



**HD 1050 DE**

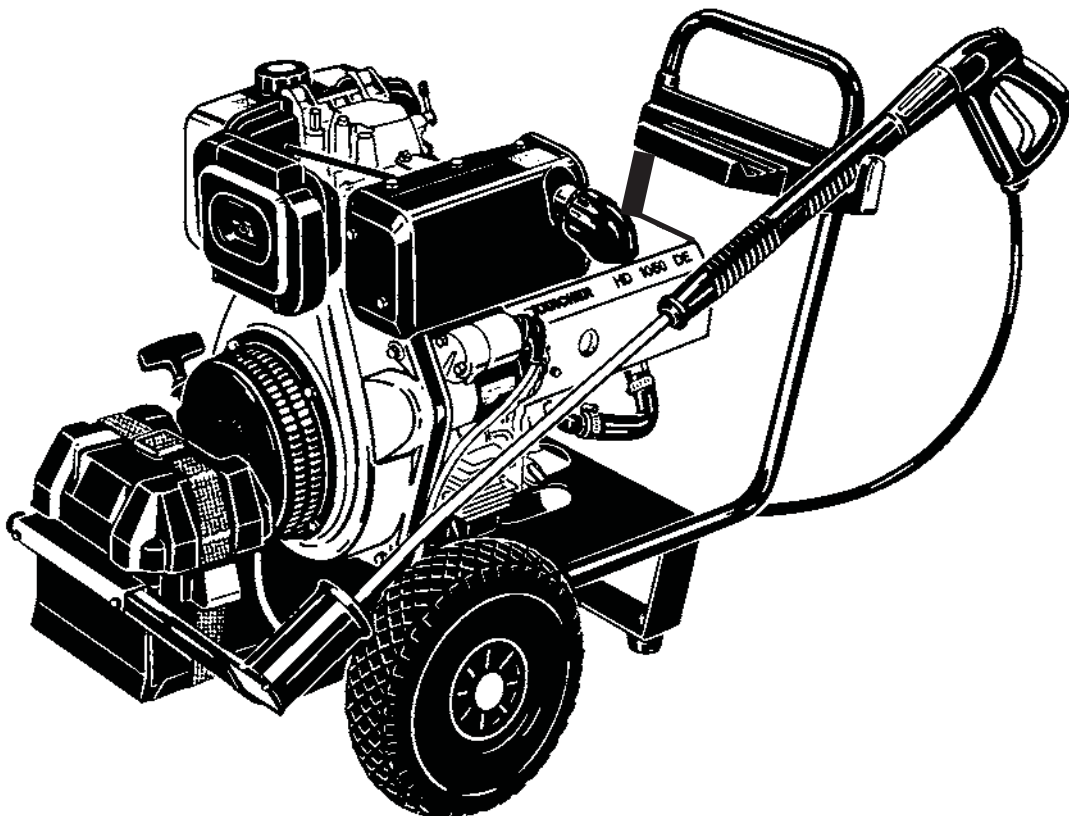
**New Unit Information**

**International Service Information**

**July 22nd, 1999**

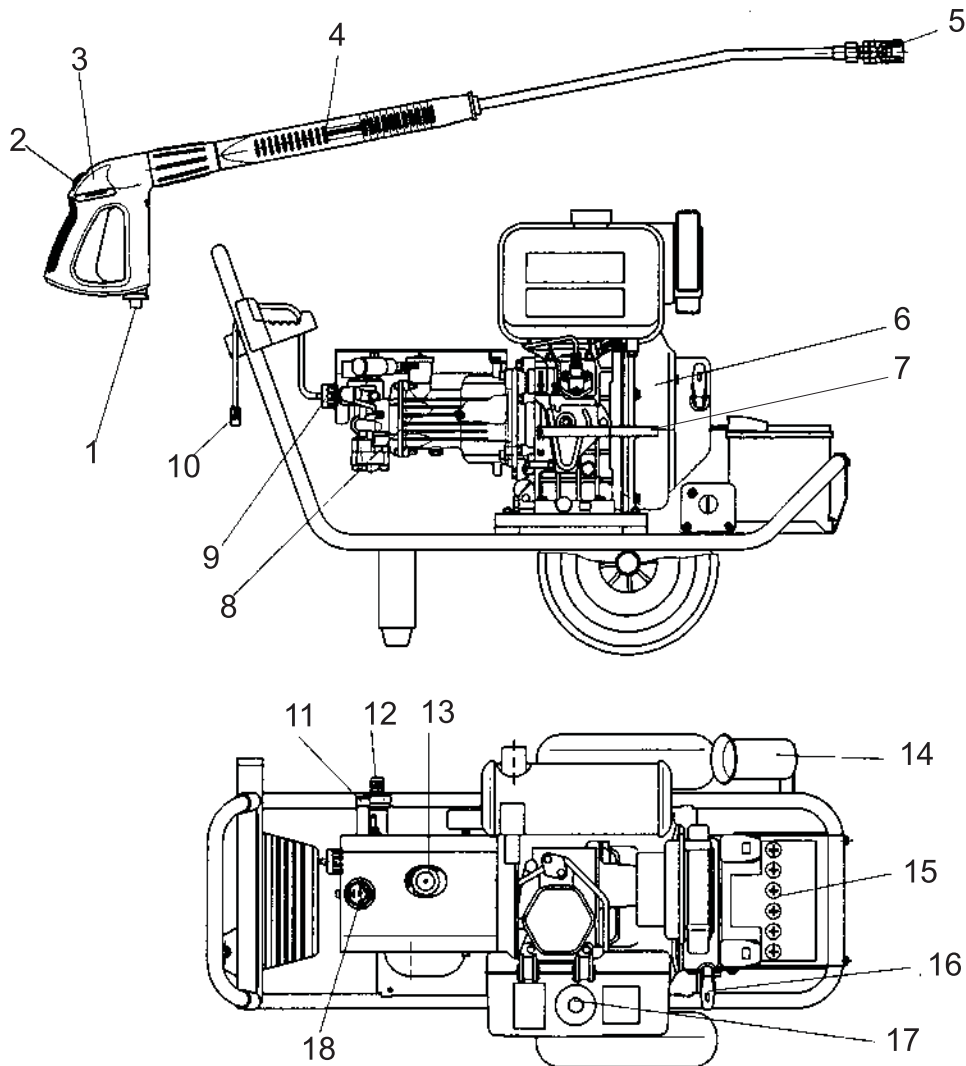
# HD 1050 DE

1.810-988



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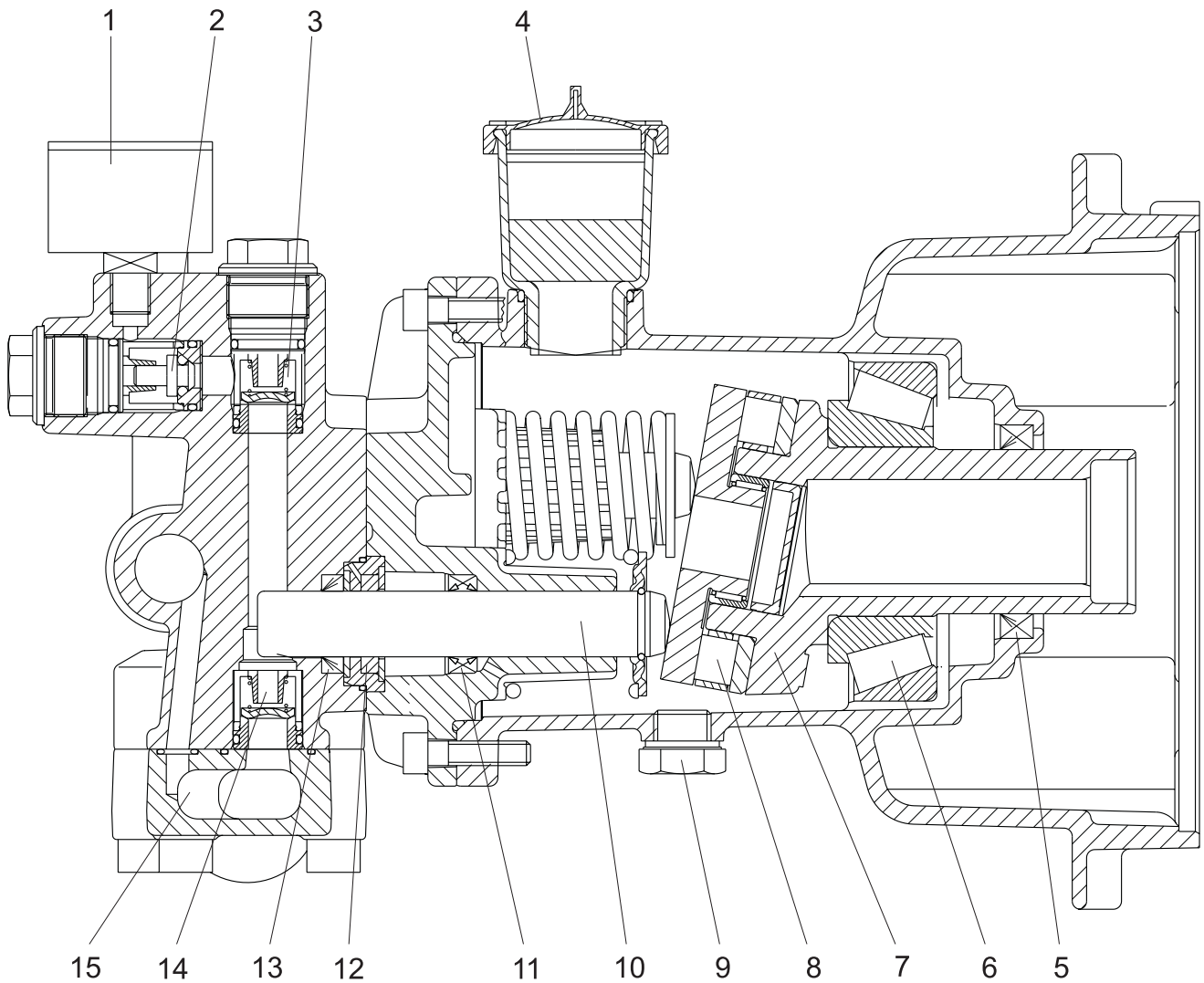
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**Equipment**

- |                                 |                                |
|---------------------------------|--------------------------------|
| 1 High-pressure hose connection | 10 Cleaning agent suction hose |
| 2 Pressure and flow control     | 11 High-pressure connection    |
| 3 Servopress handgun            | 12 Water inlet                 |
| 4 Spray lance                   | 13 Oil reservoir               |
| 5 Three-way nozzle              | 14 Accessories bracket         |
| 6 Diesel engine                 | 15 Battery                     |
| 7 Engine stop lever             | 16 Recoil hand start           |
| 8 High-pressure pump            | 17 Fuel tank                   |
| 9 Cleaning agent metering valve | 18 Pressure gauge              |

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**Technical features: pump**

- |   |                      |    |                    |
|---|----------------------|----|--------------------|
| 1 | Pressure gauge       | 9  | Oil drain plug     |
| 2 | Non-return valve     | 10 | Piston             |
| 3 | Pressure valve       | 11 | Oil seal           |
| 4 | Oil reservoir        | 12 | Low-pressure seal  |
| 5 | Shaft seal           | 13 | High-pressure seal |
| 6 | Swash plate bearing  | 14 | Suction valve      |
| 7 | Swash plate          | 15 | Suction chamber    |
| 8 | Axial roller bearing |    |                    |



