

# HD Kompakt 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:	<b>Fall 115718</b>
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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.

### 3.1 Hazard levels

#### **⚠ Danger**

*Immediate danger that can cause severe injury or even death.*

#### **⚠ Warning**

*Possible hazardous situation that could lead to severe injury or even death.*

#### **Caution**

*Possible hazardous situation that could lead to mild injury to persons or damage to property.*

#### **Note**

*indicates useful tips and important information.*

## 4 Technical Features

### 4.1 General

- 3 piston axial pump with stainless steel piston
- Cylinder head made of brass
- Pressure relief system
- Electric motor with thermal motor protection switch. Rotor thermally shocked for better starting behaviour
- The pump was designed as a joint project with Home&Garden. The version for the Professional appliances features the following improvements:
  - Angular contact bearing with HD 5/15 and HD 5/17 Magnet in the piston guide
  - Reinforced A-bearing with HD 5/12, HD 5/13 and HD 6/13
  - Improved piston material
  - Higher pretension of the piston springs
  - Improved oil seal
  - Improved radial seal in the electric motor
  - Water bearing parts made of brass
  - Power cable with rubber sheath
  - Large water filter with metal sieve
  - Improved engine mount
- Retractable push handle
- Carrying handle
- Nozzle racks for triple nozzle and rotor nozzle
- Transport bracket for surface cleaner
- Cable clamp
- Rubber strap as transport restraint for power cable and high-pressure hose (not with CX-version)
- Can be operated in a vertical or horizontal position
- Additional spray lance holder with fixation for transportation
- Metal sieve with water connection

### 4.2 Tools used

- Screwdriver 4.5 mm, 5.5 mm, 12 mm
- Screwdriver T15, T20, T30
- Open-end wrench SW 10, SW 17
- Drift punch 2 mm, 4 mm, 6 mm
- Hammer
- Oil collection basin
- Valve pliers
- Valve retainer and drive-in mandrel for suction valves
- Installation sleeve and drive-in mandrel for high-pressure and oil seals

#### **Note**

*The special tool for this appliance is described in Chapter "Technical documentation/special tool".*

### 4.3 Field of application

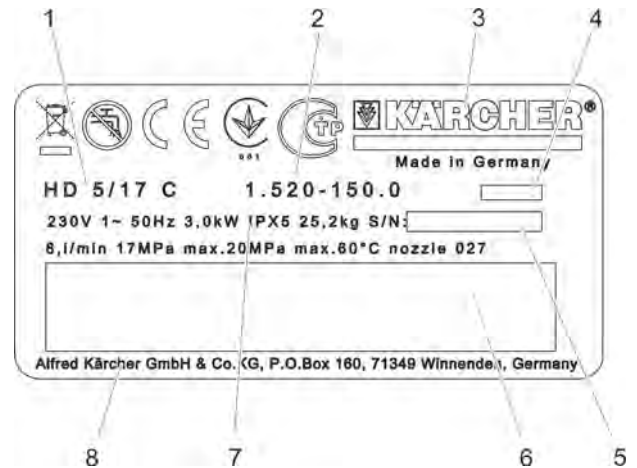
This service manual describes the appliance family:

- HD 5/12 C, HD 5/12 CX
- HD 5/13 C, HD 5/13 CX
- HD 5/15 C, HD 5/15 CX
- HD 5/17 C, HD 5/17 CX
- HD 6/13 C, HD 6/13 CX

The illustrations show the appliance HD 5/17. The appliances only vary in the pump capacity.

### 4.4 Type plate

The type plate is located on the rear of the appliance.



- 1 Appliance description
- 2 Part number
- 3 Manufacturer
- 4 Year of manufacture
- 5 Serial number
- 6 Bar code. Contains part and serial number.
- 7 Specifications
- 8 Address of manufacturer

## 5 Overview

### 5.1 Unit without hose drum



- |  |  |
|--|--|
| 1 Trigger gun  | 8 Water connection   |
| 2 Push handle, top (extended)                          | 9 Mains cable with mains plug                                      |
| 3 Nozzle rack for rotor nozzle                         | 10 Power switch  |
| 4 Spray lance holder with clamping, for transportation | 11 Rubber band for securing the power cable and high-pressure hose |
| 5 High pressure hose                                   | 12 Nozzle rack for triple nozzle                                   |
| 6 Quiver for spray lance                               |  |
| 7 High pressure connection                             |  |



- 1 Push handle, bottom (slid in)
- 2 Transport bracket for surface cleaner
- 3 Holder for detergent filter
- 4 Detergent suction hose with filter and dosing valve
- 5 Spray lance holder without clamping



- 1 Transport bracket for surface cleaner
- 2 Parking runner for operation in the horizontal position
- 3 Skid for transport on stairs  
Parking runner for operation in the horizontal position
- 4 Nameplate
- 5 Unlocking device push handle



