

07.1–115 Adjusting injection pump for begin of delivery (after checking begin of delivery)

Special tool

Socket 13 mm, 3/7" square



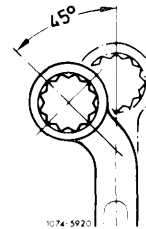
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Preparation for testing

Prior to adjusting begin of delivery, check begin of delivery of cylinder 1 (07.1–109 or 07.1–110).

A. Preparation for adjustment

- 1 Set crankshaft in direction of rotation to 24° or 26° before TDC in compression stroke of first cylinder.
- 2 Loosen fastening nuts on injection pump flange and nut or screw on supporting bracket.

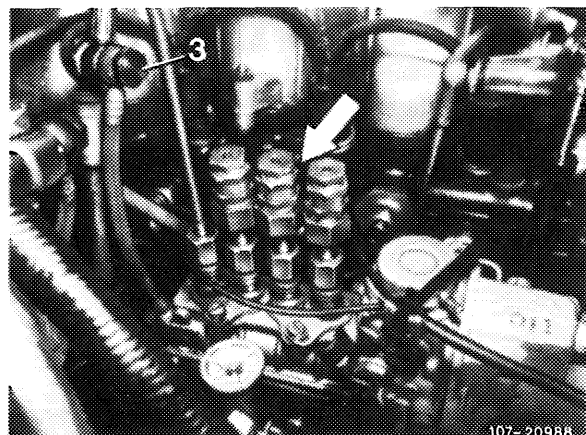


Attention!

On engine 617 in model 115.1 use self-offset 13 mm box wrench for loosening and tightening front fastening nuts.

B. Adjusting according to high pressure-overflow method

- 1 Unscrew all injection lines.
 - 2 Screw pressure limiting valves (arrow) on pipe connections of injection pump.
- Pressure limiting valves are required for protection of injection pump, e. g., when rotating by means of starter.



3 Engage pump unit.

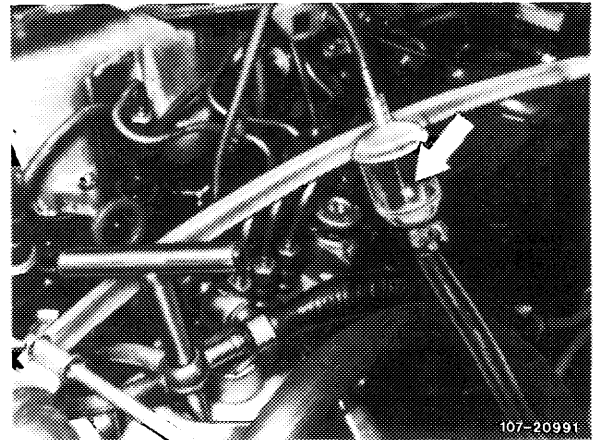
4 Swivel injection pump while watching fuel jet. As soon as fuel jet changes into a chain of drops (arrow) begin of delivery has been attained.

Nominal value: 24° or 26° before TDC.

Swivel direction of injection pump

Toward engine = earlier begin of delivery
 Away from engine = later begin of delivery

Note: If adjusting possibilities are not enough, displace injection pump (07.1–205).



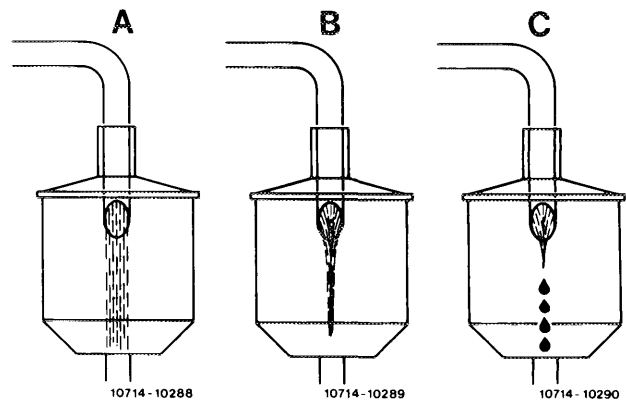
5 Repeat checkup of begin of delivery.

6 Disconnect pump unit.

7 Assemble injection system.

8 Vent injection system (07–140). Run engine and check all connections for leaks.

- A Fuel jet full
- B Fuel jet restricted shortly before begin of delivery
- C Chain of drops begin of delivery

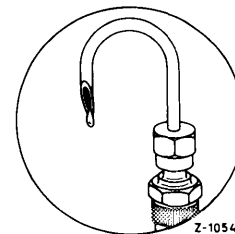


C. Adjusting according to low pressure-overflow method

1 Swivel injection pump until fuel at overflow pipe changes to drops. Formation of drops: One drop per second.

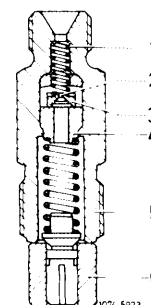
Attention!

