

HD 6/16-4 M / MX
HD 7/18-4 M / MX
HD 9/19 M / MX
HD 9/20-4 M / MX
Service Manual



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2 Preface

Good service work requires extensive and practice-oriented training as well as well-structured training materials. Hence we offer regular basic and advanced training programmes covering the entire product range for all service engineers.

In addition to this, we also prepare service manuals for important appliances - these can be initially used as instruction guides and later on as reference guides.

Apart from this, we also regular information about product enhancements and their servicing.

If you should require supplements, have corrections or questions regarding this document, please address these citing the following subject to:

international-service@de.kaercher.com

Subject:	Fall 118357
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The responsible product specialist will take care of your issue.

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3 Safety instructions

Service and maintenance tasks may only be performed by qualified and specially trained specialists.

Observe safety information in the chapters!

⚠ DANGER

Prior to all work on the appliance, switch off the appliance and pull the power plug.

Shut off water supply.

Drain off water pressure.

3.1 Hazard levels

⚠ DANGER

For an immediate danger which can lead to severe injuries or death.

⚠ WARNING

For a possibly dangerous situation which could lead to severe injuries or death.

⚠ CAUTION

For a possibly dangerous situation which can lead to minor injuries or property damage.

ATTENTION

Pointer to a possibly dangerous situation, which can lead to property damage.

Note

Indicates useful tips and important information.

4 Technical Features

These devices are the new top models among the mobile high-pressure cleaners of the mid-range. Their compact and vertical design allows easy handling and space-saving storage.

4.1 Drive

4-pin, electro motor	Cooling	rpm	Voltage/current type
HD 6/16-4 M/MX	Air-cooled	1400	230 V / 1~ / 50 Hz
HD 7/18-4 M/MX	Air-cooled	1400	400 V / 3~ / 50 Hz
HD 9/20-4 M/MX	Water-cooled	1400	400 V / 3~ / 50 Hz

Note

HD 7/18-4 M/MX

Pressure switch control with 2-phase switching.

2-pin, electro motor	Cooling	rpm	Voltage/current type
HD 9/19 M/MX	Air-cooled	2800	400 V / 3~ / 50 Hz

4.2 Pump

- 3 piston axial pump with stainless steel piston
- Piston with ceramic coating, with HD 9/20 only
- Cylinder head and water inlet made of brass
- High-pressure and suction valves made of stainless steel
- Direct shutoff with closed gun via pressure switch control
- Overflow valve for pressure and quantity regulation
- Control injector
- Pressure holding valve
- Manometer

Device	Piston diameter in mm	Special features
HD 6/16-4 M/MX	16	Piston with piston domes
HD 7/18-4 M/MX	18	Piston with piston domes
HD 9/19 M/MX	16	Piston with piston domes
HD 9/20-4 M/MX	20	Piston with piston shoes

4.3 Detergent system

- Detergent injector
- Detergent check valve
- Switch CHEM system, continuously adjustable 2-way dosing valve at the back of the device.

4.4 Electrical system

- Power switch with overload protection
- Pressure switch control

Note

HD 7/18 devices only

- Pressure switch control with 2-phase switching

4.5 Other features

- Softgrip-Easypress gun with improved ergonomics
- Highest operating comfort thanks to improved, continuous pressure and water volume regulation
- Servopress rotary regulator with ceramic insert
- Improved mobility on stairs thanks to large full rubber wheels (Ø 250mm)
- Easy oil level check from the outside, without removal of the casing cover

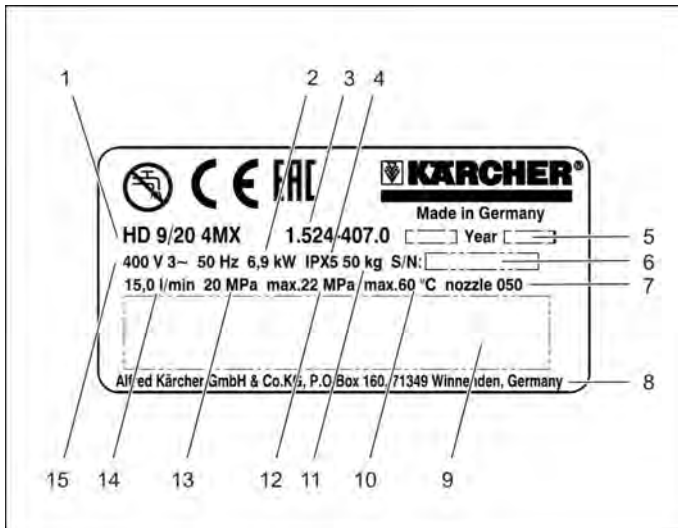
4.6 Field of application

This service manual describes the following appliances:

1.524-xxx

- HD 6/16-4 M
- HD 6/16-4 MX
- HD 7/18-4 M
- HD 7/18-4 MX
- HD 9/19 MX
- HD 9/19 M
- HD 9/20-4 M
- HD 9/20-4 MX

4.7 Type plate



The type plate is located on the right side of the appliance.

- 1 Appliance description
- 2 Connected load
- 3 Part number
- 4 Type of protection
- 5 Year of manufacture
- 6 Serial number
- 7 Nozzle size
- 8 Address of manufacturer
- 9 Bar code. Contains part and serial number.
- 10 Max. feed temperature
- 11 Typical operating weight
- 12 Max. operating over-pressure
- 13 Working pressure
- 14 Flow rate
- 15 Main Supply

5 Parts of the system

5.1 Front view

5.1.1 M-device



- 1 Lock trigger gun
- 2 Lever for trigger gun
- 3 Trigger gun
- 4 Power press regulator
Pressure/ quantity regulation
- 5 High pressure hose
- 6 Spray lance
- 7 Mains cable with mains plug
3-phase appliances
- 8 Mains cable with mains plug
1-phase appliances
- 9 Nozzle
- 10 High pressure connection
- 11 Water connection
- 12 Manometer
- 13 Oil level indicator
- 14 Cover
- 15 Power switch
- 16 Transport handle
- 17 Push handle

5.1.2 MX-device



- 1 Lock trigger gun
- 2 Lever for trigger gun
- 3 Trigger gun
- 4 Power press regulator
Pressure/ quantity regulation
- 5 High pressure hose
- 6 Spray lance
- 7 Mains cable with mains plug
3-phase appliances
- 8 Mains cable with mains plug
1-phase appliances
- 9 Nozzle
- 10 Roller guide for high-pressure hose
- 11 Cap
- 12 Water connection
- 13 Manometer
- 14 Oil level indicator
- 15 Cover
- 16 Power switch
- 17 Transport handle
- 18 Hose drum
- 19 Push handle

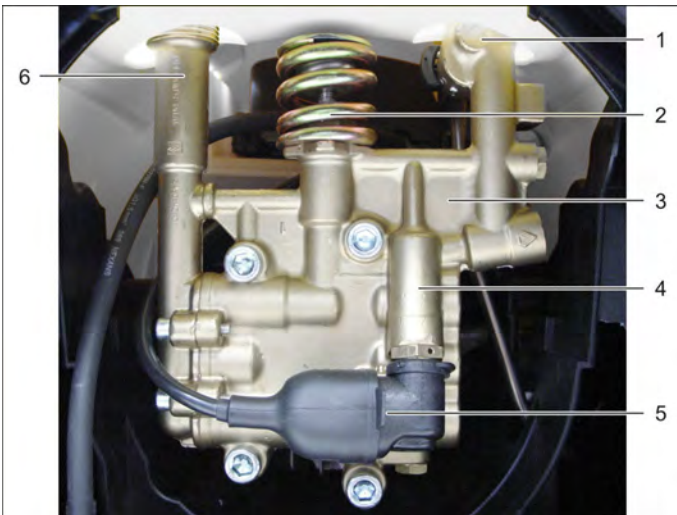
5.2 Rear view



- | | |
|--|--|
| <ul style="list-style-type: none"> 1 Hose drum 2 Crank, hose drum 3 High pressure hose 4 Detergent 5 Storage mains connection, compartment for replacement nozzle 6 Connection 2 Detergent | <ul style="list-style-type: none"> 7 Bottle holder for detergent 8 Connection 1 Detergent 9 Dosage valve for detergent Switch-over from detergent bottle 1 to 2 10 Storage, trigger gun with spray lance 11 HD...Plus includes a dirt remover as part of standard delivery. |
|--|--|

5.3 Bottom view

5.3.1 Pump head HD 6/16, HD 9/20

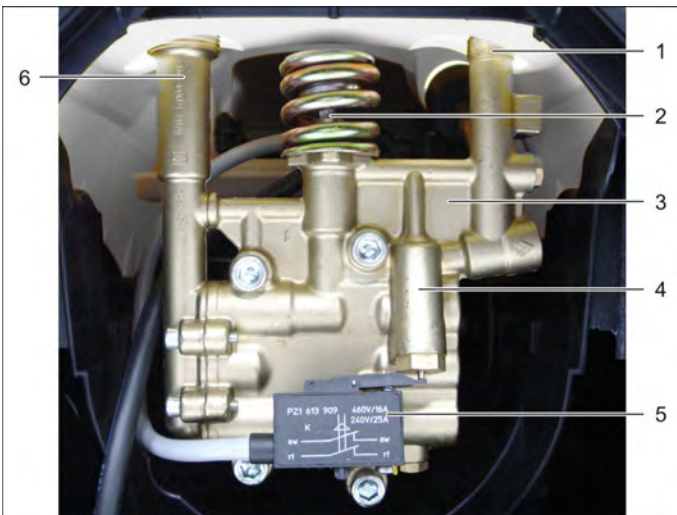


- 1 High pressure connection
- 2 Overflow valve
- 3 Pump head
- 4 Control piston, pressure switch
- 5 Pressure switch Q2/B1
- 6 Water connection

Note

The pressure switch is not adjustable.

5.3.2 Pump head HD 7/18, HD 9/19

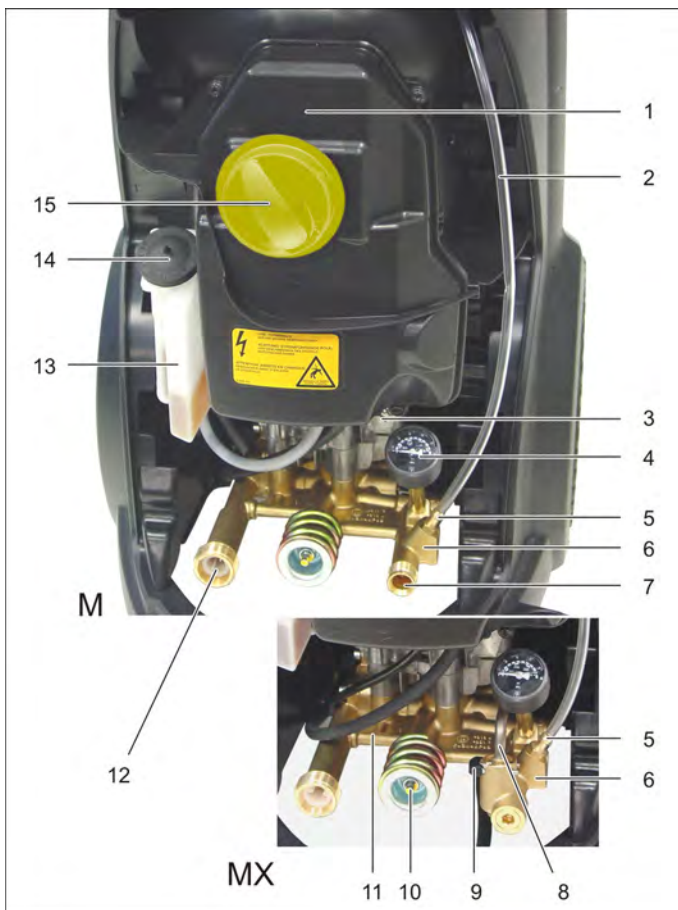


- 1 High pressure connection
- 2 Overflow valve
- 3 Pump head
- 4 Control piston, pressure switch
- 5 Pressure switch Q2
- 6 Water connection

Note

The pressure switch is not adjustable.

