

## 07.1—109 Checking injection pump for begin of delivery (according to high pressure — overflow method)

### Test values

Engine	615.912/941	615.913/940	616, 617
Begin of delivery before TDC in compression stroke	24°	26°	24°

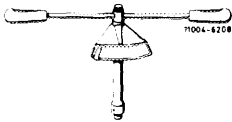

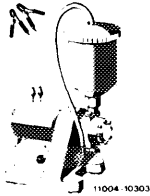
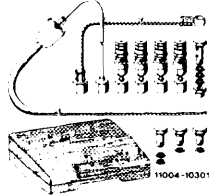
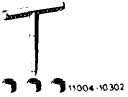
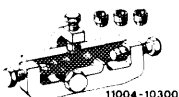
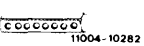
### Attention!

On MW- and M/RSF-injection pumps with mechanical governor push regulating lever of injection pump to full load while measuring and remove vacuum hose from vacuum control unit.

### Tightening torques

Designation	Engine	Injection pump abbreviation	Nm
Injection lines	615, 616, 617	M, MW, M/RSF	25

### Special tools

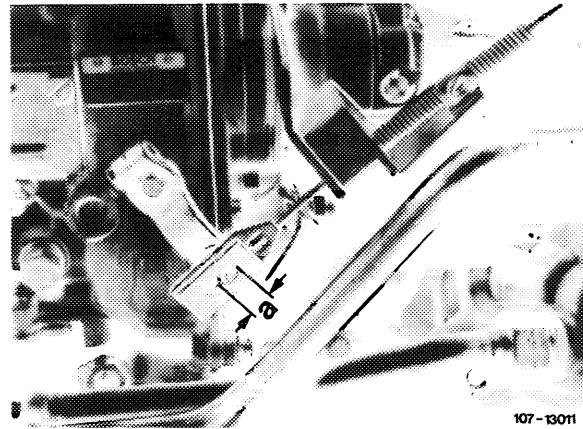
Torque wrench 1/2" square, 15–65 Nm		000 589 27 21 00
Box wrench insert open, 17 mm, 1/2" square for injection lines		000 589 68 03 00
Pump units, complete		617 589 00 71 00
Connecting parts with carrying case		617 589 00 91 00
Quick-action lock		617 589 02 91 00
Closing bracket		617 589 03 91 00
Driving square 1/2", 80 mm long for rotating engine		617 589 00 16 00

## Checking

- 1 Clean injection lines in range of coupling nuts on injection pump as well as on fuel filter.
- 2 Move control rod of injection pump to full load.

### For M-injection pump with pneumatic governor:

Move preglow starter switch on instrument panel to driving position "2". In this position, the play between adjusting lever and long-slot eye should be at least 2 mm (distance "a").  
Adjust cable control, if required (07.1-340).

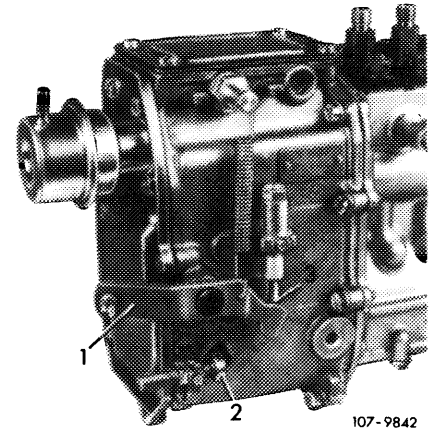


### For MW- and M/RSF-injection pump with mechanical governor

Pull vacuum hose from vacuum control unit. Lock regulating lever of injection pump to full load.

