

# Operating manual

## CAYMAN

### Part 2 Overview – Operation - Spare parts lists



Article number of the operating manual: 00 59 79 01

Article number of the parts list-machine: 00 24 88 94 CAYMAN with frequency converter

Article number of the parts list-machine: 00 44 33 71 CAYMAN without frequency converter



**Read the operating manual prior to starting any work!**

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## EC Declaration of Conformity



### 1 EC Declaration of Conformity

**Company:** Knauf PFT GmbH & Co. KG  
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Germany

declares under our sole responsibility that the product:

**Type of machine:** CAYMAN  
**Type of equipment:** Mixing pump  
**Serial number:**  
**Guaranteed sound power level:** 95 dB

is in conformity with the following CE directives:

- Outdoor directive (2000/14/EC),
- Machine directive (2006/42/EC),
- Electromagnetic Compatibility Directive (2014/30/EU).

Operative Conformity Assessment according to Outdoor Directive 2000/14/EC:

Internal production control as per article 14 paragraph 2 in connection with annex V.

This declaration only refers to the machine in the state in which it has been placed on the market. Parts subsequently added by the user and/or subsequent interventions are not covered. This declaration ceases to be valid if the product is converted or changed without consent.

**Person authorised to compile the relevant technical documentation:**

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**The technical documentation is available from:**

Knauf PFT GmbH & Co. KG, Technical Department, Einersheimer Straße 53, 97346 Iphofen.

Iphofen,

Place, Date of issue

Name and signature

Dr. York Falkenberg

Managing director  
Identification of the signatory



## **2 Examination**

### **2.1 Examination by machine operator**

- Prior to each shift, the machine operator has to examine the effectiveness of the control and safety devices as well as the proper fitting of the protection devices.
- The safe working condition of construction machinery has to be checked by the machine operator during operation.
- If the safety devices show any defects or if any other defects are detected that compromise a safe operation, the supervisor has to be informed immediately.
- In case of defects that cause harm to persons, the operation of the construction machine has to be stopped to eliminate the defects.

### **2.2 Periodic inspection**

- Construction machinery has to be inspected for their safe working condition in accordance with the operating conditions and the operational requirements as needed, however at least once a year by an expert.
- Pressure vessels have to undergo the prescribed expert inspections.
- The inspection results have to be documented and kept at least until the next inspection.



## **3 General information**

### **3.1 Information regarding the operating manual**

This operating manual gives important information on handling the device. A prerequisite for safe working is the observance of all stated safety guidelines and instructions.

Furthermore the local accident prevention guidelines and general safety instructions for the application area of the device are to be adhered to.

Read the operating manual thoroughly before starting any work! It is a part of the product and has to be kept near the tool and easily accessible to the staff at all times.

If the tool is given to third parties, also include the operating manual.

The figures in this manual are for presentation purposes of facts not necessarily to scale and may slightly differ from the actual model of the device.

### **3.2 Keep the manual for future reference**

The operating manual has to be available during the whole service life of the product.

### **3.3 Division**

The operating manual is made of:

Part 1 (two books)

General safety instructions about horizontal continuous mixer.

Article number: 00 14 63 78

General safety instructions about delivery pumps.

Article number: 00 17 27 09

Part 2 Overview and operation, service and spare parts lists (this volume).

For safe operation of the device all three parts have to be read and observed. Together they form one operating manual.





## 4 Spare parts lists

Spare parts lists and operating manual for the PFT machines can be found on the internet (in the business login) at [www.pft.eu](http://www.pft.eu).

**PFT**

Language / Sprache / Langue

**Startseite**

- News
- Über Knauf PFT
- Produkte
- Anwendungen
- Informations-Service
- Kontakt
- Händlersuche
- Business Login
- Ersatzteilservice

**PFT - WIR SORGEN FÜR DEN FLUSS DER DINGE**

Technik und Wissenschaft haben auf allen Gebieten des Lebens zu einem Wandel geführt. Unsere Stärke ist es, die Erkenntnisse aus Wissenschaft und Forschung in Maschinenerzeugnisse höchster Qualität umzusetzen...

Maschinenprogramm	Anwendungsbereiche
PNEUMATISCHE FÖRDERANLAGEN	VERPUTZEN
MISCHPUMPEN	BESCHICHTEN

## 5 Periodic inspections

Inspection recommendations for the annual expert inspection of the CAYMAN (which is to be conducted in accordance with BGR 183) can be found in this section.

[http://www.pft.de/www/de/information\\_service/recurrent\\_checks/recurrent\\_checks.php](http://www.pft.de/www/de/information_service/recurrent_checks/recurrent_checks.php)

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Nächster Prüftermin

**Technical data****6 Technical data****6.1 General information****6.2 Power connection****Electrical details**

CAYMAN		
Detail	Value	Unit
Cmpl. weight	435	kg
Weight mixer / chassis approx.	195	kg
Weight pump approx.	140	Kg
Weight caddy approx.	100	kg
Overall length (extended pump)	2615	mm
Transport length	1900	mm
Width	855	mm
Height	895	mm
Detail	Value	Unit
voltage, three-phase current 50 Hz	400	V
Power consumption, max.	26	A
Power input	13	kW
CEE connection	5 x 32	A
Fuse protection	At least 3 x 25	A
Connection cable, min.	5 x 6	mm <sup>2</sup>



Fig. 1: Motor protection switch

Detail	Power	Setting value
Pump motor	7.5kW	15 A
Mixing motor	4.0kW	8 A
Water pump	1.1kW	2.7 A



## Technical data

### Water connection



Fig. 2: Water connection

Detail	Value	Unit
Water pressure in running machine	2.5	bar
Water connection	3/4	inch

## 6.3 Operating conditions

### Environment

Detail	Value	Unit
Temperature range	2-45	°C
Relative humidity, max.	80	%

### Duration

Detail	Value	Unit
Max. operating time at a stretch	8	hours

## 6.4 Power values

### Pump capacity

### Mixer capacity

Detail	Value	Unit
Pump capacity*, approx.	100	l/min
Operating pressure, max.	25	bar
Feed range *, max. at 50mmØ	100	m

\* reference value depending on conveying height, pump condition and version, mortar quality, composition and consistency

## 6.5 Sound power level

Guaranteed sound power level LWA

95dB (A)

## 6.6 Vibrations

Weighted effective value of acceleration to which the upper body parts are exposed <2.5 m/s<sup>2</sup>

## Dimension sheet



### 7 Dimension sheet

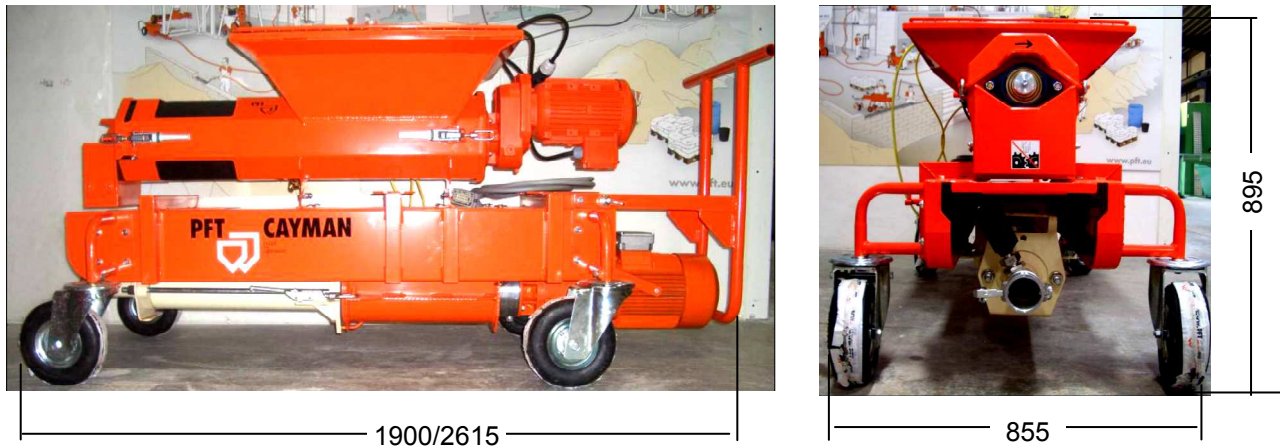


Fig. 3: Dimension sheet

#### 7.1 Name plate



Fig. 4: Name plate

The type plate is located in the mixing tube and in the CADDY and includes the following information:

- Manufacturer
- Type
- Year of manufacture
- Machine number
- Permissible operating pressure



## 8 Overview CAYMAN

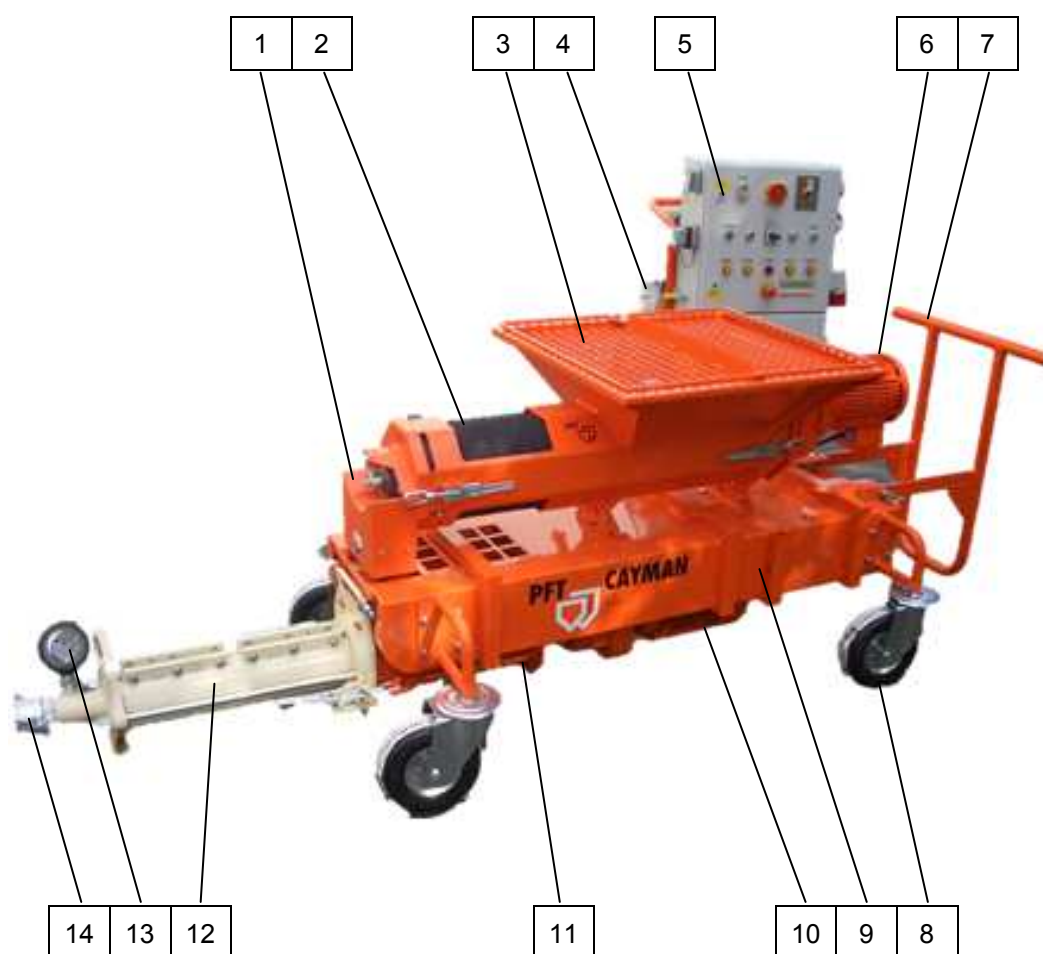


Fig. 5: Table of the assembly groups

1. Mortar outlet flange in mixer
2. Rubber mixing tube
3. Protective grille with sack opener
4. Booster pump in CADDY
5. Control box
6. Gear motor for mixer
7. Motor protection handle / slider handle

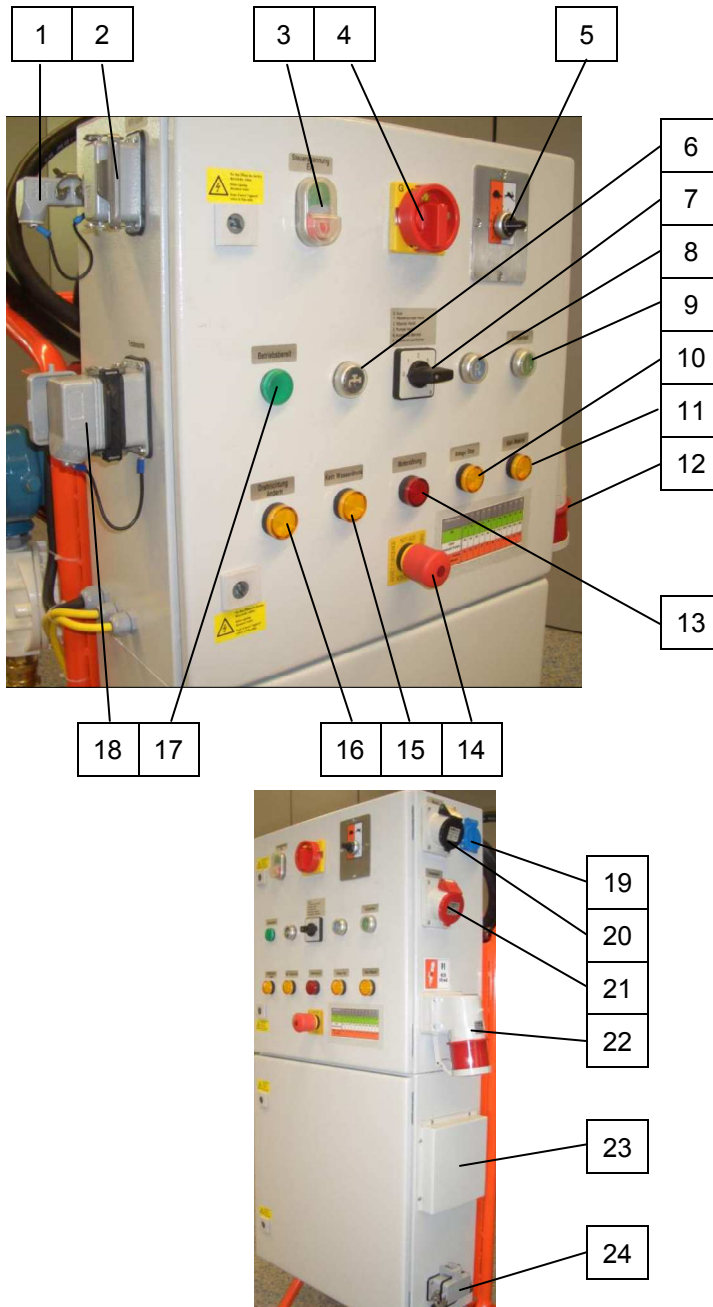
8. Castor
9. Undercarriage
10. Gear motor for pump
11. Pump material container
12. Pump unit
13. Mortar pressure gauge
14. Connection for mortar hose

## Description of assemblies



## 9 Description of assemblies

### 9.1 Overview of the control box with FU Article number 00250808



1. Dummy connector / Connection for remote control cable.
2. Connection wet sensor (wet sensor in pump material container).
3. Push button for control voltage "ON/OFF".
4. Main reversing switch = emergency-stop switch.
5. Potentiometer for speed of pump motor / quantity of material.
6. Pushbutton for water inlet.
7. Step switch for six operation modes.
8. Release the pump (reverse operation).
9. Pushbutton for lamp test.
10. Control lamp system STOP.
11. Control lamp no material.
12. Connection to main terminal.
13. Control lamp motor failure.
14. Push button "EMERGENCY-OFF".
15. Control lamp no water pressure.
16. Control lamp change direction of rotation.
17. Control lamp machine ready for operation.
18. Dummy plug / connection dry sensor - dry sensor in the material hopper of the mixer.
19. Socket 230V continuous current.
20. Connection for mixer motor.
21. Connection for air compressor or delivery hood.
22. Connection to main terminal.
23. Protective hood for filter fan.
24. Connection of pump motor.

