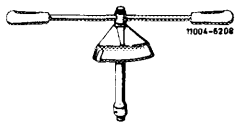
Tightening torques

Designation	Injection pump abbreviation	Engine	Nm
Pipe connection for pressure valve	M, MRSF	615, 616, 617	35
	MW	616, 617	40–50
Injection line	M, MW, M/RSF	615, 616, 617	25

Special tools

Torque wrench 1/2" square, 15–65 Nm	 11004-6208	000 589 27 21 00
Box wrench insert open, 17 mm, 1/2" square for injection lines	 11004-6359	000 589 68 03 00
Socket wrench insert notched tooth 17 x 20, 1/2" square for pipe connection M/RSF-injection pump	 11004-8544	617 589 01 09 00[1]

[1] Machine socket wrench insert 617 589 00 09 00 (refer to 07.1–210).

Note

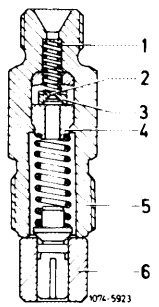
(USA) starting model year 1975

To reduce hydrocarbons in exhaust gases, the injection pump is provided with a relief throttle. The relief throttle is in pipe connection of injection pump, so that the pipe connection will be higher.

Engine 616 by 8.5 mm with M-injection pump.
Engine 616, 617 by 7 mm with MW-injection pump.

The relief throttle (2) is a plate valve opening in direction of injection nozzle and provided with a throttle bore of 0.6 mm dia. The plate valve (3) is riveted in space above pressure valve spring.

1 Compression spring
2 Relief throttle
3 Plate valve
4 Valve seat
5 Pipe connection
6 Pressure valve carrier with pressure valve

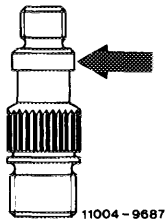


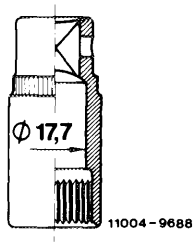
The relief throttle permits the fuel to pass in direction of injection nozzle. The pressure wave from injection nozzle in direction of injection pump, which is caused upon injection by the afterpumping effect of the nozzle needle while closing, is damped by the relief throttle. This will prevent the pressure wave from subsequently flowing back to injection nozzle and from setting up a re-injecting effect there. Re-injection would result in an increase of hydrocarbons in emissions.

Modified pipe connection on M/RSF-injection pump (engine 615, 616 and 617)

Since May 1980 a modified pipe connection with 17.4 mm OD (formerly 16 mm) is installed. For this connection and the former pipe connection, socket 617 589 01 09 00 is valid.

The socket 617 589 00 09 00 supplied up to now can be refinished as required by machining the ID to 17.7 mm. Then change part number of wrench to 617 589 01 09 00.





A. Engine 615, 616, 617 M-injection pump with pneumatic governor and M/RSF-injection pump with mechanical governor

Removal

1 Clean injection pump on coupling nuts of injection lines and on pipe connections.

2 Unscrew injection lines, clamping jaws or locking plate and pipe connection.

3 Remove compression spring, copper sealing ring and pressure valve with pressure valve carrier.

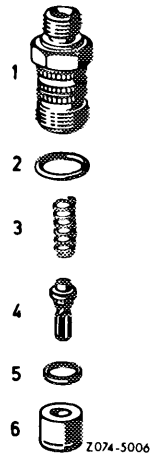
4 Flush suction chamber of injection pump by actuating manual delivery pump. Remove foreign particles, if any.

Installation

5 Clean pressure valve and pressure valve carrier, pay attention to easy operation and damage.

6 Insert pressure valve carrier (6) with ring groove in downward direction, pressure valve (4) and **new** copper sealing ring (5).

7 Mount compression spring (3) on pressure valve.



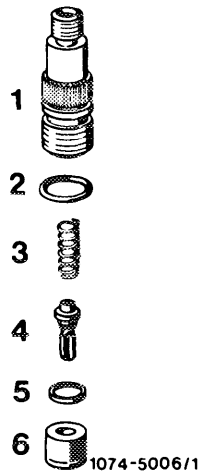
M-injection pump
1 Pipe connection
2 Rubber sealing ring
3 Compression spring
4 Pressure valve
5 Copper sealing ring
6 Pressure valve carrier

8 Slightly lubricate pipe connection and screw in with **new** rubber sealing ring (2).

9 For perfect seat of copper sealing ring (5), tighten pipe connection as follows:

Tighten pipe connection to 30 Nm and release again. Tighten once again to 30 Nm and also release again.

