

**SERVICE LETTER**  
**920161**

**Instruction for disassembly, cleaning and testing SIP III valves onboard.**

***We recommend that SIP III valves are returned to HJL for overhaul.  
If an overhaul onboard is necessary, please follow below instruction.***

## **1. Disassembling and cleaning SIP III valves**

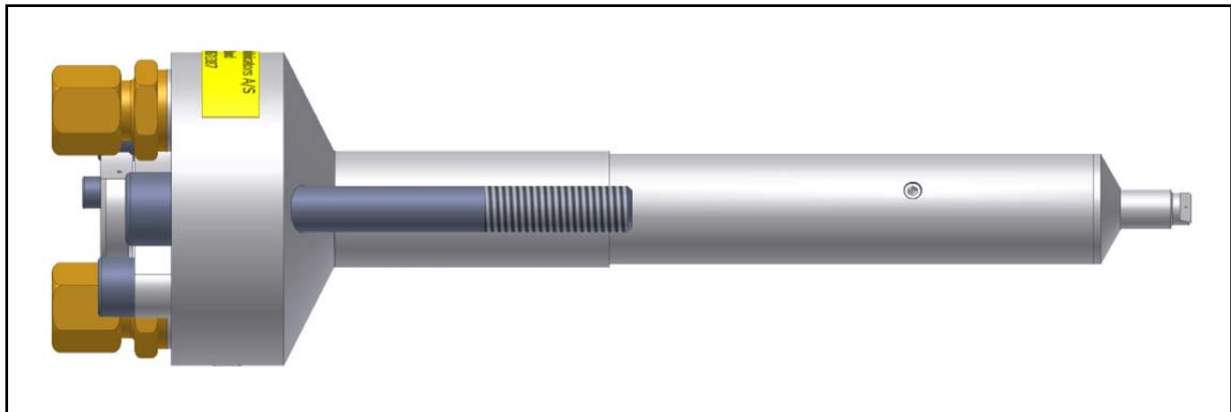
### **1.1 Preparation**

It is important that the work is carried out in a completely clean environment.

For the cleaning of the valves, use kerosene for cleaning the parts, a  $\varnothing 0.3$ mm drill for cleaning the nozzle hole, compressed air free from water and impurities for blowing the parts clean and rags free from fluff.

### **1.2 Disassembly of SIP III valve**

1.2.1 Clean the valve carefully on the outside before commencing disassembly.



## 1.2 Disassembly of SIP III valve (continued)

1.2.2 Loosen screw (1) and (2) completely and remove them together with the lock cover (3).

1.2.3 With your fingers, carefully pull out the unit consisting of the guide for adjustable screw (4) and the adjustable screw (5) with the adjustable spring nut (6).

1.2.4 Place the valve in the fixing tool (HJL no. 980192).

1.2.5 Unscrew the tightening bush (7) completely with special tool (HJL no. 980191).

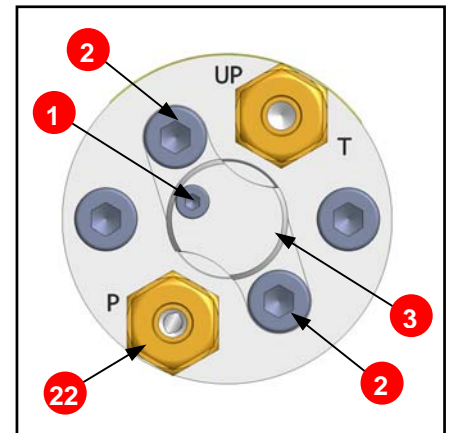
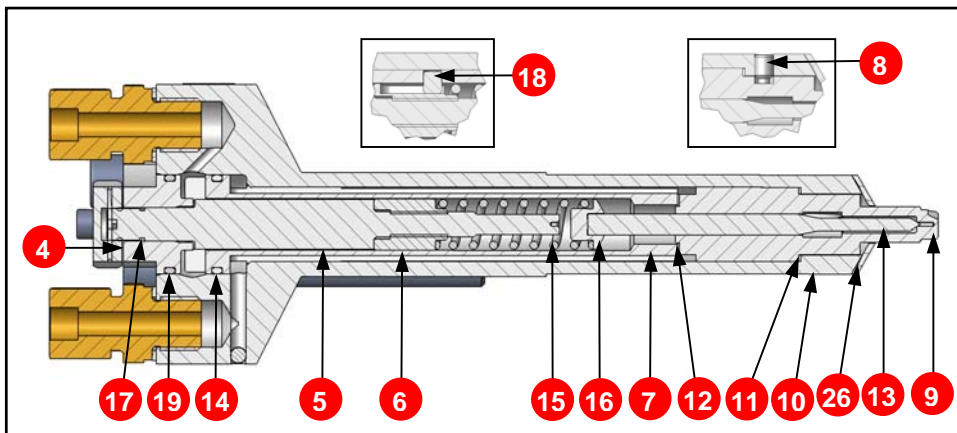
1.2.6 Dismantle the pointed screw (8), so that the nozzle (9) can be removed from the valve housing (10).