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

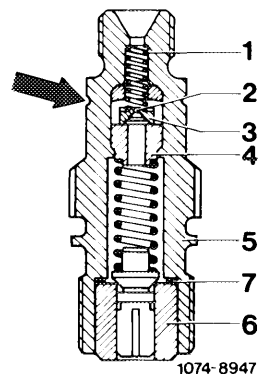


Note: On pipe connections with relief choke (2), on M/RSF-injection pump identified by a ring groove on pipe connection (arrow), no full fuel jet will come out of overflow pipe. But the measuring accuracy will not be impaired.

Pipe connection MW-injection pump



Pipe connection M/RSF-injection pump



Swivel direction of injection pump

Toward engine = earlier begin of delivery

Away from engine = later begin of delivery

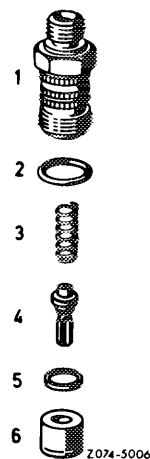
Note: If adjusting possibilities are not enough, displace injection pump (07.1–205).

- 2 Attach injection pump.
- 3 Repeat checkup of begin of delivery.
- 4 Unscrew overflow pipe and pipe connection.
- 5 Mount pipe connection:

a) Engine 615, 616 with M-injection pump

6 Remove delivery valve carrier (6), check whether delivery valve (4) is freely rotating in delivery valve carrier (6).

- 1 Pipe connection
- 2 Rubber sealing ring
- 3 Compression spring
- 4 Delivery valve
- 5 Copper sealing ring
- 6 Delivery valve carrier



- 7 Insert pressure valve carrier (6) with ring groove in downward direction.
- 8 Insert delivery valve (4), new copper sealing ring (5) and compression spring (3).
- 9 Check rubber sealing ring (2) for wear and replace, if required.
- 10 Slightly lubricate pipe connection (1) on threads and screw-in.

For perfect seat of copper sealing ring, tighten pipe connection as follows:

Tighten pipe connection to 30 Nm, slacken. Tighten once again to 30 Nm and slacken again.

Then tighten to 35 Nm.

11 Mount injection lines and clamping jaws and vent injection system (07.1–140).

12 Run engine and check all connections for leaks.

b) Engine 615, 616, 617 with M/RSF-injection pump

Insert delivery valve (4), new copper sealing ring (5) and compression spring (3).

13 Remove delivery valve carrier (6). Check whether delivery valve (4) is freely moving in delivery valve carrier (6).

14 Insert delivery valve carrier (6) with ring groove in downward direction.

15 Insert delivery valve (4), new copper sealing ring (5) and compression spring (3).

16 Check rubber sealing ring (2) for wear and renew, if required.

17 Slightly lubricate pipe connection (1) on threads and screw-in.

To obtain a perfect seat of copper sealing ring (5) tighten pipe connection as follows:

Tighten pipe connection to 30 Nm and slacken. Tighten once again to 30 Nm and slacken again.

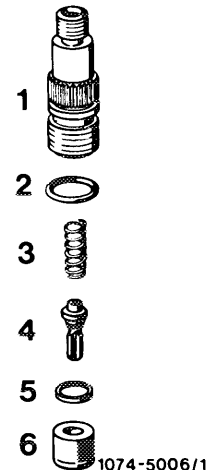
Then tighten to 35 Nm.

18 Mount injection lines and locking plate and vent injection system (07.1–140).

19 Check regulating linkage and adjust, if required (30–300).

20 Run engine and check all connections for leaks.

- 1 Pipe connection
- 2 Rubber sealing ring
- 3 Compression spring
- 4 Delivery valve
- 5 Copper sealing ring
- 6 Delivery valve carrier

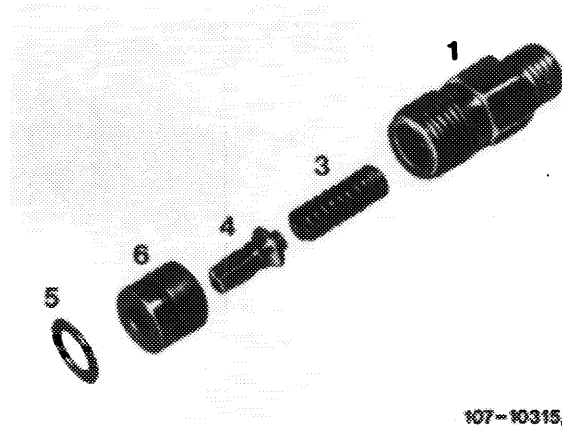


c) Engine 616, 617 with MW-injection pump

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

Attention!

The copper sealing ring (5) is installed under pressure valve carrier (6) and need not be replaced.



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Mount injection line and bleed injection system (07.1-140).

Check regulating linkage and adjust, if required (30-300).

Run engine and check all connections for leaks. If a pipe connection is leaking, install new pipe connection with annular groove. When installing a new pipe connection, **renew** copper sealing ring **under pressure valve carrier** (07.1-210).