5.4 Front view (without cover)



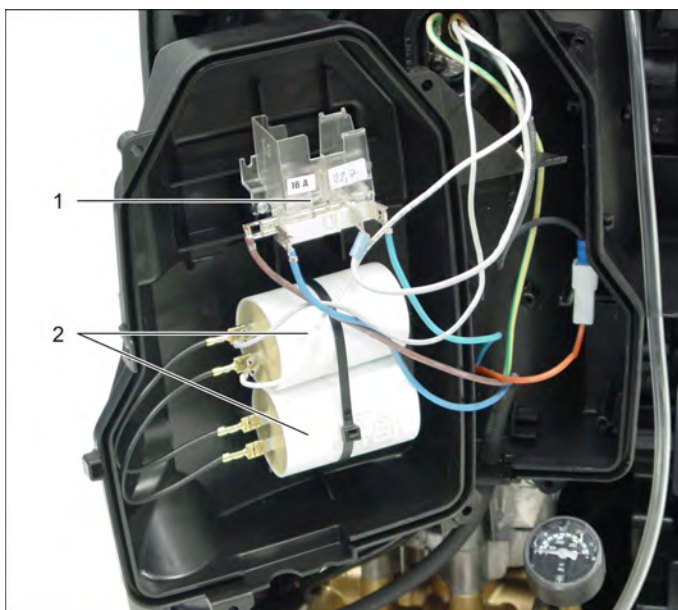
- 1 Electronics system
- 2 Detergent hose
- 3 Pump motor
- 4 Manometer
- 5 Detergent hose with check valve
- 6 Detergent injector
- 7 High pressure connection
- 8 High pressure line
- 9 Safety clip, high pressure line.
- 10 Overflow valve
- 11 Pump head
- 12 Connection for water supply with filter
- 13 Oil tank
- 14 Closing head
- 15 Power switch