1.2.7 Turn the valve upside down (keep your hand beneath it) with the oil connection turned downwards, so that all parts can slide out of the valve housing (10).

1.2.8 Press on the nozzle tip (9) with your finger so that the nozzle (9) slides out of the valve housing (10).

1.2.9 It is essential to be very careful during Dismantling in order not to damage, bump, or drop any of the parts or bring impurities into them.

1.2.10 Do not bump the valve parts and be careful not to drop the loose parts.



### 1.3 Cleaning

Clean the individual parts with kerosene. Clean the nozzle hole carefully with a  $\varnothing 0.3\text{mm}$  drill. Blow the parts through with compressed air inside out.

If the needle (13) in the nozzle (9) does not move freely and without resistance as it is supposed to do after cleaning, it must be removed and replaced.

Both the needle (13) and the nozzle (9) must be removed and replaced as the parts are matched together in pairs.

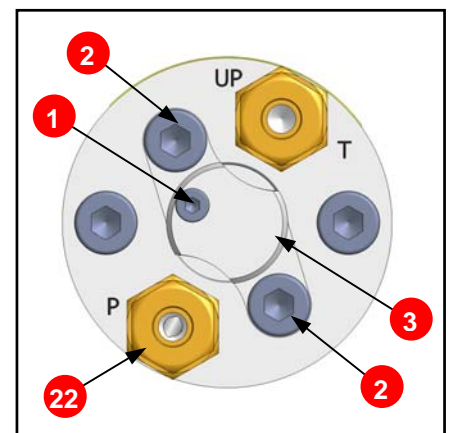
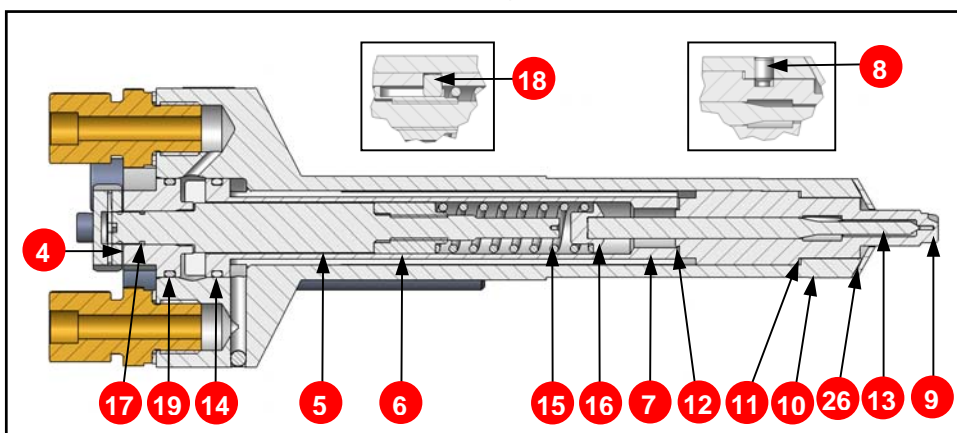
### 1.4 Assembly of the SIP III valve

It is important that the components are placed at the same positions as before the valve was disassembled. Please note that the carrier between the tightening bush and the nozzle is different.

We recommend a change of all packing after disassembly of a SIP III valve. Packing set, item no. 950202 (MC engines) or 950203 (RT/UEC engines).

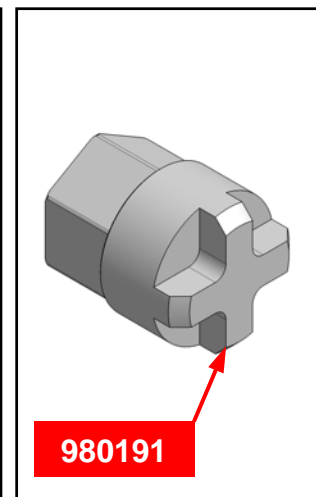
Oil all parts with thin acid-free oil, e.g. hydraulic oil SAE 10-20 before assembly.

- 1.4.1 Place the copper gasket (11) at the bottom of the valve housing (10). Look into the valve housing (10) to ensure that the copper gasket (11) is correctly placed at the bottom of the valve housing (10).
- 1.4.2 Place copper gasket (12) on nozzle (9).
- 1.4.3 Push the complete nozzle (9) and needle (13) set including copper gasket (12) into the valve housing (10) with the nozzle tip first.