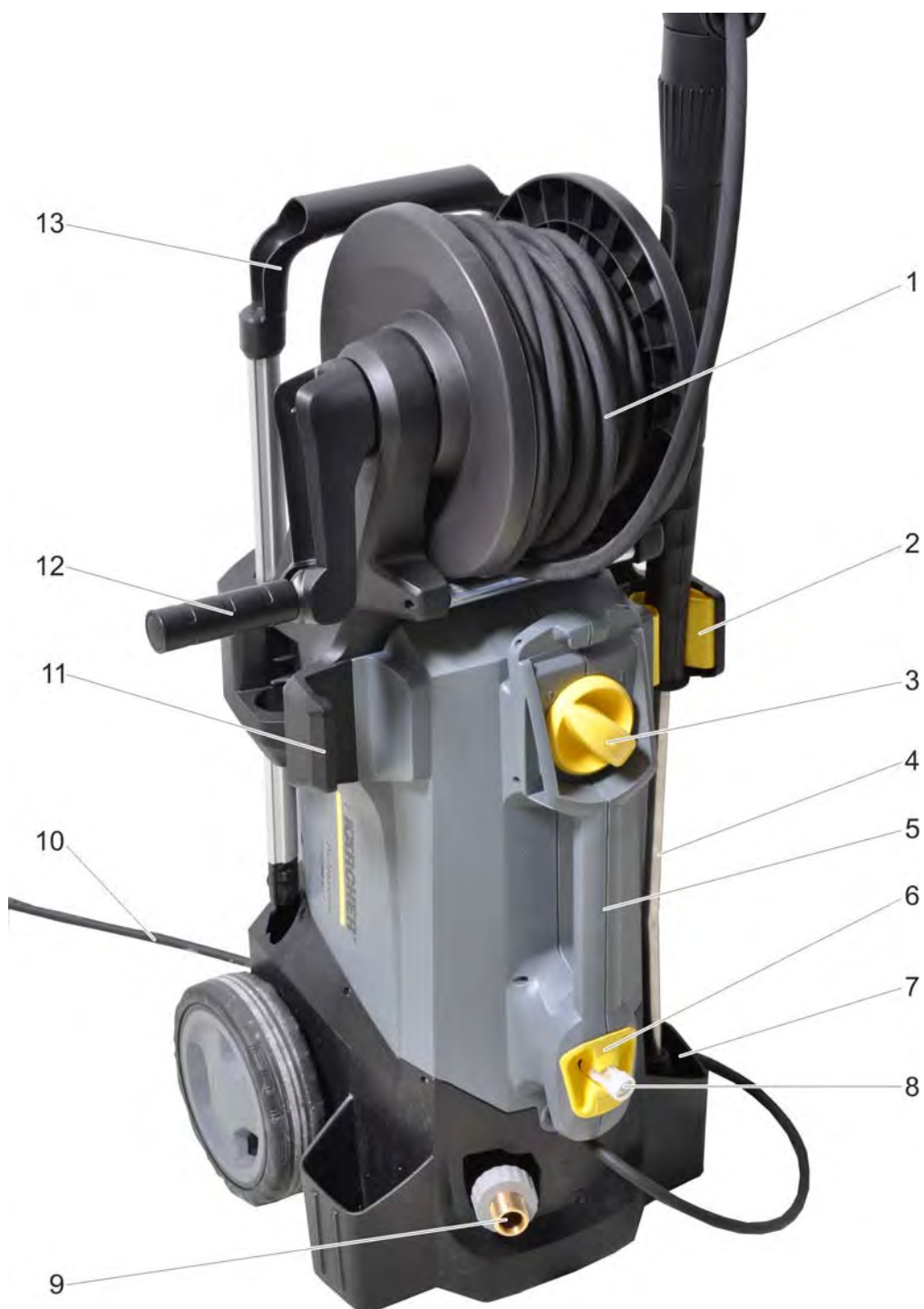
## 5.2 Sieve in the water connection



- 1 Water connection
- 2 Sieve
- 3 Hose hub
- 4 Union joint

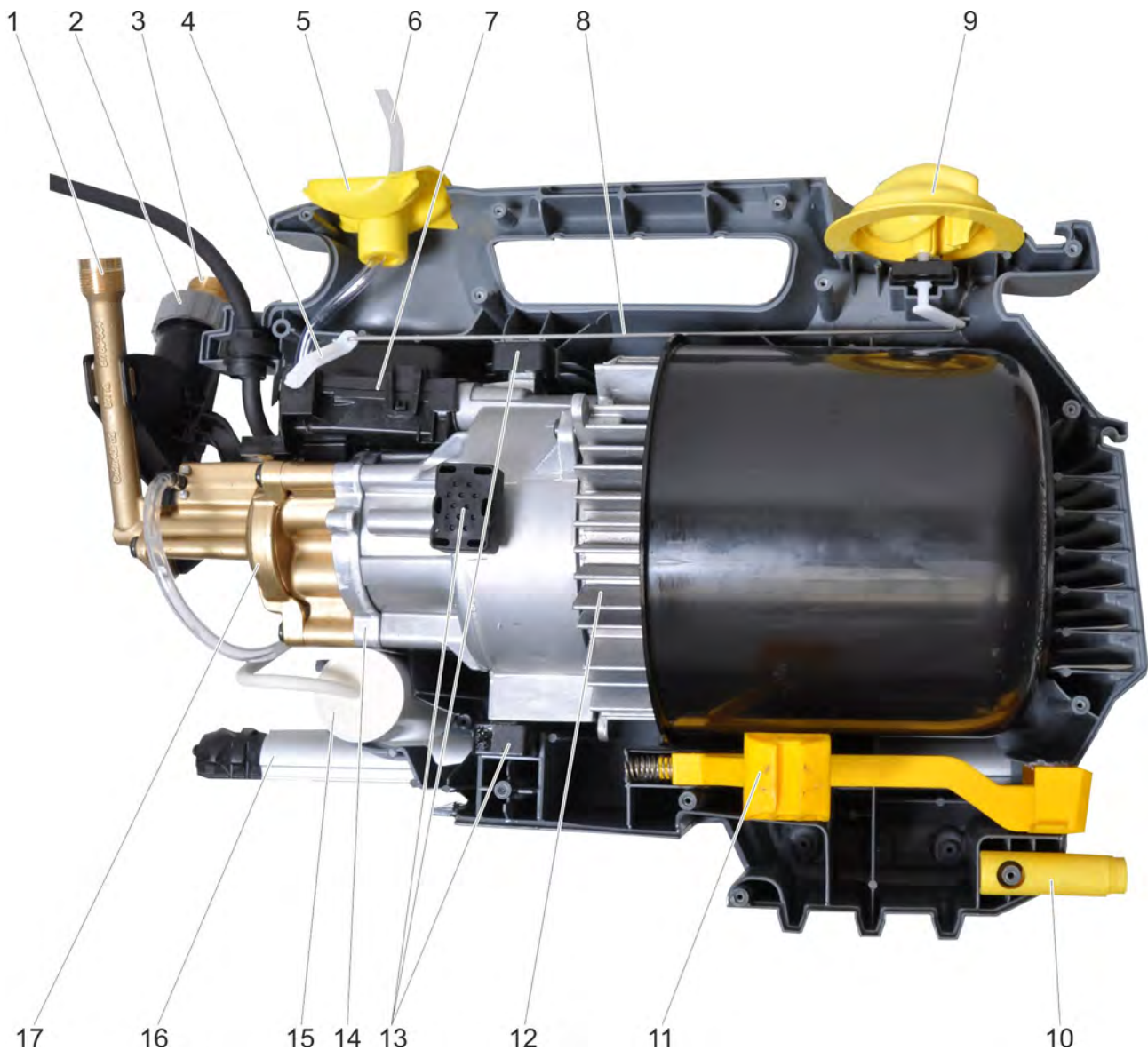


### 5.3 Device with hose drum



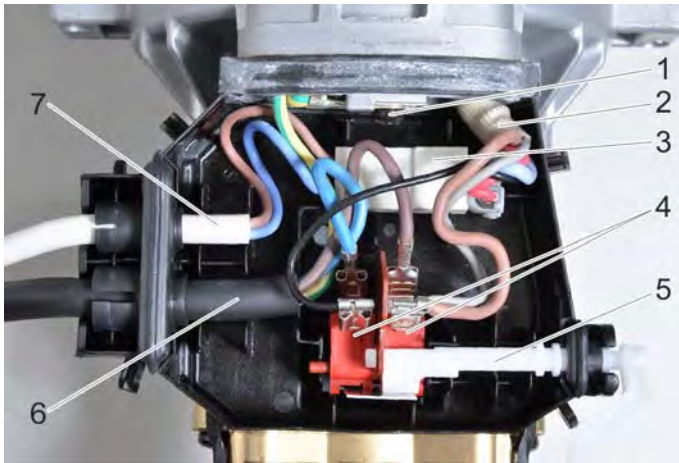
- 1 Hose drum
- 2 Spray lance holder with clamping, for transportation
- 3 Power switch
- 4 Spray lance
- 5 Carrying handle
- 6 Holder for detergent filter
- 7 Quiver for spray lance
- 8 Detergent suction hose with filter and dosing valve
- 9 Water connection
- 10 Mains cable with mains plug
- 11 Spray lance holder without clamping
- 12 Crank
- 13 Push handle

## 5.4 Opened appliance



- 1 High pressure connection
- 2 Water connection
- 3 Power cord
- 4 Lever appliance switch
- 5 Holder for detergent filter
- 6 Detergent suction hose with filter and dosing valve
- 7 Electric casing
- 8 Switch rod
- 9 Rotary handle appliance switch
- 10 Transport bracket for surface cleaner
- 11 Unlocking device push handle
- 12 Electric motor
- 13 Engine mount
- 14 Piston guide
- 15 Capacitor
- 16 Push handle
- 17 Pump head

### 5.4.1 Electric casing



- 1 Protective conductor terminal
- 2 Motor cable
- 3 Connector
- 4 Micro switch  
Main switch and pressure switch
- 5 Lever appliance switch
- 6 Power cord
- 7 Capacitor

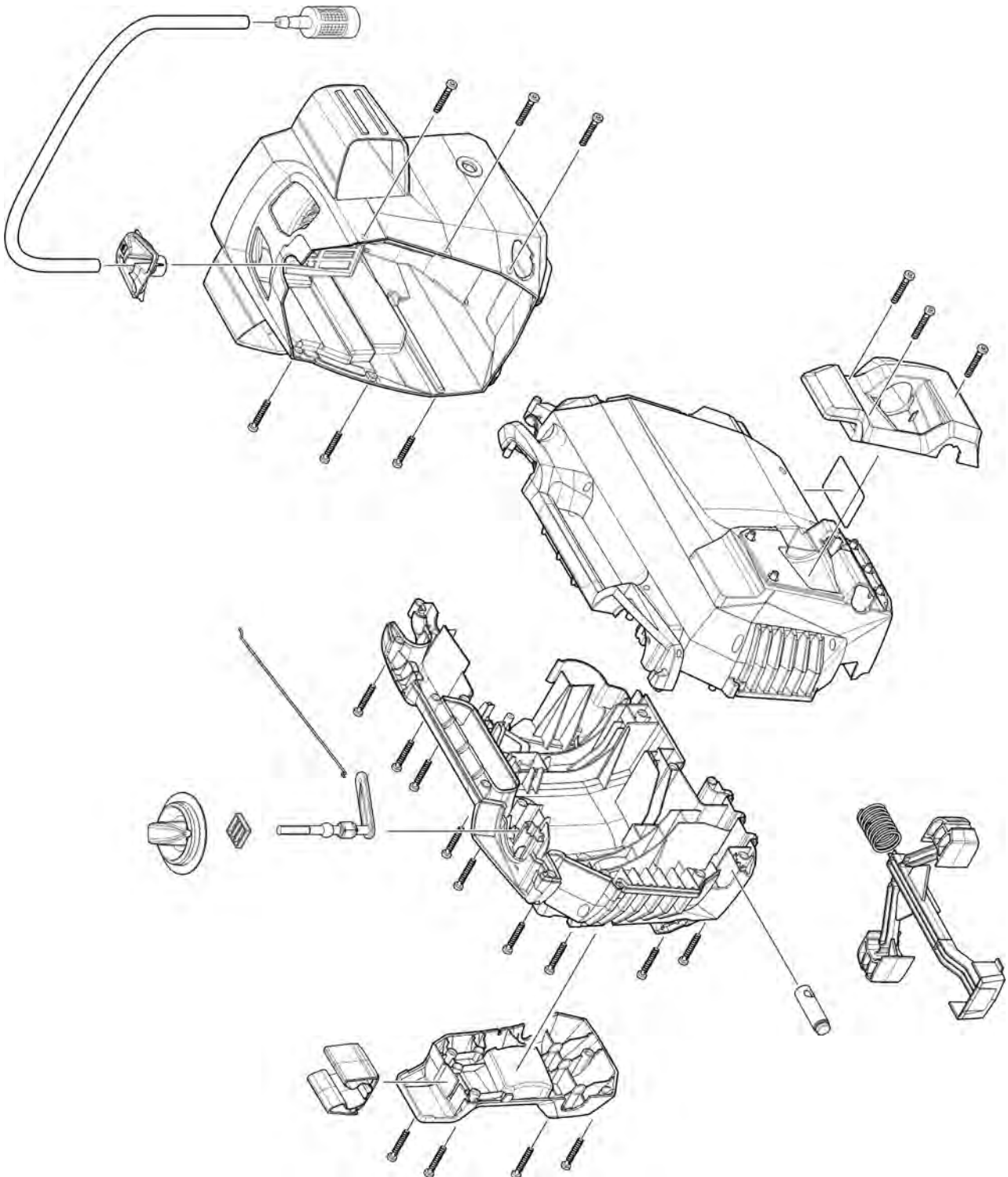
## 6 Basic settings and service procedures

### **⚠ Danger**

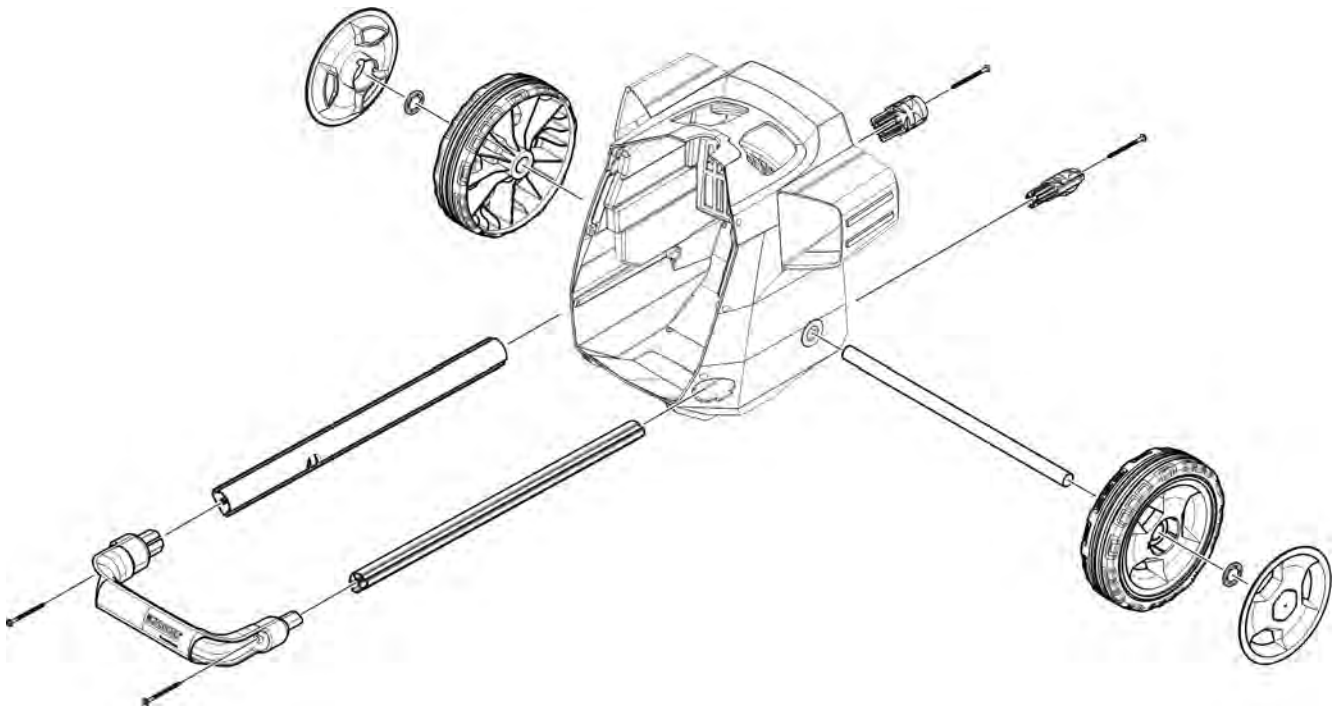
First pull out the plug from the mains before carrying out any tasks on the machine.