Then tighten to 35 Nm.



M/RSF-injection
1 Pipe connection
2 Rubber sealing ring
3 Compression spring
4 Pressure valve
5 Copper sealing ring
6 Pressure valve carrier

10 Mount injection lines and clamping jaws or locking plate and vent injection system (07.1–140).

11 Run engine, check for leaks and quiet idle speed.

B. Engine 616, 617 MW-injection pump with mechanical governor

Note

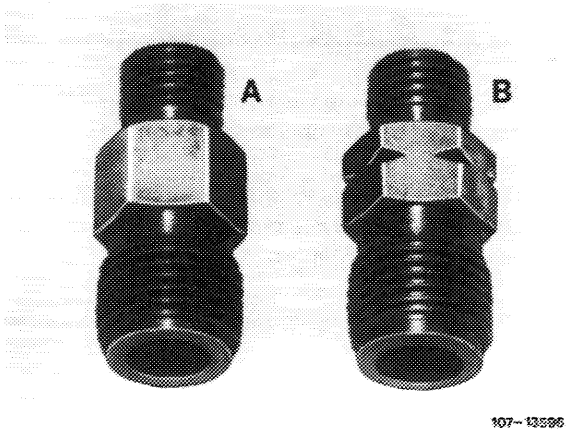
In the event of leaks between pipe connection and element connection proceed as follows:

a) Pipe connection with ring groove on hex head

Replace rejected pipe connection only.

b) Pipe connection without ring groove on hex head

Replace all 5 pipe connections, even if only a single pipe connection is leaking.



A Pipe connection without ring groove
B Pipe connection with ring groove

Start of production: Pipe connection (B) with ring groove engine 616 (USA) model year 1977 starting begin of production.

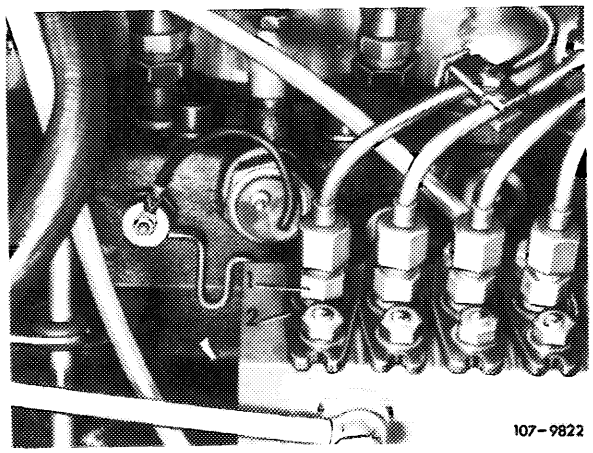
Engine 617 starting November 1975. Injection pump production date 531.

Removal

1 Clean injection pump on coupling nuts of injection lines and on pipe connections.

2 Unscrew injection lines and pipe connection.

Attention!
Do not loosen element connection (2), since otherwise a basic adjustment of injection pump on injection pump test bench will be required.



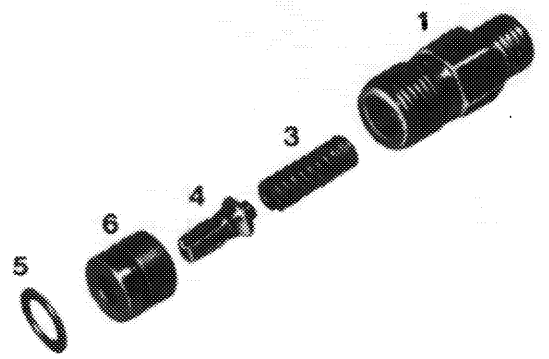
3 Remove compression spring, copper sealing ring and pressure valve with pressure valve carrier.

4 Flush suction chamber of injection pump by actuating manual delivery pump. Remove foreign particles, if any.

Installation

5 Clean pressure valve and pressure valve carrier, check for easy operation and damage.

6 Insert new copper sealing ring (5) **under** pressure valve carrier (6). Install pressure valve carrier (6) with ring groove in downward direction. Mount pressure valve (4) and compression spring (3) again.



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1 Pipe connection
3 Compression spring
4 Pressure valve
5 Copper sealing ring
6 Pressure valve carrier

7 Slightly lubricate pipe connection (1) on threads, screw in and tighten in **one step** to 40–50 Nm.

8 Mount injection lines and vent injection system (07.1–140).

9 Run engine, check for leaks and quiet idle speed.