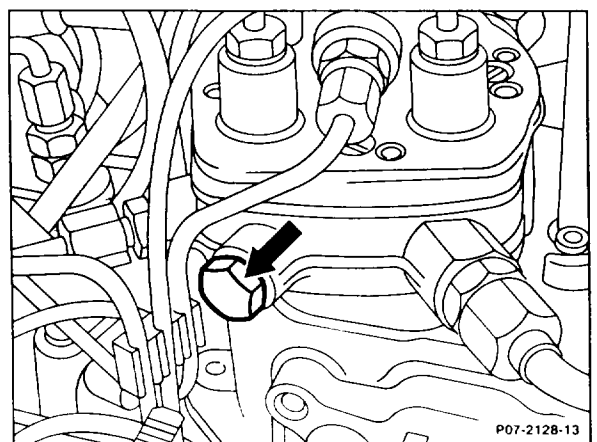
(upper chamber, cold start valve connection)



Note

To relieve the pressure on the seals, always hold valve screw or screws open. The connections of the three-way valve are numbered. When slackening the screw plug, ensure that the open-end wrench does not press on the air flow sensor position indicator. Failure to observe this instruction will cause damage to the position indicator.

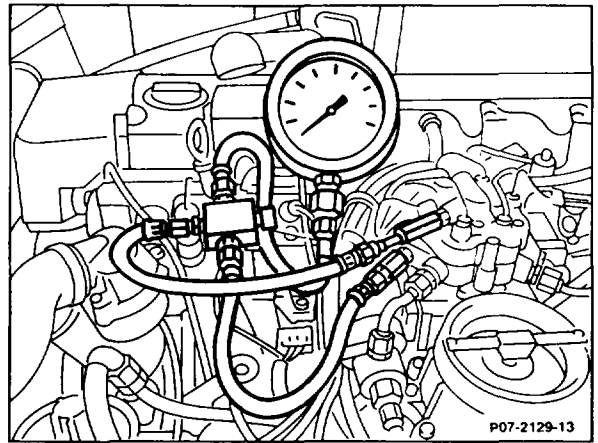
6 Unscrew plug (arrow) on the lower chamber of the fuel distributor.



7 Run hose line from connection A or 1, respectively, to lower chamber. Use double union M8 × 1/M12 × 1.5, special tool part no. 102 589 06 63 00, for this purpose.

8 Unscrew fuel line at start valve at fuel distributor.

9 Run hose line from connection B or 3, respectively, to fuel distributor.

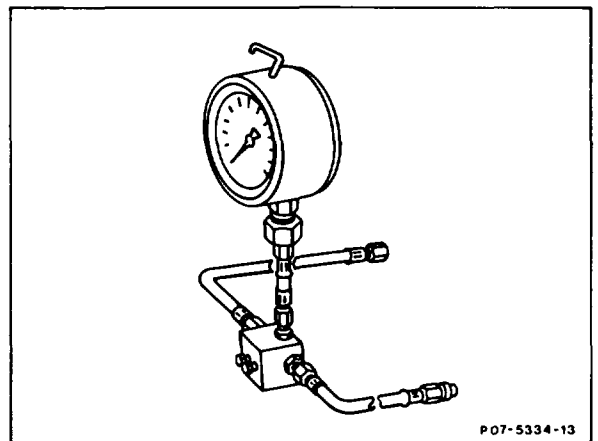


10 Position of valve screws:

a) System pressure

Pressure measuring device 1st version:
Close valve screw at connection 1, open
valve screw at connection 3.

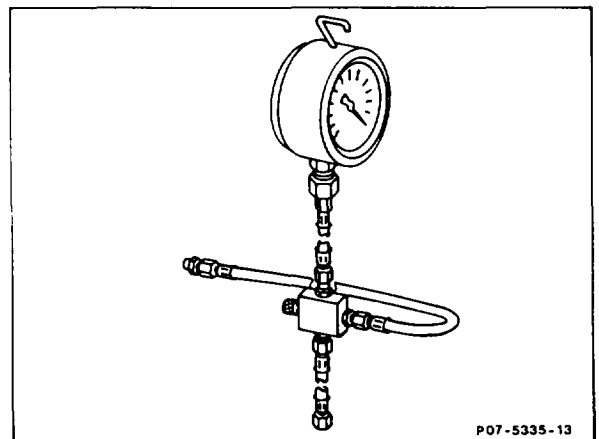
Pressure measuring device 2nd version:
Open valve screw.



b) Lower chamber pressure, decel fuel shutoff,
acceleration enrichment

Pressure measuring device 1st version:
Open valve screw of connection 1, close
valve screw of connection 3.

Pressure measuring device 2nd version:
Close valve screw.



Testing

Perform the test of the system and lower chamber pressure with the engine switched off.

Test acceleration enrichment and decel fuel shutoff with the engine running.

Place pressure measuring device on cylinder head cover.

a) System pressure with engine cold or at normal operating temperature

11 Detach fuel pump relays (N16/1 to N16/4) and bridge the contacts 7 and 8, on model 129 engine systems control unit MAS between contacts 1 and 2, for (USA) (J) as of model year 1990 on the KE control unit (N3) between contacts 11 and 20.

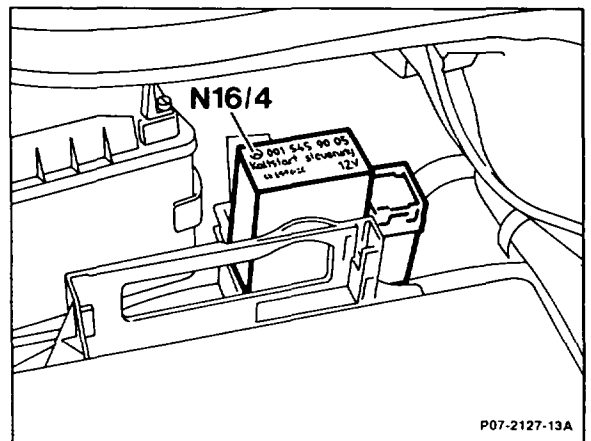
Pay attention to position of valve screws, read off system pressure.