5.5 Front view (electric box opened)

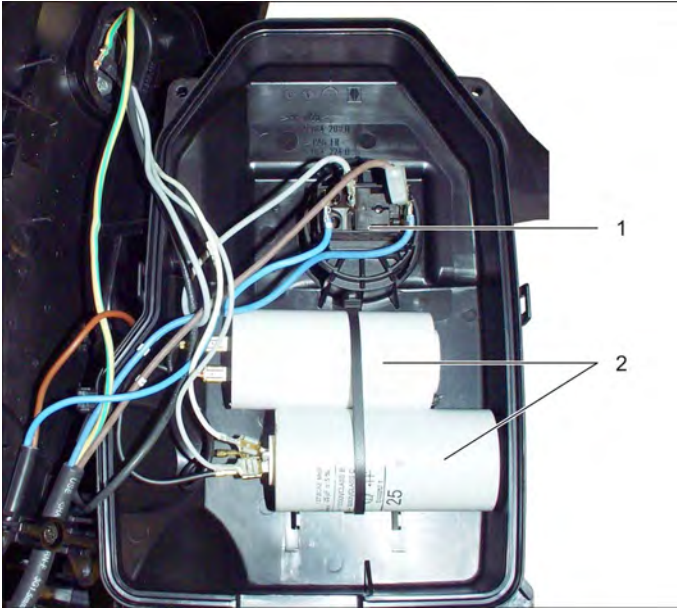
5.5.1 1-phase device

HD 6/16-4

Version 1



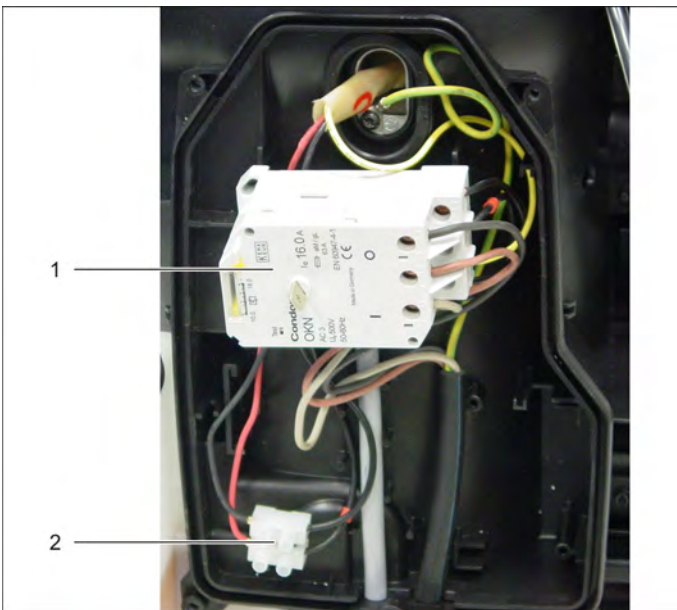
- 1 Power switch Q1
- 2 Capacitors



- 1 Power switch Q1
- 2 Capacitors

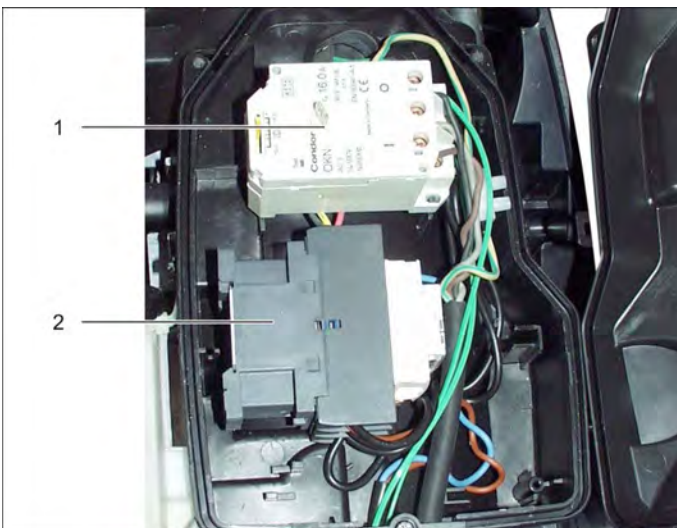
5.5.2 3-phase device

HD 7/18-4
HD 9/19



- 1 Power switch Q1
- 2 Pressure switch connection

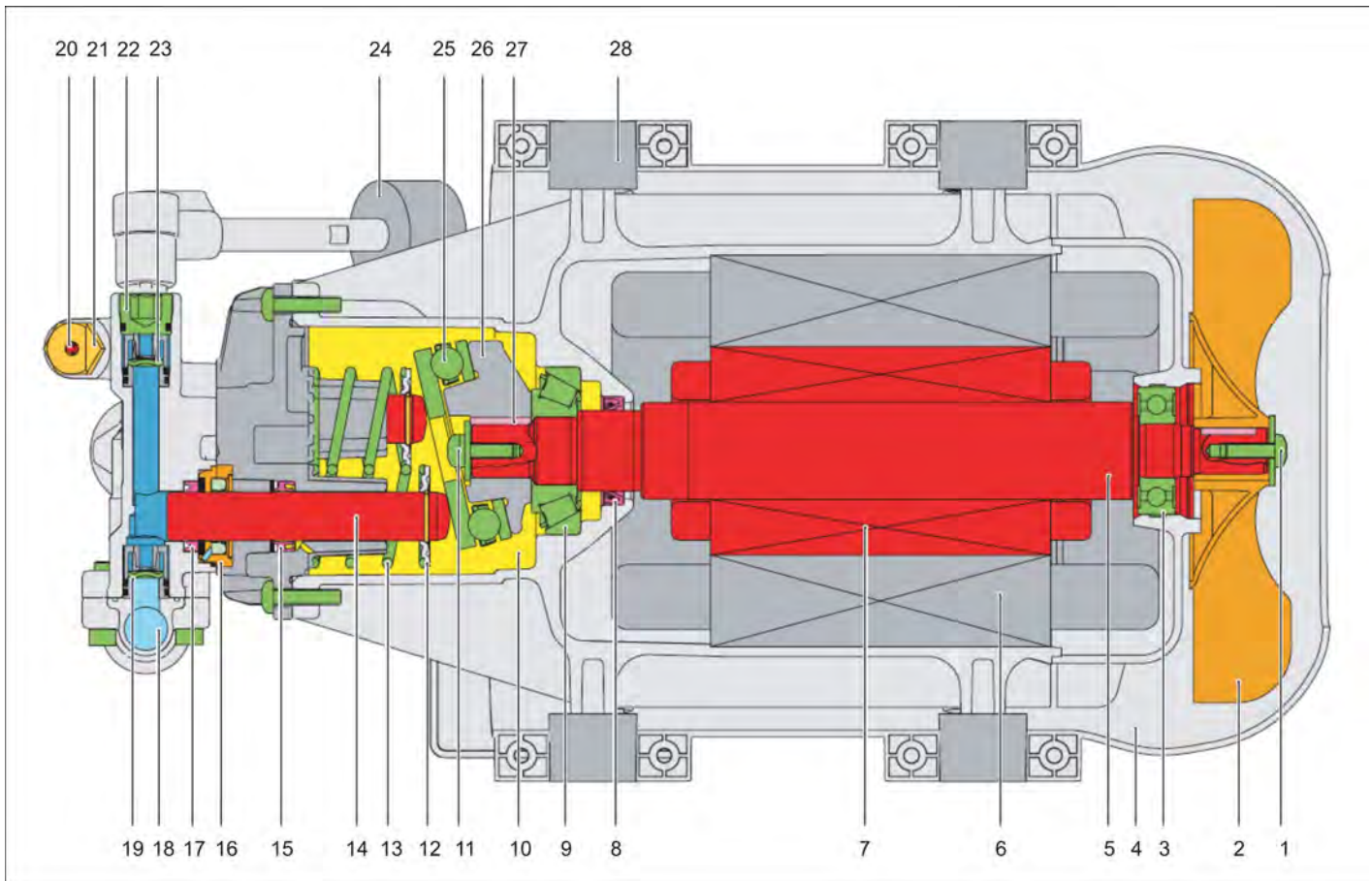
HD 9/20-4



- 1 Power switch Q1
- 2 Contactor K1

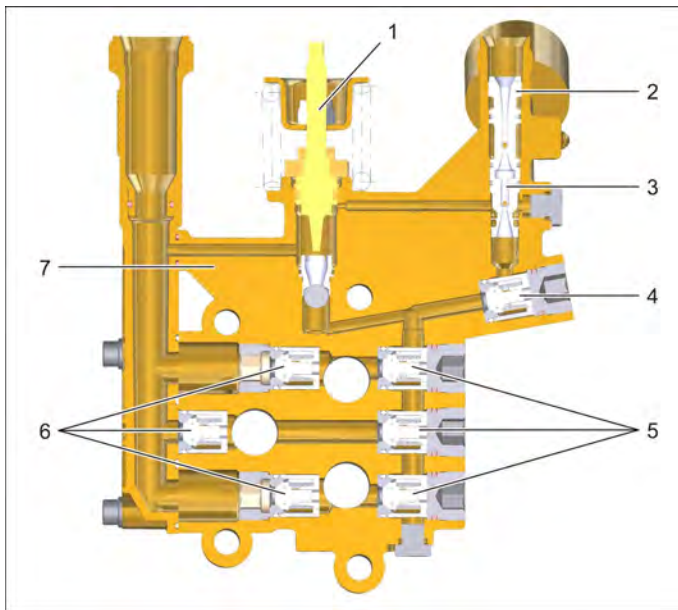
6 Function

6.1 Motor/pump unit



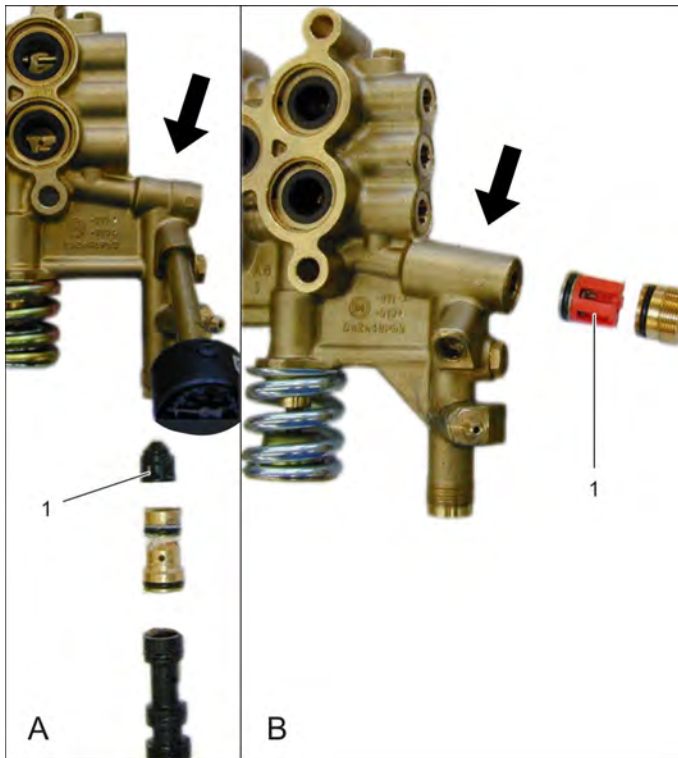
- | | |
|------------------------------------|-------------------------------------|
| 1 Screw fan wheel attachment | 15 Oil seal |
| 2 Fan wheel | 16 Low pressure seal |
| 3 Motor bearing, rear (B bearing) | 17 High pressure seal |
| 4 Motor casing | 18 Suction side pump |
| 5 Motor shaft | 19 Suction valve |
| 6 Stator | 20 Control piston, pressure switch |
| 7 Rotor | 21 Screw connections |
| 8 Shaft seal ring | 22 Locking screw for pressure valve |
| 9 Motor bearing, front (A bearing) | 23 Pressure valve |
| 10 Oil bath | 24 Manometer |
| 11 Fastening screw, swash plate | 25 Axial bearing |
| 12 Holding plate of piston spring | 26 Swash plate |
| 13 Piston spring | 27 Fitting key |
| 14 Plunger | 28 Engine mount |

6.2 Pump head



- 1 Overflow valve
- 2 Detergent injector
- 3 Control pressure injector
- 4 Pressure holding valve
- 5 Pressure valves
- 6 Suction valves
- 7 Pump head

6.2.1 Versions

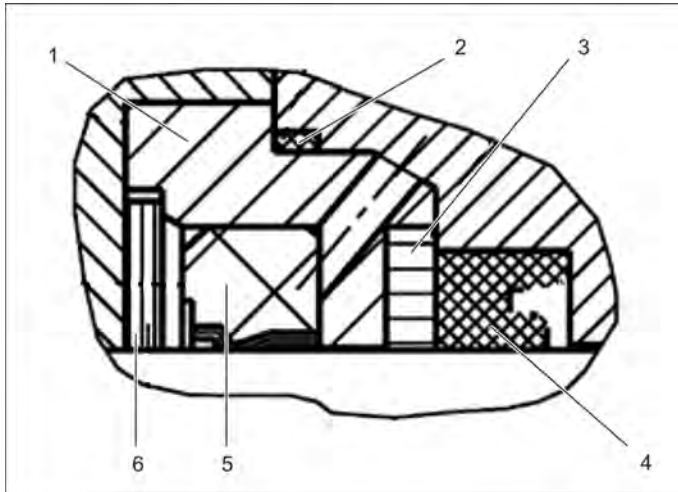


- A Pump head old
- B Pump head new
- 1 Pressure holding valve

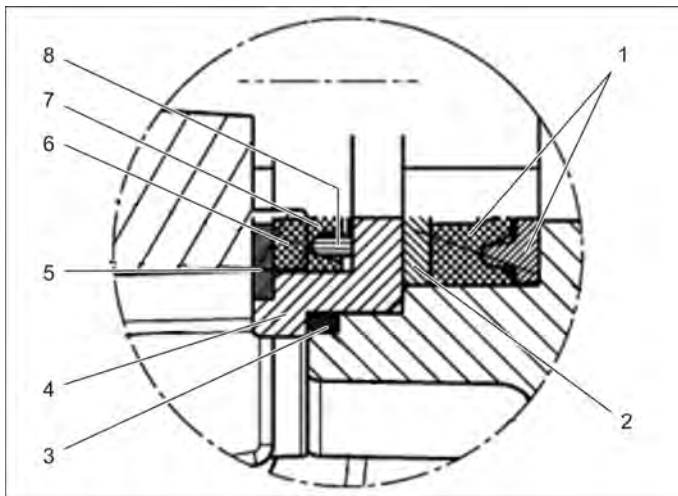
6.2.2 High pressure seal / low pressure seal

Note

Pay attention to installation position of the seals.



- 1 Bushing
- 2 O ring
- 3 Disc
- 4 High pressure seal
- 5 Low pressure seal
- 6 Disc

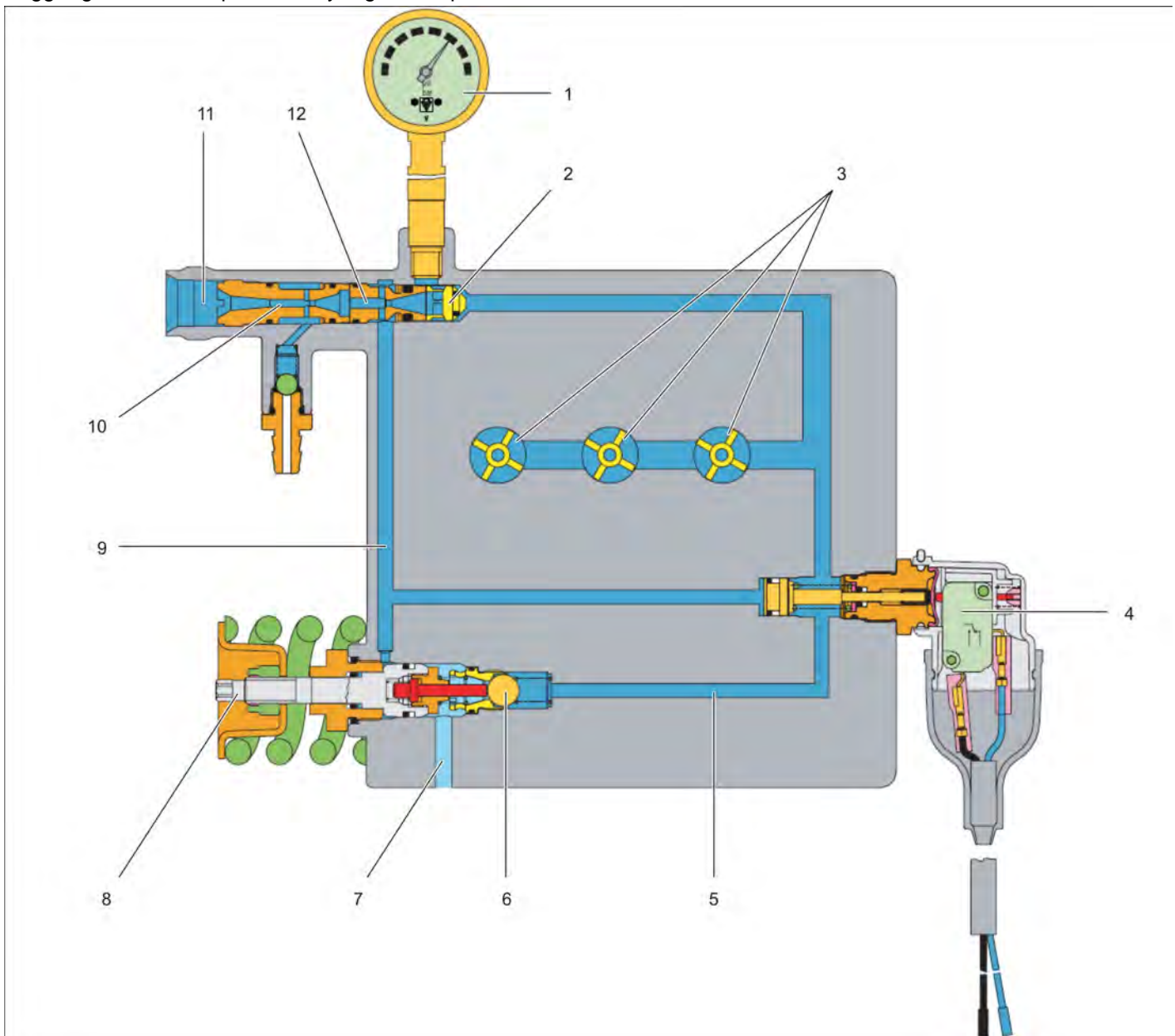


- 1 High pressure seal
- 2 Disc
- 3 O ring
- 4 Bushing
- 5 Disc
- 6 Washer ring
- 7 Low pressure seal
- 8 Spreader ring

6.3 Pump diagram

6.3.1 HD 6/16-4, HD 9/20-4

Trigger gun and servopress rotary regulator opened:



- 1 Manometer
- 2 Pressure holding valve
- 3 Pressure room with pressure valves
- 4 Pressure switch
- 5 Connecting boring to overflow valve
- 6 Overflow valve ball
- 7 Connecting boring to suction room
- 8 Piston rod
- 9 Connecting boring from the overflow valve to the control pressure injector
- 10 Detergent injector
- 11 High pressure outlet
- 12 Control pressure injector

Q2/B1

holding valve via the control pressure injector to the high pressure outlet.