Fig. 6: Assembly unit control box





## 9.2 Overview of control box article number 00280799

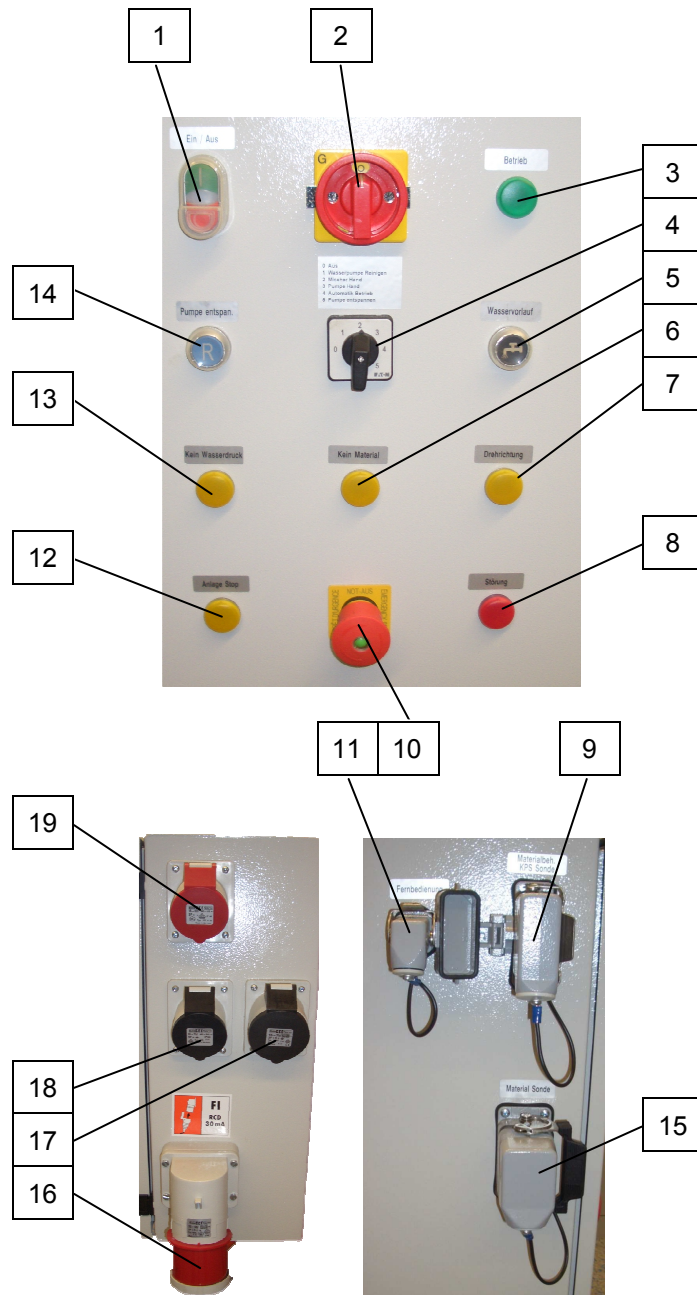


Fig. 7: Assembly unit control box

## Description of assemblies



### 9.3 Overview of Water tap assembly

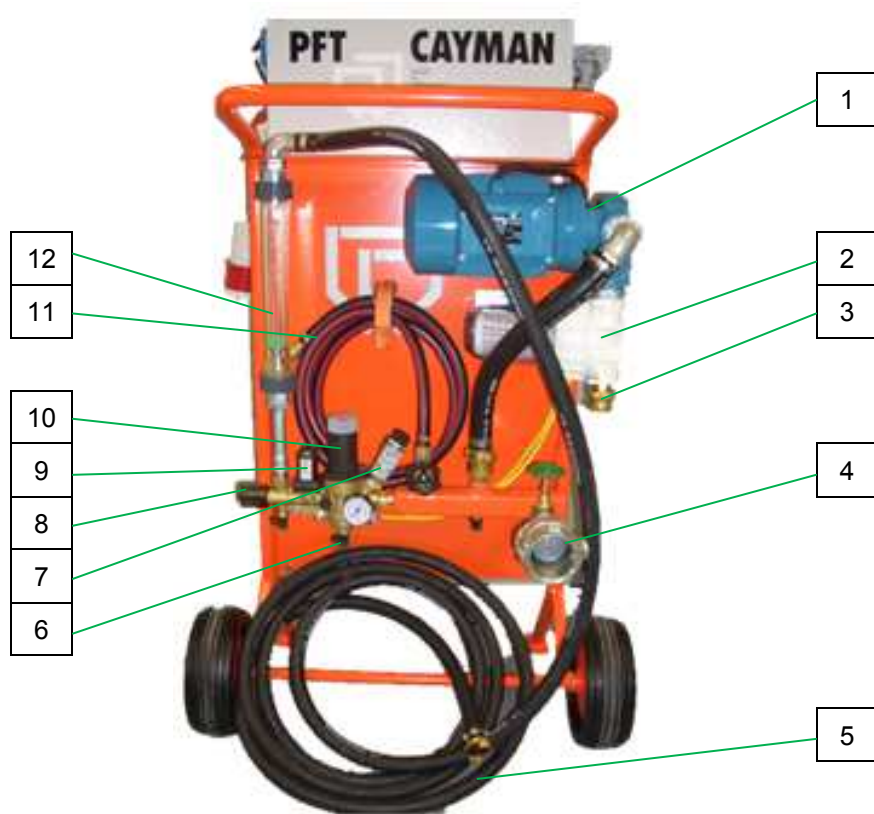


Fig. 8: Water tap assembly

- |   |   |
|---|---|
| 1. Booster pump.                                | 7. Pressure switch for water.                   |
| 2. Pre-filter with tray.                        | 8. Needle valve to regulate the water quantity. |
| 3. Water inlet from water supply or water tank. | 9. Solenoid valve.                              |
| 4. Connection for cleaning the mortar hoses.    | 10. Pressure reducer.                           |
| 5. Water connection to mixing tube.             | 11. Cleaning hose with spray nozzle.            |
| 6. Water drain valve.                           | 12. Water flow meter.                           |





## 10 Operating modes

### 10.1 Selector switch for operating modes



**Fig. 9:** Selector switch position "0"

**Main switch "ON", control voltage "ON", Selector switch position "0";:**

**Machine is ready for operation, green control lamp lights up.**

By pressing the water supply button, the water pump starts (for adjusting the needle valve of water flow meter).

The control lamp is checked by pressing the push button lamp test.



**Fig. 10:** Selector switch water pump

**Main switch "ON", control voltage "ON", Selector switch water pump "Manual":**

**Water pump is in operation.**

For cleaning the hoses or for water extraction by water extraction valve.

The water quantity evident on the sight glass of the water flow meter at the needle valve can be adjusted.



**Fig. 11:** Selector switch mixer

**Main switch "ON", control voltage "ON", Selector switch mixer "Manual":**

**Mixer is in operation.**

Mixer is operated separately for filling the pump material container.

Mixer and booster pump run on manual operation.

The mixer is switched off at full indication using the level sensor in the pump material container.

## Intended use control panel



Fig. 12: Selector switch pump motor

### **Main switch “ON”, control voltage “ON”, Selector switch pump “Manual”:**

**Pump motor is in operation.**

Pump motor is operated separately to empty the pump motor container.



#### **NOTE!**

*Never let the pump run dry.*



Fig. 13: Selector switch automatic

### **Main switch “ON”, control voltage “ON”, Selector switch automatic mode:**

Machine runs in automatic mode.

The mixer motor starts automatically at the full indication of the dry sensor.

The pump motor starts automatically at the full indication of the wet sensor in the pump material container.



#### **NOTE!**

*Water factor must be set at prescribed value.*



Fig. 14: Release selector switch pump

### **Main switch “ON”, control voltage “ON”, release Selector switch pump:**

Press blue push button Release pump.

The pump motor rotates in the opposite direction and relieves the pressure in the pump.



Fig. 15: Run selector switch mixer empty

### **Main switch “ON”, control voltage “ON”, run Selector switch mixer empty (FU):**

Another part of the residual material is pumped from the pump container through the lag time.

The dry area of the mixer is emptied to 90%.

This function considerably eases the cleaning.

## 11 Intended use control panel

### 11.1 Intended purpose flow meter



#### **Scope of application:**

*The flow meter is used for the volume measurement of transparent liquid and gaseous flows in closed pipelines. Optionally the devices can be used for flow monitoring.*



## 11.2 Intended purpose control panel

The tool is conceptualised and designed exclusively for the purpose of use specified here.



**Scope of application:**

*Primary use for water and neutral, non-adhesive liquids. Also suitable for air and neutral non-flammable gases.*

*Maximum operating pressure (inlet pressure) 16 bar.*

*Outlet pressure infinitely adjustable from 1.5 to 6 bar.*

*Smallest possible inlet pressure 2.5 bar.*

*Minimum pressure drop (inlet pressure/outlet pressure) 1 bar.*

*Maximum media and ambient temperature 75°C.*

*Assembly position as desired, preferable vertical.*

## 11.3 Intended purpose solenoid valve



**Scope of application:**

*Solenoid valves for liquid and gaseous media, aggressive or neutral, can be used different temperature and pressure ranges*

*Type 6213 is a 2/2 way solenoid valve with straight passage, normally closed, with a permanently coupled membrane system.*

*It operates from 0 bar and can be used universally for liquids. A minimum pressure differential of 0.5 bar is required for the valve to fully open.*



**WARNING!**

**Danger due to improper use!**

Any case of use beyond the specified purpose of use and/ or any other sort of use of the tool can lead to dangerous situations.

Therefore:

- Use the tool only for the purpose specified.
- Always adhere to the usage directives of the material manufacturer.
- Strictly follow all instructions in this operating manual.

Claims of any kind due to damage caused by improper use will not be entertained.

The operator of the tool is alone responsible for any damage arising from improper use.

**Description Booster pump**

## 12 Description Booster pump

### 12.1 Scope of application booster pump

The PFT booster pump is mainly used as booster pump for interposing at the mortar mixer and mortar mixing pumps with insufficient water pressure. Moreover it can be used as suction pump to suck liquids from containers, to empty smaller pools and ponds, for cellar drainage and irrigation.

The constant water supply of the PFT machine technology is automatically ensured by means of water supply from a water reservoir by the PFT booster pump.

A flow pressure of at least 2.5 bar with the machine in operation on the construction side is guaranteed by means of suction from the water reservoir.

### 12.2 Intended use

**Attention!**

*The booster pump is recommended only for pumping of clean water, of water containing a reasonable amount of impurities and non-aggressive chemical liquids. Media with fibrous and abrasive components should be avoided.*

*Their use is subject to the regulation of local legislation.*



## 13 Work flow

### 13.1 Functional description

The machine combination **PFT CAYMAN** is a continuously working mixing and delivery pump for processing floor screed.

But it is also possible to carry out plastering with the machine. For this purpose, a small metering shaft must be built-in and a small pump must be fitted. Additionally, even an air compressor with pressure switch-off is needed.

**Adhere to the usage directives of the material manufacturer.**

The machine combination **PFT CAYMAN** can be loaded with material in sacks or via delivery hood under a Silo / Container with material.

The material reaches in the pump container of the delivery pump by a horizontal mixer equipped with its own drive after addition of water in mixing tube and is forwarded from there at up to 100 l/min to processing plant.

The control box with programmable logic control (PLC) regulates the interplay of the components in the automatic mode.

For the run-in of the system and even the cleaning after finishing the work, all functions can also be controlled manually at the control box.

For a more secure functioning of the system, an appropriate water pressure is necessary. With the integrated booster pump, even an external supply from a collection tank (water tank) is possible if the water quantity is not adequate. The pressure switch built-in the water supply switches off the machine in the event of very low pressure to avoid malfunctioning of the system.

## 14 Basic equipment

The basic equipment of the machine combination is made of the following units:

- CADDY water fitting.
- CADDY with control box.
- Material container with mixing tube and gear motor.
- Capacitive level sensor, dry material sensor.
- Pump container with pump shaft and gear motor.
- Pump unit.

**Material:**

## 15 Material:

### 15.1 Flowability / Flow characteristic

**NOTE!**

- The pump unit can be used up to 25 bar operating pressure.
- The possible conveying distance depends mainly on the flowability of the material.
- If 25 bar operating pressure are exceeded the mortar hose length has to be reduced.
- In order to avoid machine faults and increased wear of the pump motor and the pump itself, only original PFT spare parts such as
  - PFT rotors
  - PFT stators
  - PFT mortar hoses must be used.
- These are compatible with each other and form a constructive unit with the machine.
- Non-compliance does not only cause loss of guarantee, but also bad mortar quality is to be expected.

## 16 Mortar pressure gauge

**Caution!**

The use of a mortar pressure gauge is recommended for safety-related reasons.



Fig. 16: Mortar pressure gauge

**PFT mortar pressure gauge**

Some advantages of the mortar pressure gauge:

- Exact adjustment of the correct mortar consistency.
- Constant control of the right conveying pressure.
- Early detection of clogging or overload of the pump motor.
- Relieving pressure.
- Long service life of the PFT pump parts.
- Is a major contribution to the safety of the operators.

## 17 Safety rules

**Caution!**

Observe the regional safety rules for mortar conveyors and mortar guns!



## 18 Transport, packing and storage

### 18.1 Safety instruction for transport

#### Improper transport



#### **ATTENTION!**

##### **Damage from improper transport!**

Improper transport may cause substantial property damage.

Therefore:

- When unloading the packages on delivery as well as transport within the company pay attention and observe the symbols and instruction on the package.
- Use only the specified anchorage points.
- Remove packaging only shortly before the assembly.

#### Suspended loads



#### **WARNING!**

##### **Danger to life from suspended loads!**

When lifting heavy loads there is danger to life from falling parts or uncontrolled swinging parts.

Therefore:

- Never step under suspended loads.
- Observe the instructions regarding the provided anchorage points.
- Do not fix at projecting machine parts or eyelets of attached components and ensure safe fit of the sling gear.
- Use only approved lifting gear and sling gear with sufficient lifting capacity.
- When ropes and chains are used in construction operations, the provisions contained in the 'Load suspension devices in lifting gear operations' (VBG 9a) accident prevention regulation should be complied with. The following sections contains instructions for scenarios in which ropes and chains are used as lifting means.

### 18.2 Remove the complete pump unit



Fig. 17: Remove pump unit

1. The complete pump unit can be disconnected from the machine for the purpose of transport or repairing.

## Transport, packing and storage



### 18.3 Transport inspection

On receipt check the delivery immediately for completeness and transport damage.

In case of externally visible transport damage, proceed as follows:

- Do not accept the delivery or under reserve only.
- Note the extent of damage on the transport documentation or on the delivery note of the carrier.
- Initiate complaint process.



#### NOTE!

*Report any defect as soon as it is detected. Claims for damages can be asserted only within the valid warranty period.*

### 18.4 Transport

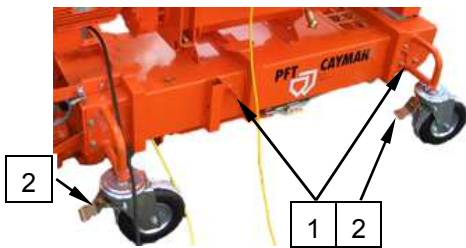


Fig. 18: Truck transport

#### Anchor points



Fig. 19: Crane transport

#### Truck transport:

1. Pay attention that the turning bolts (1) for securing the pump are engaged
2. Lock the castors (2).
3. Secure loose parts, or remove them.
4. The material container of the mixer must be completely empty and clean.
5. Check whether all supply lines and hoses are decoupled.
6. Lock control box doors of CADDY.

#### Crane transport:

Anchor the machine at the crane lugs (3) with straps for transport by crane.

Observe the following conditions:

- The crane and lifting equipment have to be designed for the weight of the packages.
- The operator has to be authorised to operate the crane.

#### Attachment:

- Attach ropes or straps accordingly.
- Ensure that the package is straight, possibly observe eccentric centre of gravity.





## 18.5 Transport by car or truck



### **DANGER!**

#### **Danger of injury by unsecured loads!**

In case of road transport, all persons involved in the loading process are responsible for the proper securing of the load. The responsible driver is responsible for the operational loading.

## 18.6 Transport of already running machine



### **DANGER!**

#### **Risk of injury from discharged mortar!**

Injuries to face and eyes can occur.

Therefore:

- Before opening the couplings ensure that there is no more pressure on the hoses (observe display at mortar pressure gauge).

1. Carry out the following steps before beginning the transport:
2. First unplug the mains cable.
3. Unplug all other cable connections and water hoses.
4. Start transport.
5. In case of transport by crane, remove the loose parts.

# 19 Packaging

## For packaging

The individual packages have to be packed in accordance with the transport conditions to be expected. Only environmentally-friendly materials were used for the packaging.

The packaging should protect the individual components until the assembly from transport damage, corrosion and other damage. Therefore do not destroy the packaging and remove only shortly before the assembly.

## Handling packaging materials

If no agreement for the recovery of the packaging has been made, separate materials according to type and size and reuse or recycle.

## Operation



### Handling packaging materials



#### ATTENTION!

##### Environmental damage due to wrong disposal!

Packaging materials are valuable raw materials and in many cases they can be reused or reconditioned and recycled.

Therefore:

- Dispose of packaging materials in an environmentally-friendly way.
- Observe the applicable local disposal regulations. If required hand over the disposal to a specialist.

## 20 Operation

### 20.1 Safety

#### Personal protective equipment

The following protective equipment has to be worn for all operative work:

- Protective clothing
- Protective goggles
- Protective gloves
- Safety shoes
- Hearing protection



#### NOTE!

*Further protective equipment that is to be worn when effective particular jobs will be pointed out separately in the warning instructions of this chapter.*

#### Basic information



#### WARNING!

##### Danger of injury due to incorrect operation!

Improper operation may lead to serious damage to persons or property.

Therefore:

- Carry out all operating steps according to the instructions in this user manual.
- Prior to starting your work, ensure that all covers and protection devices are installed and work as intended.
- Never deactivate protection devices during operation.
- Ensure order and cleanliness in the work area! Loose components and tools on top of one another or lying about pose potential accident risks.
- Increased noise level may cause permanent hearing deficiencies. At close range of the machine 95 dB(A) can be exceeded due to operational conditions. Close range is a distance of less than 5 metres to the machine.



