

INFORMATION ONLY

Instructions for inspecting nozzles in a nozzle holder assembly (NHA)

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T002

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**This instruction manual applies to the following nozzle types:
DLLA S and DLLA P nozzles except DLL S nozzle 038 326 322**

The inspection should be performed with a standard nozzle tester acc. to DIN ISO 8984-1,
e.g. Monark No. 030 000 308.

Inspection is performed acc. to DIN ISO 8984-2:

- a) Opening pressure
- b) Leakage of needle seat
- c) Chattering
- d) Atomization / spray picture
- e) Leakage between nozzle needle and nozzle body

**For the inspection pure testing oil e.g. acc. to ISO 4113 Shell 61 v 11 or pure diesel fuel
must be used.**

WARNING: NEVER USE GASOLINE! DANGER OF EXPLOSION!!!

The nozzle holder, together with the pressure line, is mounted onto the nozzle tester.
To check if the nozzle is mounted properly, forcefully push down the lever of the nozzle tester
several times with the manometer turned off (6-8 x / sec.)

Under perfect condition with the nozzle needle sliding without problems, the nozzle should
chatter with a high whistling sound. If not, untighten the cap nut, turn the nozzle and tighten
again.

Exception: Nozzles with one (1) or two (2) spray holes will not chatter under manual testing.

a) Check the opening pressure:

The opening pressure can be found in the instruction manual of the engine manufacturer.
Slowly push down hand lever until nozzle sprays with a light chattering.
Read opening pressure from the manometer. If the pressure is different from the specified
pressure, exchange the (pressure) adjustment shims.

The atomization should not be judged when doing this check!

ATTENTION:

**If manometer is open, increase and release pressure slowly as manometer
could be damaged!**

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b) Leakage of the needle seat:

Use hand lever of the nozzle tester until pressure is 20 bar below the specified opening pressure.

There is no leakage of the nozzle if there is no drop of fuel falling from the mouth of the nozzle within ten (10) seconds.

If nozzle leaks, disassemble the unit and clean the nozzle.

c) Chattering:

Always turn off the manometer for this test. All nozzles should chatter when slowly moving the hand lever (1-2 movements = 1,5 – 2,0 sec.).

The atomization should not be judged when doing this check! The atomization / spray performance should only be judged with fast lever movements (1-2 movements = 0,2 - 0,4 sec.).

The quality of chatter is graded into different groups (I, II, III):

Chatter Group I:

- Good chattering in the full range of hand lever speed.
- Lowest testing speed, dissolved sprays with high atomization.
- With increasing hand lever speed, atomization will also increase.

Chatter Group II:

- Good chattering at either low or fast hand lever speed. In between, chattering may periodically disappear showing line sprays with poor atomization.
- At low hand lever speed, dissolved sprays with high atomization.
- With increasing hand lever speed, atomization will also increase.

Chatter Group III:

- Chattering at either low or fast hand lever speed. In between, chattering may disappear showing line sprays with poor atomization up to high hand lever speeds.
- At high hand lever speed, atomization will be as specified.

WARNING:

Keep hands away from the nozzle spray!

The spray from a nozzle can penetrate deeply into the flesh of the fingers or hand and destroy the tissues.

Fuel oil entering the blood stream can cause blood poisoning.

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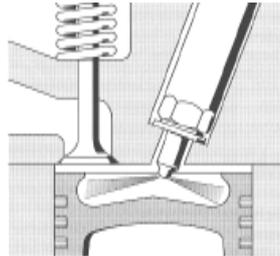
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d) Atomization / Spray picture:

The atomization should be cone shaped with a fine spray.
coarse streaks are not acceptable!



e) Leakage between nozzle needle and nozzle body:

Before performing this test, make sure that test **b) Leakage of the needle seat** was within tolerance. The NHA has to be cleaned by five (5) hand lever movements with the stop valve of the manometer closed.

Afterwards open the stop valve fully and move the lever to increase the opening pressure “**PA**”, release the hand lever so that the pressure drops without external influence.

Measure the time (which is required due to the testing liquid leakage between the nozzle needle and the nozzle body) for the decrease of pressure from an upper point of pressure decrease “**PB**” to a lower point of pressure decrease “**PC**”.

“**PA**”: Opening pressure

“**PB**”: Upper point of pressure decrease

“**PC**”: Lower point of pressure decrease

Nozzle tester Monark No.: 038 000 308

The pressure decrease time depends on various criteria e.g.:

- Testing liquid
 - Testing temperature
 - Capacity of the testing equipment
- For reference values and other testing criteria for the respective nozzle types please contact us. _____



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