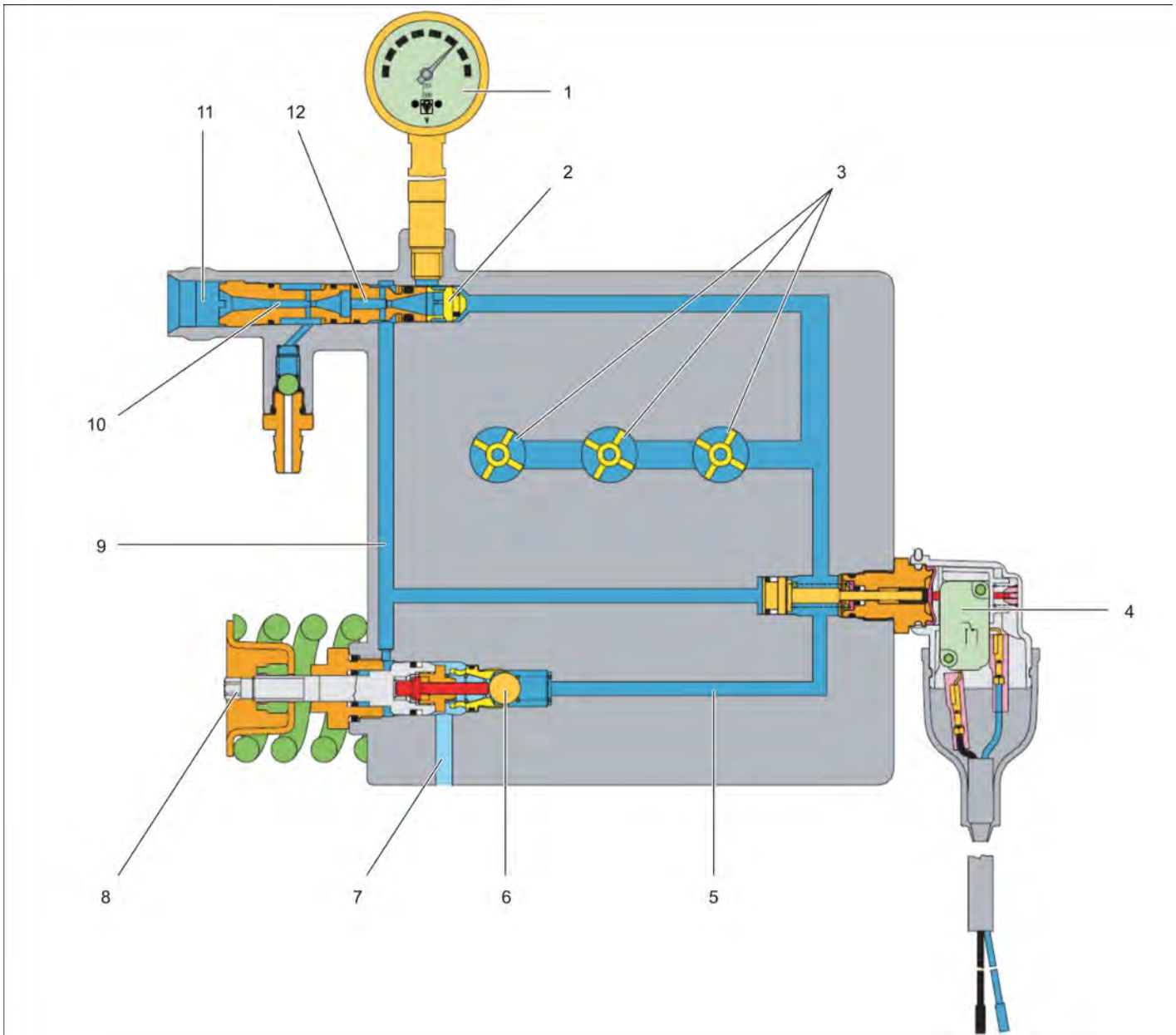
The ball of the overflow valve is pressed onto the valve seat by the pump pressure and thus seals the connecting boring to the suction chamber.

The manometer displays the working pressure in the pressure room.

But, due to the affect of the control pressure injector, there is less pressure in the connecting boring.

Servopress rotary regulator partially closed:

When the power press regulator is opened all the way, the water flows from the pressure room through the pressure

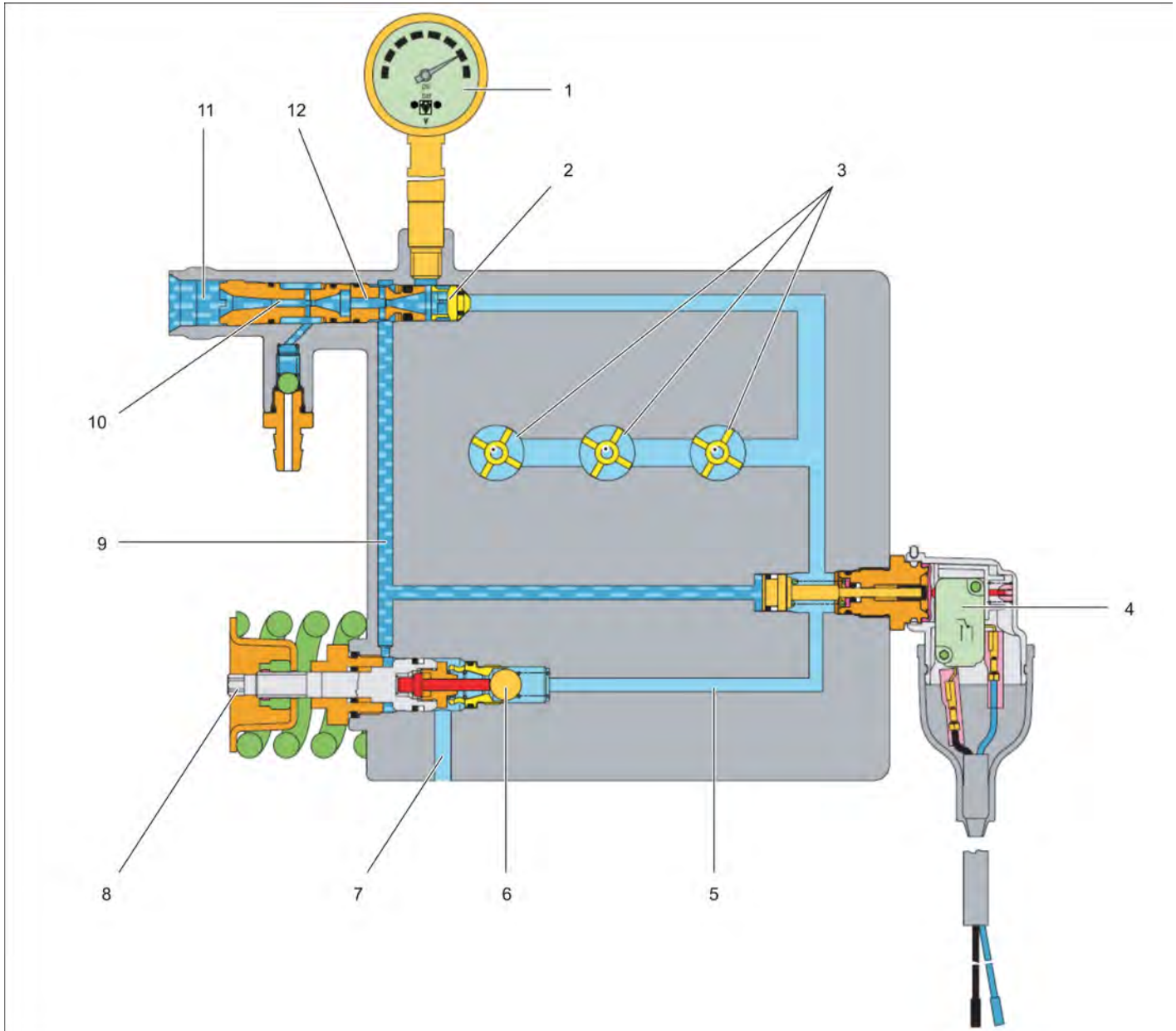


- 1 Manometer
- 2 Pressure holding valve
- 3 Pressure room with pressure valves
- 4 Pressure switch
- 5 Connecting boring to overflow valve
- 6 Overflow valve ball
- 7 Connecting boring to suction room
- 8 Piston rod
- 9 Connecting boring from the overflow valve to the control pressure injector
- 10 Detergent injector
- 11 High pressure outlet
- 12 Control pressure injector

Q2/B1

With the power press regulator partially closed, the pressure in the pressure room will not rise any further. However, due to less water volume, the effect of the control pressure injector decreases, so that the pressure in the connecting boring rises. Thus, the piston rod is pressed slightly to the right against the spring pressure. The cone tip of the rod slightly pushes the ball out of its seat so that a part of the flow rate flows to the suction chamber. The pressure switch is slightly pushed to the right due to the increased pressure in the connecting boring, but not far enough to switch off the pressure switch.

Trigger gun closed:



- 1 Manometer
 - 2 Pressure holding valve
 - 3 Pressure room with pressure valves
 - 4 Pressure switch
 - 5 Connecting boring to overflow valve
 - 6 Overflow valve ball
 - 7 Connecting boring to suction room
 - 8 Piston rod
 - 9 Connecting boring from the overflow valve to the control pressure injector
 - 10 Detergent injector
 - 11 High pressure outlet
 - 12 Control pressure injector
- Q2/B1

Upon closing the trigger gun, the pressure in the pressure room rises abruptly. This pressure peak will affect the piston rod and the pressure switch via the connecting boring. The ball is pressed out of its seat by the piston rod and the entire flow volume can flow to the suction room via the connecting boring.

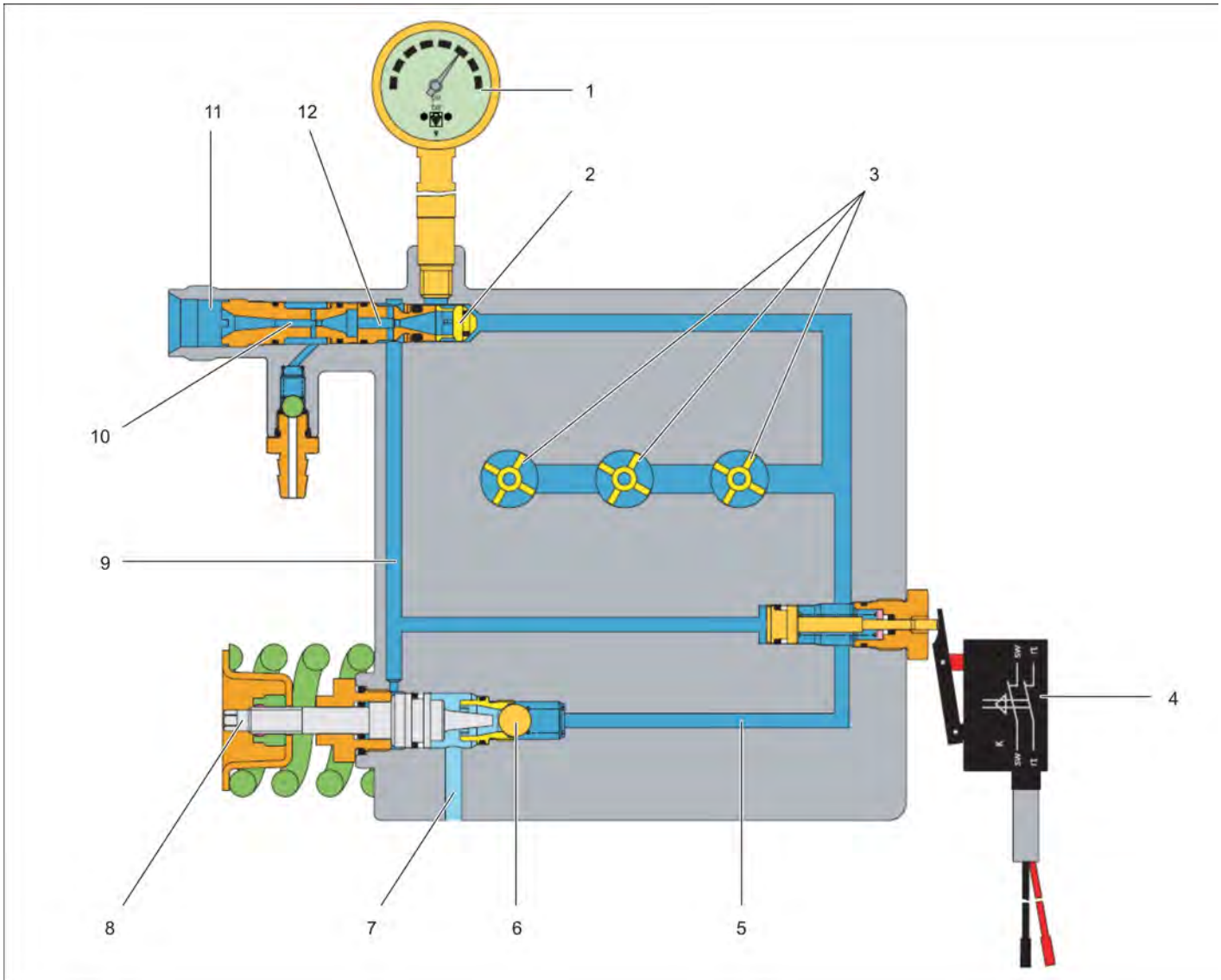
The pressure switch switches the motor off.

As soon as the trigger gun is closed, the pressure retaining valve closes. This way the entire system pressure is locked between the trigger gun and the pressure retaining valve.

When the gun is opened again, the pressure in the system decreases rapidly, the overflow valve returns to its original position and the pressure switch switches the motor back on.