## 21 Machine preparation

### 21.1 Positioning machine

Prior to operating the machine carry out the following steps for preparing the machine:

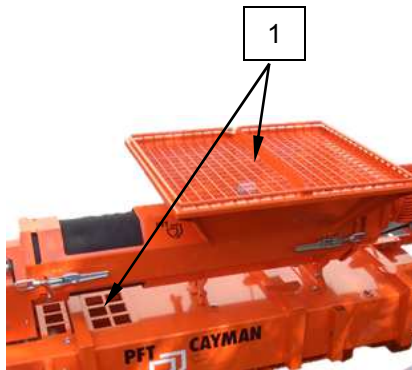


Fig. 20: Risk of injury



#### **DANGER!**

#### **Rotating metering and pump shaft.**

Risk of injury while reaching into the material container.

Therefore:

- During machine preparation and operation, the protective grids (1) must not be removed.
- Never reach into the running machine.



Fig. 21: Lockable castor

Put up the PFT CAYMAN on a stable, even surface and secure against unwanted movements:

- Put up the machine in such a way that it cannot be hit by falling objects.
- Lock the castors (2) of the machine.
- The operating elements have to be freely accessible.

### 21.2 Pull pump unit from chassis

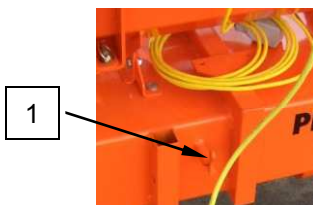


Fig. 22: Open turning bolts

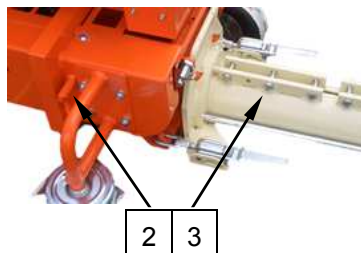


Fig. 23: Pump unit

1. Open turning bolts (1) and (2) on both the sides.
2. Pull the pump unit (3) from the chassis.
3. Close turning bolt (2).

## Machine preparation



### 21.3 Connection of the machine FU 00248894 to the power supply

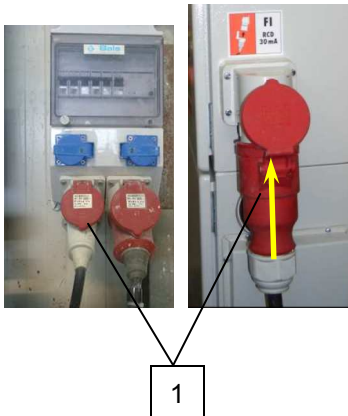
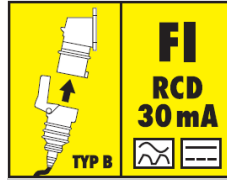


Fig. 24: Connect the power

1. Connect the machine to the site distribution board 400 V only.



#### **DANGER!**

#### **Danger of death from electric current!**

The connection line has to be fused properly:  
Connect the machine only to a power source with permissible 30 mA FI protection switch RCD (residual current operated device) of type "B" that is sensitive to all currents that are required for the operation of frequency converters.

### 21.4 Check the individual connectors



Fig. 25:  
Connection of  
mixer motor.



Fig. 26:  
Connection of  
pump motor



#### **WARNING!**

#### **Danger to life from rotating parts!**

Improper operation may lead to serious damage to persons or property.

- The respective drive (motors) must be operated only with the control box of the machine.
- Using other or external power sources is forbidden for safety reasons.

All the connections should be made or checked before commissioning:

- Connect the power supply for mixer motor (Fig. 25).
- Connect the power supply for pump motor (Fig. 26).

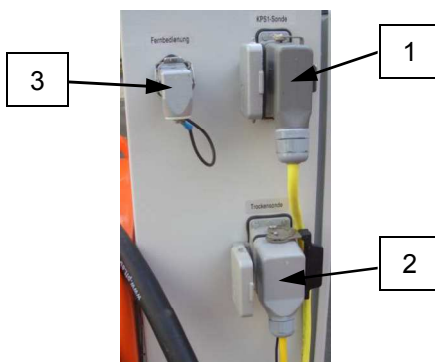


Fig. 27: Check the connections.

- Connection wet-sensor (1).
- Connection dry-sensor (2).
- Dummy plug (3) connection remote control.



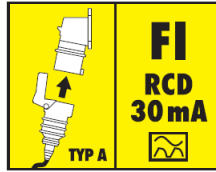
## 21.5 Connection of the machine 00443371 to the power supply



1

Fig. 28: Connect the power

1. Connect the machine to the site distribution board 400 V only.



### DANGER!

#### Danger of death from electric current!

The connection line has to be fused properly:

Connect the machine only to a power source with permissible RCCB (30 mA) RCD (residual current operated device) type A.

## 21.6 Check the individual connectors



Fig. 29:  
Connection of  
mixer motor.



Fig. 30:  
Connection of  
pump motor



### WARNING!

#### Danger to life from rotating parts!

Improper operation may lead to serious damage to persons or property.

- The respective drive (motors) must be operated only with the control box of the machine.
- Using other or external power sources is forbidden for safety reasons.

All the connections should be made or checked before commissioning:

- Connect the power supply for mixer motor (Fig. 29).
- Connect the power supply for pump motor (Fig. 30).

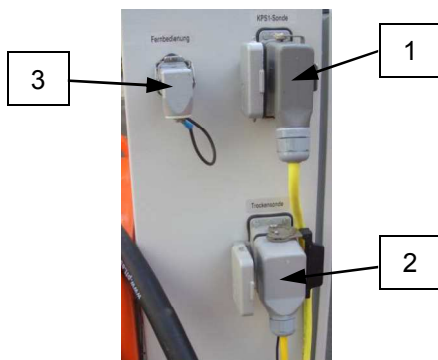


Fig. 31: Check the connections.

- Connection wet-sensor (1).
- Connection dry-sensor (2).
- Dummy plug (3) connection remote control.

## Machine preparation



### 21.7 Connecting the water supply



Fig. 32: Water connection

1. Connect to water supply with 3/4" hose.
2. The water supply line must first be rinsed to vent the hose line and to clean it of contaminations.
3. Connect the water hose to the water inlet (1).
4. If the flow pressure is not adequate (at least 2.5 bar in running machine), either a second supply can be put in or it can be operated using a collection tank (water tank).

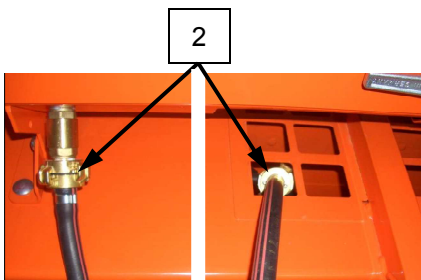


Fig. 33: Remove the water hose

5. Remove the water hose (2) from the mixing tube and put it in the pump container.
6. Check whether all outlet valves and the shut-off valves on the water fitting are closed.
7. Open water cock for water inlet.



#### NOTE!

Use only clean water free of solids. The minimum pressure is 2.5 bar when the machine is running.

### 21.8 Water from water tank

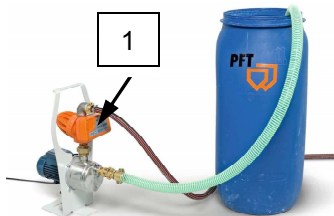


Fig. 34: Booster pump

Water pump as suction pump AV 3000, 230 V (1) Article number 00493686

The connected booster pump ensures the required water pressure of at least 2.5 bar.



#### NOTE!

When working from the water tank, the strainer with filter screen (article number 00136619) has to be positioned upstream (bleed booster pump).



Fig. 35: Suction strainer complete with filter screen



## 22 Switching on

### 22.1 Main switch

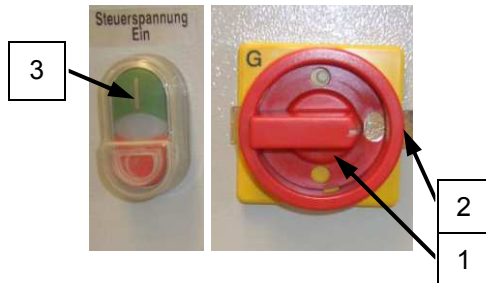


Fig. 36: Pre-setting

Set the main reversing switch (1) to 'I'.

1. If the yellow pilot lamp "Change direction of rotation" lights up, the direction of rotation at the main switch must be changed.
2. The main switch is arrested in the zero position by pushing the selector membrane (2) to the left or right in a presetting. In this way, the direction of rotation is selected. If the switch is to the left, it can be switched back to position "0", but is blocked for the right position.
3. Press the green push button operation "ON" (3)

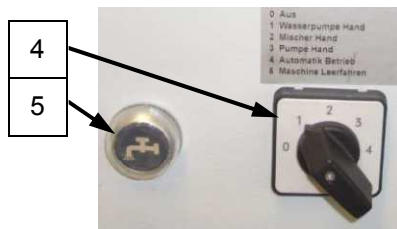


Fig. 37: Selector switch water pump

4. Switch the selector switch (4) to the stage "1".
5. Press the water supply button (5).

### 22.2 Pre-setting the water flow rate

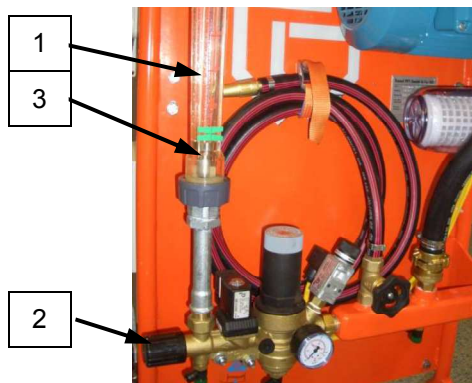


Fig. 38: Regulator valve

1. Keep the water supply button (5) (Fig.: 37) pressed till no air bubbles are to be seen in the water flow meter (1).
2. Adjust the expected amount of water at the regulator valve (2): Evident on the floater (3) in the inspection glass of water flow meter.



#### NOTE!

The specifications of the material manufacturer must be observed here.

3. Subsequently, turn the step switch (Fig.: 37) to position "0" again.



## Mortar pressure gauge

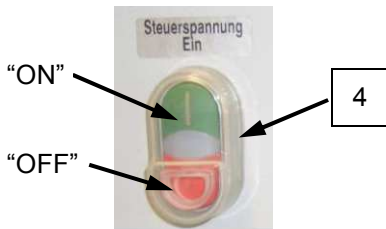


Fig. 39: Press button "ON / OFF"



### NOTE!

Before switching over from step switch to other operating modes, the control voltage must be switched off through the push button operation "ON / OFF" (4). Subsequently switch on the control voltage again using the push button.

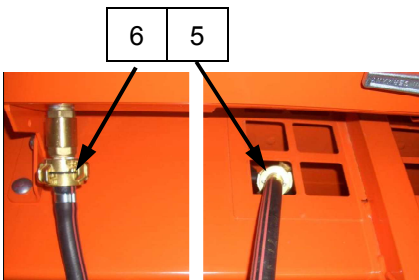


Fig. 40: Connecting the water hose

4. Take the water hose (5) out of the pump container and reconnect it to mixer tube (6).

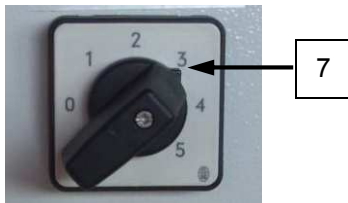


Fig. 41: Selector switch "Manual pump"

4. Turn the Selector switch (7) to position "3" (Manual pump).
5. Empty the pump container till a little residual water remains.



### NOTE!

Never let the pump run dry as this reduces the service life of the pump.

## 23 Mortar pressure gauge



Fig. 42: Mortar pressure gauge



### DANGER! Operating pressure too high!

Machine parts can open in an uncontrolled manner and injure the operator.

Therefore:

- Do not operate the machine without mortar pressure gauge.
- Use only mortar hoses with a permissible operating pressure of at least 40 bar.
- The burst pressure of the mortar hose must reach at least 2.5 times the value of the operating pressure.





## 24 Hazardous dusts



Fig. 43: Dust protection



### **Warning!** **Health hazard caused by dust!**

In the long term, inhaled dust can lead to lung damage or have other adverse health effects.



### **NOTE!**

*The machine operator or the person working in the dusty area always have to wear a dust protection mask when filling the machine!*

## 25 Feeding dry material to the machine



Fig. 44: Bagged goods

Depending on the equipment, the machine can be fed with bagged goods, with the delivery hood or the injection hood.



### **DANGER!** **Risk of injury at the sack opener!**

The sharp edges of the sack opener pose a risk of injury.

- Wear safety gloves.

## 26 Monitoring the machine



### **DANGER!** **Access by unauthorised persons!**

The machine must be operated only if monitored.

## 27 Putting the machine into operation

### 27.1 Risk of injury from discharged mortar



### **DANGER!** **Risk of injury from discharged mortar!**

Discharged mortar may lead to injuries to eyes and face.

Therefore:

- Never look into the hose end.
- Always wear protective goggles.
- Always position yourself in such a way that you are not hit by the mortar being discharged.

## Putting the machine into operation



### 27.2 Connect mortar hose

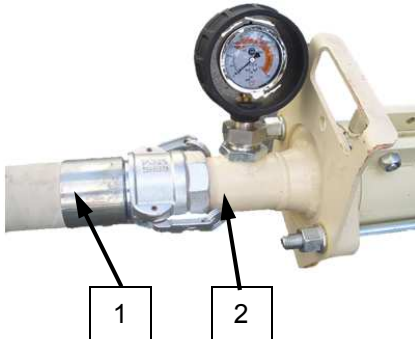


Fig. 45: Connect mortar hose



Fig. 46: Mortar pressure gauge

1. Smear the mortar hose with approximately two litres of lime sludge to avoid clogging of hose.
2. Connect mortar hose (1) to the pressure flange (2).
3. The slurry is mixed through the mortar hose with the first mixing.



#### NOTE!

Ensure clean and correct connection of the couplings!

4. Lay mortar hoses in large radius so that no kinks form in the hoses.
5. Attach risers carefully in order to prevent them from tearing off under their own weight.



#### DANGER!

Torn off hoses can beat about and injure bystanders!

Never loosen the hose couplings as long as there is pressure on the mortar hoses (check mortar pressure gauge)! The mix could burst out under pressure and result in serious injuries, especially injuries to the eyes.



#### NOTE!

The possible conveying distance depends mainly on the flowability of the mortar. Heavy, sharp-grained mortar has poor flow characteristics. Runny materials have good flow characteristics.

If 25 bar operating pressure are exceeded the mortar hose length must be reduced.

### 27.3 Automatic mode

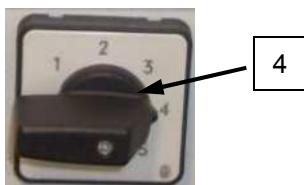


Fig. 47: Automatic mode

1. Turn the selector switch to position "4" (automatic mode).
2. Press green push button for control voltage "ON"
3. The control of the system runs in automatic operation in this switch position "Automatic mode".
4. The mixer starts (pay attention to the proper direction of rotation).
5. The pump motor starts after the full indication of the wet sensor in the pump container.
6. Check consistency of mortar.



## 28 Potentiometer

### 28.1 Litre output of pump



Fig. 48: Potentiometer

Potentiometer	0	1	2	3	4	5	6	7	8	9	10
Hz	8	12	17	21	26	31	38	44	54	67	80
1/min Drehzahl Pumpe	28	42	60	73	90	108	133	155	190	235	280
FERRO – Pumpe Liter / Minute	10	16	22	27	33	40	49	56	70	86	100

1. The litre output of the pump can be controlled via the potentiometer.
2. The higher the potentiometer is turned, the higher the motor speed of the pump motor and this also the litre output of the pump (apparent from the adjacent table).

### 28.2 Optimum consistency

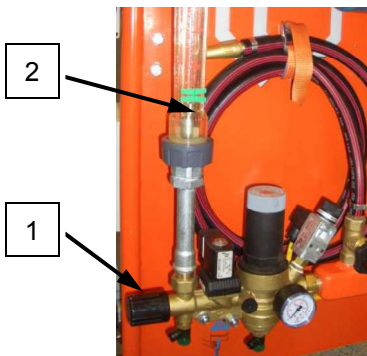


Fig. 49: Correct consistency

1. Correct the amount of water at the regulator valve (1) for optimum consistency.
2. The amount of water is evident on the floater (2) of water flow meter.

## 29 Sensor controller

### 29.1 Dry-sensor

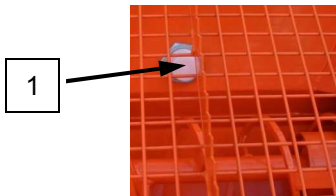


Fig. 50: Dry-sensor

1. The material level in the material container of the mixer is monitored by a dry level sensor (1).
2. If the dry level sensor in the material container is no longer covered with dry material, the dry level sensor switches off the mixer motor after a certain lag time.

