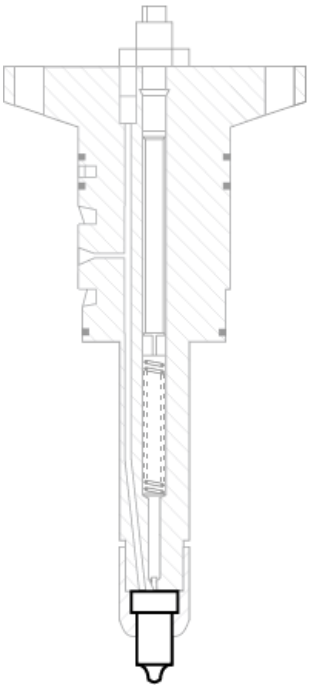
Action code: WHEN CONVENIENT

Cleaning of fuel injection nozzles

SL2021-719/JNN
December 2021

Concerns
Owners and operators of
MAN four-stroke engines.
Type:
Marine: L16/24, L21/31, L27/38, L23/30H, L23/30H Mk2, L23/30H Mk3, L28/32H
Stationary: L16/24S, L21/31S, L27/38S, L23/30S, L28/32S, V28/32H, V28/32S
Propulsion: L21/31, L27/38, L23/30A, L28/32A, V28/32A
Not applicable for Dual Fuel engines

Reference:
Work card 514-01.02 / 614-01.02
Planned maintenance programme 500.23 / 600.23



Dear Sir or Madam

By this Service Letter we would like to draw your attention to the procedure for cleaning of the injection nozzles on our four-stroke small bore engines.

Our latest recommendation is to extend the time between overhaul of the fuel injection valves to 8,000 running hours.

Previously, we recommended to test of the opening pressure every 2,000 running hours. A test normally reveals a drop in the opening pressure compared to new injection valves. The design allows for such a pressure drop, and it is present on all fuel valves for all engine types. However, it does not call for readjustment of the opening pressure.

The drop in pressure is separated in two phases. The first and biggest drop is experienced while new parts are running in, and it is therefore called the running-in effect. The second phase has a very slow and moderate pressure drop and is caused by wear.

Thus, it is only recommended to remove the injection valve from the engine for testing if one of the following conditions occur:

1. High exhaust gas temperature alarm before turbocharger
2. Exhaust gas deviation alarm
3. Visible exhaust smoke
4. TBO of the fuel valve is reached

In case operational issues require testing of the injection nozzle, the following procedure must be followed.

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Cleaning

Clean the complete injection valve with approved cleaning fluid and Scotch Brite or similar, and remove coke deposits by using a hard brush.

NOTICE For the injection nozzle, only use a wooden spatula in order not to damage the nozzle holes. Clean the cylindrical projection of the nozzle body with particular care.

Step 1 – Leakage test

Bring the complete valve to the pressure tester and make sure that the gauge indication is 0 bar before starting the test. Connect the valve to the tester and increase the pressure to 250 bar and keep the pressure by working the lever slowly downwards. When the pressure is kept at 250 bar, there should be no more than one drip from the nozzle tip for approx. 3-5 sec.
If drops can be seen, make sure that they are not coming from the leakage holes in the nozzle body.