6.3.2 HD 7/18-4, HD 9/19

Trigger gun and servopress rotary regulator opened:



- 1 Manometer
- 2 Pressure holding valve
- 3 Pressure room with pressure valves
- 4 Pressure switch
- 5 Connecting boring to overflow valve
- 6 Overflow valve ball
- 7 Connecting boring to suction room
- 8 Piston rod
- 9 Connecting boring from the overflow valve to the control pressure injector
- 10 Detergent injector
- 11 High pressure outlet
- 12 Control pressure injector

Q2

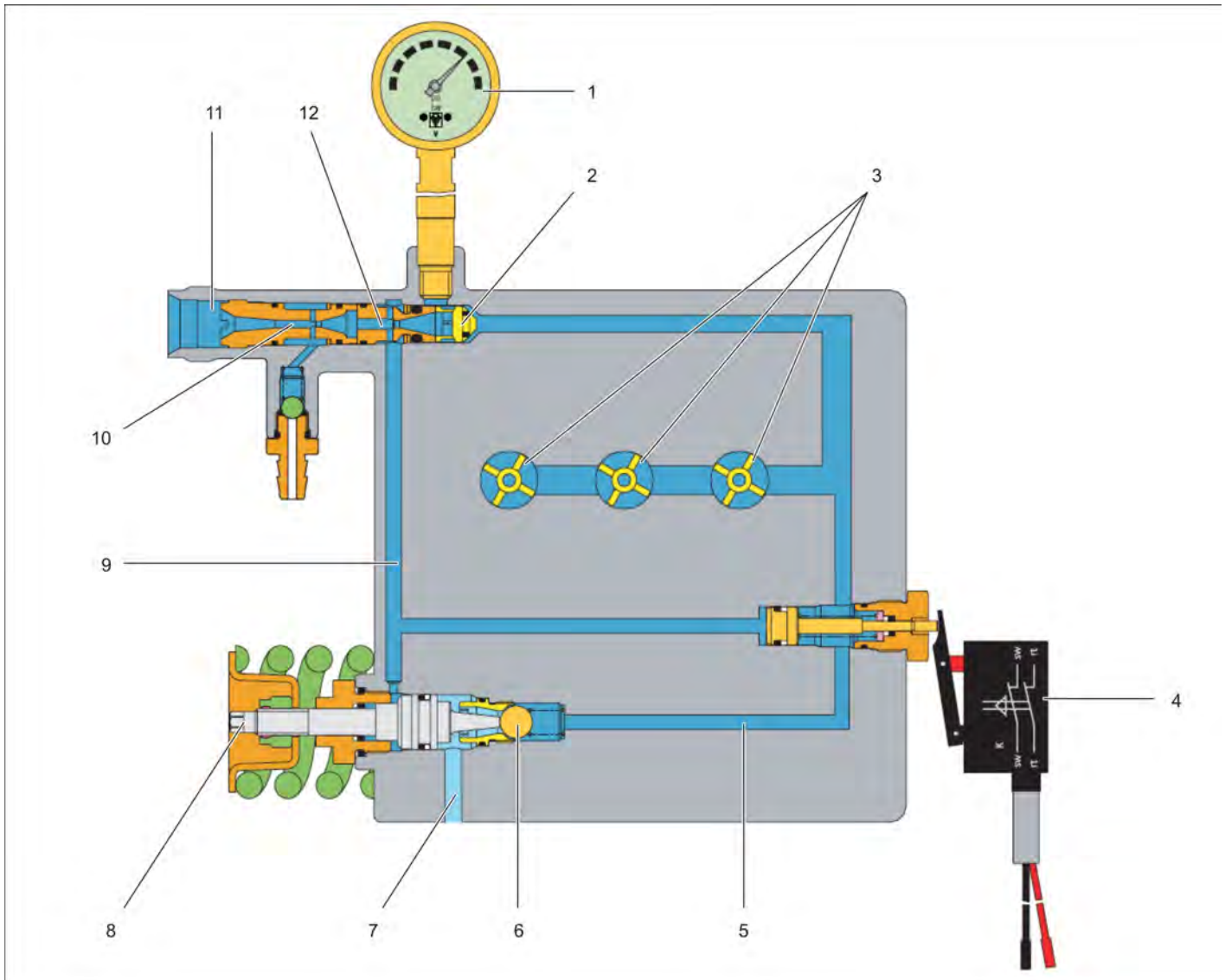
When the power press regulator is opened all the way, the water flows from the pressure room through the pressure holding valve via the control pressure injector to the high pressure outlet.

The ball of the overflow valve is pressed onto the valve seat by the pump pressure and thus seals the connecting boring to the suction chamber.

The manometer displays the working pressure in the pressure room.

But, due to the affect of the control pressure injector, there is less pressure in the connecting boring.

Servopress rotary regulator partially closed:

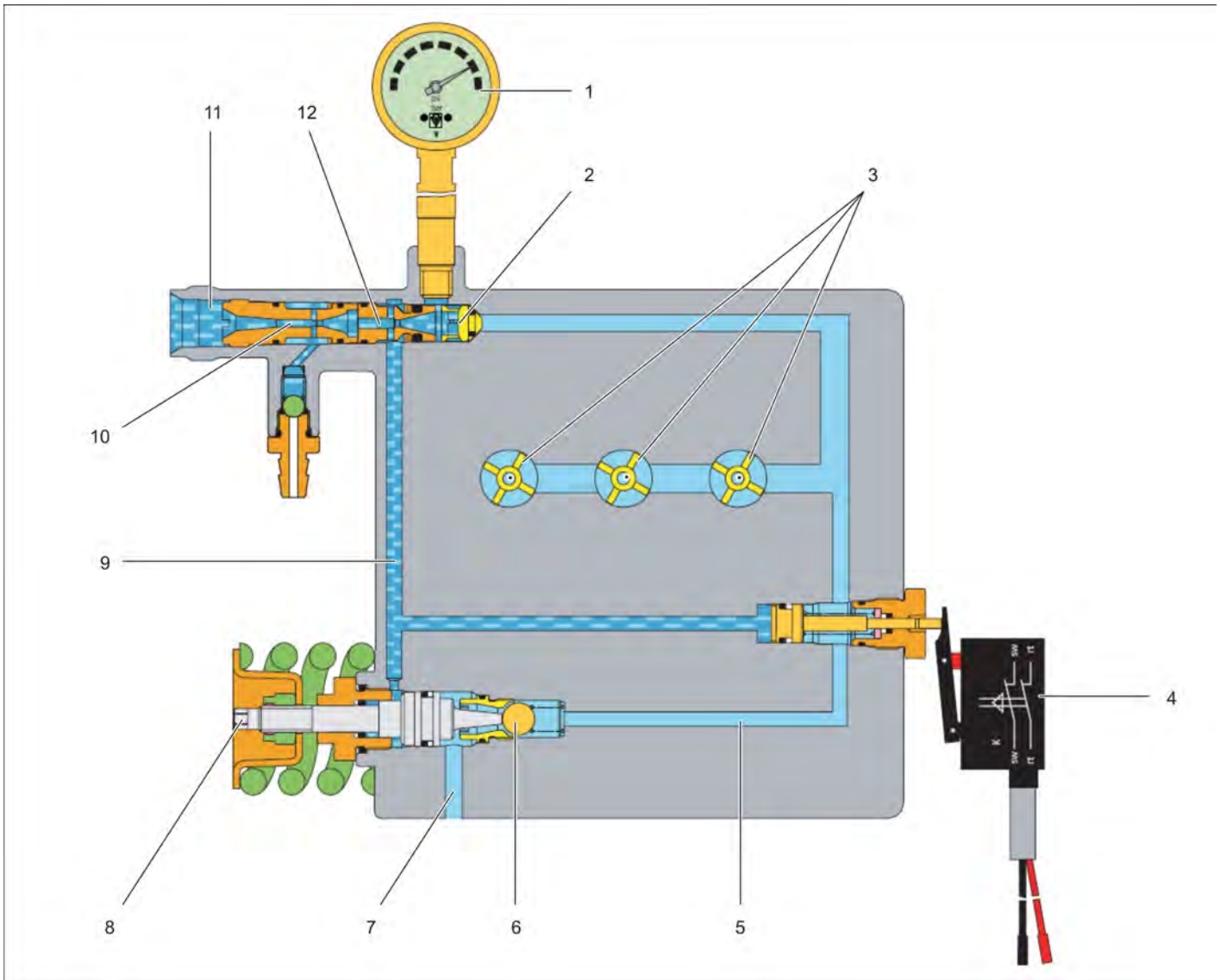


- 1 Manometer
- 2 Pressure holding valve
- 3 Pressure room with pressure valves
- 4 Pressure switch
- 5 Connecting boring to overflow valve
- 6 Overflow valve ball
- 7 Connecting boring to suction room
- 8 Piston rod
- 9 Connecting boring from the overflow valve to the control pressure injector
- 10 Detergent injector
- 11 High pressure outlet
- 12 Control pressure injector

Q2

With the power press regulator partially closed, the pressure in the pressure room will not rise any further. However, due to less water volume, the effect of the control pressure injector decreases, so that the pressure in the connecting boring rises. Thus, the piston rod is pressed slightly to the right against the spring pressure. The cone tip of the rod slightly pushes the ball out of its seat so that a part of the flow rate flows to the suction chamber. The pressure switch is slightly pushed to the right due to the increased pressure in the connecting boring, but not far enough to switch off the pressure switch.

Trigger gun closed:



- 1 Manometer
- 2 Pressure holding valve
- 3 Pressure room with pressure valves
- 4 Pressure switch
- 5 Connecting boring to overflow valve
- 6 Overflow valve ball
- 7 Connecting boring to suction room
- 8 Piston rod
- 9 Connecting boring from the overflow valve to the control pressure injector
- 10 Detergent injector
- 11 High pressure outlet
- 12 Control pressure injector