## Remote control



### 29.2 Wet sensor

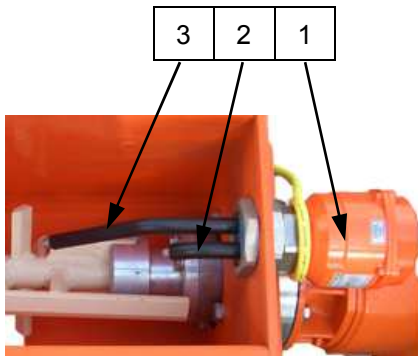


Fig. 51: Wet sensor

1. The material level in the material container of the pump container is monitored by a wet sensor (1).
2. Sensor rod short (2), level maximum.
3. Sensor rod long (3), level minimum.



#### NOTE!

In order to ensure the functioning of the sensor, pay attention to the cleanliness of the sensor rod.

We recommend cleaning every 3-4 hours.

## 30 Remote control

### 30.1 Working with the remote control

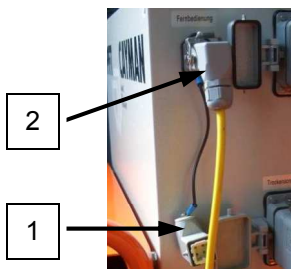


Fig. 52: Connecting the remote control

1. Remove dummy plug (1) from control box.
2. Insert plug (2) from the cable drum of remote control.

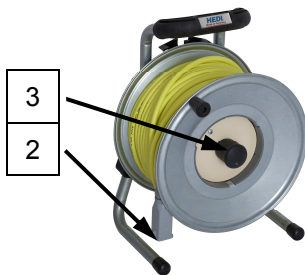


Fig. 53: Remote control

3. The automatic mode can be switched on or off with the push button (3) on the remote control.

Cable drum with remote control 50 m: Article number 00 02 22 60:

## 31 Interruption of work



#### NOTE!

*Always observe the setting time of the material to be processed:*

*Clean the system and mortar hoses depending on the setting time of the material and the length of the interruption (pay attention to outside temperature).*

*The guidelines of the material manufacturers have to be observed regarding breaks.*



## Stopping in case of an emergency

### 32 Stopping in case of an emergency

#### Stopping in case of an emergency



Fig. 54: Stopping

In dangerous situation machine movements have to be stopped as quickly as possible, and the power supply has to be disconnected.

In case of danger proceed as follows:

1. Switch off immediately the main switch.
2. Secure the main switch against start-up using a lock.
3. Inform responsible person at the operational site.
4. If necessary, call for medical assistance and a fire brigade.
5. Recover persons from the danger zone, initiate First Aid measures.
6. Keep access routes free for emergency vehicles.
7. If the severity of the emergency permits inform the competent authorities.
8. Assign specialised personnel with the troubleshooting.
9. Check the system before reactivation and ensure that all safety equipment is installed and functional.



#### **WARNING!**

#### **Danger to life from premature reactivation!**

On reactivation there is danger to life for all persons in the danger zone.

- Before reactivation ensure that there are no persons in the danger zone anymore.

After the rescue operations

### 33 “EMERGENCY STOP” Situation



Fig. 55: “EMERGENCY STOP”

The “EMERGENCY OFF” button is to be pressed in emergency situations.

“EMERGENCY OFF” switch illuminates after being pressed.



#### **NOTE!**

*Check the system before reactivation and ensure that all safety equipment is installed and functional.*

The machine can be switched off using the following devices:

- “EMERGENCY-STOP” switch.
- Main switch.

Work on troubleshooting

34 Work on troubleshooting

34.1 Reaction in the event of faults

The following strictly applies:

1. In the event of faults presenting immediate danger to persons or property, activate the EMERGENCY-STOP function immediately.
2. Determine cause for fault.
3. If the rectification of faults requires works in the danger zone, switch off the system and secure against restarting.
4. Inform the manager on site immediately about the fault.
5. Depending on the type of fault commission authorised skilled personnel or rectify the fault yourself.

34.2 Control lamps

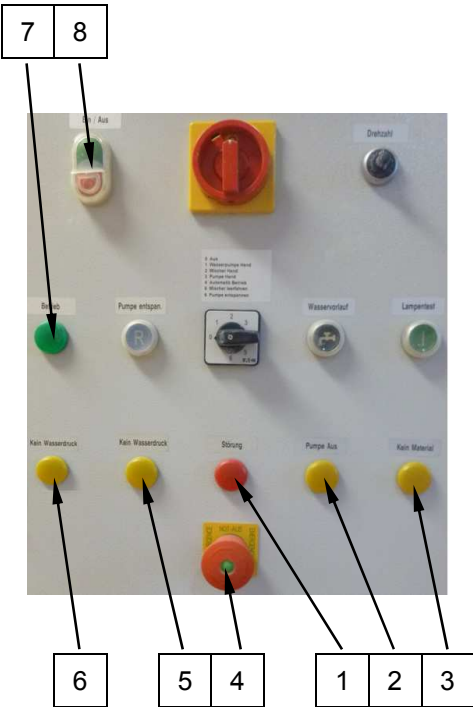


Fig. 56: Fault displays

Pos.	Light signal	Description
1	red control lamp	Lights up when the motor protection switch has been triggered.
2	Yellow control lamp	Control lamp system STOP, machine is switched off over the remote control.
3	Yellow control lamp	Control lamp no material
4	"EMERGENCY-STOP" switch	Blinks when "EMERGENCY OFF" button is pressed. Lights up on fault of motor protection switch.
5	Yellow control lamp	Control lamp no water pressure
6	Yellow control lamp	Control lamp change direction of rotation



NOTE!

Phase control lamp (7) green (ready for operation):

If the green control lamp does not light up, check the supply line or fuses.



NOTE!

If the white control lamp in the push-button (8) blinks, the control voltage must be switched off and then switched on again.



### 34.3 Lamp test

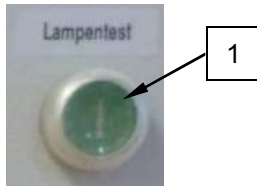


Fig. 57: Lamp test



#### NOTE!

Please press the push button “lamp test” (1) at least once per shift to check the function of the signal lamps.

Faulty operation of the system can thus be prevented.

### 34.4 Faults

The following chapter describes possible causes for faults and the activities carried out for their rectification.

In case faults occur frequently, shorten the maintenance intervals in accordance with the actual load.

In the event of faults that cannot be rectified by means of the following notes, kindly contact the dealer.



#### NOTE!

The following fault table gives information on who is authorised to rectify the fault.

### 34.5 Safety

#### Personnel

- The work for rectification of faults described here can be carried out by the operator, unless marked otherwise.
- Some works must be carried out only by specially trained skilled personnel or exclusively by the manufacturer. Information on this can be found in the description of the individual faults.
- Work on the electrical system must, in principle, be carried out only by electricians.

#### Personal protective equipment

The following protective equipment has to be worn for all maintenance work:

- Protective clothing
- Protective goggles
- Protective gloves
- Safety shoes



## Work on troubleshooting



## 34.6 Table of faults

Fault	Possible cause	Solution	Rectification by
Machine does not start: <b>Water</b> Control lamp "no water pressure"	No water	Pressure switch or solenoid valve defective	Service engineer
	Water pressure too low - pressure gauge shows less than 2 bar	Check water supply line, clean strainer screen, supply line cross section at least ¾ inch.	Operator
	Water pressure too low	Check water supply line. Lay additional supply line. Water container as buffer.	Operator
Machine does not start: <b>Current</b>	Main switch not activated	Activate main switch	Operator
	Power supply not in order	Repair power supply	Service engineer
	Protection switch was triggered	Reset RCCB	Service engineer
	Motor protection switch triggered	Turn motor protection switch in control box to position 1	Service engineer
	"Operating button On" not pressed	Press "Operating button On"	Operator
	Press "EMERGENCY-STOP"	Release "EMERGENCY-STOP"	Operator
	"Manual/automatic selector switch was not in the middle position while switching on.	Bring the selector switch in the middle position and switch on the control again.	Operator
	Control lamp "Change direction of rotation" lights up.	Change the direction of rotation at the main switch. Check fuse or supply line	Operator
Machine does not start: <b>Material:</b>	Micro fuses on the transformer	Replace micro fuses	Service engineer
	Too much dried material in the material container. Possible tunnel formation	<b>Caution:</b> Main switch <b>OFF</b> - Disconnect the main power cable. Empty the material container. Re-start machine.	Operator
	Dried out material clogs up the pump unit (rotor/stator)	<b>Caution:</b> Main switch <b>OFF</b> - Disconnect the main power cable. Disassemble, clean and re-install the pump.	Operator
Machine does not start: <b>"No Material"</b>	Excessively dry material in pump part	<b>Caution:</b> Main switch <b>OFF</b> - Disconnect the main power cable. Clean the hopper	Operator
	Control is on "Run machine on empty"	Bring switch "Run machine on empty" to zero position	Operator
	Machine is started up with "Mixer container empty"	Position manual / automatic selector switch on manual mode	Operator
	Dry material sensor faulty	Replace dry material sensor	Service engineer





## Work on troubleshooting

Fault	Possible cause	Solution	Rectification by
Remote control off	Plug of the remote control cable not inserted properly.	Check the proper fit of the plug	Operator
	Remote control cable defective	Repair or replace remote control cable	Operator
		Work with dummy plug without the option of remote control	
Mixing motor does not start in automatic mode	Plug of the capacitive wet sensor not inserted properly	Check the proper fit of the plug	Operator
	Wet sensor defective	Replace component	Service engineer
	Wet sensor contaminated	Remove the material sticking to the sensor	Operator
	Wet sensor defective	Replace defective component	Service engineer
Mixer motor is automatic mode, pump hopper is not filled yet	Remote control off	Briefly position the manual/automatic switch at zero and turn back on "Automatic"	Operator
	Defective capacitive wet sensor	Replace defective component	Service engineer
Solenoid valve does not open	Solenoid valve contaminated	Dismount solenoid valve and clean	Service engineer
	Solenoid valve defective	Change solenoid valve	Service engineer
Water is running on in mixer standby	Solenoid valve contaminated	Dismount solenoid valve and clean	Service engineer
Pump motor does not switch on in automatic mode	Wet sensor contaminated	Remove the material sticking to the sensor	Operator
	Defective wet sensor	Replace defective component	Service engineer
	Mechanical blockage of system parts	Check pump shaft Check rotor and spiral casing, change the direction of rotation briefly if required.	Operator
	Overheating / overloading of pump motor	Shorten mortar hose or increase the cross section	Operator
	Pump motor defective	Exchange pump motor	Service engineer
Water is not flowing. Flow	Solenoid valve (hole in membrane blocked)	Clean solenoid valve	Service engineer

**Work on troubleshooting**

<b>Fault</b>	<b>Possible cause</b>	<b>Solution</b>	<b>Rectification by</b>
meter does not display water quantity.	Solenoid coil defective	Change solenoid coil	Service engineer
	Pressure reducing valve closed	Open pressure reducing valve	Operator
	Needle valve closed	Open needle valve	Operator
	Cable to solenoid valve defective	Replace cable to solenoid valve	Service engineer
Programme does not start	Micro fuse on the transformer	Replace micro fuse	Service engineer
	Manual-0-automatic switch faulty	Check parts and replace them if	Service engineer
	Manual / automatic selector switch is on "manual"	Selector switch at position "4" (automatic mode)	Operator
	Remote control drawn	Put on dummy connector	Operator
	Conveyor line blocked	See Removal of blockages in the hose	Operator
	PLC-control program sequence	Check the programme sequence	Service engineer
Very less material in the machine	Level sensor	Clean level sensor	Operator
Pump motor does not start	Pump motor defective	Replace the pump motor	Service engineer
	Connection cable defective	Change connection cable	Service engineer
Consistency variation "Thick - thin"	Water safety switch set incorrectly or defective	Adjust or replace water safety switch	Service engineer
	Pressure reducer set incorrectly	Adjust pressure reducer	Service engineer
	Too little water	Water tank as intermediate buffer	Operator
	Strainer screen contaminated	Clean or replace strainer	Operator
Mixer does not start	Excessively pressed in / hardened material in mixing tube	Open and clean mixing tube	Operator
	Wet or hardened material in the metering section	Open and clean metering section	Operator
Control lamp red, fault lights up	Overload due to the pump getting blocked with dry material	Run the machine in backward mode, remove pump and clean it	Operator



## 35 Transport is at a standstill / Blockage

Clogging might form in the feed hoses for several reasons. This means that the material to be conveyed remains stuck in the feed hoses and cannot be pumped to the hose end.

### 35.1 Removal of clogging in hoses / Signs of blockages

#### Implementation by operator:

- Blockages can occur in the pressure flange or in the mortar hoses.

#### Indications are:

- rapidly increasing pressure head,
- blocking of pump,
- running difficulties or blockage of the pump motor,
- expansion and turning of the mortar hose,
- no mortar discharge at hose end.

### 35.2 Causes of blockages:

- Highly worn mortar hoses,
- work interruptions,
- badly greased mortar hoses,
- residual water in mortar hose,
- clogging of the pressure flange,
- strong tapering at the couplings,
- kink in mortar hose,
- Poorly pumpable and separated materials.

### 35.3 Earlier damage to the mortar hose



#### **NOTE!**

*If in the event of a machine fault by material clogging the pressure in the mortar hose exceeds 60 bar, even only temporarily, replacement of the mortar hose is recommended as there might be damage in the hose that is not externally visible.*

**Transport is at a standstill / Blockage****35.4 Danger when there is overpressure in mortar hose****DANGER!****Danger from discharged material!**

Never loosen the hose couplings as long as the pressure head is reduced! Material to be conveyed can be discharged under pressure and cause injuries particularly to the eyes.

Persons commissioned with the cleaning of clogged hoses have to wear personal protective equipment (protective goggles, gloves) for safety reasons, and to position themselves in such a way that they cannot be hit by discharged material. Other persons have to clear the area.

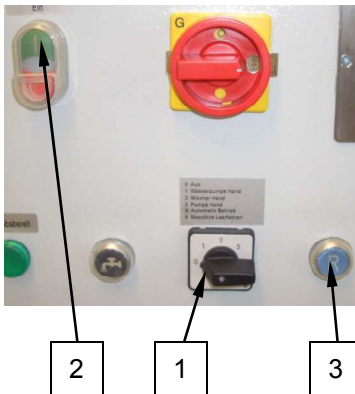
**35.5 Release the pump**

Fig. 58: Release the pump

1. Turn the Selector switch (1) to position "5" (Release pump).
2. Press the green push button control voltage operation "ON" (2).
3. Press the blue push button (3) (release pump) and press until the pressure at the mortar pressure gauge has dropped to "0 bar".

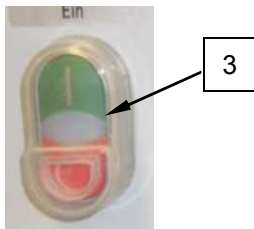


Fig. 59: Change direction of rotation

**NOTE!**

*Before switching over from step switch to other operating modes, the control voltage must be switched off through the push button operation "ON / OFF" (2). Subsequently switch on the control voltage again using the push button.*

4. Turn the selector switch (1) to position "4" (automatic mode).
5. Machine starts again.



### 35.6 Blockage cannot be cleared



**Fig. 60:** Loosen coupling



**NOTE!**

*Mortar hoses are cleaned immediately.*

1. Cover coupling connections with tear-proof film.
2. Loosen cam leaver and hose connections.
3. Dislodge the blockage by tapping or shaking at the place where the blockage is located.
4. If required, insert a rinsing hose into the mortar hose and flush out the material (PFT rinsing hose art. no. 00113856).
5. Wash in mortar hoses again.



**Fig. 61:** Mortar pressure gauge



**DANGER!**

**Overpressure on the machine!**

When opening machine parts they can open in an uncontrolled manner and injure the operator.

- Open the mortar hoses only when the pressure has dropped to "0" bar.

### 35.7 Interruption in conveying



**NOTE!**

*Avoid interruptions in conveying over a longer time as far as possible.*

## 36 Rest



**Fig. 62:** Switching off



**NOTE!**

Always observe the setting time of the material to be processed and the external temperatures.

Clean the system and mortar hoses depending on the setting time of the material.

## 37 End of work / clean machine

### 37.1 Secure against restarting



#### **DANGER!**

#### **Danger to life from unauthorised restarting!**

When working with the machine there is the risk that the energy supply is switched on without authorisation. This poses a danger to life for the persons in danger area.

- Switch off all energy supplies before starting any work and secure against restarting.

### 37.2 Empty the machine FU Machine:

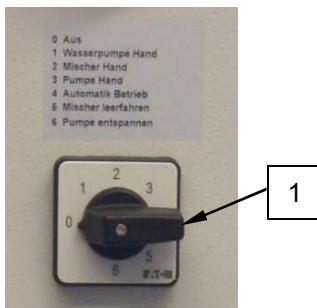


Fig. 63: Run the machine empty

**The machine has to be cleaned daily.**

In addition, before end of work:

1. Turn the selector switch (1) to position "6" (empty the mixer).
2. The mixer conveys material in the pump container till the pilot lamp "No Material" lights up.
3. The machine switches off on its own.