### 6.1 Overview individual parts of the casing

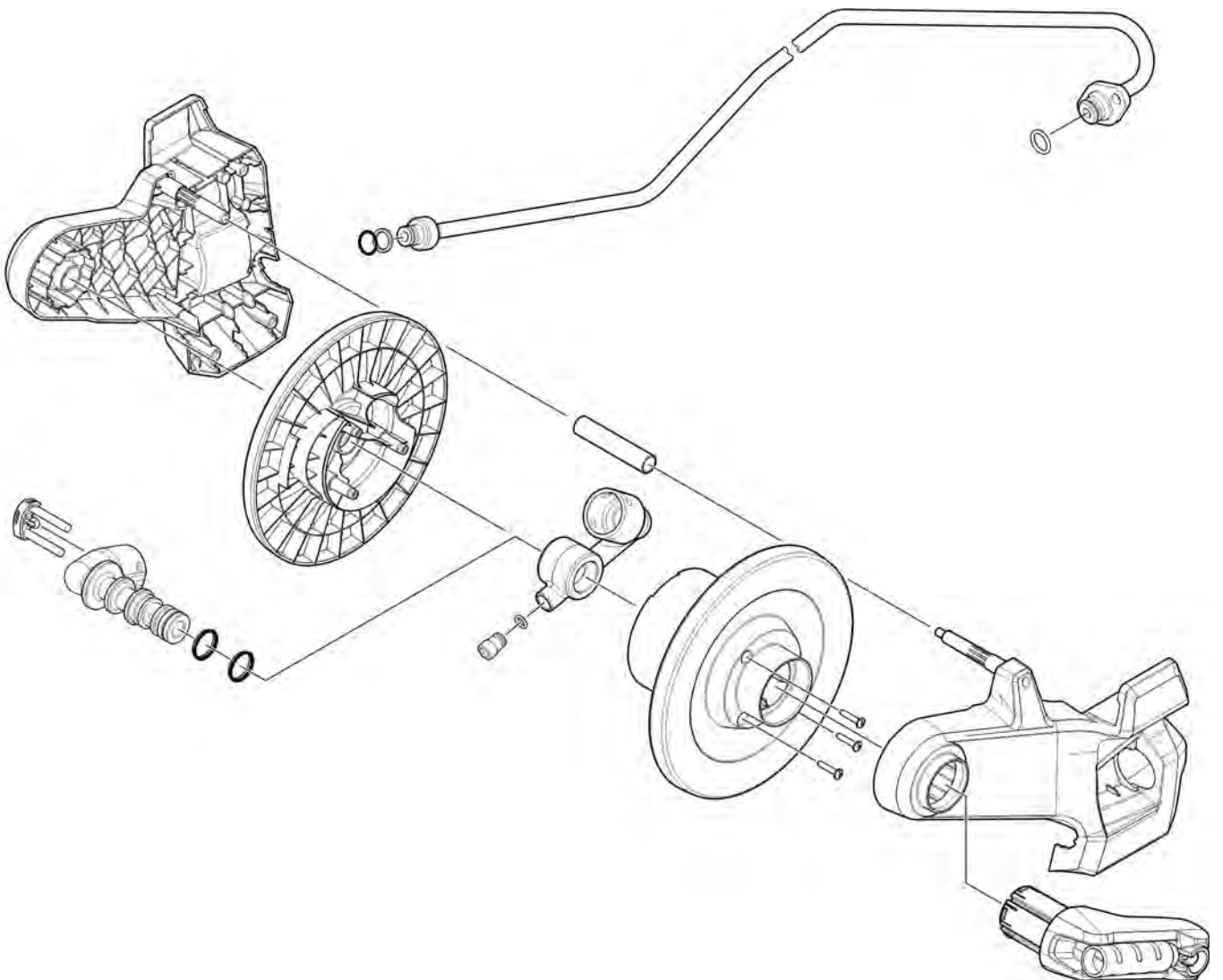
#### 6.1.1 Casing



### 6.1.2 Chassis, push handle

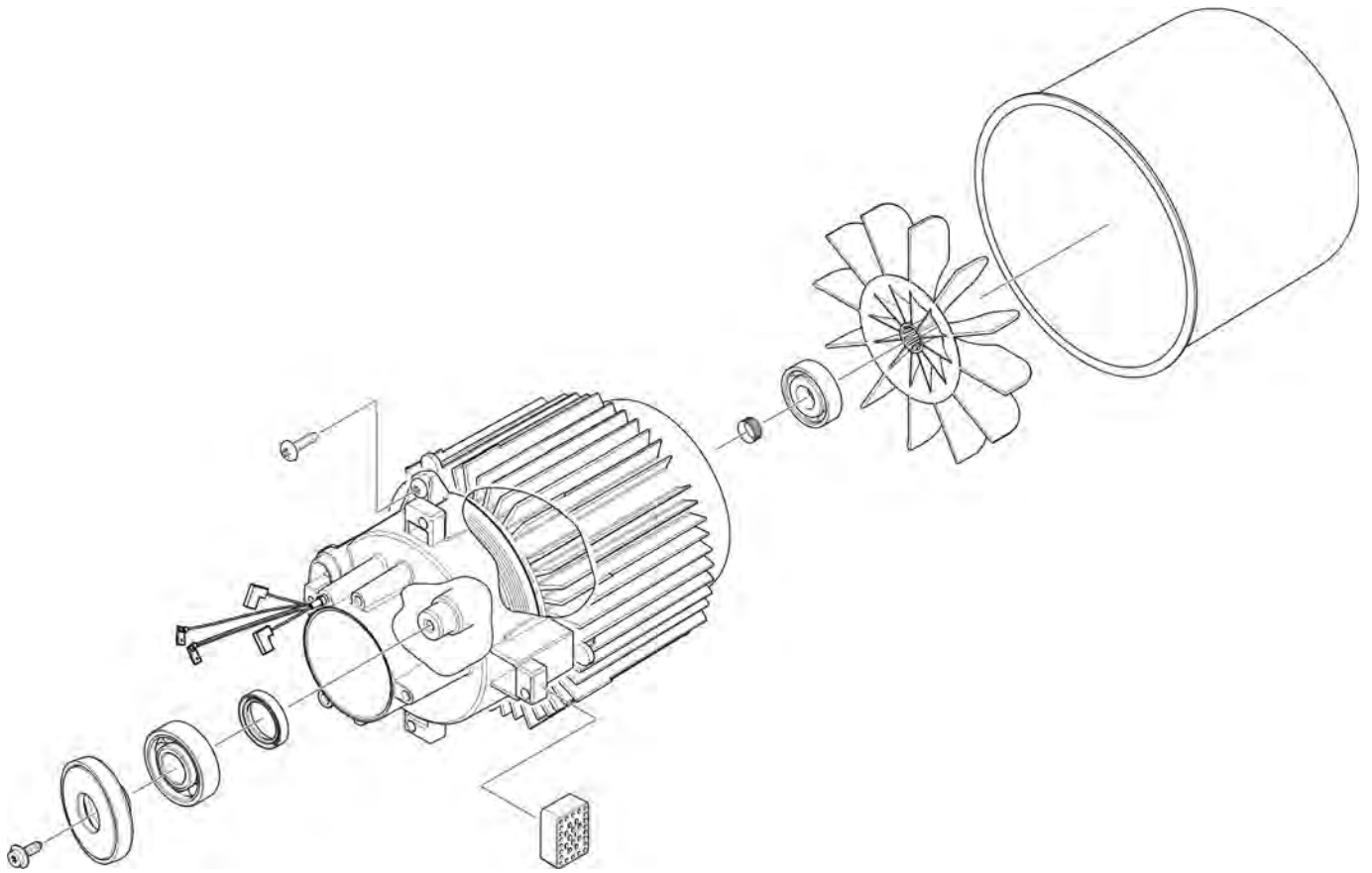


### 6.1.3 Hose drum

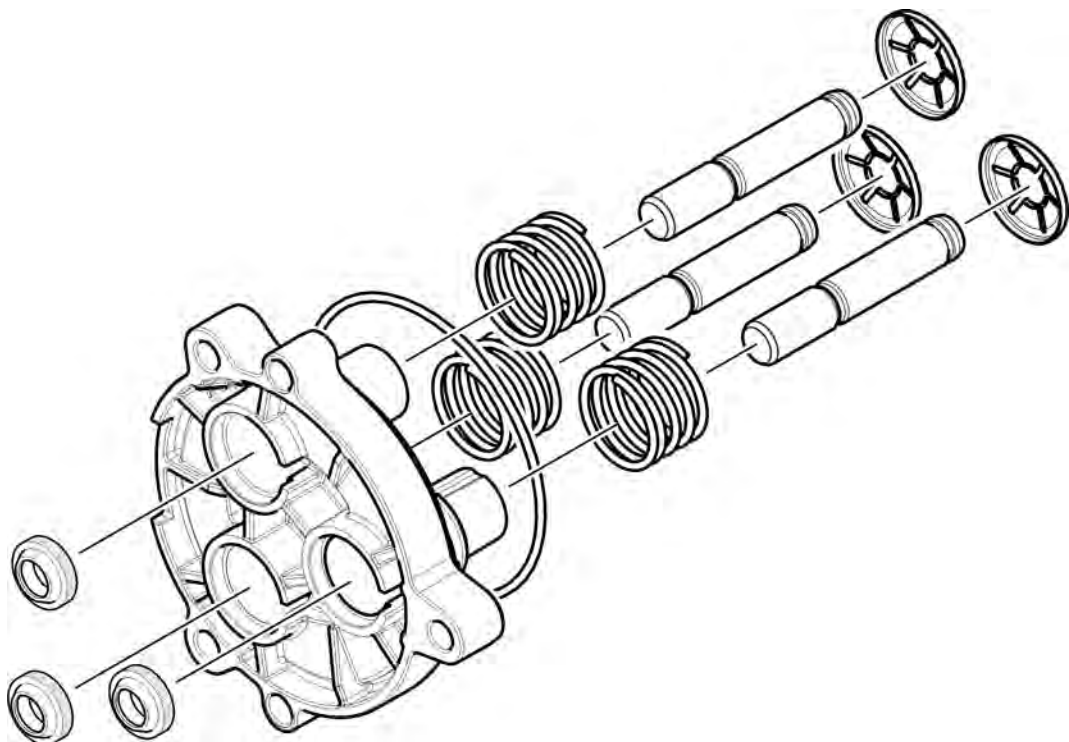


## 6.2 Overview individual parts of the motor, pump

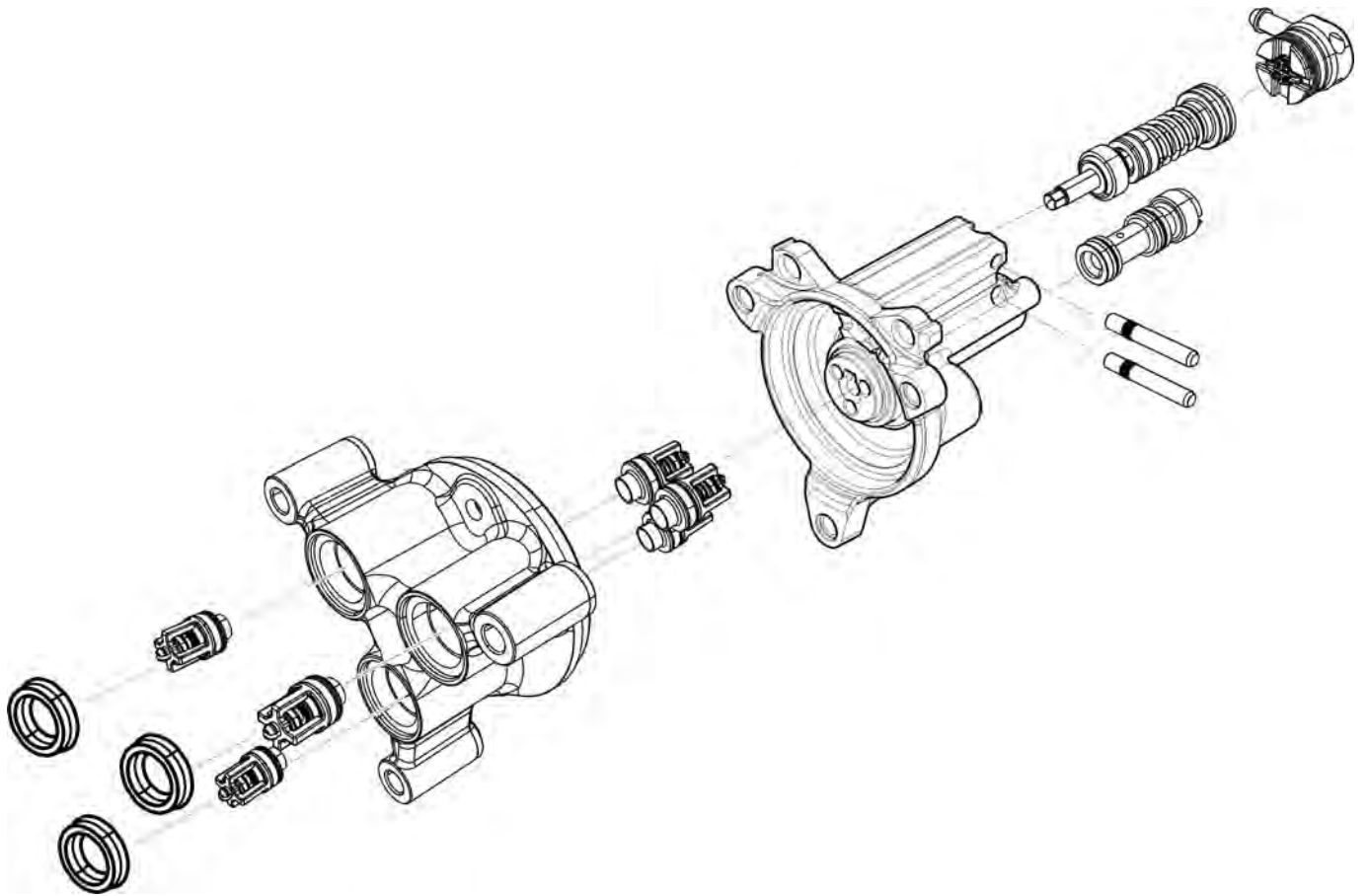
### 6.2.1 Motor



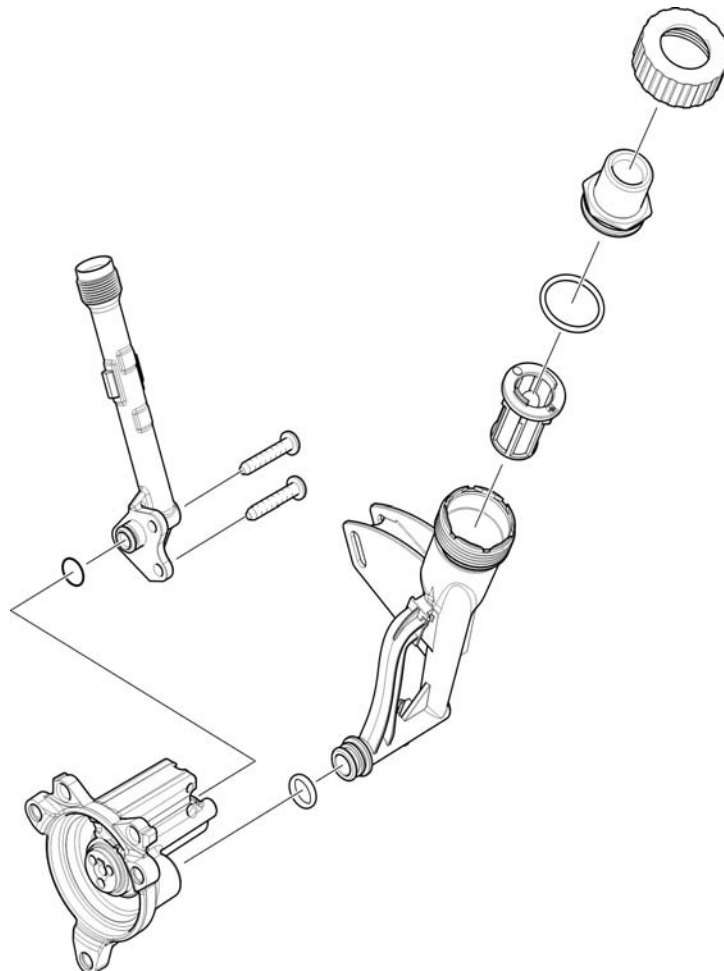
### 6.2.2 Piston guide



### 6.2.3 Pump head

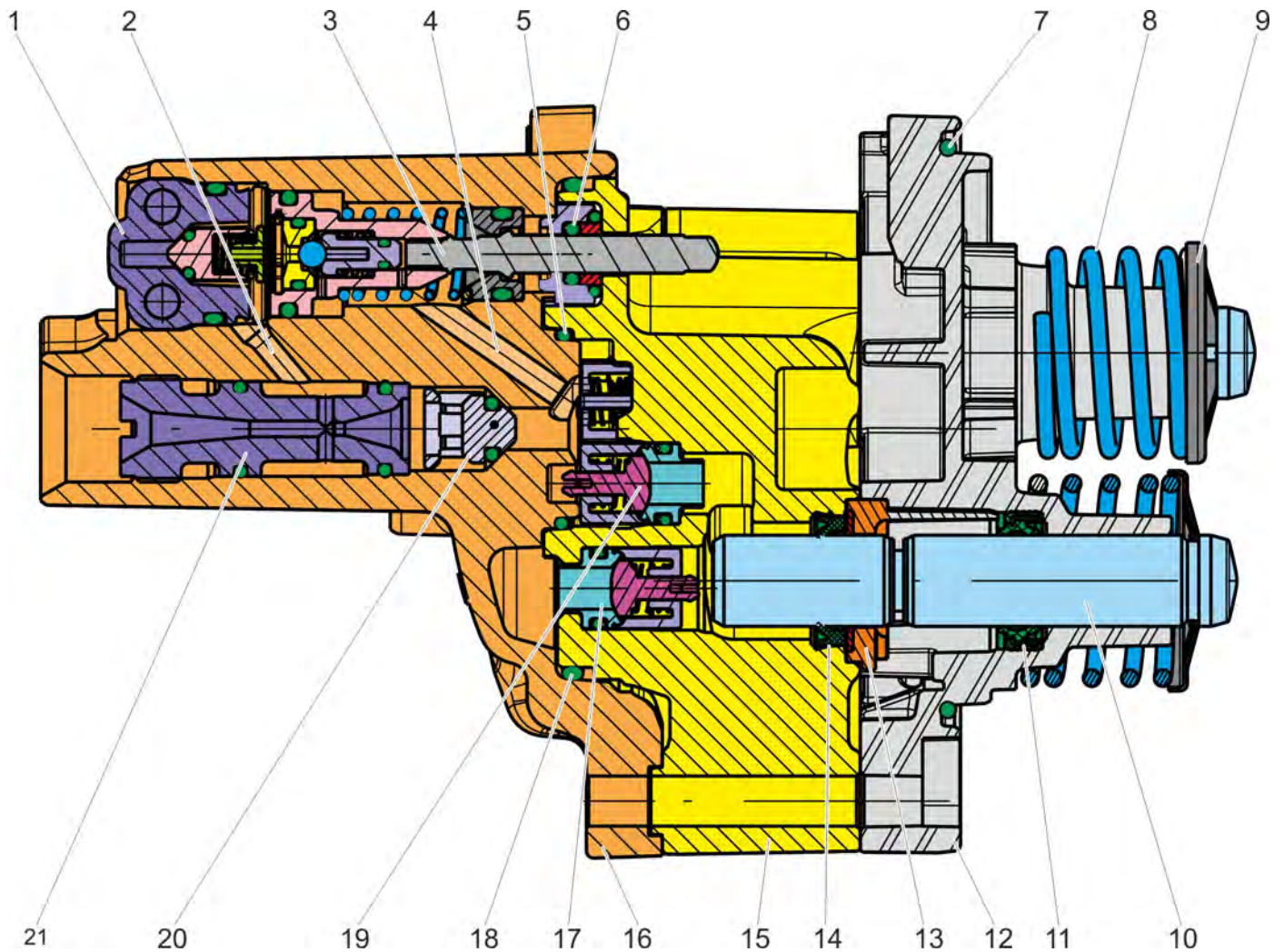


### 6.2.4 Water connection, without hose drum





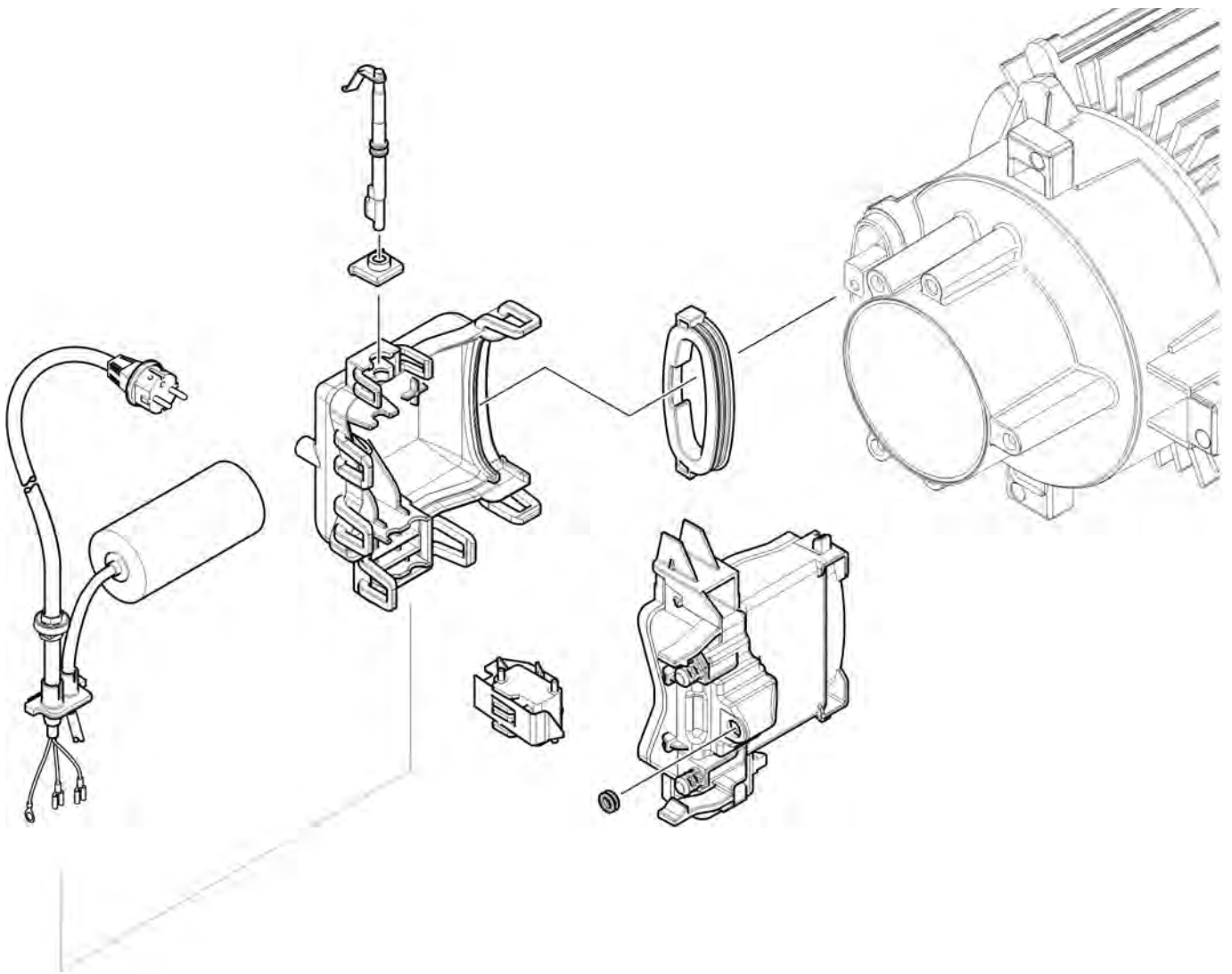
## 6.2.5 Pump head in section



- 1 Suction nipple with check valve
- 2 Detergent intake
- 3 Control valve, complete \*
- 4 Control boring
- 5 O-ring, low-pressure range/high-pressure range
- 6 Seals control piston
- 7 O-ring, oil
- 8 Piston spring
- 9 Spring plate
- 10 Piston, with drip edge
- 11 Oil groove ring
- 12 Piston guide
- 13 Spacer
- 14 High-pressure seal with support washer
- 15 Cylinder head
- 16 Valve gear casing
- 17 Suction valve, caulked
- 18 O-ring, valve gear casing
- 19 Pressure valve
- 20 Pressure holding valve
- 21 Injector nozzle