Q2

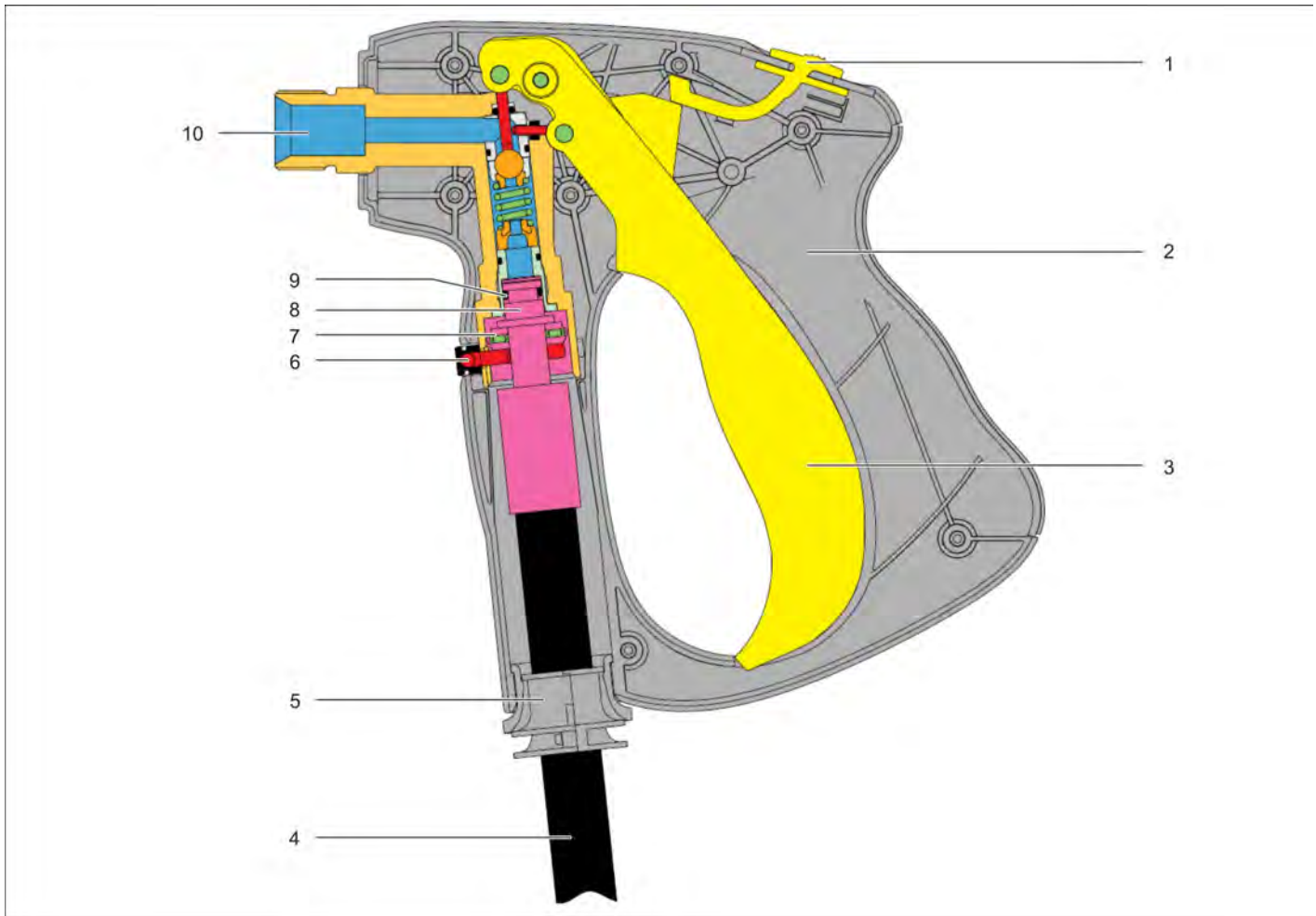
Upon closing the trigger gun, the pressure in the pressure room rises abruptly. This pressure peak will affect the piston rod and the pressure switch via the connecting boring. The ball is pressed out of its seat by the piston rod and the entire flow volume can flow to the suction room via the connecting boring.

The pressure switch switches off 2 of the 3 phases, this way the motor is switched off.

As soon as the trigger gun is closed, the pressure retaining valve closes. This way the entire system pressure is locked between the trigger gun and the pressure retaining valve.

When the gun is opened again, the pressure in the system decreases rapidly, the overflow valve returns to its original position and the pressure switch switches the motor back on.

6.4 Hand spraygun



- 1 Lock trigger gun
- 2 Casing shell
- 3 Hand lever
- 4 High pressure hose
- 5 Hose guide
- 6 Safety clip
- 7 Needle bearing
- 8 Coupling high-pressure hose/trigger gun
- 9 O ring
- 10 Node piece

Function

When the manual lever is actuated, the valve in the node piece opens and the water can flow from the hose through the gun into the spray lance.

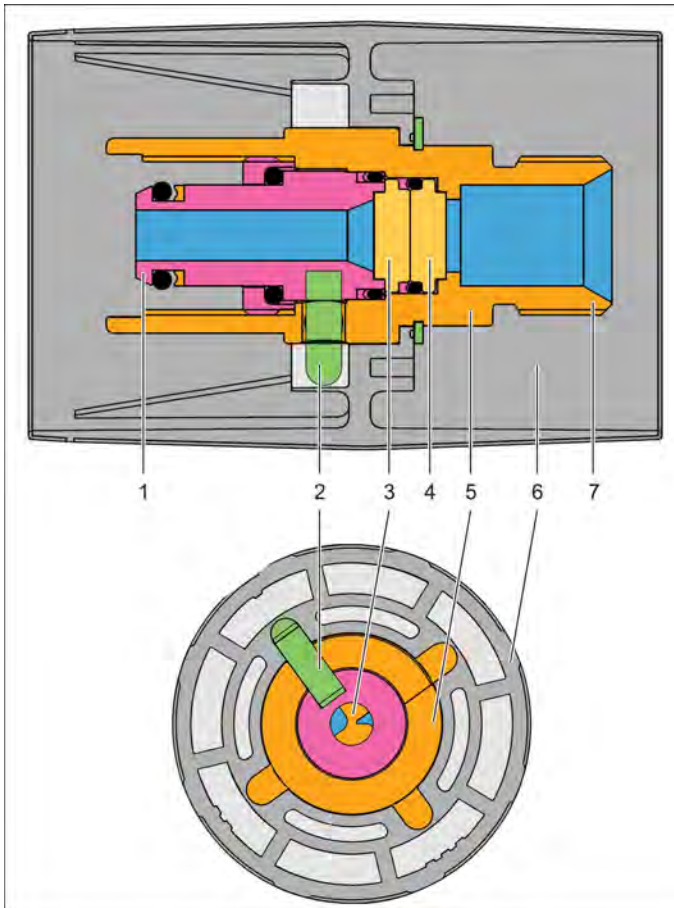
Note

The node piece cannot be repaired and must be replaced as a complete unit.

The date of manufacture is imprinted on the node piece. It is composed of the month (letters A to L for January through December) and year (1-digit number 1 for 2011, 2 for 2012, etc.).

Example: H1 = August 2011

6.5 Pressure and volume regulation



- 1 Connection trigger gun
- 2 Connecting pin
- 3 Ceramic disc on gun side
- 4 Ceramic disc on spray pipe side
- 5 Casing of rotating regulator
- 6 Handle of rotary regulator
- 7 Spray lance connection

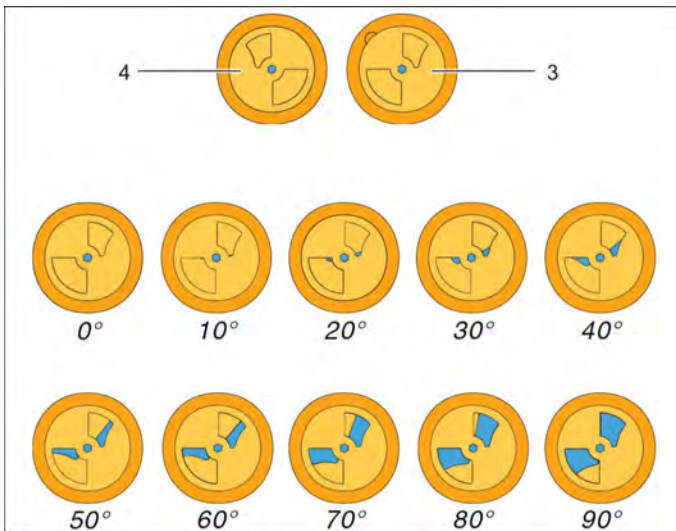
The pressure and volume regulation is designed as a rotary regulator between the trigger gun and the spray lance. There are two ceramic discs within the high pressure channel.

The ceramic disc is rigidly connected with the connection of the trigger gun. The ceramic disc is connected to the rotary switch and therefore adjustable. Offset holes in the ceramic discs can adjust the flow volume and the pressure when rotating the discs.

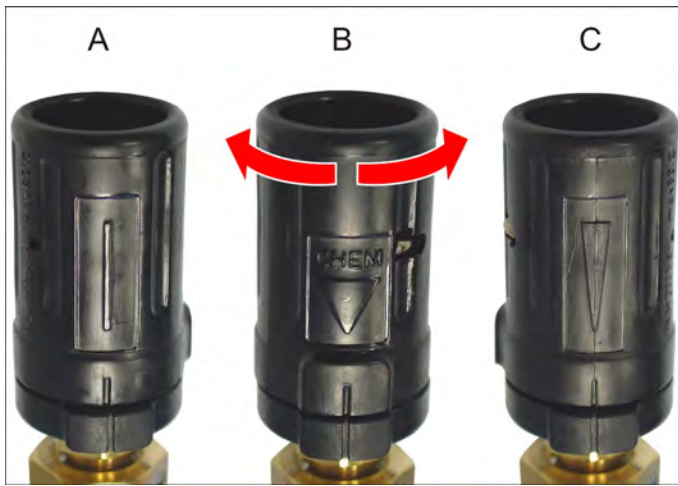
This illustration shows the two overlapping ceramic discs and the water flow (blue) with different opening angles (from 0° to 90°).

With the minimal setting, the water flows through a small hose in the middle of the ceramic discs.

Water flow with opening angle 0° - 90°



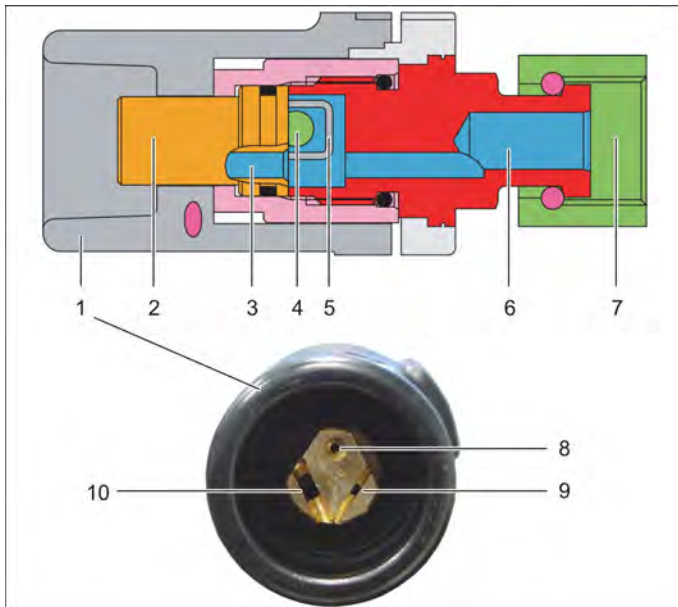
6.6 Triple nozzle



- A High-pressure round jet
- B Flat low pressure spray (CHEM) for operating using detergents or cleaning at low pressure.
- C High pressure flat spray (25°) for large dirt areas

The triple nozzle can be adjusted to three different settings. By rotating the nozzle head, you can switch between the chemical nozzle and the high pressure nozzles. The symbols on the nozzle head show which nozzle type is selected.

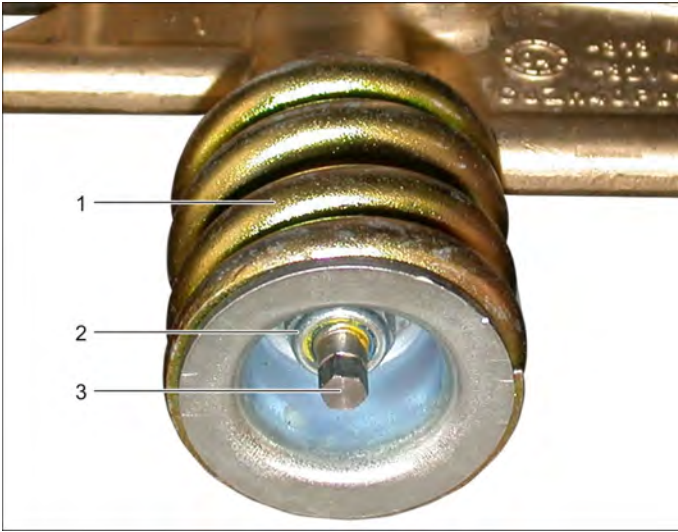
To adjust the required type of nozzle, the trigger gun must be closed and the nozzle head must be turned to the positions shown (A, B, C).