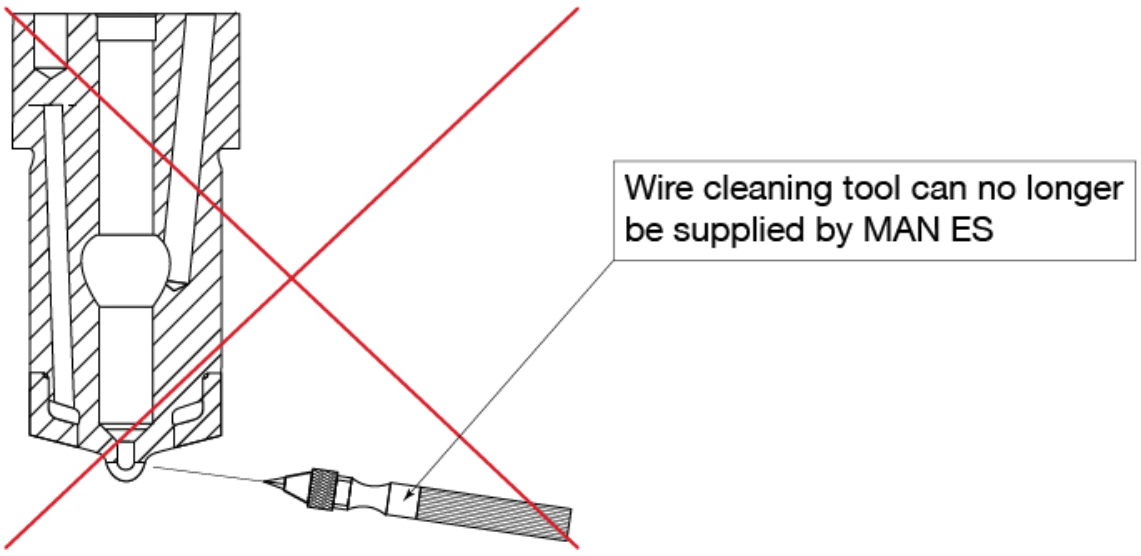
Step 2 – Opening pressure

Bring the hydraulic pressure slowly past the test pressure to avoid errors while reading the indicator. When the nozzle sprays above the min. and below the max. allowed test pressure, everything is in order. Remember the measured value for step three.
Min. and max. values are found in the engine specific work cards.

Step 3 – Blocked holes

This step is only to be performed if one or more holes are blocked in the nozzle during step two.
If the nozzle holes are blocked, the complete injector must be soaked in anti-corrosion oil or clean diesel oil. Clean the nozzle tip with a nylon sponge.

NOTICE Do not use rotating steel brush or similar, and also we do not recommend a wire cleaning device due to the risk of altering the geometry of the nozzle holes. Therefore the wire cleaning tool can no longer be supplied by MAN ES.

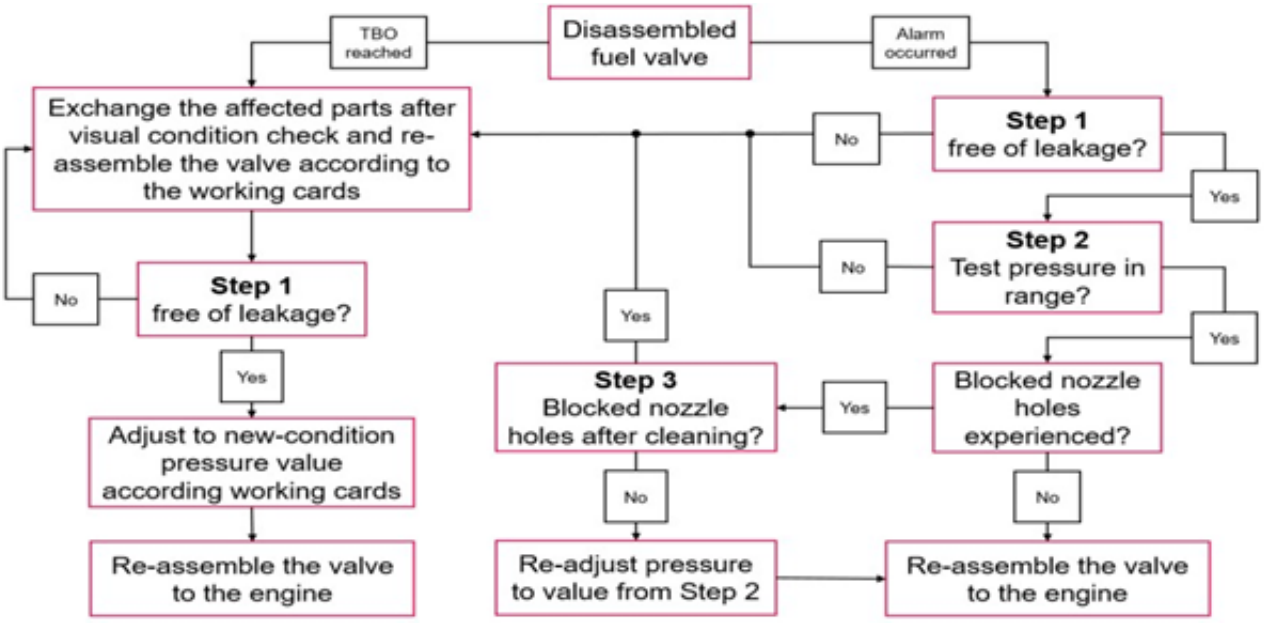


Mount the nozzle in the testing tool after the manual cleaning and turn back the adjusting screw until the spring is completely released. Actuate the pump uniformly and monitor the sprays coming out of the nozzle. If all holes are free, readjust the test pressure to the value measured during step two.

If the nozzle holes cannot be cleaned satisfactorily by the above procedure, we recommend to install a new nozzle and spring.

The test pressure must only be readjusted to the pressure of a new valve if a new nozzle and spring are installed.

The below flowchart describes the process for test and overhaul of the fuel valve.



For inquiry concerning parts, or questions to this Service Letter, please contact our PrimeServ Department by email.

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