\* The control valve switches off the electric motor by means of the pressure surge that is created when closing the hand spray gun. Subsequently, the control valve effects a pressure reduction to 30...40 bar. In this way, the pump and accessories are protected and the force for opening the hand spray gun is reduced. For pumps that are equipped with this control valve, the pressure cannot be regulated on the hand spray gun (Servopress).

## 6.2.6 Electric casing



### 6.3 Replace the wheel



→ Remove the wheel cover.



→ Remove the retaining ring.

→ Remove wheel.

→ Slide a new wheel onto the axle.

→ Insert the lockwasher.

**Note**

*Use new retaining ring.*

### 6.4 Removing the bottom of the appliance (chassis)



→ Loosen 3 screws.

→ Unscrew 3 screws on the opposite site.

→ Remove the bottom of the appliance.

## 6.5 Sealing the pump on the water side



C

- Unscrew 2 screws.
- Remove water connection.

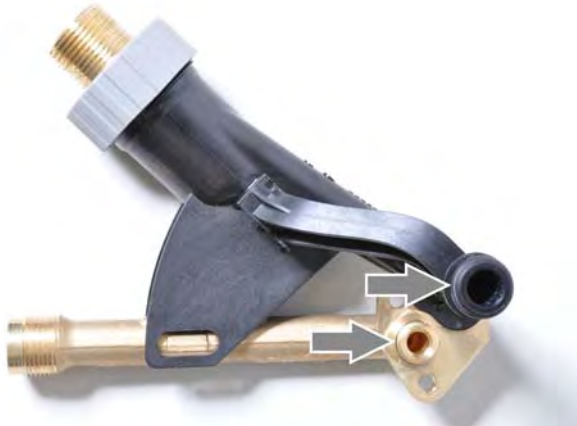
Design C



CX

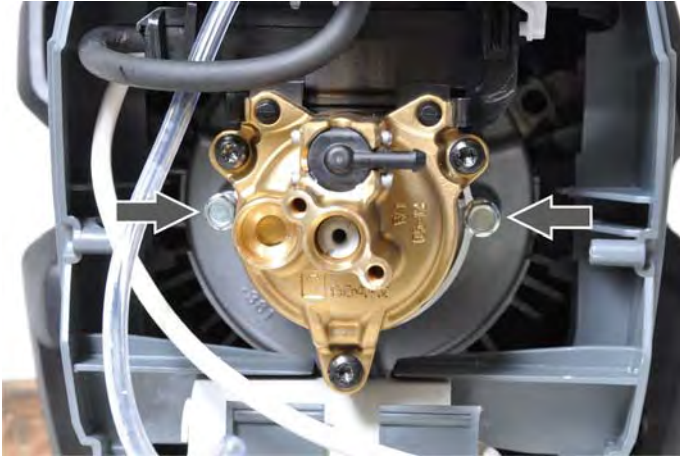
Design CX

- If necessary, replace O-rings



- Remove detergent suction hose.