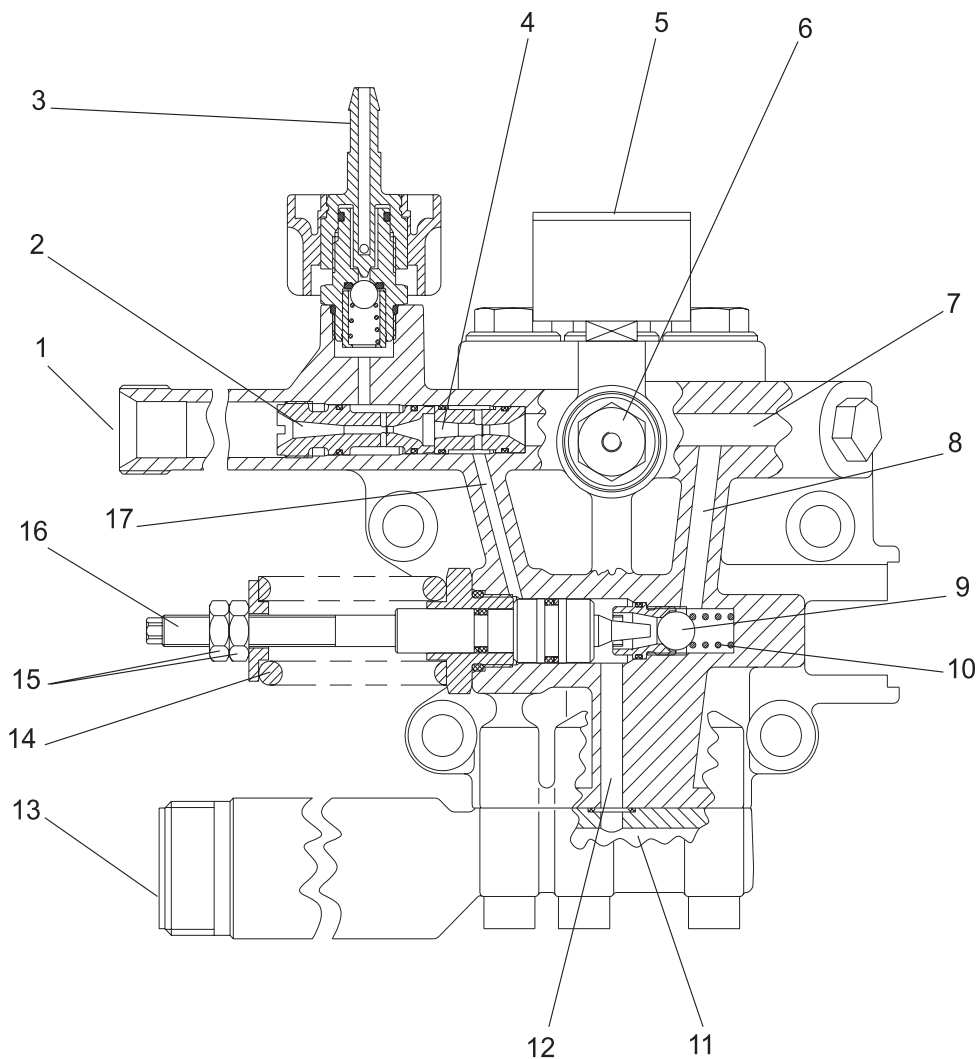
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### Function of the overflow valve



- |   |   |    |  |
|---|---|----|--|
| 1 | High-pressure outlet                              | 10 | Spring   |
| 2 | Cleaning agent injector                           | 11 | Suction chamber  |
| 3 | Cleaning agent connection                         | 12 | Connection bore from overflow valve to suction chamber             |
| 4 | Control pressure injector                         | 13 | Water connection   |
| 5 | Pressure gauge                                    | 14 | Spring   |
| 6 | Screw plug for non-return valve                   | 15 | Adjusting screw with locking nut                                   |
| 7 | Pressure chamber                                  | 16 | Overflow valve spindle   |
| 8 | Connection bore from pressure chamber to ball (9) | 17 | Connection bore from injector to overflow valve (control pressure) |
| 9 | Ball  |    |  |



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### Function of the overflow valve

#### 1. Servopress handgun is open.

When the handgun is completely open, water flows from the pressure chamber (7) through the non-return valve (6) and both injectors (2+4) to the high-pressure outlet (1).

The ball (9) is pressed against the valve seat by the pump pressure, thus sealing the connection bore (12) to the suction chamber (11).

The pressure gauge (5) indicates the operating pressure.

The pressure in the connection bore (17) is approx. 30 bar less due to the injector influence (4) (control pressure).

#### 2. Servopress handgun is partly closed.

When the handgun is partly closed, the pressure in the pressure chamber (7) does not increase. Due to the decreased water flow rate, the influence of the injector (4) is reduced so that the control pressure in the connection bore (17) increases. The increasing control pressure pushes the overflow valve spindle (16) against the spring (14) and slightly to the right. The tip of the spindle pushes the ball (9) off its seat so that part of the water can flow through the connection bores (8) and (12) to the suction chamber (11).