#### **NOTE!**

*Never let the pump run dry as this reduces the service life of the pump.*

### 37.3 Disconnect the mortar hoses

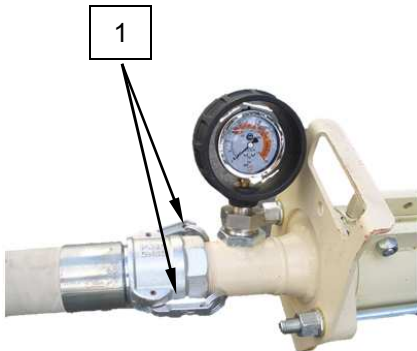


Fig. 64: Mortar pressure to "0" bar.

1. Check the mortar pressure gauge if the mortar pressure has lowered to "0" bar.
2. Change the direction of rotation of the pump motor is required. See chapter 22.1



#### **DANGER!**

#### **Overpressure on the machine!**

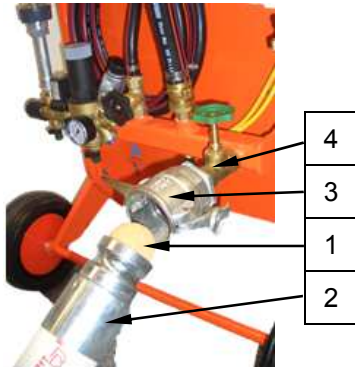
When opening machine parts they can open in an uncontrolled manner and injure the operator.

Therefore:

- Open the mortar hoses only when the pressure has dropped to "0" bar.
3. Loosen the cam lever (1) and disconnect the mortar hose from the pressure flange.



### 37.4 Cleaning the mortar hoses



**Fig. 65:** Sponge ball



**NOTE!**

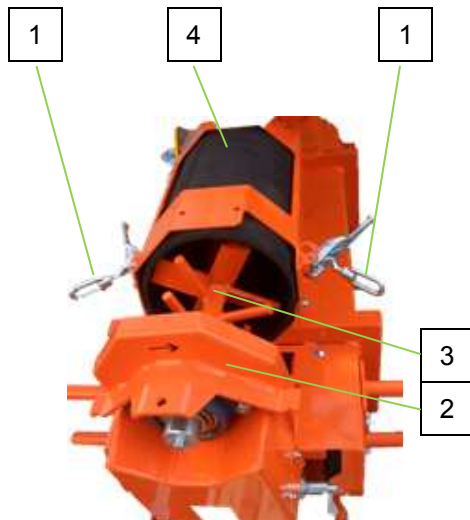
*The mortar hoses must be cleaned immediately.*

1. Press the water saturated sponge ball (1) into the mortar hose (2).
2. Connect the mortar hose (2) with the sponge ball at the cleaning nozzle (3).
3. Open shut-off valve (4).
4. Turn selector valve to position "1" (manual water pump) till the sponge ball exits from the hose end.
5. Repeat this process.
6. In case of strong soiling repeat this process.
7. In case of different hose diameters, the mortar hoses have to be cleaned separately with the matching sponge balls.



**Fig. 66:** Clean mortar hoses

### 37.5 Cleaning the mixer



**Fig. 67:** Cleaning the mixer



**DANGER!**

**Danger to life from unauthorised restarting!**

When working with the machine there is the risk that the energy supply is switched on without authorisation. This poses a danger to life for the persons in danger area.

- Switch off all energy supplies before starting any work and secure against restarting.

1. Loosen the quick closures (1) at the mixing tube.
2. Pull the mortar outlet (2) with mixing shaft (3) out of the mixing tube and clean parts.
3. Pull rubber mixing tube (4) out of the mixing tube and clean it.



**End of work / clean machine**

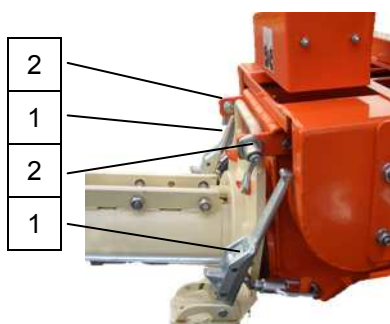
5

**NOTE!**

*Do not clean dry section (5) with water.*

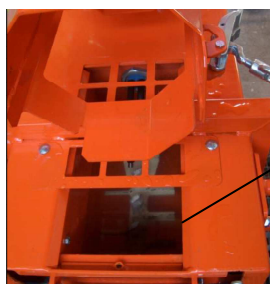
*Keep the dry section (5) free of caking.*

*Fig. 68: Dry section*

**37.6 Cleaning the pump and pump container**

1. Open quick closures (1).
2. Slightly raise the pump on the pressure flange and let the turning bolt (2) engage.
3. A gap forms in the lower area.
4. The water can escape from the pump material container.

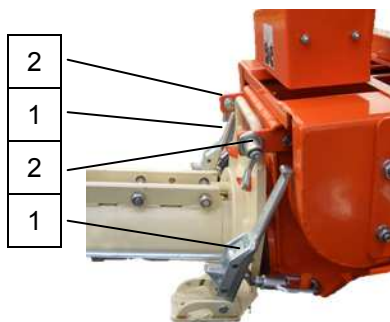
*Fig. 69: Loosen the pump*



3

5. Clean the pump container (3) of sticky material residues with the cleaning hose from the water fitting.

*Fig. 70: Cleaning the pump container*



6. Slightly raise the pump on the handle of pressure flange and open the turning bolt (2).
7. Lower the pump and close quick closure (1).
8. Fill the pump container with water.

*Fig. 71: Locking the pump*



## Action in case of power cut



Fig. 72: Manual pump



Fig. 73: Push button "ON / OFF"

9. Turn the selector switch to position "3" (Manual pump) (Fig. 72) .
10. Pump the water from the pump container till clean water come out at the mortar hose connection.
11. Switch the machine off by pressing the red push button control voltage "OFF" (Fig. 73) .
12. Open quick closures and drain the residual water from the pump container.
13. Close the quick closures again.
14. Briefly switch the machine on by pressing the green push button control voltage "ON" so that the residual water is pumped out of the pump (in case of risk of frost also).

### 37.7 Installing the cleaned mixing tube



Fig. 74: Installing the mixer



#### NOTE!

While installing, take care that you are clean and dry.

Pay attention to the correct fit of metering and mixing shaft.

Always keep the quick closures and seals clean. Grease the bearing journal and connecting pieces of the mixing shaft.

## 38 Action in case of power cut



Fig. 75: "ON / OFF" -Push button



#### NOTE!

The CAYMAN is equipped with a restart interlock. In case of a power cut, the system must be restarted by pressing the green push button control voltage "ON".



#### NOTE!

The mortar hoses must be cleaned immediately in case of a longer power failure.

Before opening the couplings ensure that there is no more pressure on the hoses (observe display at mortar pressure gauge)!

## Measures to be taken in case of water outage



### 39 Measures to be taken in case of water outage



#### NOTE!

Water can be supplied to the machine from a container by means of suction strainer (article number 00 13 66 19).

### 40 Measures in case of risk of frost

#### 40.1 Remove the water hoses

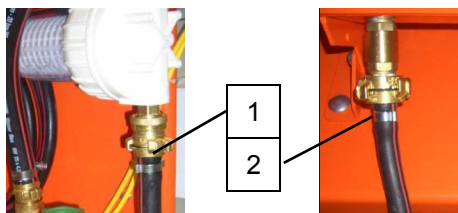


Fig. 76: Remove the water hose

Fig. 77: Remove the water hose

1. Remove the water hose (1) from the water fitting.
2. Remove the water hose (2) from the mixing tube.

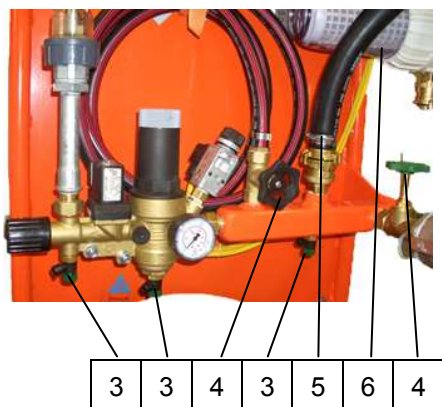


Fig. 78: Water fitting

3. Open draining cocks (3).
4. Open shut-off valves (4).
5. Loosen the water hose (5) from the water fitting.
6. Unscrew the pre-filter (6) so that the residual water can flow out of the filter and the booster pump.



Fig. 79: Non-return valve

7. Activate non-return valve in the water inlet on the mixer by hand.
8. Residual water can escape.



Fig. 80: Manual pump



Fig. 81: "ON / OFF" -Push button

9. Turn the selector switch to position "3" (Manual pump) (Fig. 80) .
10. Briefly switch the machine on by pressing the green push button control voltage "ON" (Fig. 81) so that the residual water is pumped out of the pump.

## 41 Maintenance

### Basic information

### Electrical system



Fig. 82: Remove connection cable



#### **WARNING!**

##### **Risk of injury due to improperly carried out maintenance work!**

Improper maintenance can lead to severe injuries or considerable property damage.

- Prior to starting the works ensure that there is enough space to carry out the works.
- Ensure order and safety at the assembly site! Loose components and tools on top of one another or lying about pose potential accident risks.
- If components were removed, ensure proper assembly and put back all fastening elements.



#### **DANGER!**

##### **Danger of death from electric current!**

There is danger to life if you come in contact with live parts. Activated electrical components can carry out uncontrolled movements and cause serious injuries.

- Switch off the energy supply before starting any work and secure against restarting.
- Disconnect the power supply by removing the connection cable

## Maintenance



### Secure against restarting



#### **DANGER!**

#### **Danger to life from unauthorised restarting!**

When working with the tool, there is the risk that the energy supply is switched on without authorisation. This poses a danger to life for the persons in danger area.

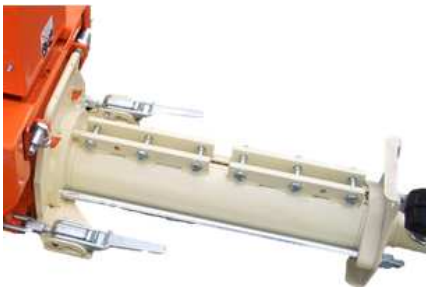
- Switch off all energy supplies before starting any work and secure against restarting.



#### **NOTE!**

*Maintenance of the CAYMAN is limited to a few checks. Thorough cleaning of the machine is the most important maintenance.*

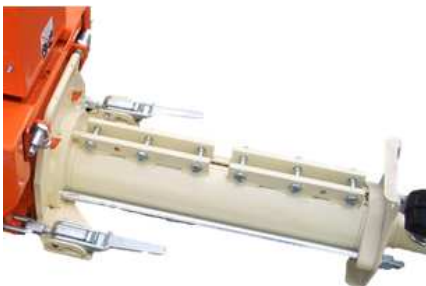
### 41.1 Adjust clamping of pump



**Fig. 83:** Stator can be retightened

1. The CAYMAN is equipped with a pump system that can be retightened.
2. If the pumping pressure decreases, the stator can be adjusted.
3. The supply pressure is approx. 20 – 25 bar.
4. Do not adjust the pump during operation.
5. The lesser the voltage of the spiral casing, the lesser is the wear of the spiral pump.

### 41.2 Change pump



**Fig. 84:** Change pump

Pump parts that do not achieve the required pumping pressure when clamped, have to be replaced:

When changing the pump it has to be ensured that

- all screws of the clamp are tightened uniformly.



#### **NOTE!**

*Assembled pump (rotor in stator) are stored for a few days only as rotor and stator can get connected inseparably in case of prolonged storage.*



## 41.3 Safety

### Personnel

- The maintenance works described here can be carried out by the operator, unless marked otherwise.
- Some maintenance work must only be carried out by specially trained technical personnel or exclusively by the manufacturer.
- Work on the electrical system must, in principle, be carried out only by electricians.

### Basic information



#### **WARNING!**

#### **Risk of injury due to improperly carried out maintenance work!**

Improper maintenance can lead to severe injuries or considerable property damage.

Therefore:

- Prior to starting the works ensure that there is enough space to carry out the works.
- Ensure order and safety at the assembly site! Loose, stacked components or components lying about can cause accidents.
- If components were removed, ensure proper assembly, put back all fastening elements and observe torque indications for screws.

### Electrical system



#### **DANGER!**

#### **Danger of death from electric current!**

There is danger to life if you come in contact with electrical components. Activated electrical components can carry out uncontrolled movements and cause serious injuries.

Therefore:

- Switch off the energy supply before starting any work and secure against restarting.

### Environmental protection

Observe the following notes on environmental protection when carrying out maintenance works:

- Remove the discharged, exhausted or surplus grease at all greasing points that are lubricated manually and dispose of in accordance with the local applicable regulations.
- Collect replaced oil in suitable containers and dispose of in accordance with the local applicable regulations.

## Maintenance



### 41.4 Cleaning

- The inside of the hopper can be cleaned with a water hose after having been emptied completely.



#### ATTENTION!

#### Water can enter sensitive machine parts!

- Before cleaning the machine cover all openings in which no water must enter for safety and functional reasons (e.g.: electric motors and control boxes).
- Remove covers completely after cleaning.

### 41.5 Maintenance plan

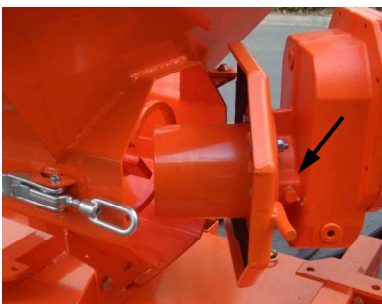
The following paragraphs describe the maintenance works that are required for an ideal and trouble-free operation.

In the event that increased wear is detected during regular checks, the required maintenance intervals have to be shortened according to the actual signs of wear.

Should you have any queries regarding maintenance works and intervals contact the manufacturer, see page 2 for service addresses.

Interval	Maintenance work	To be carried out by
weekly	Lubricate gear seal	Operator
Weekly	Lubricate turning bolts and quick closures	Operator
weekly	Check sealing unit on the pump motor - inspection glass	Operator
2 weeks	Clean/replace water inlet filter in pressure reducer.	Service engineer
daily	Check/clean the pre-filter.	Operator

### 41.6 Lubrication

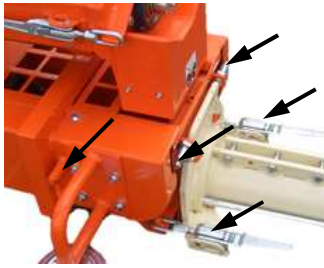


**Fig. 85:** Lubrication

Gear seal for mixer motor:

Lubricate weekly with commercially available lubricants in running motor (approx. 16g = two strokes with manual grease gun).



*Fig. 86: Lubrication*

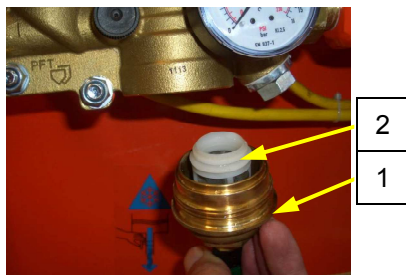
Grease quick closures and turning bolts.

## 41.7 Seal unit

*Fig. 87: Greasing status*

Weekly check at the inspection glass of the seal unit.  
Top up seal unit with commercially available gear grease.

### 41.7.1 Water inlet filter

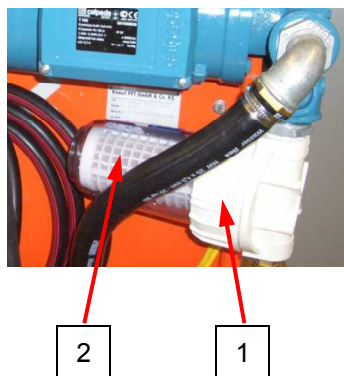
*Fig. 88: Water inlet filter*

1. Unscrew the locking screw (1) of the pressure reducer valve.
2. Take out and clean the water inlet filter (2) (every two weeks).
3. Replace the water inlet filter in case of heavy contamination.
4. Insert water inlet filter and screw in the locking screw.

Water inlet filter for pressure reducer: Article number 20156000

■ Execution by service technician.

## 41.8 Pre-filter

*Fig. 89: Pre-filter*

Check the pre-filter in water inlet daily:

1. Loosen the cap nut (1).
2. Take out and clean the pre-filter (2).
3. Replace the pre-filter in case of heavy contamination.
4. Reinsert the pre-filter.

■ Implementation by operator.

## 41.9 Actions after completed maintenance

After finishing the maintenance works and prior to switching on the machine, the following steps have to be carried out:

1. Check all previously loosened screw connections for secure fit.
2. Check if all previously removed safety systems and covers are properly reinstalled.
3. Ensure that all used tools, materials and other equipment were removed from the work area.
4. Clean the work area and remove any spilled materials such as liquids, processing material or similar.
5. Ensure that all safety systems of the installation work perfectly.

## 42 Disassembly

After the useful service life has been reached, the device has to be dismantled and disposed of in an environmental-friendly manner.