→ Secure piston guide by means of 2 hexagon screws M6x30 (6.303-091.0).



→ Loosen 3 screws.



→ Unhook both locking hooks of the electric casing.  
→ Remove pump head, leave the electric casing at the motor.



→ Pull the valve gear casing and the cylinder head apart.



→ Remove the high-pressure seals using valve pliers or a screwdriver.

**Caution**

*Risk of damage. Do not scratch the mating surface of the cylinder head with the screwdriver when dismantling the high-pressure seals.*



→ Pull out the upper parts of the pressure valve using valve pliers.

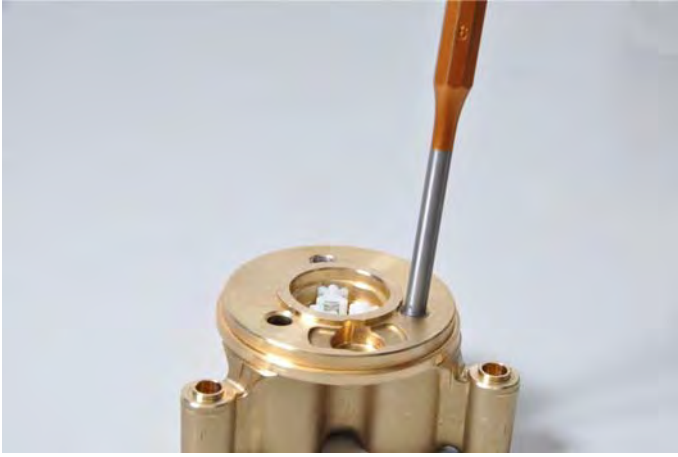


→ Push out the valve seats of the pressure valves using a drift punch (Ø 2 mm).



→ Lightly grease the O-rings.

→ Insert new pressure valves into the pump head.



- Drive the suction valves out of the pump head using a drift punch (Ø 6.0...6.4 mm).
- Lightly grease the O-rings on the suction valves.
- Insert new suction valves into the cylinder head.



- Support the cage side of the suction valve by means of the valve retainer (special tool 2.901-049.0).
- Flare the opposite side by means of the drive-in mandrel (special tool 2.901-049.0).