Specification: 5.3–5.5 bar gauge.

12 If the specification is not achieved or is exceeded:

- test fuel pump (07.3–5701).
- replace diaphragm pressure regulator.
- check whether fuel return line is blocked.

13 Again open valve screw at connection 1.



b) Lower chamber pressure

14 Detach fuel pump relays (N16/1 to N16/4) and bridge contacts 7 and 8, on model 129 engine systems control unit MAS between contacts 1 and 2, for (USA) (J) as of model year 1990 on KE control unit (N3) between contacts 11 and 20. Switch on ignition.

15 With engine at normal operating temperature, unplug electrical connection at electrohydraulic actuator.

Pay attention to position of valve screws.

Read off lower chamber pressure.

Specification at normal operating temperature approx 0.4 bar below system pressure.

When plugging in the electrical connection, no pressure change must take place.

Note

In the warming-up phase, a certain current exists at the actuator which is determined by the coolant temperature sensor and the control unit.

If the specification is not achieved:

- test coolant temperature sensor (07.3-0121).
- test control unit (07.3-0121).
- test electrohydraulic actuator (07.3-0121).

If the pressure in the lower chamber is above the specification, check whether restrictor in fuel distributor is blocked (07.3-1604).

16 Re-install fuel pump relays (N16/1 to N16/4).



c) Decel fuel shutoff

17 Warm engine up to normal operating temperature.

18 Pay attention to position of valve screws.

19 Run engine at idling speed, briefly increase engine speed to about 2500/min. As engine speed drops, the pressure in the lower chamber must rise to system pressure.

Combustion is restored at 1300/min.

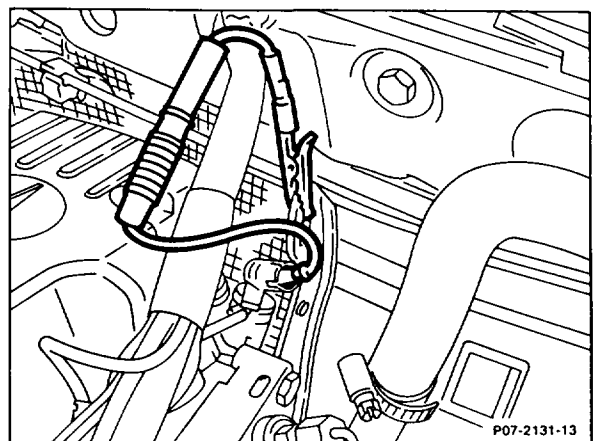
If the specification is not achieved:

- Test microswitch (07.3-0121).
- Test control current at actuator (07.3-0121).
- Test control unit (07.3-0121).
- Test TD signal (07.3-0121).
- On vehicles fitted with Tempomat cruise control, test relay for cruise control (Repair Instructions Group 54).

d) Acceleration enrichment

20 Pay attention to position of valve screws.

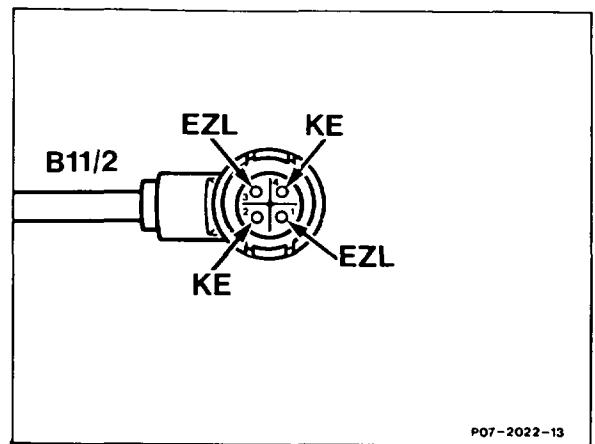
21 Simulate "engine cold." This is done by connecting resistor with 2.5 k Ω , corresponding to approx. +20°C, between temperature sensor connection cable and vehicle ground (between contact 2 and 4 of 4-pin temperature sensor).
Special tool part no. 102 589 05 63 00.



Coolant temperature sensor

Coupling pin assignment

- 1 EZL/AKR temperature sensor
- 2 KE temperature sensor
- 3 Ground, EZL/AKR ignition control unit
- 4 Ground, KE ignition control unit



22 Start engine, increase engine speed to approx. 2500/min by blipping throttle. When engine speed rises, the lower chamber pressure must drop.

If the specification is not achieved:

- test air flow sensor position indicator (07.3-0121).
- test control current at actuator (07.3-0121).
- test control unit (07.3-0121).

Checking fuel distributor and fuel pump for leaks

23 Switch off engine. The pressure in the system should then drop below the opening pressure of the injection valve (approx. 2.8 bar gauge).

24 If the pressure drops immediately to 0 bar, replace non-return valve at fuel pump.

25 If the pressure drops slowly, unscrew fuel return line (51) at the diaphragm pressure regulator. No fuel must flow out (a slight leak quantity is permissible).

Note

If fuel flows out at the fuel line, seal off line.

26 Pinch leak line at the fuel accumulator. If the pressure does not drop, replace fuel accumulator (07.3-1683).

27 If, after checking for leaks, no leakage is found, check start valve for leaks. Remove start valve for this purpose (07.3-2353).

28 Disconnect pressure measuring device; collect fuel with a rag.

29 Connect fuel lines, run engine once again and check all connections for leaks.