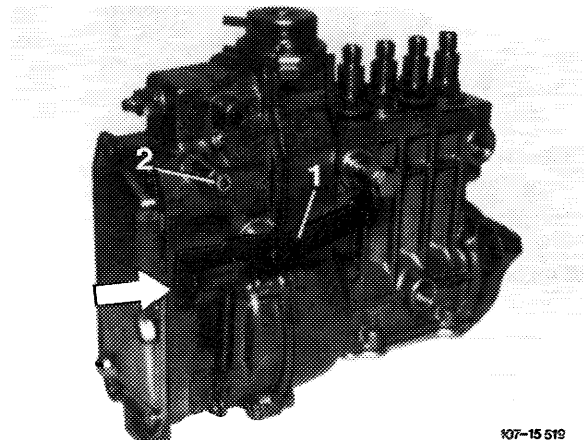
#### MW-injection pump

- 1 Regulating lever
- 2 Full throttle stop



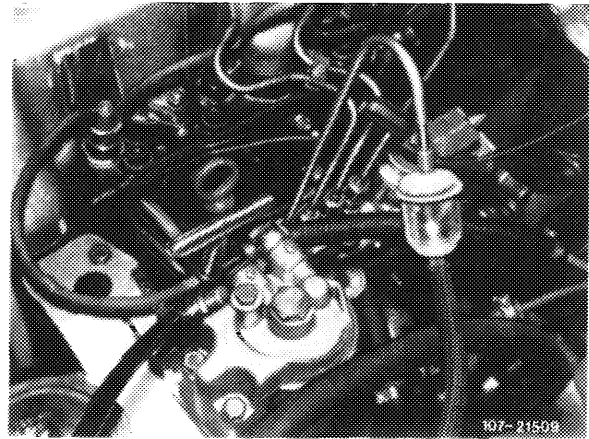
#### M/RSF-injection pump

- 1 Regulating lever
- 2 Full throttle stop

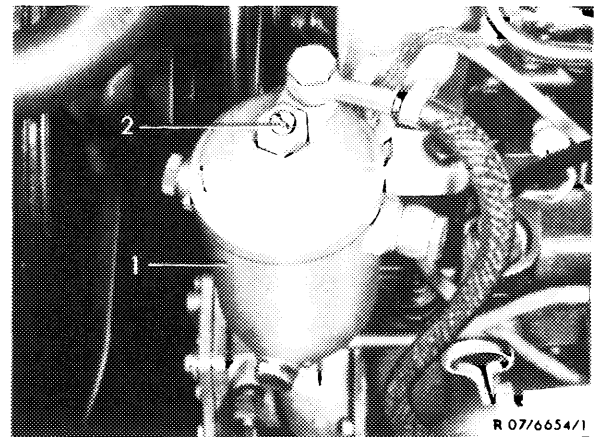


3 Unscrew injection line for cylinder 1.

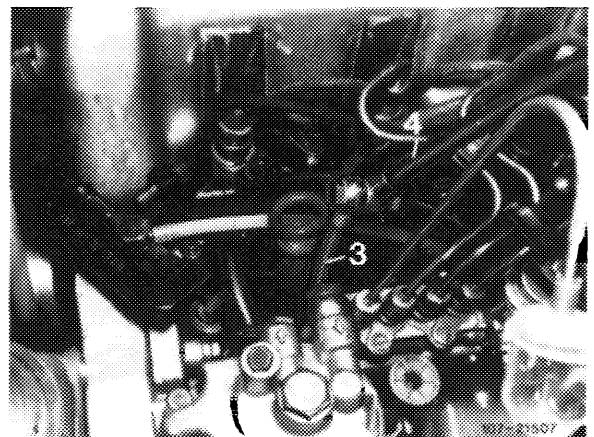
On injection pump, screw-on test line with sight glass and install return line to fuel tank of pump unit.



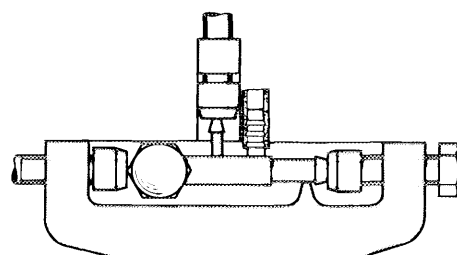
4 Close fuel return line from injection pump to fuel filter, depending on filter version.