#### 1.4 Assembly of the SIP III valve (continued)

- 1.4.4 Mount the pointed screw (8) loosely so that the tip catches the groove in the nozzle (9).
- 1.4.5 Mount a new o-ring (14) on the tightening bush (7). Place the valve in the fixing tool (HJL no. 980192).
- 1.4.6 Screw the tightening bush (7) with spring (15) and spring disc (16) into the valve housing (10). Apply the spanner (HJL no. 980191) and tighten to 70 Nm.
- 1.4.7 Mount new O-rings (17) on the adjustable screw (4).
- 1.4.8 Carefully push the adjustable screw (5) with adjustable spring nut (6) into the tightening bush (7). The groove in the adjustable spring nut (6) must catch the guide pin (18) inside the tightening bush (7).
- 1.4.9 Mount a new O-ring (19) on the guide for adjustable screw (4). Mount the guide for adjustable screw (4) on the valve housing (10) with the screw (2) and tighten to 10 Nm.
- 1.4.10 Dismantle the pointed screw (8), degrease with petrol or similar. Apply Loctite 243 or similar to the thread. Mount the pointed screw (8) in the valve housing (10) and tighten loosely.



## 2. Adjustment and test of SIP III valves

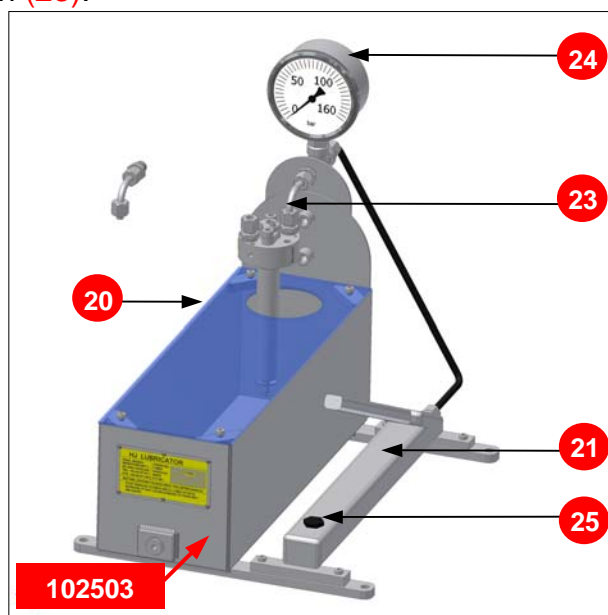
### 2.1 Safety precautions

Before mounting the SIP III valve in the HJ Test rig (HJL no. 102503) make sure that the following safety precautions are followed:

- 2.1.1 During testing make sure that eyes and hands are in a safe distance from the nozzle.
- 2.1.2 Make sure that the cover (20) is mounted on the HJ Test rig.
- 2.1.3 The max. permissible flow to the hand pump (21) must not exceed a flow corresponding to the adjustment of the lubricator, approx 0.4l/h.

### 2.2 Testing

- 2.2.1 Loosen and remove the screw (25). Fill the hand pump (21) with hydraulic oil SAE 10-20 at the oil-filling branch. Remember to mount the screw (25) after filling.
- 2.2.2 Place the SIP III valve in the HJ Test rig (102503). Connect the union (23) to the joint marked "P" (22) on the SIP I valve. Before tightening the union (23), pump with the hand pump (21) until the oil flows at the union (23). Then tighten the union (23).



## 2.2 Testing (continued)

2.2.2 Pump with the hand pump and adjust the closing pressure according to manometer (24) on the HJ Test rig during pumping to  $35^{+5}_0$  bar by screwing the adjustment screw (5) on the SIP III valve anti-clockwise for higher pressure or clockwise for lower pressure.

2.2.3 Correct spray is checked when pumping with the hand pump. There is to be a continuous cone of droplets of oil through the nozzle hole – “droplets” is not accepted.

2.2.4 If the spray is not acceptable, impurities have entered the valve and a disassembly and a cleaning is necessary. If the valve needle (13) does not move freely after cleaning, the nozzle (9) must be replaced.

2.2.5 Mount the lock cover (3) with the screw (1).

## 2.3 Mounting

2.3.1 The SIP III valve is now ready for mounting in the cylinder. Please follow the instructions for mounting in the HJ SIP III valve manual, section 2.2.

2.3.2 Do not forget to check the distance from the nozzle tip to the cylinder liner running surface – see below table.

Parameter	On delivery	Service
Valve closing pressure	$35^{+5}_0$ bar	Suitable intervals e.g. each time a cylinder is overhauled or every 12,000-15,000 hours.
Leak per SIP III valve	15±10ml/h	The leak quantity may increase over time. Therefore we recommend that it is checked at suitable intervals, e.g. each time a cylinder is overhauled or every 12,000-15,000 hours.
Distance from nozzle tip to running surface	MBD = 1.5 <sup>+0.5</sup> <sub>-0</sub> mm MHI = 2.5 <sup>+0.5</sup> <sub>-0</sub> mm Sulzer = 3 <sup>+0.5</sup> <sub>-0</sub> mm	Suitable intervals e.g. each time a cylinder is overhauled or once every 12,000-15,000 hours. Adjust the distance by means of conical shims (26).