### 42.1 Safety

#### Personnel

- Disassembly must be carried out only by specially trained technical personnel.
- Work on the electrical system must be carried out by qualified electricians only.

#### Basic information



#### **WARNING!**

#### **Risk of injury in case of improper disassembly!**

Stored residual energies, sharp components, points or edges at and inside the device or at the required tools might cause injuries.

- Prior to starting the works ensure that there is sufficient space.
- Carefully handle components with sharp edges.
- Ensure order and cleanliness at the working place! Loose components and tools on top of one another or lying about pose potential accident risks.
- Dismantle components correctly. Pay attention to partly high dead weight of the components. If required use lifting equipment.
- Secure components that they do not fall down or fall over.
- In case of doubt, consult the dealer.



## Electrical system



### **DANGER!** **Danger of death from electric current!**

There is danger to life if you come in contact with live parts. Activated electrical components can carry out uncontrolled movements and cause serious injuries.

Therefore:

- Prior to beginning the disassembly, switch off the power supply and finally disconnect it.

## 42.2 Disassembly

Clean the device for phasing out and disassemble under observance of applicable health and safety rules as well as environmental regulations.

Prior to starting the disassembly:

- Switch off device and secure against restarting.
- Physically separate the complete energy supply to the device, discharge stored residual power.
- Remove operating supplies as well as remaining processing materials and dispose of in an environment-friendly way.

## 43 Disposal

If no agreement for the recovery or the disposal was made, recycle the disassembled components:

- Scrap metals.
- Recycle plastic elements.
- Dispose of remaining components, sorted according to the type of material.



### **ATTENTION!** **Environmental damage in case of incorrect disposal!**

Waste from electronic and electrical equipment, electronic components, lubricants and other auxiliary materials are subject to hazardous waste treatment and must be disposed of by specialised companies only!

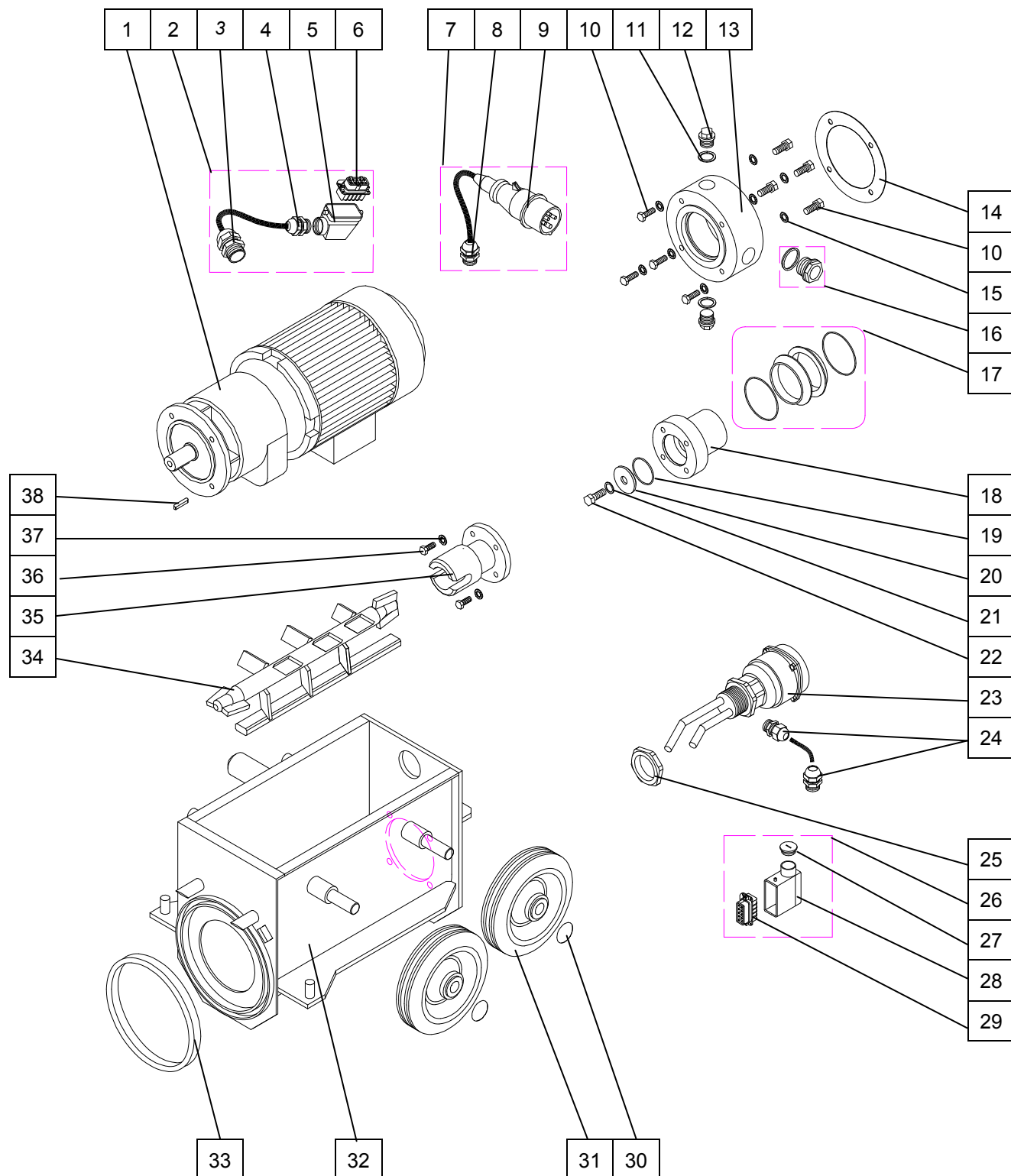
The local authority or special waste management operators can supply information on environmentally-friendly disposal.

## Spare parts drawing / spare parts list



## 44 Spare parts drawing / spare parts list

## 44.1 Pump motor / pump container





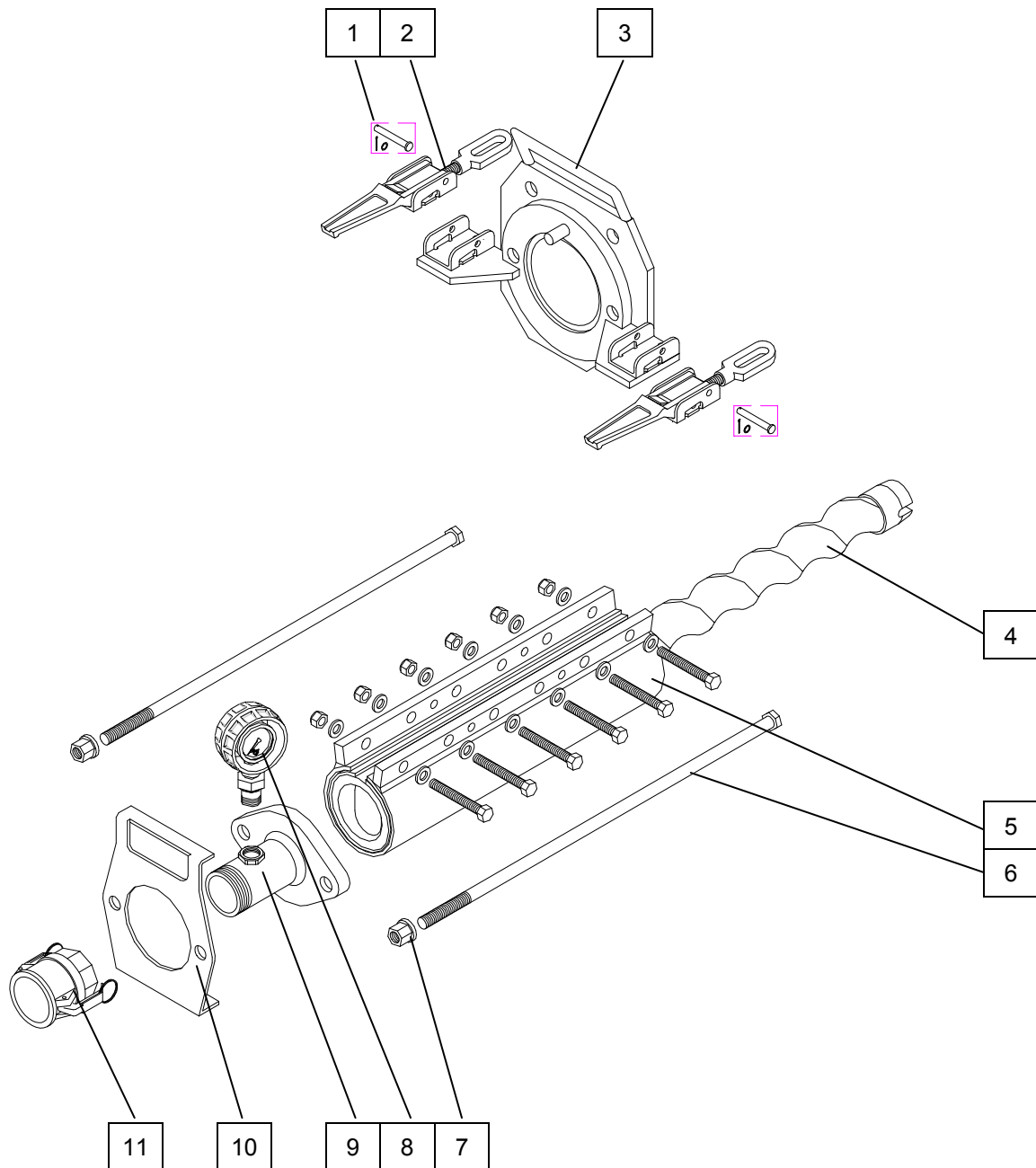
## Spare parts drawing / spare parts list

Pos.	Quantity	Art. no.	Name
1	1	20 14 35 01	Gear motor 7.5 kW, 175 rpm
2	1	00 07 03 57	Motor connection cable 4 x 2.5 mm <sup>2</sup> , 16 A, 10-pin - 5 m
3	1	00 06 69 81	EMC cable gland M25 x 1.5
4	1	00 06 69 79	EMC cable gland PG 16
5	1	00 04 06 71	Sleeve housing 10-pin HAN 10 E 16A
6	1	20 43 23 00	Pin insert 10 pin HAN 10 E
7	1	00 58 69 86	Motor connection cable 5.0 m CEE 5 x 16A
8	1	00 04 11 42	Skintop screw connection M 25 x 1.5
9	1	00 02 20 71	CEE plug 5 x 16A 7h sw
10	8	20 20 75 01	Hexagon screw M10 x 30
11	2	20 10 26 01	Gasket USIT TM 120
12	2	20 20 58 80	Locking screw 1/2"
13	1	20 14 40 27	Sealing housing
14	1	20 12 16 07	Paper seal D160 x 110 x 0.5
15	8	20 20 93 09	Serrated washer A 10.5
16	1	20 14 40 12	Oil inspection glass R 1"
17	1	20 14 40 21	Slide ring gasket (set) oil sealing unit ZP3
18	1	00 02 38 86	Hub D = 35 for FERRO II
19	1	20 14 40 15	O-Ring D 50 x 2
20	1	00 02 36 61	Sealing ring D53.5 x 12.5 T8
21	1	00 02 36 67	Gasket USIT 13.7 x 22 x 1.5
22	1	20 20 59 00	Hexagonal screw M12 x 50, galvanised
23	1	00 45 31 82	Level sensor KPS1 Cayman 42V 50Hz
24	2	20 43 09 00	Skintop screw coupling PG 13.5
25	1	20 60 68 02	Counter nut 1 1/2", galvanised
26	1	20 42 85 10	Dummy plug 10-pin, HAN 10A
27	1	20 43 10 00	Blind plugs PG 16
28	1	20 42 98 23	Sleeve housing, 10-pin, angled HAN 10A
29	1	20 42 98 22	Narrow pin insert 10-pin HAN 10A
30	4	20 20 86 03	Quick fastener with cap
31	4	20 54 83 10	Wheel 180 x 50 x 90
32	1	00 57 81 06	Pump container CAYMAN BETA II
33	1	20 17 21 05	Gasket material container ZP 3/HM 3
34	1	00 03 51 21	Pump shaft FERRO II RAL1015
35	1	00 03 51 28	Adaptor pump FERRO, galvanised
36	4	20 20 78 10	Hex. screw M8 x 25, galvanised
37	4	20 20 91 00	Spring lock washer
38	1	00 02 34 60	Feather key A14 x 9 x 90

## Spare parts drawing / spare parts list



### 44.2 Pump unit





## Spare parts drawing / spare parts list

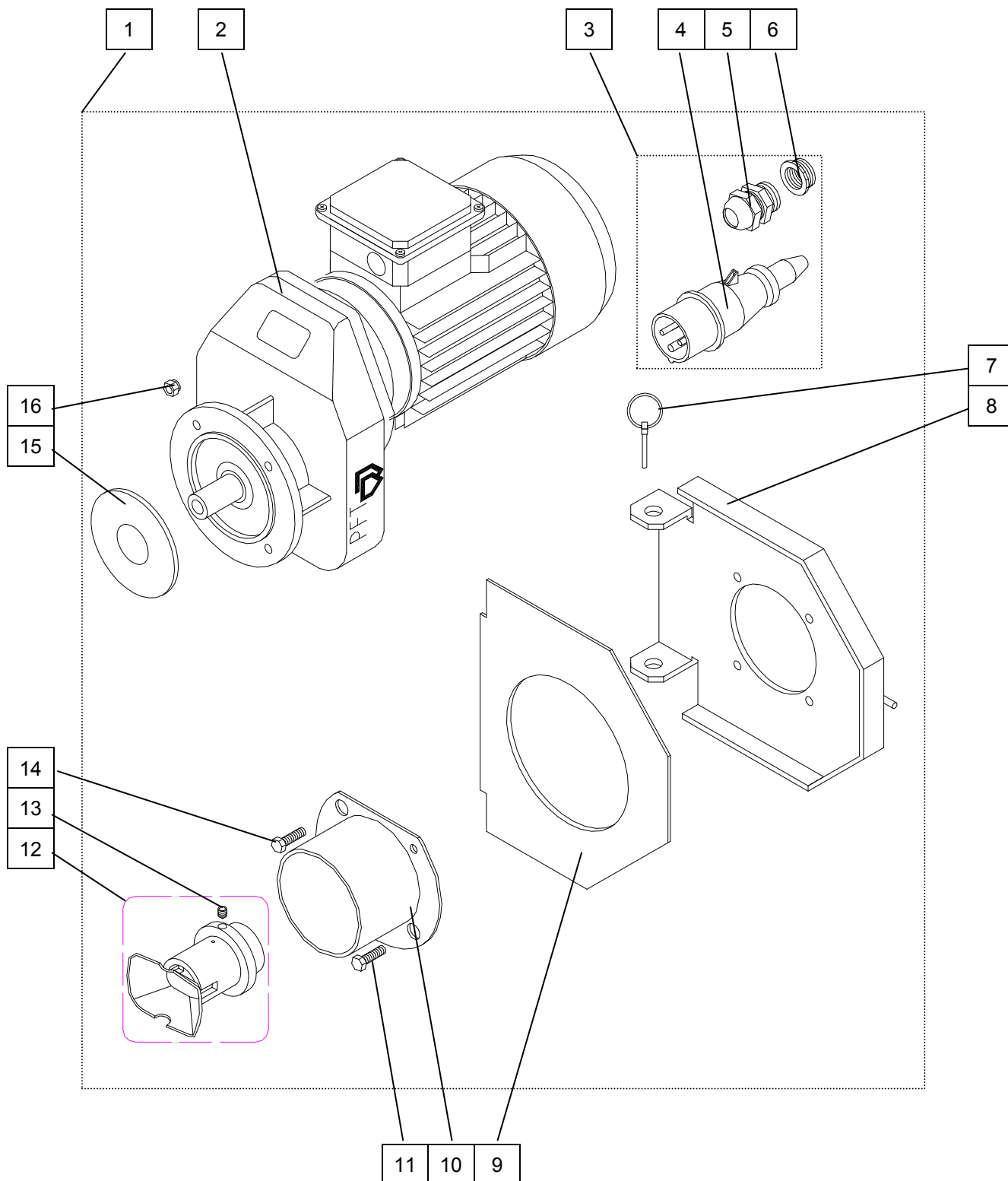
Pos.	Quantity	Art. no.	Name
1	2	20 20 85 22	Splint bolt 8 H11 x 58 x 54 with washer und splint, galvanised
2	2	20 10 08 01	Quick closure with locking device
3	1	00 57 81 49	Pump flange CAYMAN BETA II
4	1	00 02 10 25	ROTOR FERRO
5	1	00 51 26 85	Stator FERRO soft RAL2004
6	2	20 11 89 12	Clamping screw M16 x 630, galvanised for tie rod 20118910
7	2	20 20 99 21	Collar nut M16 galvanised
8	1	00 09 90 89	Manometer with plastic inlet housing 0-100 bar 1" pressure reducer VA
9	1	00 10 21 16	Pressure flange T-Pump 2" RAL2004
10	1	20 17 21 03	Support plate for ZP 3 -pump with carrying handle
11	1	20 20 07 80	Coupling 50 M-part 2" internal thread with gasket