1st version with closing bracket



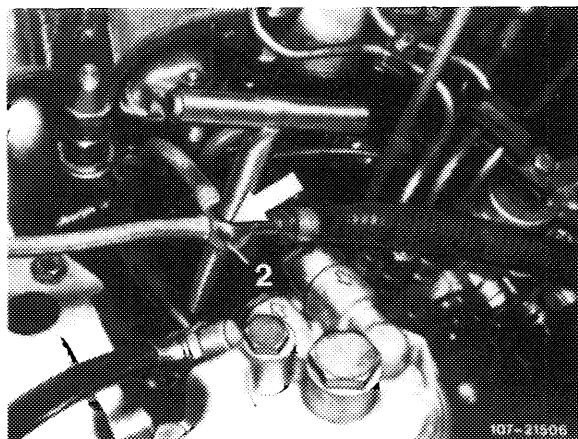
2nd version with closing bracket



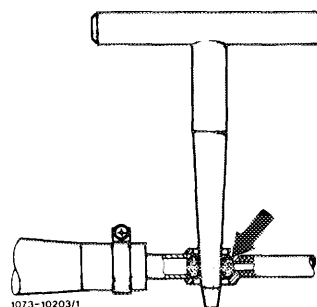
Closing bracket for 1st and 2nd version

On 3rd version of fuel filter, place O-ring into ring fitting (2) of return line and energetically push-in quick-action lock.

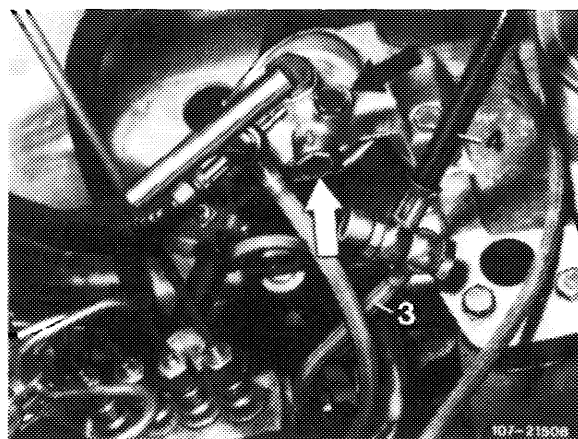
3rd version with quick-action lock



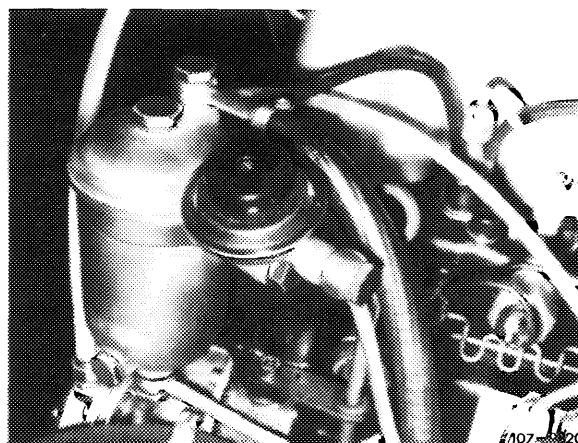
Quick-action lock for 3rd version



5 Connect feed line (3) to injection pump with connecting line (4) of pump unit by means of a double hollow screw. Close connecting holes on fuel filter with closing plugs (arrows).



On fuel filters of 1st version, the fuel feed to injection pump is located on lower half of filter. On this version, the pump unit is connected directly to injection pump. Close screwed-off line.



6 Clamp connecting cable of pump unit to vehicle battery (red terminal positive, black terminal negative).

7 Rotate crankshaft in direction of rotation of engine up to approx.  $35^{\circ}$  before TDC in compression stroke of first cylinder. Engage pump unit.