#### 3. Servopress handgun is completely closed.

When the handgun is completely closed, the pressure in the pressure chamber (7) increases. The increased control pressure pushes the overflow valve spindle (16) via the connection bore (17) against the spring (14) completely to the right. The tip of the spindle pushes the ball (9) off its seat, so that the entire water volume can flow through the connection bores (8) and (12) to the suction chamber.

As soon as the handgun is closed, the non-return valve (6) closes. Therefore the entire pressure is trapped in the system between handgun and non-return valve (6).

The pump continues running in circulation mode.

#### 4. Servopress handgun is opened.

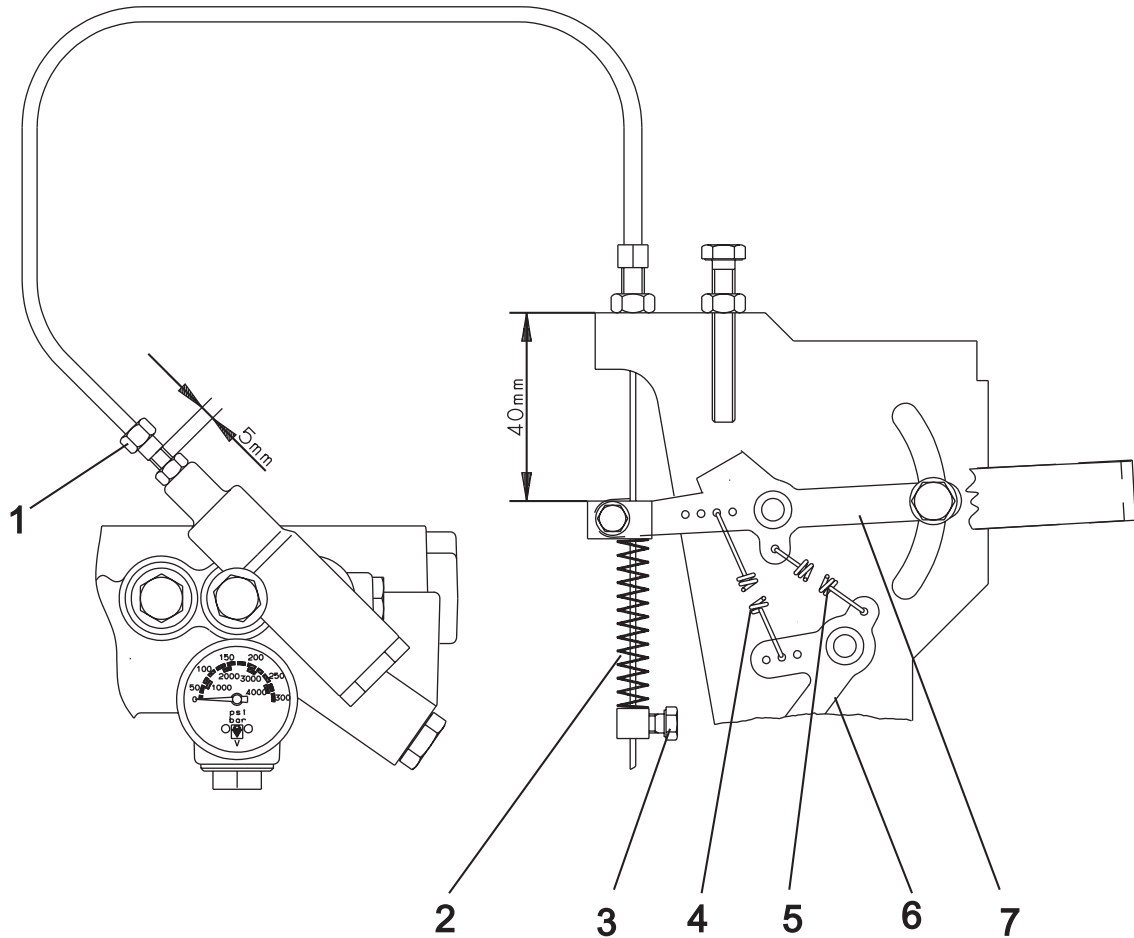
When the handgun is opened, the entire pressure in the system decreases.