**Note**

*If there is no possibility to flare the valves, the complete cylinder head can be ordered and replaced as a spare part.*

## 6.6 Remove detergent injector.



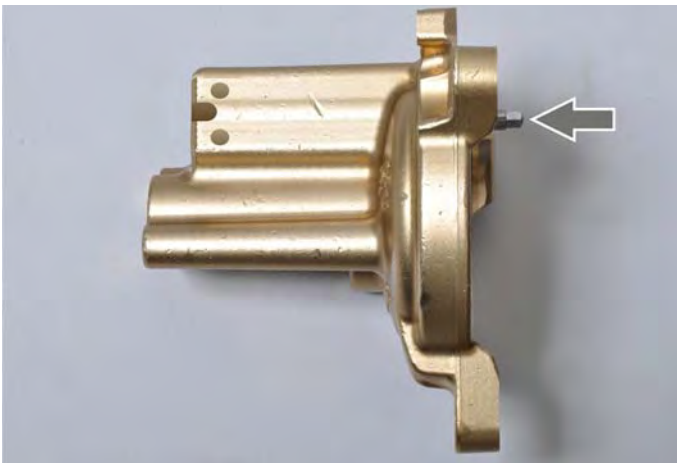
- Screw out the injector nozzle using a screw driver (12 mm).
- Remove the pressure retaining valve.
- Clamp the pump head into a vice.



- Drive out 2 pins using a drift punch ( $\varnothing$  4 mm).

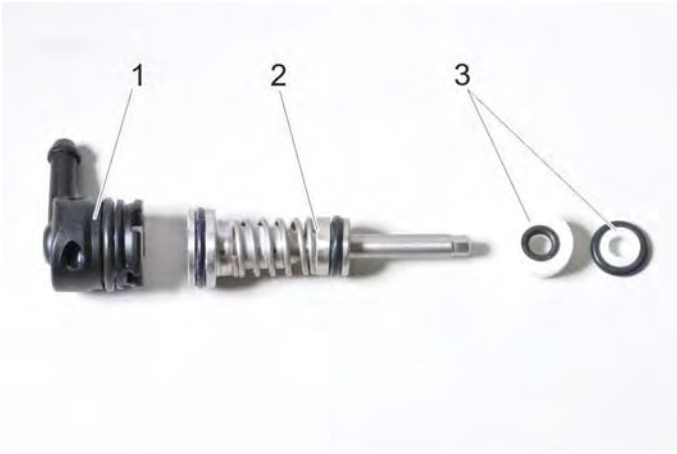


- Pull the detergent suction nipple out of the valve gear casing.
- Check backflow valve.



- Push the control piston out of the valve gear casing.





- 1 Detergent suction nipple
- 2 Control piston with pressure relief
- 3 Seals, control piston

## 6.7 Replacing support washers

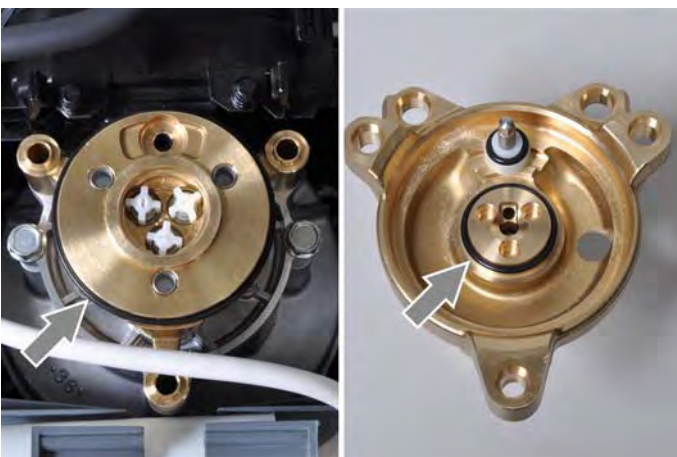


- Pull out the support washers and spacers.
- Insert new support washers and spacers.



- 1 Spacer
- 2 Support disc

## 6.8 Install pump head

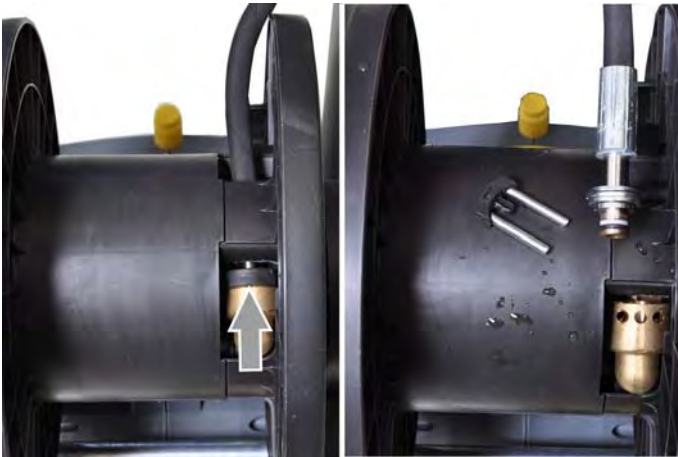


- Replace the O-rings on the outside (sealing valve gear casing) of the cylinder head and on the inside (sealing low/high pressure) of the control head.
- Insert new control piston and seals.
- Install valve gear casing on the cylinder head and pay attention to the correct position of the two O-rings.
- Place the pump head onto the piston guide and screw it in.

## 6.9 Remove the hose drum

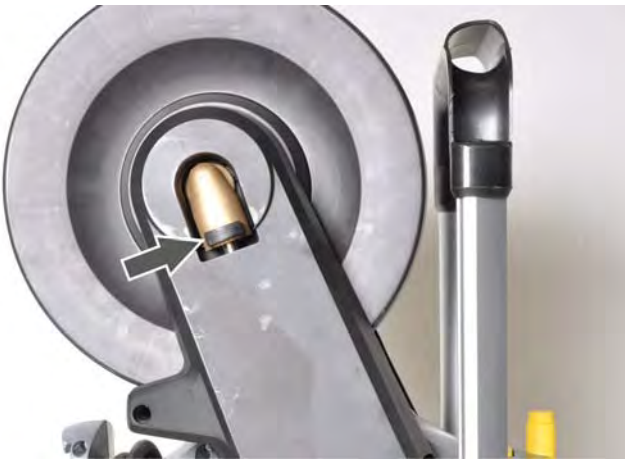


→ Remove the crank from the hose drum.



→ Pull out the safety clip.

→ Pull the high-pressure hose out of the joint.



→ Pull out the safety clip.



→ Loosen 5 screws.

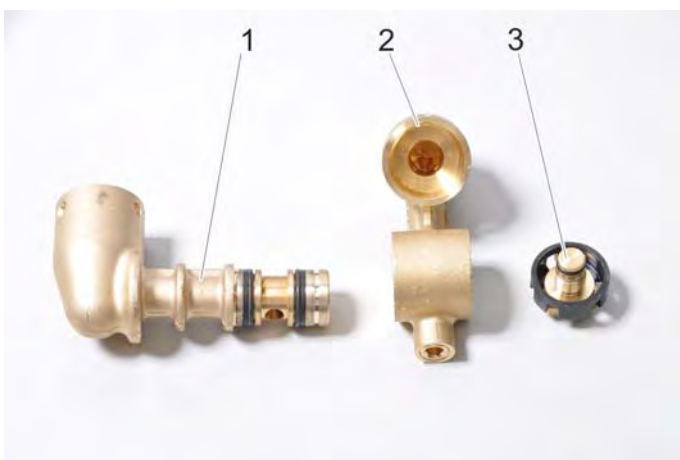
→ Remove the holder with the hose drum half.



- Loosen 3 screws.
- Remove drum half.



- Loosen screws.



- Remove elbow.
- Remove axle.

- 1 Axle
- 2 Elbow
- 3 Screw

## 6.10 Opening the casing



→ Remove bottom of the appliance, see Chapter "Removing bottom of the appliance (chassis)".

### **Caution**

Risk of damage when using the wrong screwdriver. The screws on the handle of the push handle are size T20. Do not use the same screwdriver as for the casing (T15).

→ Unscrew 2 screws.

→ Remove the handle of the push handle.



→ Unscrew 12 screws.

→ Separate the casing halves.

## 6.11 Replacing the high-pressure pipe



→ Remove bottom of the appliance, see Chapter "Removing bottom of the appliance (chassis)".

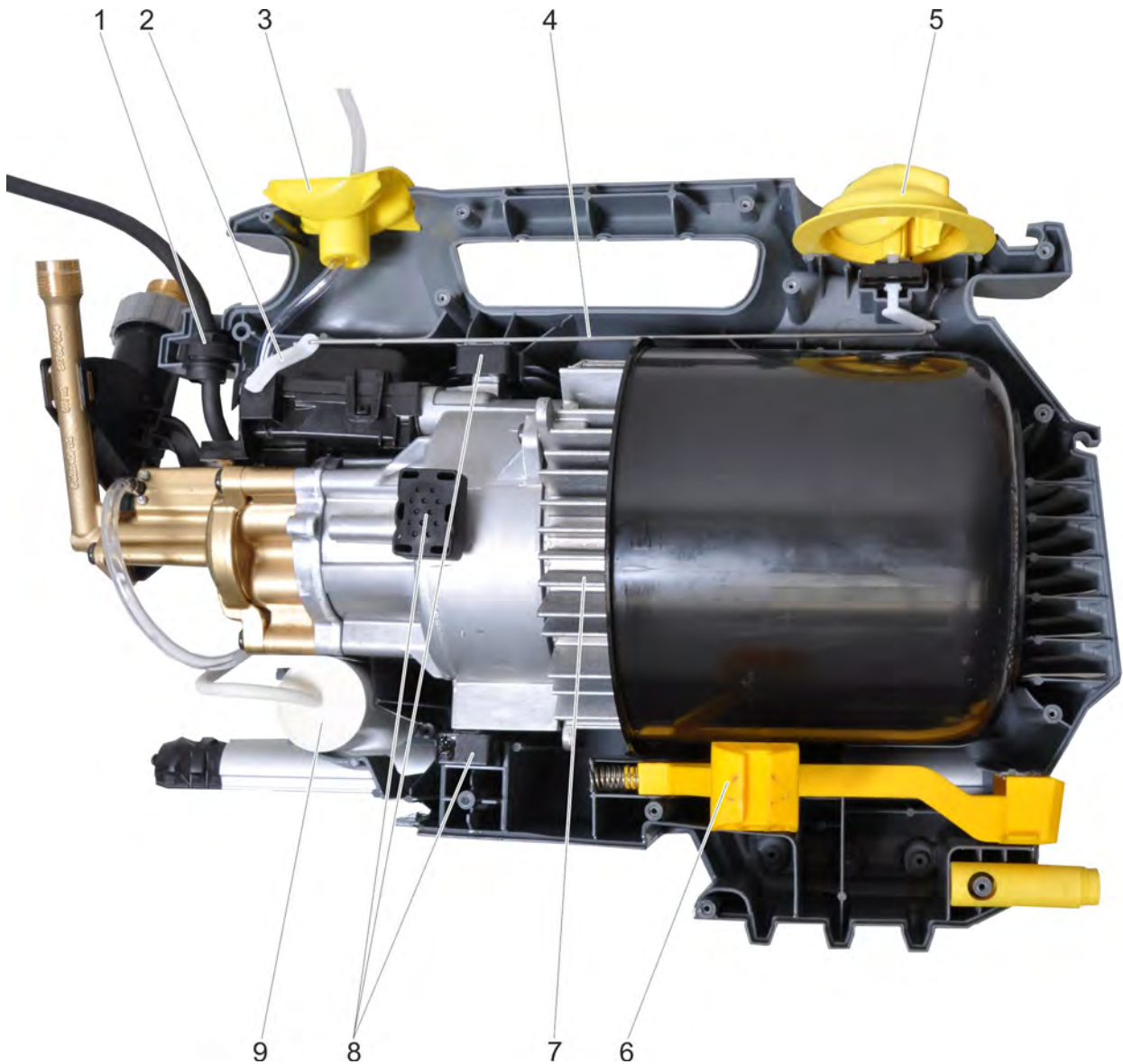
→ Unscrew 2 screws.