**Attention!**

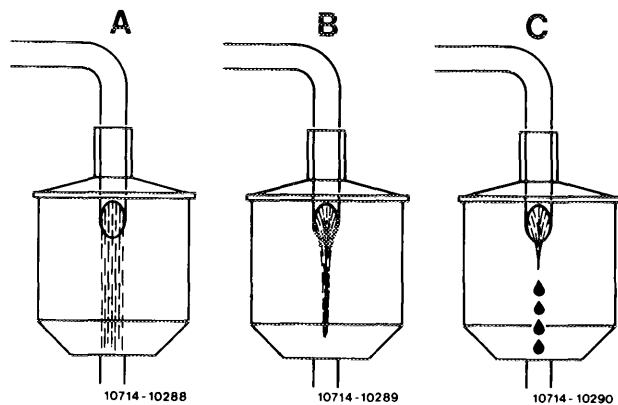
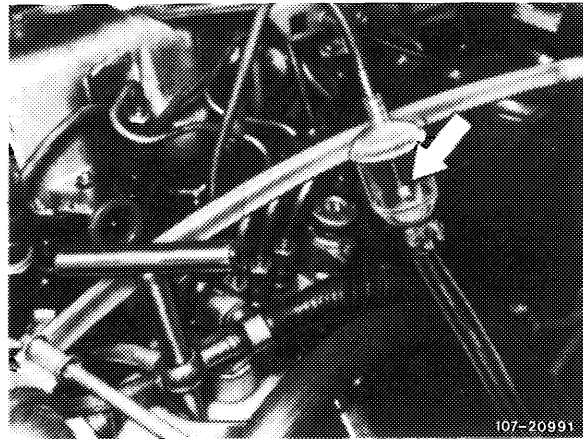
Engage pump unit only for measuring. If an injection nozzle is leaking, fuel may enter combustion chamber.

8 Slowly rotate crankshaft in direction of rotation of engine, while watching fuel jet in sight glass.

**If fuel jet turns into a chain of drops, begin of delivery has been attained.**

In this position, read begin of delivery on graduated scale on **balancing disc**.

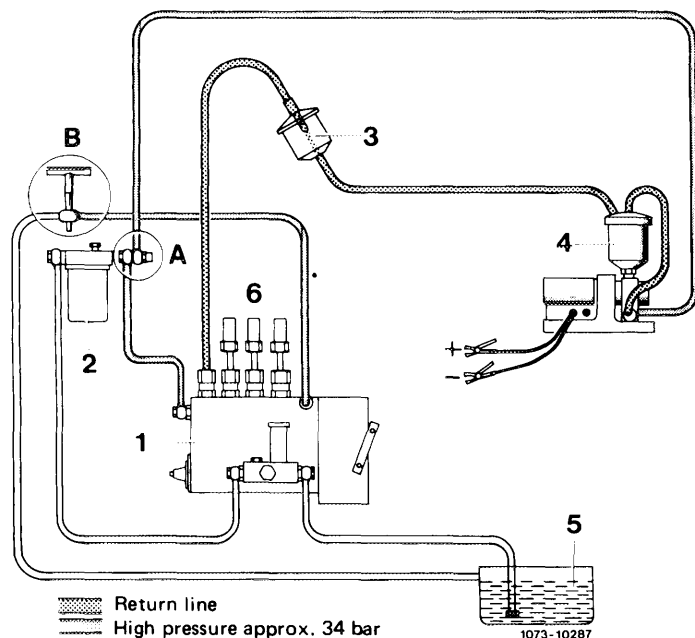
Nominal value:  $24^{\circ}$  or  $26^{\circ}$  before TDC.



9 Disconnect pump unit. Assemble injection system.

10 Vent injection system (07.1-140). Run engine and check all connections for leaks.

Connection diagram high pressure – overflow method



- 1 Injection pump
- 2 Fuel filter
- 3 Sight glass

- 4 Pump unit
- 5 Fuel tank

- A Hollow screw, fuel feed from pump unit
- B Fuel return line closed with quick-action lock or closing bracket