The overflow valve spindle (16) is pushed back to its original position to the left via spring (14). The spring (10) and the pump pressure of the connection bore (8) push the ball (9) back onto the valve seat.

The connection bore (8) is thereby closed and the operating pressure can be built up again.

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**Adjustment of the bowden cable**

- 1 Adjusting screw
- 2 Spring
- 3 Clamping screw
- 4 Governor spring
- 5 Governor spring
- 6 Governor lever
- 7 Governor lever

- 1. Switch off engine and release pressure.
- 2. Adjust bowden cable as indicated :
  - 5 mm : by adjusting screw (1)
  - 40 mm : by clamping screw (3)

**Note:**

**The governor springs (3) and (4) must be attached in the holes of the governor levers (5) and (6) (see drawing).**



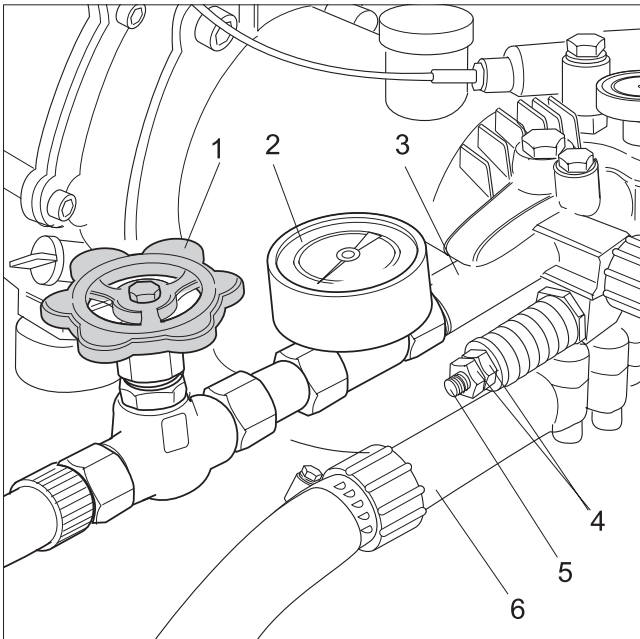
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### Adjustment of the overflow valve



- 1 Shut-off valve
- 2 Testing pressure gauge
- 3 High-pressure outlet
- 4 Adjusting screw with locking nut
- 5 Overflow valve spindle
- 6 Water inlet connection

#### Note:

**Before any adjustments the high-pressure nozzle, air filter and spark plug must be checked for damage or wear. All defective parts must be replaced.**

1. Mount testing pressure gauge (2), shut-off valve (1), high-pressure hose, servopress handgun without high-pressure nozzle on high-pressure outlet (3).  
The unit pressure gauge cannot be used to check the operation pressure, because it measures too inaccurate !
2. Set servopress handgun to maximum water volume, open it and operate the unit.
3. Close shut-off valve (1) slowly until flow rate of 6.7 to 7.5 litres/min. has been achieved (see technical data). This corresponds to the smallest servopress setting (flow rate measured by litres).
4. Now set adjusting screw (4) to operation pressure 208 to 212 bar (see technical data) and check with testing pressure gauge.