- 1 Adjustable nozzle head
- 2 Nozzle
- 3 Nozzle channel
- 4 Valve ball 2x
- 5 Valve ball cage
- 6 High pressure channel
- 7 Spray lance connection
- 8 High-pressure round jet
- 9 High-pressure flat jet
- 10 Low-pressure flat jet

7 Basic settings and service procedures

7.1 Adjusting the overflow valve



- 1 Spring
- 2 Setting nut, self-locking
- 3 Overflow valve spindle with hexagon

7.1.1 Trigger gun with servopress pressure regulator

- Connect the test manometer with high-pressure hose and the trigger gun with servopress rotary regulator to the high pressure outlet.
- Turn the servopress rotary regulator to the **smallest** position and let the device run.
- Use the adjustment nut to adjust the tension of the spring so that the overflow valve opening pressure is reached (see technical data).
- Switch the appliance off and remove all pressure by opening the gun.

7.1.2 Trigger gun standard

- Connect the test manometer with high-pressure hose and trigger gun standard to the high-pressure outlet. Insert new high-pressure nozzle!
- Open the hand spray gun and let the device run.
- Use the adjustment nut to adjust the tension of the spring so that the working pressure reaches full load (see technical data).
- Switch the appliance off and remove all pressure by opening the gun.

8 Care and maintenance

See operating instructions.

9 Troubleshooting

Findings	Possible cause	Correction
Appliance is not running	Power supply interrupted	Check connection cable for damages. Check the supply voltage.
	Engine is overheated	Turn device switch on "0" and let engine cool off for min. 5 minutes.
	Power switch	Check/replace the appliance switch.
	Pressure switch	Check/replace the pressure switch.
Appliance is not building up pressure	Nozzle soiled	Set nozzle to "High pressure".
		Clean the nozzle.
		Replace the nozzle.
	Air within the system	Vent appliance.
	Insufficient water quantity	Check water supply level (refer to technical data).
	Suction area blocked	Clean the sieve in the water connection.
Check all inlet pipes to the pump.		
Pressure interruption	Check the pressure and suction valves for leaks / replace.	
	Check / adjust/ replace overflow valve.	
Device turns on and off while hand spray gun is closed	Tightness of system	Check the trigger gun and the O-rings on the high-pressure hose for leaks / replace.
		Pressure interruption
	Check / replace the pressure retaining valve.	
Appliance does not switch off when the hand-spray gun is closed	Pressure interruption	Check / replace the pressure switch / control piston.
		Check / adjust/ replace overflow valve.
		Check / replace the pressure retaining valve.
		Check/replace the pressure switch.
Detergent is not being sucked in	Low or no detergent flow	Check / replace the pressure switch / control piston.
		Set nozzle to "CHEM".
		Check/ clean detergent suction hose with filter.
		Open or check/clean detergent dosing valve.
		Check / clean / replace the detergent check valve.
		Check / replace nozzle for detergent.
Pump leaky	Water leak between the cylinder head and the piston casing	Check / replace high pressure and low pressure seals.
	Oil leaks between the cylinder head and the piston casing	Replace oil seals.
	Check / replace piston.	
Pump is vibrating	Pipes	Check suction pipes for water and detergent and ensure that they are leak-proof.
	Dosing valve	Close dosing valve for detergent to operate the machine without detergent.
	Air within the system	Vent appliance.

10 Technical Documentation


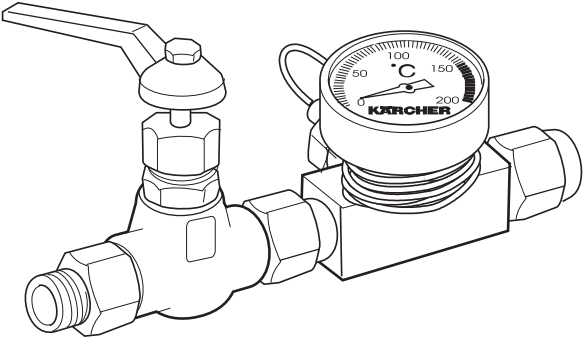
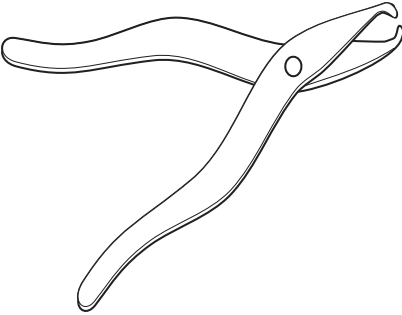
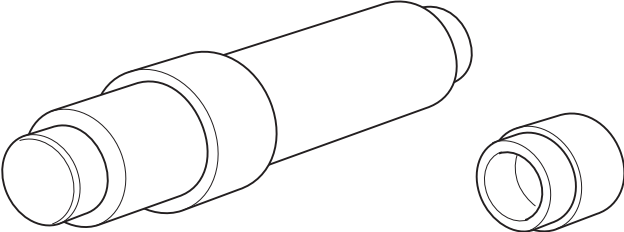
Appliance type	Piston diameter in mm	Appliance no.	Circuit diagram	Operating instructions	Spare parts list
HD 6/16-4 M	16	1.524.120.0	0.089-003.0	5.964-870.0	5.971-970.0
HD 6/16-4 MX	16	1.524.125.0	0.089-003.0	5.964-870.0	5.972-055.0
HD 7/18-4 M	18	1.524.220.0	0.087-804.0	5.964-870.0	5.972-050.0
HD 7/18-4 MX	18	1.524.225.0	0.087-804.0	5.964-870.0	5.972-121.0
HD 9/19-4 M	16	1.524.320.0	0.087-804.0	5.964-870.0	5.972-122.0
HD 9/19-4 MX	16	1.524.327.0	0.087-804.0	5.964-870.0	5.971-999.0
HD 9/20-4 M	20	1.524.400.0	0.088-885.0	5.964-870.0	5.971-969.0
HD 9/20-4 MX	20	1.524.407.0	0.088-885.0	5.964-870.0	5.972-061.0

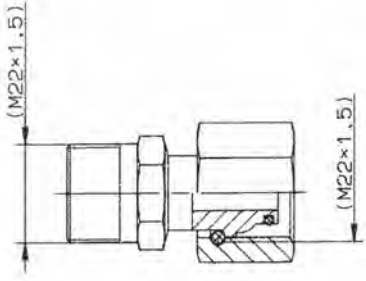
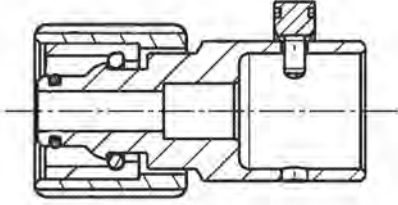
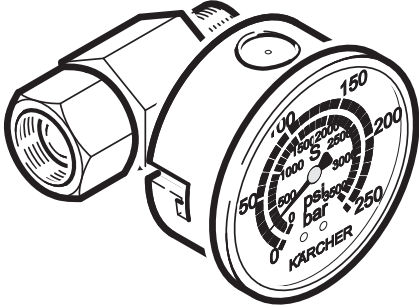
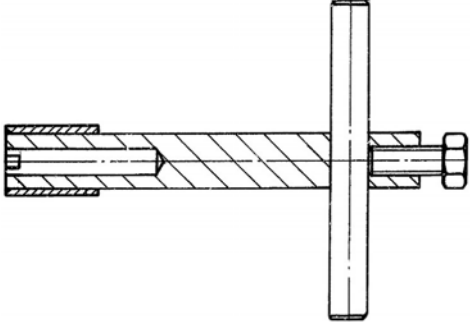
10.1 Technical specifications

Type		HD 6/16-4 M 1.524-120.0	HD 7/18-4 M 1.524-220.0	HD 9/19-4 M 1.524-320.0	HD 9/20-4 M 1.524-400.0
		HD 6/16-4 MX 1.524-125.0	HD 7/18-4 MX 1.524-225.0	HD 9/19-4 MX 1.524-327.0	HD 9/20-4 MX 1.524-407.0
Main Supply					
Voltage	V	230	400		
Current type	Hz	1~ 50	3~ 50		
Motor rpm	1/min	1400		2800	1400
Connected load	kW	3,4	4,7	6,8	6,9
Protection (slow, char. C)	A	16			
Type of protection		IPX5			
Maximum allowed net impedance	Ohm	0,294+j0,184	-		0,222+j0,139
Extension cord 30 m	mm ²	2,5			
Water connection					
Max. feed temperature	°C	60			
Min. feed volume	l/h (l/min)	600 (10)	700 (11,7)	900 (15)	900 (15)
Suck height from open container (20 °C)	m	0,5			
Max. feed pressure	MPa	1			
Performance data					
Working pressure	MPa	3...16	3...18	4...18,5	4...20
Nozzle size		038	042	053	050
Max. operating over-pressure	MPa	19	21	22,5	22
Flow rate	l/h (l/min)	300...600 (5...10)	300...700 (5...11,67)	450...890 (5...14,8)	460...900 (7,7...15)
Detergent suck in	l/h (l/min)	0...40 (0...0,7)			
Max. recoil force of trigger gun	N	30	37	49	49
Values determined as per EN 60335-2-79					
Hand-arm vibration value					
Hand spray gun	m/s ²	< 2,5			
Spray lance	m/s ²	< 2,5		3,0	1,5
Uncertainty K	m/s ²	1			

Sound pressure level L_{pA}	dB(A)	69	75	76	75
Uncertainty K_{pA}	dB(A)	1		2	1
Sound power level $L_{WA} + \text{Uncertainty } K_{WA}$	dB(A)	84	90	91	88
Fuel					
Amount of oil	l	0,5			0,75
Oil grade		SAE 15W40	SAE 90 Hypoid		
Dimensions and weights					
Length	mm	554			
Width	mm	509			
Height	mm	1000			
Weight without accessories (MX)	kg	48 (50)	49 (52)	47 (55)	48 (50)

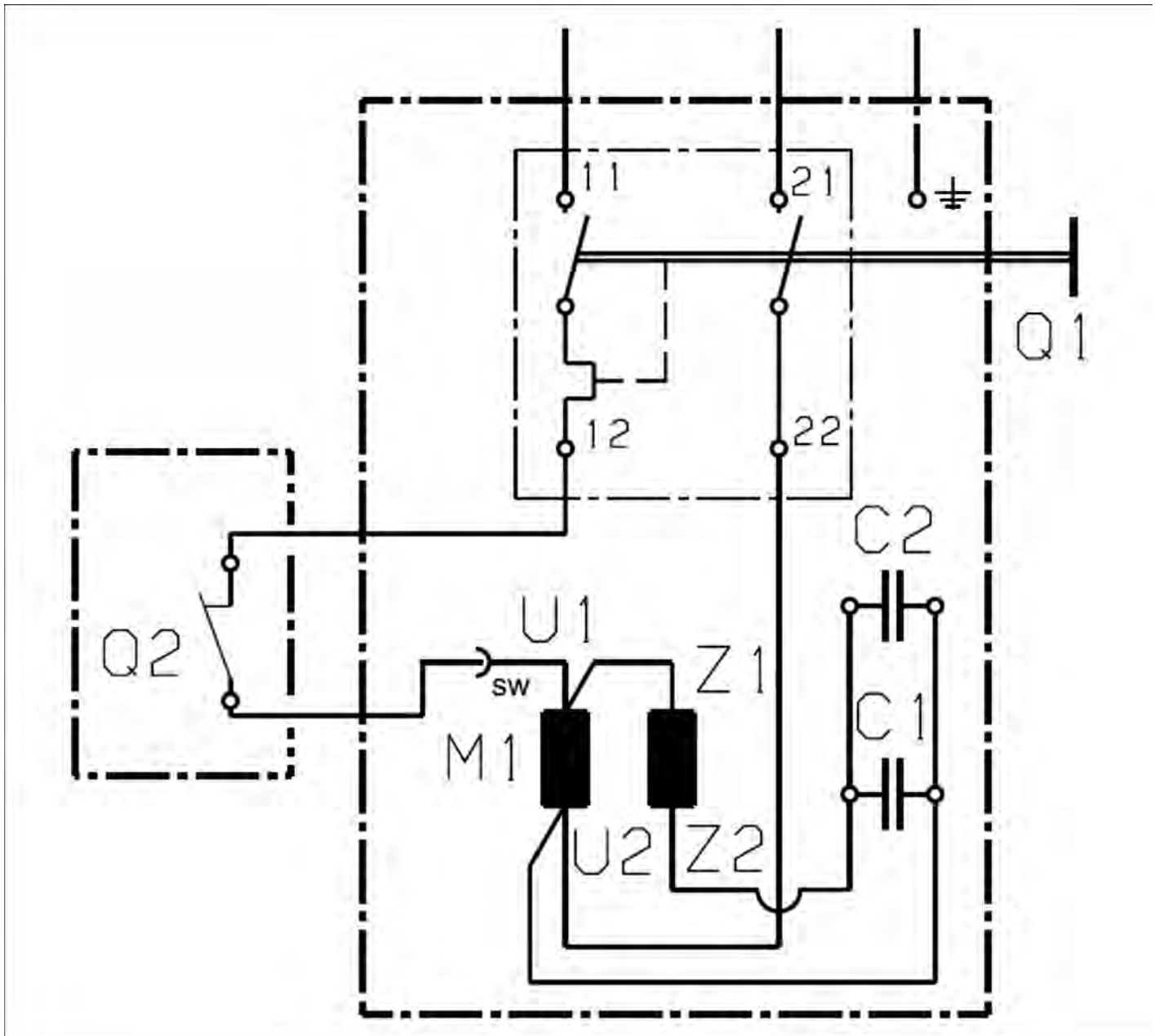
11 Special tools

			
Electric measuring appliance	6.803-022.0	Shut-off valve with thermometer	4.580-034.0
			