## Spare parts drawing / spare parts list



### 44.3 Gear motor 4 kW, 273 rpm complete, article no. 00097094





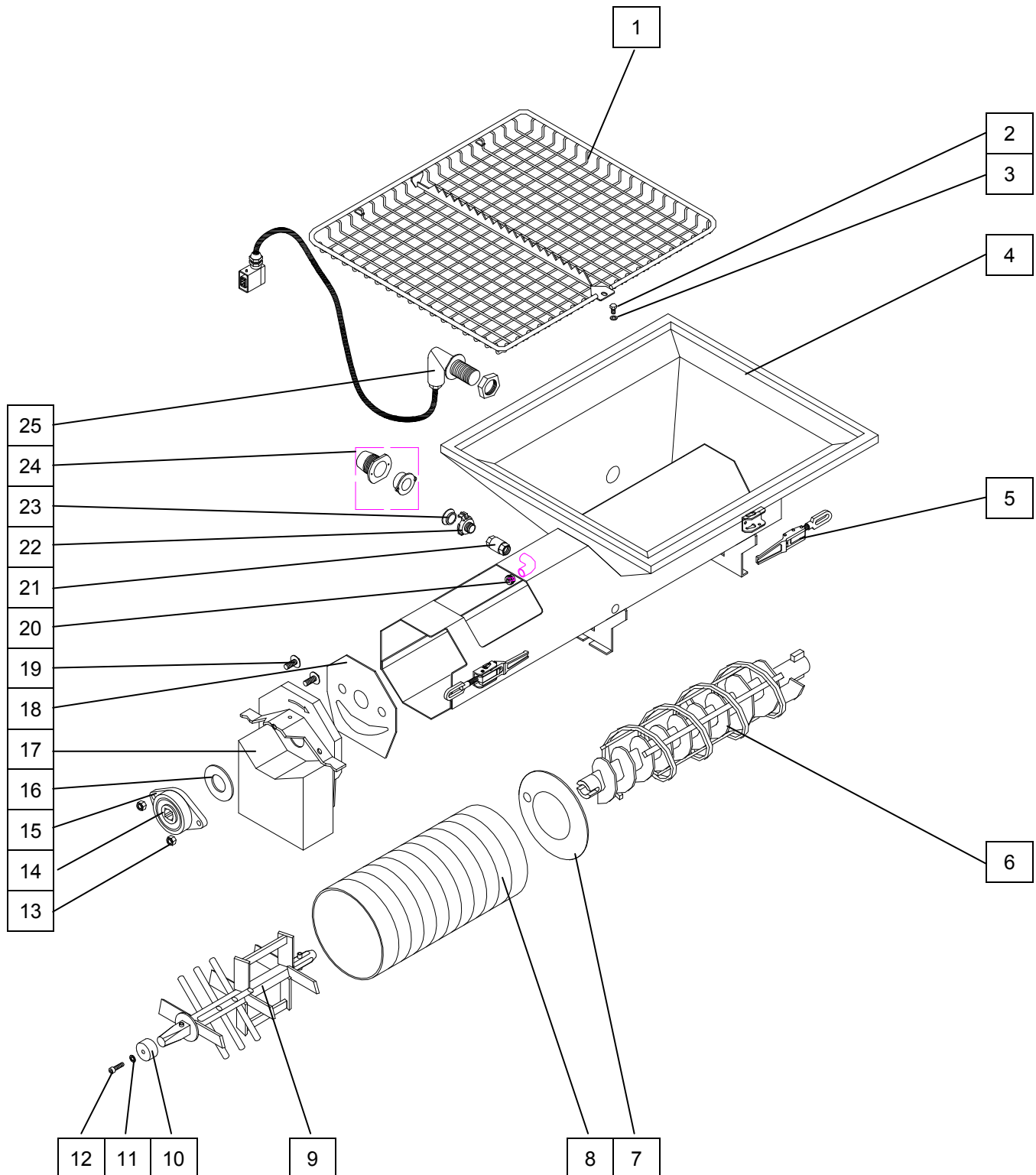
## Spare parts drawing / spare parts list

Pos.	Quantity	Art. no.	Name
1	1	00 09 70 94	Drive HM 2006, 4 kW, 273 rpm, complete
2	1	00 05 36 03	Gear motor 4 kW, 273 rpm
3	1	20 42 41 36	Motor connection cable 5.0 m CEE 4 x 16A
4	1	20 42 87 00	CEE plug 4 x 16A 7h, black
5	1	00 04 11 27	Skintop screw connection M 20 x 1.5
6	1	00 04 61 38	Reduction (plastic) M25x1.5/M20x1.5
7	1	20 10 10 10	Lynch pin D 4.5 with ring
8	1	00 04 79 50	Motor flange HM 106 / 2006 RAL 2004
9	1	00 04 79 35	Gasket of motor flange HM 106
10	1	20 10 29 05	Protective tube for drive dog
11	2	20 20 78 00	Hex. screw M8 x 30 galvanised
12	1	20 10 29 11	Drive dog with round drogue system 25 mm bore HM 2/HM 200
13	1	20 20 96 03	Threaded pin with hexagon socket M8 x 20, galvanised
14	2	20 20 78 10	Hex. screw M8 x 25 galvanised
15	1	20 54 57 02	Gasket ring of gear seal D 107 x 40 x 5
16	4	20 20 72 00	Safety nut M8 galvanised

## Spare parts drawing / spare parts list



## 44.4 Material container with rubber mixing tube.

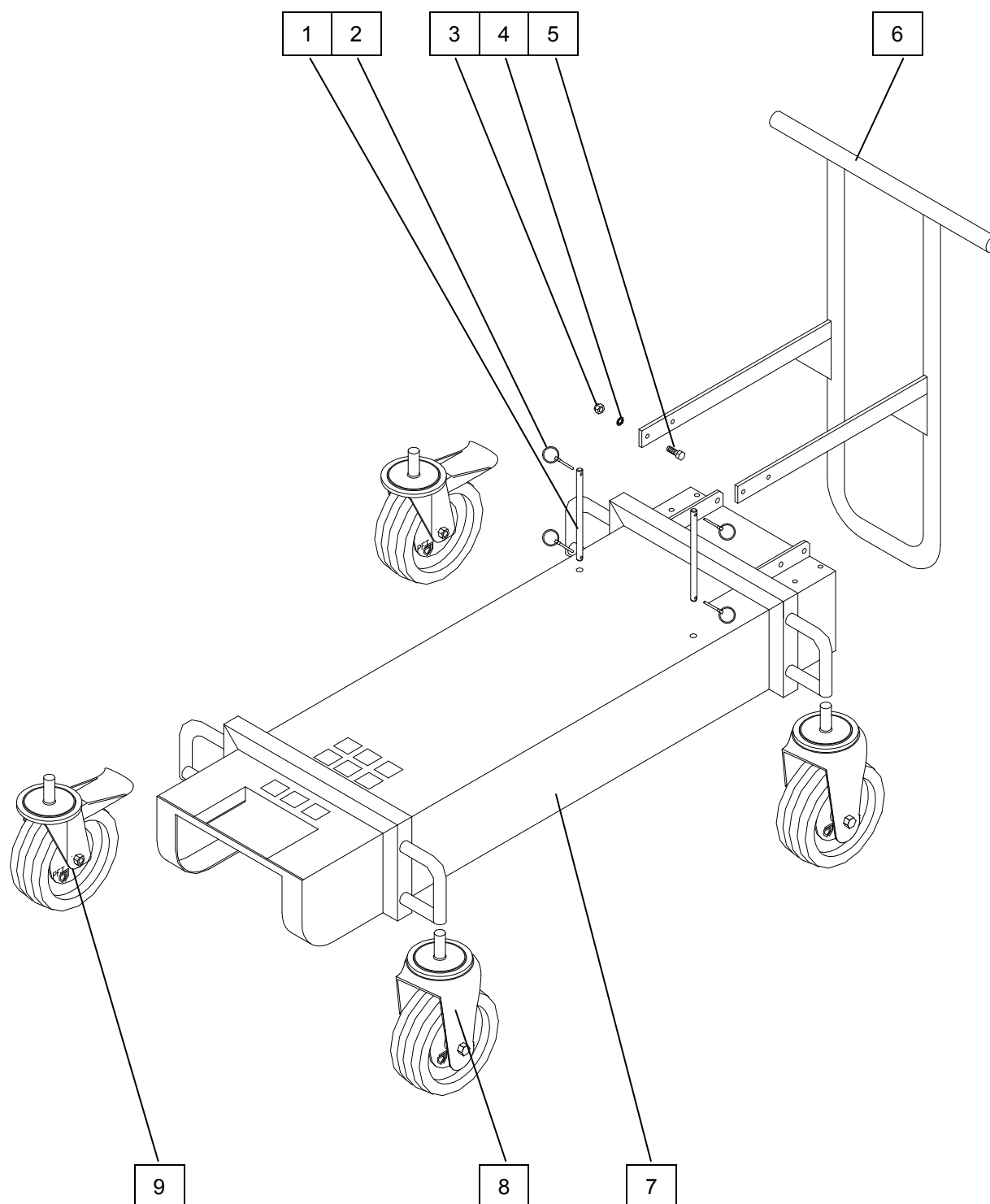




## Spare parts drawing / spare parts list

Pos.	Quantity	Art. no.	Name
1	1	00 17 38 26	Protective grille
2	1	20 20 87 01	Hex. screw M8 x 16 galvanised
3	1	20 20 93 13	Washer B 8.4, galvanised
4	1	00 06 73 68	Material container HM 2006 with mixing tube, large material container
5	3	00 04 78 20	Quick release fastener with locking device M10 small
6	1	00 58 16 62	Metering worm 70l/m CAYMAN BETA II RAL2004
7	1	00 04 79 77	Gasket of mixing section HM 106
8	1	00 04 79 85	Rubber mixing tube OCTAGON HM 106/2006 L=465
9	1	00 43 07 23	Mixing shaft HM 106
10	1	20 54 54 09	Locking washer HM
11	1	20 20 93 14	Serrated washer A 8.4, galvanised
12	1	20 20 97 03	Cylinder screw with hexagon socket M8 x 30, galvanised
13	2	20 20 89 00	Safety nut M12 galvanised
14	1	20 54 55 06	Square external bearing
15	1	00 04 51 69	Flange bearing housing type FYT B 508M
16	1	00 04 51 44	Rubber gasket HM 6
17	1	00 58 14 22	Mortar outlet flange CAYMAN BETA II RAL2004
18	1	00 04 79 95	Rubber gasket mortar outlet flange OCTAGON
19	2	00 04 51 37	Saucer-head screw M12 x 30, galvanised
20	1	00 05 51 35	Water nozzle 1/2" hexagon socket with hole MS
21	1	20 21 90 50	Non-return valve 1/2" internal thread
22	1	20 20 09 00	Geka coupling 1/2" external thread (packing unit = 10 pcs)
23	1	20 20 17 00	Gasket Geka-coupling
24	1	20 61 03 02	Protective sleeve for capacitive sensor
25	1	20 61 03 10	Capacitive level sensor, complete 5 m, 6-pin

## 44.5 CAYMAN undercarriage





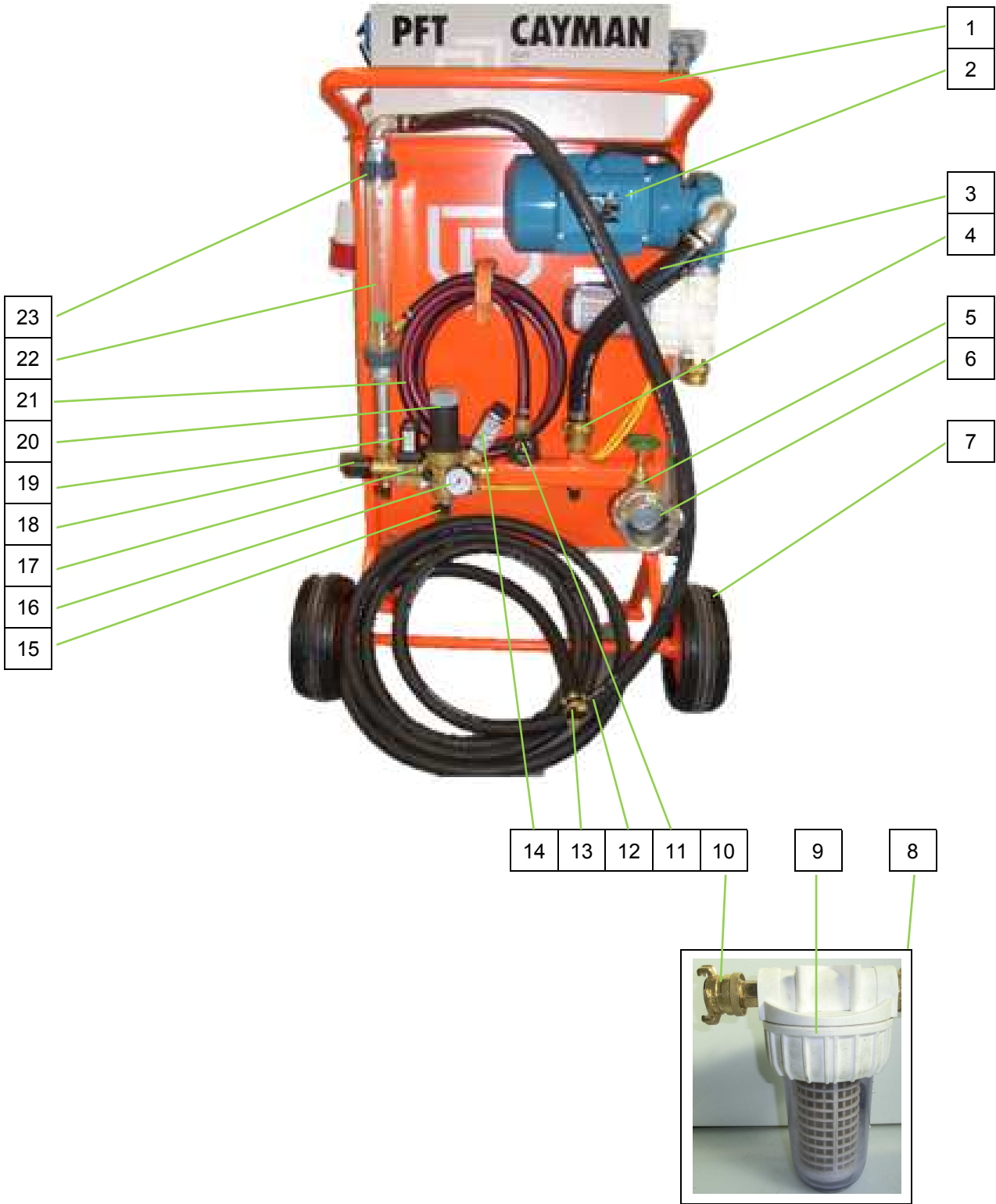
## Spare parts drawing / spare parts list

Pos.	Quantity	Art. no.	Name
1	2	00 00 21 87	CAYMAN stop axel
2	4	20 10 10 10	Lynch pin D 4.5 with ring
3	2	20 20 66 03	Safety capped nut M8, galvanised
4	2	20 20 93 13	Washer B 8.4, galvanised (PACKING UNIT = 10 PCS)
5	2	20 20 63 23	Saucer-head screw M8 x 25, galvanised
6	1	00 57 80 88	Transport handle CAYMAN BETA II
7	1	00 57 80 61	CAYMAN BETA II undercarriage
8	2	00 49 49 11	Castor 230 mm with steel rim
9	2	00 49 49 14	Stop castor 230 mm with steel rim