→ Dismount the hose drum, see Chapter "Dismounting hose drum".

→ Open casing, see Chapter "Open casing".

→ Replace the high-pressure pipe.

## 6.12 Remove the motor



- 1 Cable clamp
- 2 Lever
- 3 Holder for detergent filter
- 4 Switch rod
- 5 Rotary handle appliance switch
- 6 Unlocking device push handle
- 7 Motor with pump
- 8 Engine mount
- 9 Capacitor

- Remove bottom of the appliance, see Chapter "Removing bottom of the appliance (chassis)".
- Open casing, see Chapter "Opening the casing".
- Remove the unlocking device of the push handle.
- Remove the rotary handle of the appliance switch.
- Unhook the switch rod on the lever.
- Remove the holder for the detergent filter.
- Loosen the cable holder.
- Pull out the capacitor.
- Remove the engine mount.
- Lift the motor with the pump out of the casing.



- Open 5 closures of the electric casing.
- Remove the lid.



- Unplug the cable of the motor.
- Position the motor so that the pump points upwards.



- Loosen 3 screws.

**Note**

*Slowly loosen the screws on all sides.*

- Pull the pump head off the motor.

## 6.13 Replacing the oil seals



### Note

The complete piston guide (with press-fitted oil seals) can be ordered as a spare part.

- Pull out piston.
- Check piston for wear.



- 1 Magnet
- 2 O ring

- Carefully push out the oil seals using a screwdriver.
- Replace O-ring.
- Clean magnet (not present in all versions)

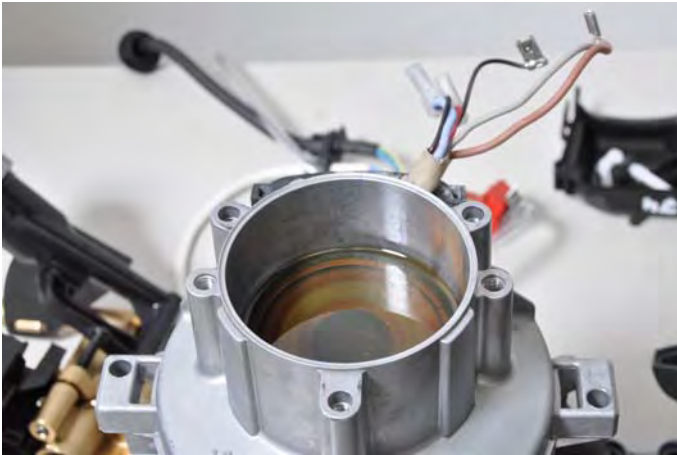


- Clean drilled holes from oil and grease.
- Insert new oils seals using the installation mandrel.

## 6.14 Attaching the pump to the motor



- 1 Balls with cage
- 2 Pressure disc
- 3 Swash plate



- Position the motor so that the swash plate points upwards.
- Fill in oil 15W40 until the swash plate is covered.



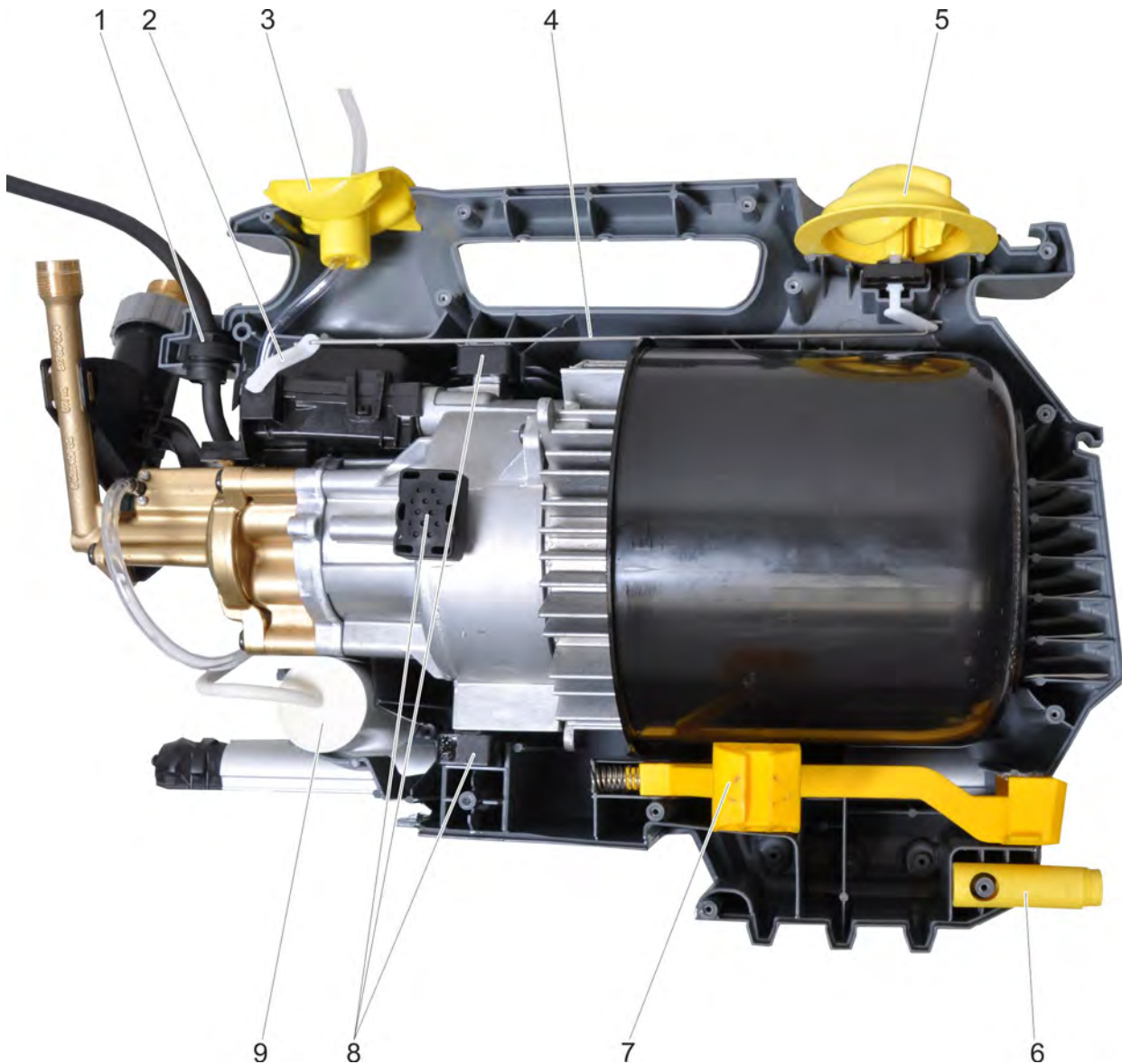
- Attach piston guide.
- Attach entire pump head.
- Tighten 3 screws.

**Note**

*Slowly screw in and tighten the screws on all sides.*



## 6.15 Installing the motor/pump into the casing



- |   |  |
|---|--|
| <p>1 Cable clamp<br/>                 2 Lever appliance switch<br/>                 3 Holder for detergent filter<br/>                 4 Switch rod<br/>                 5 Rotary handle appliance switch<br/>                 6 Transport bracket for surface cleaner<br/>                 7 Unlocking device push handle<br/>                 8 Engine mount<br/>                 9 Capacitor</p> | <p>→ Insert the transport bracket for the surface cleaner in the casing half.<br/>                 → Hook the switch rod into the rotary handle of the appliance switch.<br/>                 → Hook the switch rod into the lever of the appliance switch.<br/>                 → Turn the rotary handle to the "0" position and insert it into the casing half.<br/>                 → Insert the capacitor into the casing half.<br/>                 → Fit and align the second casing part.<br/>                 → Screw in the 12 screws and tighten them.<br/>                 → Slide the bar of the push handle into the casing.<br/>                 → Place the handle of the push handle onto the two bars.<br/>                 → Screw in the 2 screws and tighten them.</p> |
|---|--|
- Place an engine mount in the casing half.  
 → Place motor/pump in the casing half.  
 → Attach the remaining 3 engine mounts to the motor.  
 → Align the motor in the casing half.  
 → Insert the cable holder with the power cable in the casing half.  
 → Insert the holder for the detergent filter in the casing half.  
 → Insert the unlocking device of the push handle in the casing half.

## 7 Troubleshooting

### **⚠ Danger**

*Risk of injury by inadvertent startup of appliance and electrical shock.*

*First pull out the plug from the mains before carrying out any tasks on the machine.*

*Have the electrical components checked and repaired by an authorised expert only.*

### **7.1 Appliance is not running**

- Check connection cable for damages.
- Check the supply voltage.
- If the appliance is overheated:
  - Set the appliance switch to "0".
  - Allow machine to cool down at least for 15 minutes.
  - Set the appliance switch to "1".
- In case of an electrical defect, contact an expert.

### **7.2 Pressure does not build up in the appliance**

- Set nozzle to "High pressure".
- Appliance ventilation:
- Clean the sieve in the water connection.
- Check water supply level (refer to technical data).
- Clean the nozzle.
- Replace the nozzle.

### **7.3 Pump leaky**

3 drops of water per minute are permitted and can leak from the bottom of the appliance.

- Check the appliance in case of heavy leaks.

### **7.4 Pump is vibrating**

- Check suction pipes for water and detergent and ensure that they are leak-proof.
- Set the suction flow on the detergent filter to the minimum quantity.
- Appliance ventilation:

### **7.5 Detergent is not getting sucked in**

- Set nozzle to "CHEM".
- Increase the suction flow at the detergent filter.
- Check/ clean detergent suction hose with filter.