Removal pliers, pressure/suction valves and water sieves	4.901-062.0	Installation mandrel oil seal, high-pressure seal Piston diameter 16 mm HD 6/16-4 HD 9/19	5.901-106.0
		Installation sleeve, high pressure seal Piston diameter 16 mm HD 6/16-4 HD 9/19	5.901-105.0
		Installation mandrel oil seal, high-pressure seal Piston diameter 18mm HD 7/18-4	5.901-062.0
		Installation sleeve, high pressure seal Piston diameter 18mm HD 7/18-4	5.901-118.0
		Installation mandrel oil seal, high-pressure seal Piston diameter 20mm HD 9/20-4	5.901-055.0
		Installation sleeve, high pressure seal Piston diameter 20mm HD 9/20-4	5.901-182.0

			
<p>Adapter system 2000, M22x1.5 with extended union nut</p>	<p>4.401-072.0</p>	<p>For hose drum appliances: Adapter M22 (inside) onto 11 mm male coupling</p>	<p>4.424-004.0</p>
			
<p>Test manometer for working pressure</p>	<p>4.742-025.0</p>	<p>Installation and removal tools, overflow valve seat</p>	<p>4.901-054.0</p>

12 Circuit diagram

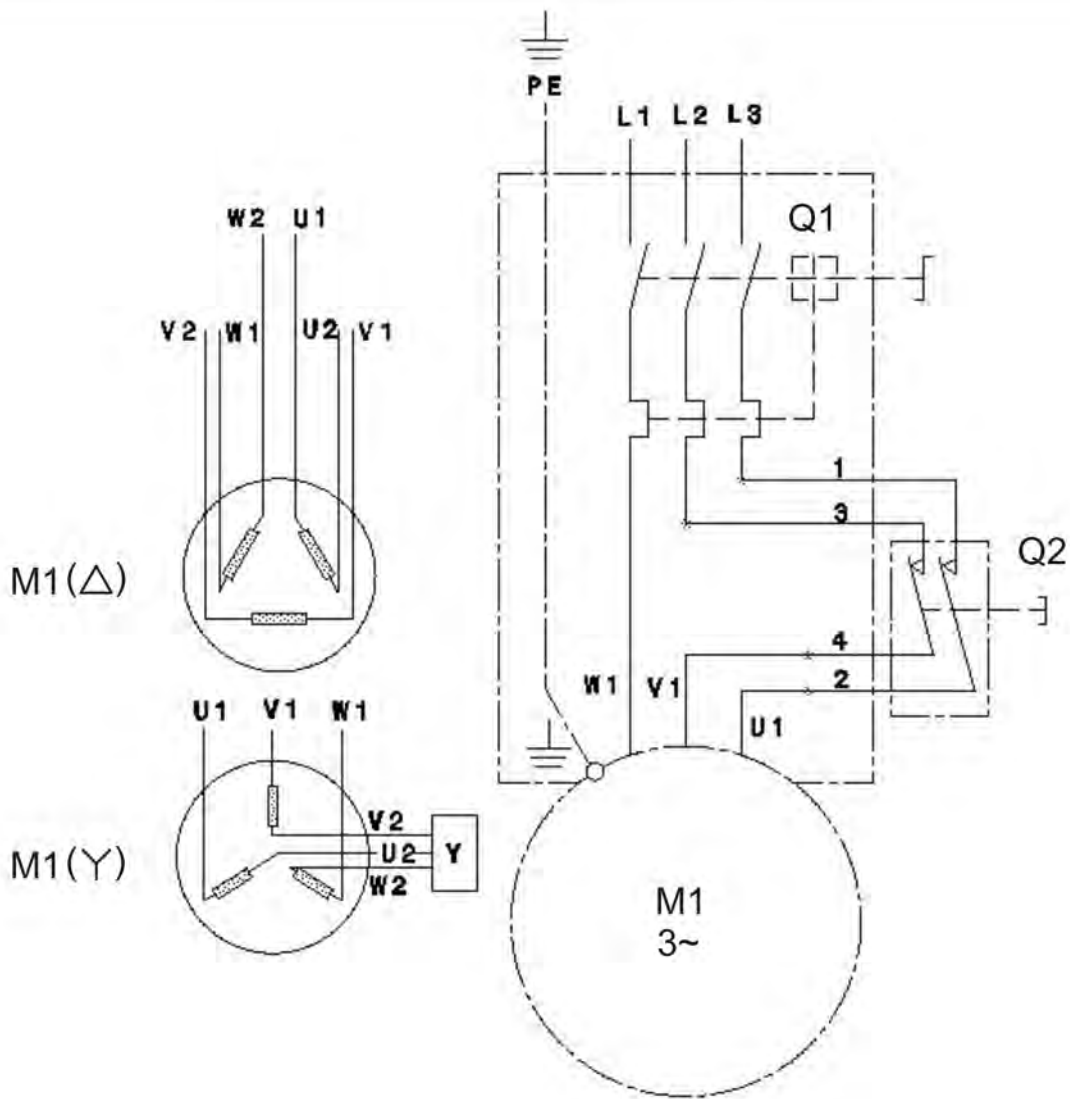
When working on the device, please always use the current circuit diagram in DISIS.



0.089-003.0

HD 6/16

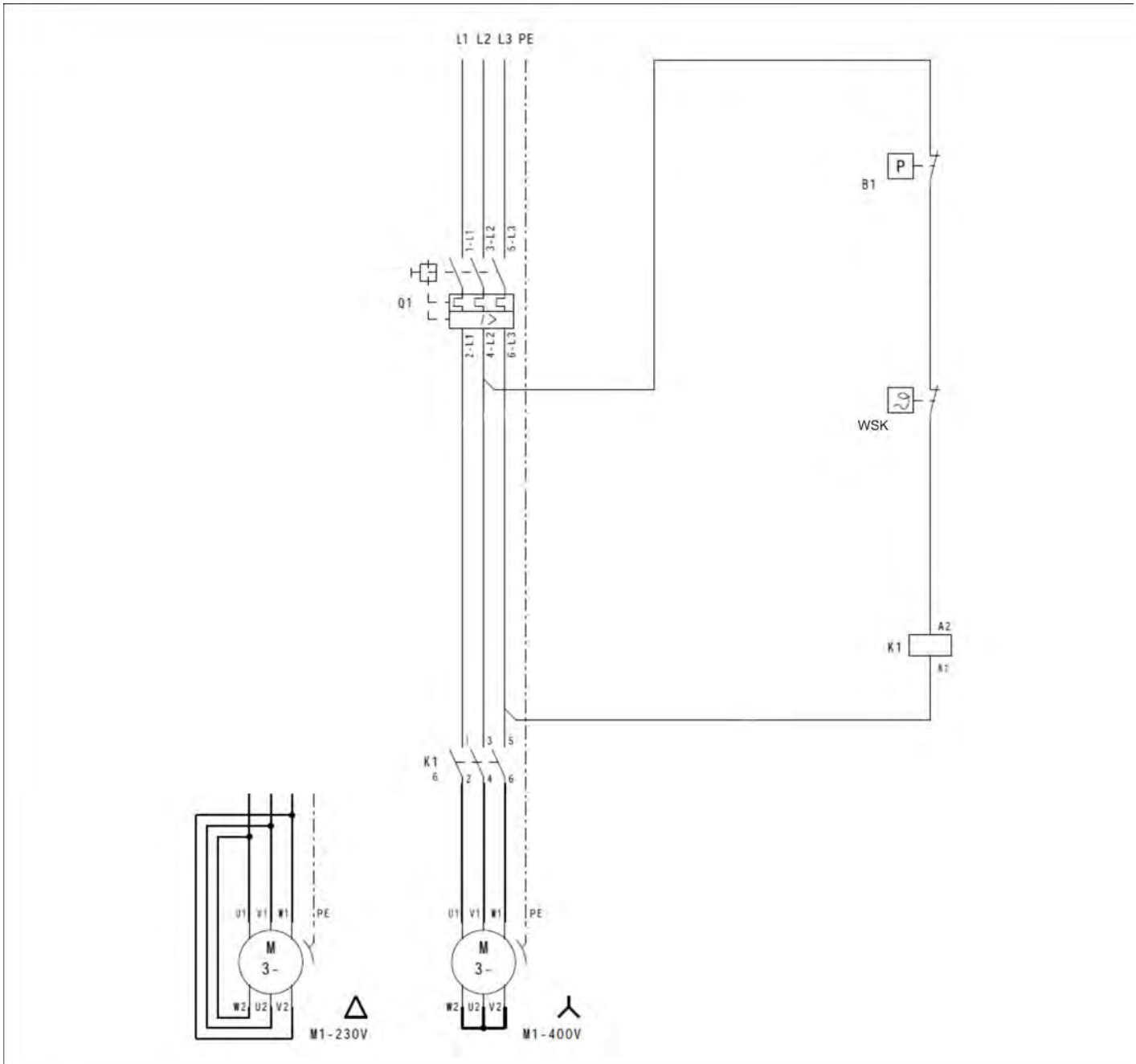
C1	Capacitor
C2	Capacitor
M1	Motor
Q1	Power switch
Q2	Pressure switch



0.087-804.0
 HD 7/18, HD 9/19

M1	Motor
Q1	Power switch
Q2	Pressure switch

	ATB	LS
U1	Red	Black
V1	Yellow	Red
W1	Black	White
U2	White	Yellow
V2	Blue	Blue
W2	Grey	Brown



0.088-885.0
HD 9/20

B1	Pressure switch
K1	Contacteur
M	Motor
Q1	Power switch
WSK	Winding protection in the motor

ATB	
U1	Red
V1	Yellow
W1	Black
U2	White
V2	Blue
W2	Grey

13 Torques

Name	Nm
Cylinder head screws	40 - 45
Piston casing	5 - 7
Trigger gun, pressure regulator	40
Screw connection pressure valves	40 - 45
Screw connection pressure switch	15 - 17
Screw connection suction valves	35 - 40
Overflow valve seat	8 - 10
Swash plate	9 - 12
Motor casing	9 - 12
Screw connection overflow valve	30 - 35
Detergent injector	1,5 - 2,5
Screw connection suction cover	12 - 15
Screw fan wheel attachment	9 - 12