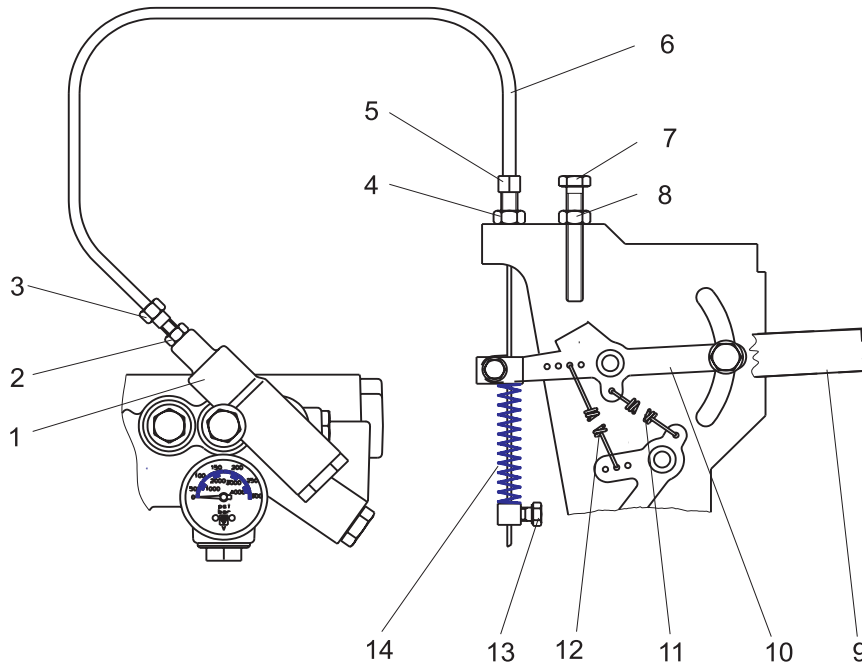
Increase spring tension : pressure increases.

Decrease spring tension : pressure decreases.

5. Open shut-off valve completely. Open and close servopress handgun with new high-pressure nozzle several times.
6. Repeat step 3 and 4 and adjust once more if required.
7. Finally secure the adjusting screw with locking nut (4) and seal with safety paint.

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**Adjustment full-load r.p.m.****Note:**

**The overflow valve must be adjusted first, before adjusting the full-load r.p.m. of the engine.**

**The adjusting screw (7) has been sealed by the engine manufacturer.**

1. Set servopress handgun with new high-pressure nozzle to maximum water volume and operate the unit.
2. Set engine r.p.m. by the adjusting screw (1), the testing pressure gauge indicates an operating pressure of 190 to 200 bar. With this operating pressure the corresponding operating r.p.m. must also be achieved (see technical data).
3. Close and open servopress handgun several times and check adjustment.
4. Finally seal adjusting screw (3), (5) and (13) with safety paint.

- 1 r.p.m. control
- 2 Locking nut
- 3 Adjusting screw
- 4 Locking nut
- 5 Adjusting screw
- 6 Bowden cable
- 7 Adjusting screw for max. operating speed
- 8 Locking nut
- 9 Engine stop lever
- 10 Governor lever
- 11 Spring
- 12 Spring
- 13 Clamping screw
- 14 Spring





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### Troubleshooting

Problem	Remedy
Engine does not start.	Check gasoline system / clean if required. Check engine stop lever. Check decompression lever.
Engine r.p.m. fluctuates.	Check air filter / clean / replace if required. Eliminate any leakage in the high-pressure system: handgun, high-pressure hose, cleaning agent system, non-return valve, overflow valve and ball valve seat.
Low operating pressure and flow rate	Check high-pressure nozzle / clean / replace if required. Check water inlet filter / clean if required. Check engine r.p.m. / adjust if required. Check spring at overflow valve / adjust if required. Eliminate any leakage in the high-pressure system (as mentioned above). Replace suction and pressure valves. Replace high and low-pressure seals.
Pump does not draw in cleaning agent.	Clean cleaning agent system and eliminate leakage. High-pressure hose is too long or its diameter too small.  <b>Note:</b> <b>Cleaning agent is only drawn in during full-load.</b>  <b>Replace injectors:</b> - Unscrew front injector as much as possible. - Then slowly pull through hand start rope. <b>While doing so, engine must not start.</b> - The resulting pump pressure pushes both injectors out of the high-pressure outlet.



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### Technical data

unit	technical data	circuit diagram	operating instructions	maintenance booklet	spare parts list
HD 1050 DE Engine: Yanmar-Diesel L 90	1.810-988	0.087-634	5.956-961	-	5.958-219

The technical data sheet and circuit diagram are on the next edition of the spare parts CD-ROM (DISIS) and in the Intranet (KMN), folder : "Central / Service Info Int'l / Technical Data resp. Circuit Diagram").

Further operating instructions and spare parts lists can be ordered with the corresponding part number from our Spare Parts Dept.

### Special tools

shut-off valve	4.580-034	
testing pressure gauge	4.742-025	
r.p.m. counter	6.491-361	mechanical version