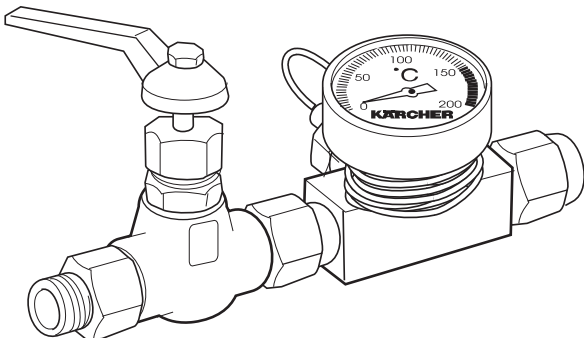
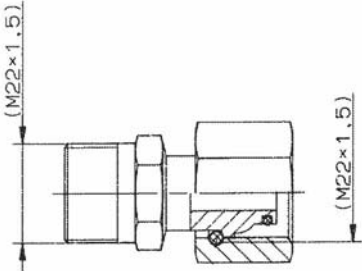
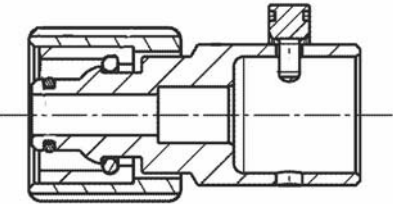
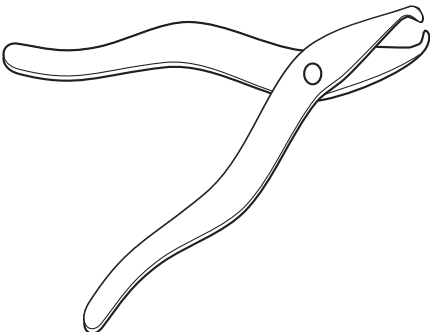
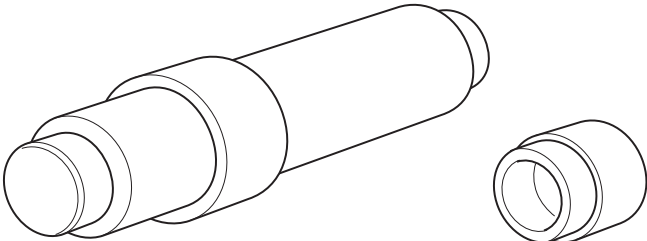
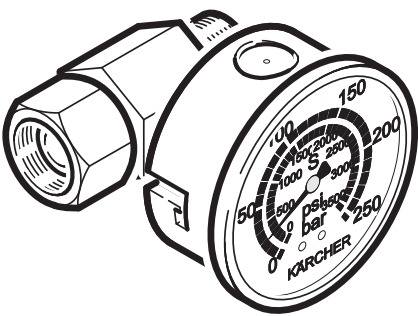
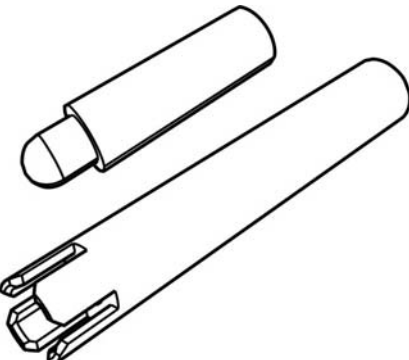
## 8 Technical Documentation

Appliance type	Appliance no.:	Circuit diagram	Operating instructions	Spare parts list
HD 5/12 C	1.520-120.0	0.089-602.0	5.964-789.0	5.972-460.0
HD 5/13 C	1.520-130.0			5.972-461.0
HD 5/15 C	1.520-140.0			5.971-796.0
HD 5/17 C	1.520-150.0			5.971-462.0
HD 6/13 C	1.520-160.0			5.972-463.0

## 8.1 Technical specifications

Type	HD 5/12 C		HD 5/13 C		HD 5/15 C		HD 5/17 C		HD 6/13 C	
	1.520-120.0		1.520-130.0		1.520-140.0		1.520-150.0		1.520-160.0	
	HD 5/12 CX		HD 5/13 CX		HD 5/15 CX		HD 5/17 CX		HD 6/13 CX	
	1.520-121.0		1.520-131.0		1.520-141.0		1.520-151.0		1.520-161.0	
<b>Main Supply</b>										
Voltage	V	230								
Current type	Hz	1~ 50								
Connected load	kW	2,5	2,6	3,0	3,0	2,9				
Protection (slow, char. C)	A	16								
Type of protection	--	IPX5								
Extension cord 30 m	mm <sup>2</sup>	2,5								
<b>Water connection</b>										
Max. feed temperature	°C	60								
Min. feed volume	l/min	12							13	
Suck height from open container (20 °C)	m	0,5								
Max. feed pressure	MPa	1								
<b>Performance data</b>										
Working pressure	MPa	12	13	15	17	13				
Nozzle size	--	035	034	032	027	038				
Max. operating over-pressure	MPa	17,5	17,5	20	20	19				
Water flow rate	l/min	8,3				8,1	9,8			
Detergent suck in	l/h	0...25								
Max. recoil force of hand spray gun	N	21,3	22,2	23,8	25,4	26,6				
<b>Values determined as per EN 60355-2-79</b>										
Hand-arm vibration value										
Hand spray gun	m/s <sup>2</sup>	3,6			2,4		4,1			
Spray lance	m/s <sup>2</sup>	2,5			1,9		2,8			
Uncertainty K	m/s <sup>2</sup>	0,9			0,7		0,9			
Sound pressure level L <sub>pA</sub> (CX)	dB(A)	72 (75)			72 (74)		72 (75)			
Uncertainty K <sub>pA</sub>	dB(A)	3								
Sound pressure level L <sub>WA</sub> + Uncertainty K <sub>WA</sub> (CX)	dB(A)	88 (92)			88 (90)		88 (92)			
<b>Dimensions and weights</b>										
Length	mm	380								
Width (CX)	mm	360 (370)								
Height	mm	930								
Typical operating weight (CX)	kg	24 (26)			25,2 (27,5)		26 (29)		26 (28)	

## 8.2 Special tools

			
<p>Electric measuring appliance</p>	<p>6.803-022.0</p>	<p>Shut-off valve with thermometer</p>	<p>2.901-030.0</p>
			
<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>Removal pliers, pressure/suction valves and water sieves</p>	<p>4.901-062.0</p>	<p>Installation mandrel oil seal, high-pressure seal</p>	<p>5.901-224.0</p>
		<p>Installation sleeve, high pressure seal</p>	<p>5.901-223.0</p>
			
<p>Test manometer for working pressure</p>	<p>4.401-072.0</p>	<p>Valve retainer and drive-in mandrel for suction valves</p>	<p>2.901-049.0</p>

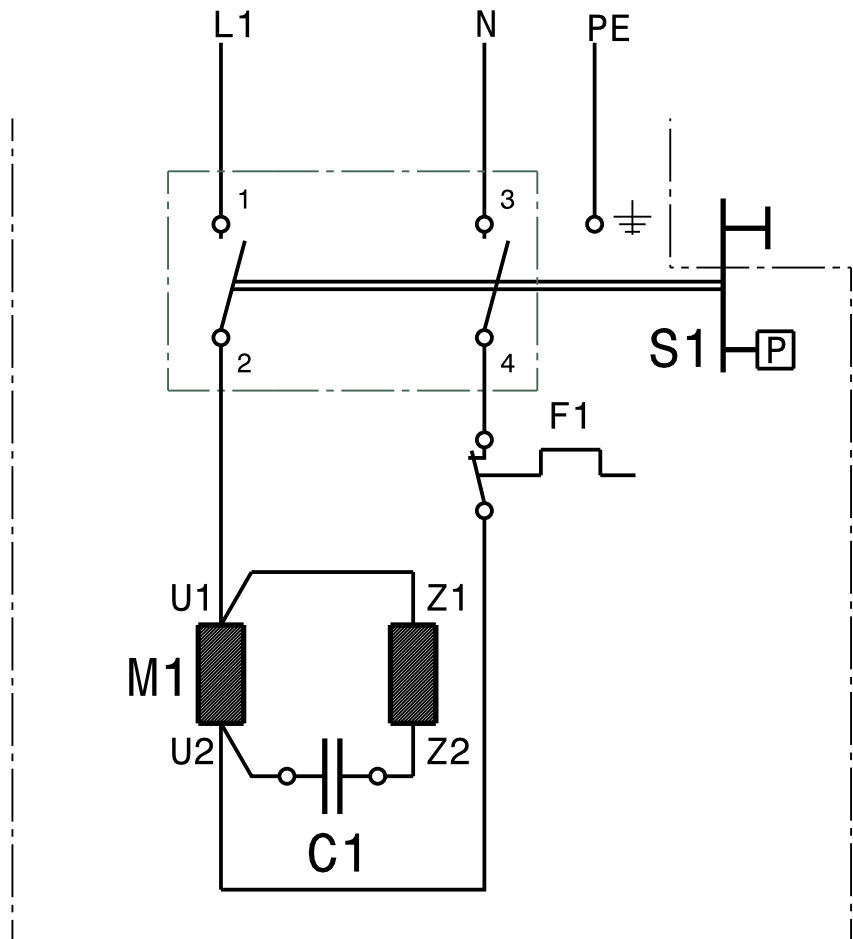
### 8.3 Torques

Injector nozzle	Nm	0,8...1,2
Water connection on the valve gear casing	Nm	6...8
Pump head	Nm	10...12
Protective conductor	Nm	3,5...4,5
Plastic casing	Nm	1,2...1,9
Locking screw elbow hose drum	Nm	7...9
Plastic screws hose drum	Nm	1...1,5

## 8.4 Circuit diagram

The status of the attached circuit diagram represents the creation date of the service manual. This circuit diagram is not updated. When working on the device, please always use the current circuit diagram in DI-SIS.

230V 1~ 50HZ  
240V 1~ 50HZ  
100V 1~ 50HZ  
100V 1~ 60HZ  
120V 1~ 60HZ



M1 Motor/motor/moteur/motor

C1 Betriebskondensator/capacitor/condensateur/  
condensador de servicio

S1 Geräteschalter/Druckschalter/switch/pressure switch/  
interrupteur/interrupteur a pression/interruptor/prespstato

F1 Thermokontakt/thermostat contact/thermo-contact/  
termostático contacto