Spare parts drawing / spare parts list

44.6 Spare parts drawing CADDY with water tap assembly







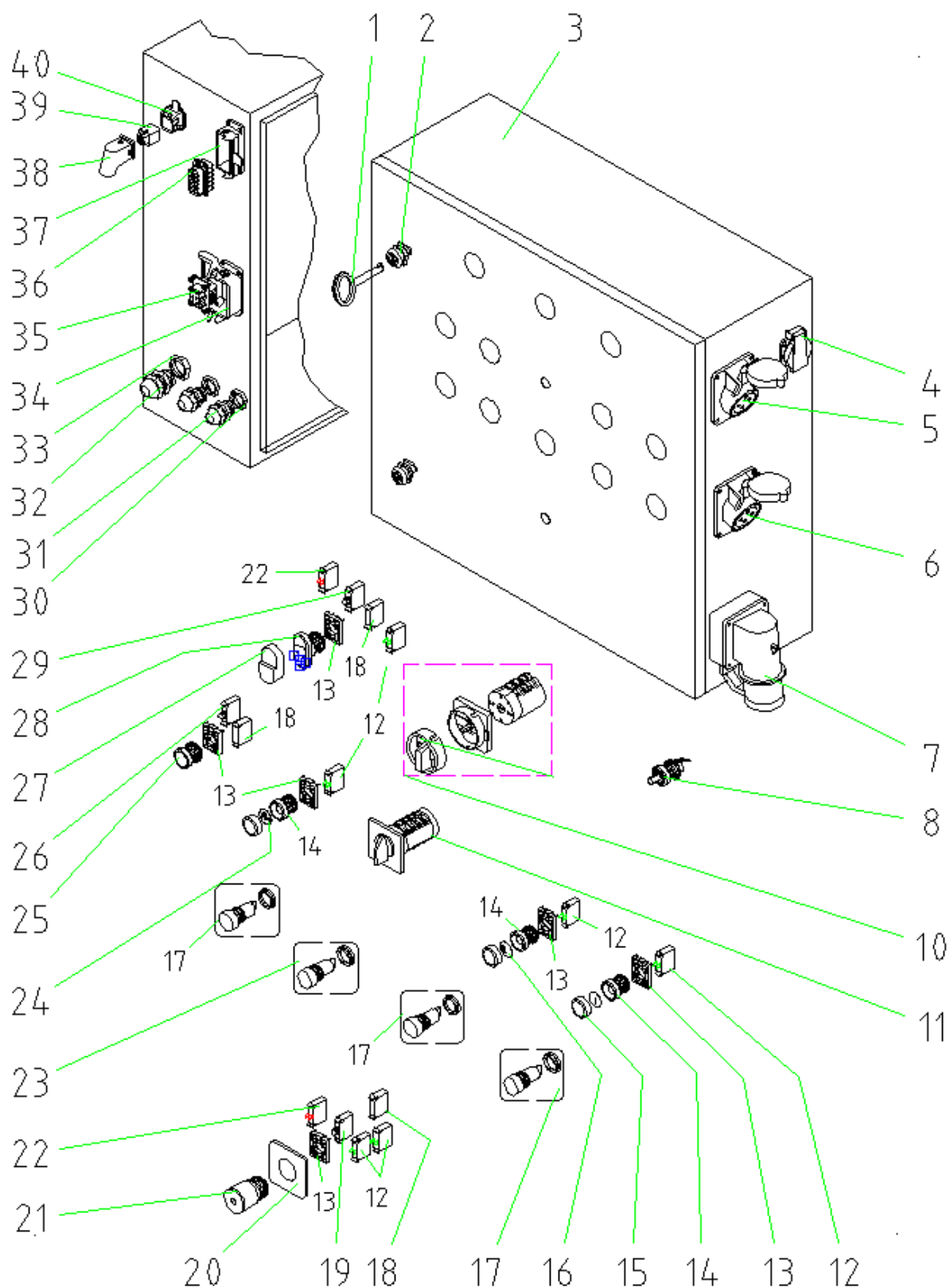
#### 44.6.1 Spare parts list Caddy with water tap assembly

Pos.	Quantity	Art. no.	Name
1	1	00 58 11 67	CADDY CAYMAN BETA II undercarriage
2	1	00 15 13 82	Booster pump 1.1 KW 400 V 50 Hz
3	1	00 04 71 31	Water/air hose 1" x 400mm
4	1	20 20 16 10	Geka coupling 1" sleeve (PACKING UNIT = 10 PCS)
5	1	20 21 52 20	Shut-off valve 3/4" without drain
6	1	20 20 07 80	Coupling 50 M-part 2" internal thread with gasket
7	2	00 49 49 90	Spare roll 230 mm, steel rim without spacer
8	1	00 13 02 19	Pre-filter AV3000 cmpl.
9	1	00 13 02 20	Pre-filter AV3000*
10	1	20 20 16 81	High-pressure suction coupling 3/4" external thread with gasket
11	1	20 21 52 00	Shut-off valve 1/2" without drain
12	1	00 00 21 97	Water hose/air hose 3/4" x 6000mm
13	1	20 20 16 00	Geka coupling 3/4" sleeve (PACKING UNIT = 10 PCS)
14	1	00 08 26 79	Pressure switch type BC 0.5 - 3 bar
15	3	00 04 04 28	Outlet valve control panel gun metal
16	1	00 01 99 13	Pressure gauge 0-16 bar 1/4" rear, D = 50 mm
17	1	00 03 92 86	Control panel, brass, DK06FN-1/2"E 42V
18	1	00 04 04 26	Regulating valve insert complete for control panel gun metal
19	1	20 15 26 13	Solenoid valve 1/2", 42 V, 50Hz/48V 60 Hz Type 6213 A
20	1	00 01 96 07	Pressure reducing valve control panel gun metal G 5
21	1	00 04 41 98	Water hose/air hose 1/2" x 3000mm
22	1	20 18 51 00	Plastic tube 250-2500 l/h
23	1	20 18 50 01	Water flow meter 250-2500 l/h cmpl.

## Spare parts drawing / spare parts list



## 44.7 Control cabinet with FU Article number 00250808





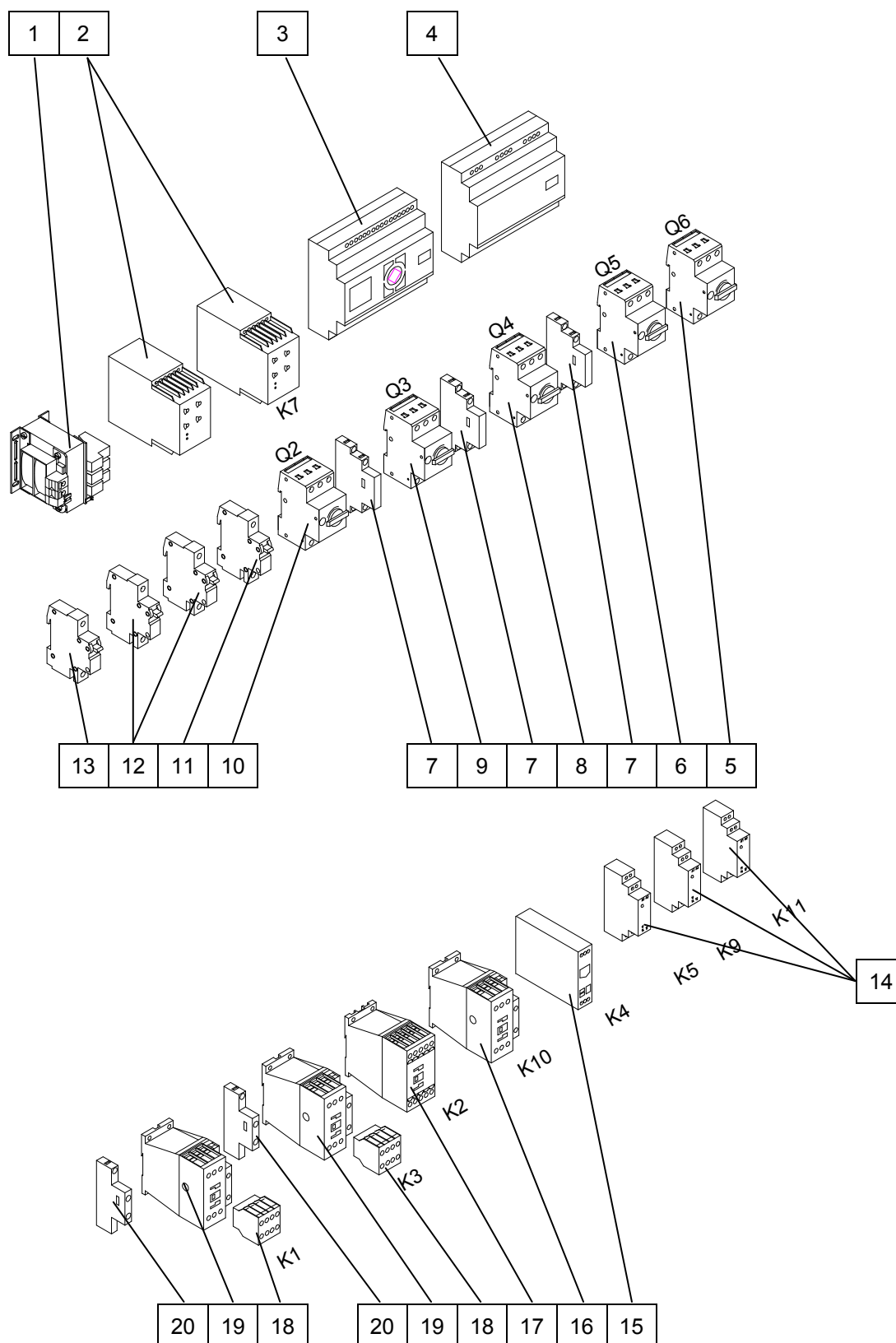
## Spare parts drawing / spare parts list

Pos.	Quantit	Art. no.	Name
1	1	20 44 45 00	Key for control box
2	2	00 03 62 49	Lock for control box (double bit)
3	1	00 45 40 68	Empty housing CAYMAN PLC
4	1	20 42 72 00	Schuko socket outlet 16A, blue
5	1	00 02 20 66	CEE-socket outlet 4 x 16A 7h, black 500 V
6	1	20 42 66 10	CEE socket outlet 4 x 16A 6h, red
7	1	00 00 21 29	CEE connection plug 5 x 32A 6h, red
8	1	00 05 07 83	Potentiometer 4.7 kOhm with drive, screw connections
10	1	00 01 99 92	Main switch 400 V, 50 Hz with under-voltage release
11	1	00 18 63 72	Step switch 0-6, 1-pin
12	5	00 05 38 35	Contact element 1 closer M 22 EK 10
13	10	00 05 38 34	Fastening adapter for switch elements
14	3	00 05 38 39	Pushbutton without touch plate M22
15	3	00 05 38 30	Test membrane round for push-button IP 67
16	1	00 05 38 43	Touch plate for pushbutton - blue/reset M 22
17	3	00 05 38 74	Indicating lamp insert for yellow luminous pushbutton
18	1	00 05 38 86	LED - resistor - additional series resistor 42 V
19	1	00 05 38 79	Luminous element, red, 12-30V
20	1	00 18 63 75	Emergency-stop shield in four languages
21	1	00 18 63 74	Emergency-stop button M22, illuminated
21	2	00 05 38 40	Touch plate for pushbutton Green / On M22
22	1	00 05 38 36	Contact element 1 opener M22 EK01
23	1	00 10 21 36	Control lamp LED 48V AC/DC, red
24	1	00 05 38 42	Touch plate for pressure switch, black, liquid M22
25	1	00 05 38 73	Transparent lamp insert cover green M22
26	1	00 05 38 80	Luminous element, green 12-30V
27	1	00 05 38 31	Test membrane square for double pushbutton IP 67
28	1	00 05 38 32	Luminous pushbutton ON/OFF M22
29	1	00 05 38 81	Luminous element white 12-30V
30	2	00 04 11 43	Skintop counter nut M 16 x 1.5
31	1	20 43 09 44	Counter nut of skintop screw coupling PG 16
31	2	00 04 11 41	Skintop screw connection M 16 x 1.5
32	1	20 43 09 30	Skintop screw coupling PG 16
32	1	00 04 11 27	Skintop screw connection M 20 x 1.5
33	1	00 04 11 45	Skintop counter nut M 20 x 1.5
34	1	00 00 10 80	Socket housing 6-pin, HAN 6 E
35	1	20 42 84 08	Female insert 6-pin, HAN 6 E
36	1	20 42 98 24	Female insert 10 pin, HAN 10A
37	1	20 42 98 21	Socket housing 10A-pin, HAN 10A
38	1	20 42 85 01	Dummy plug 4-pin, HAN 3A
39	1	20 42 86 03	Female insert 5-pin, HA 4
40	1	20 42 86 04	Socket housing 4/5-pin, HAN 3A/HA 4

## Spare parts drawing / spare parts list



## 44.8 Control cabinet with FU Article number 00250808





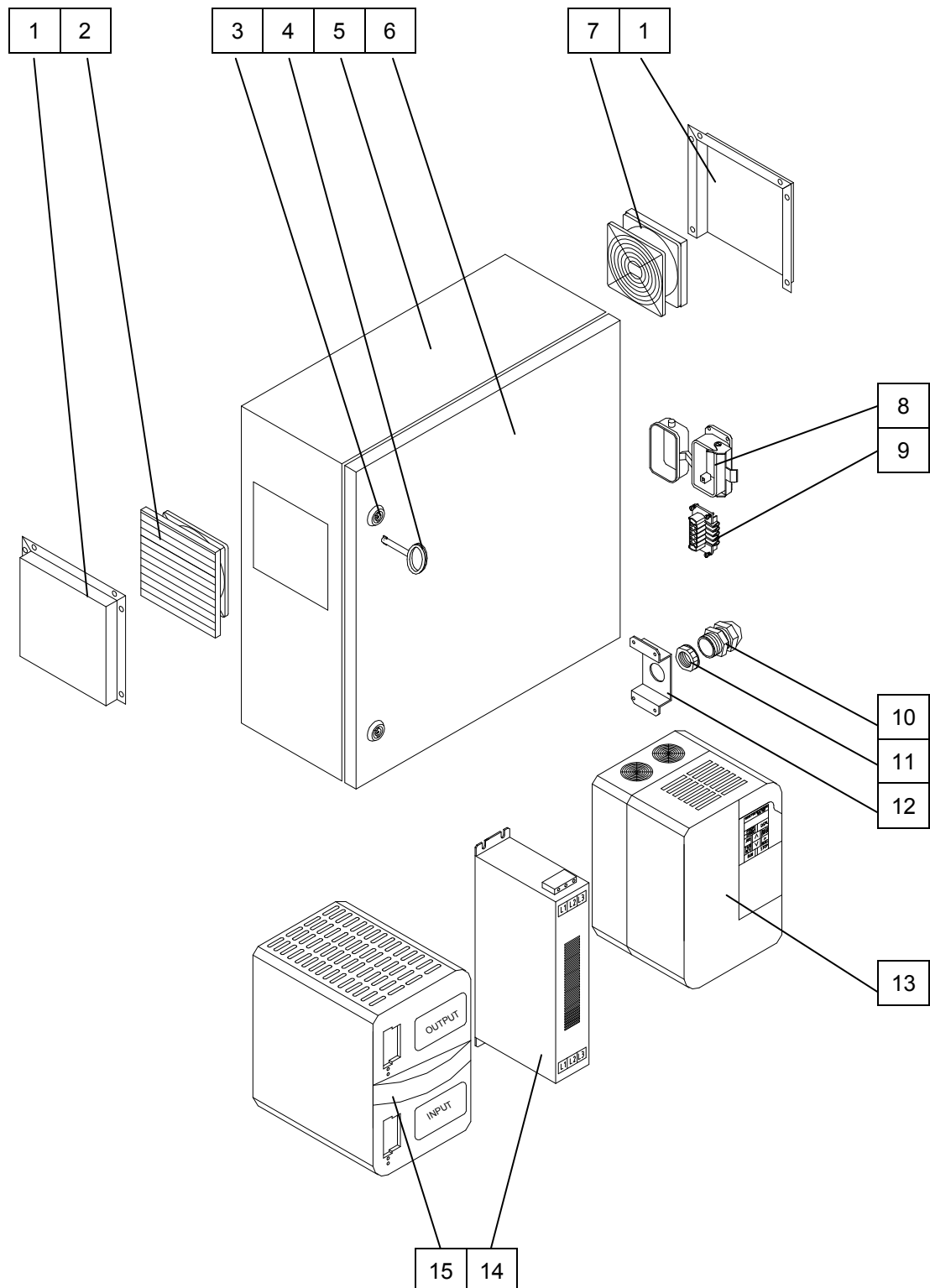
## Spare parts drawing / spare parts list

Pos.	Quantity	Art. no.	Name
1	1	00 02 21 70	Control transformer 400V-42V/230V 190 VA
2	2	20 45 27 15	Evaluation device humidity sensor
3	1	00 45 97 35	PLC control of CAYMAN 400 V, programmed
4	1	00 25 56 39	PLC extension of Easy 618-DC-RE
5	1	00 04 26 01	Motor protection switch 1.6-2.5A PKZM 0-2.5
6	1	00 04 25 99	Motor protection switch 0.63-1A PKZM 0-1
7	3	00 02 14 01	Auxiliary contactor NHI-11-PKZO
8	1	00 04 26 02	Motor protection switch 10-16A PKZM 0-16
9	1	00 04 38 42	Motor protection switch 6-10A PKZM0-10
10	1	00 04 26 03	Motor protection switch 2.5-4A PKZM 0-4
11	1	00 04 63 79	Miniature circuit breaker C 0.5A, 1-pin
12	2	00 08 31 38	Miniature circuit breaker C 4A, 1-pin
13	1	20 41 93 10	Miniature circuit breaker B 16A, 1-pin
14	3	20 44 81 20	Coupling relay 42 V 2 changer
15	1	00 26 28 73	Monitoring relay
16	1	00 08 42 25	Air-break contactor DIL M17-10 42 V, 50 Hz 48 V, 60 Hz 7.5 kW size I
17	1	00 08 42 23	Air-break contactor DIL M9-10 42 V, 50 Hz 48 V, 60 Hz 4.0 kW size I
18	2	00 58 29 61	Auxiliary switch DILA-XHI40 4S
19	1	00 08 42 26	Air-break contactor DIL M25-10 42 V, 50 Hz 48 V, 60 Hz 11 kW size II
20	2	00 08 52 95	Auxiliary switch DILM 32-XHI11-S 1S / 1Ö

## Spare parts drawing / spare parts list



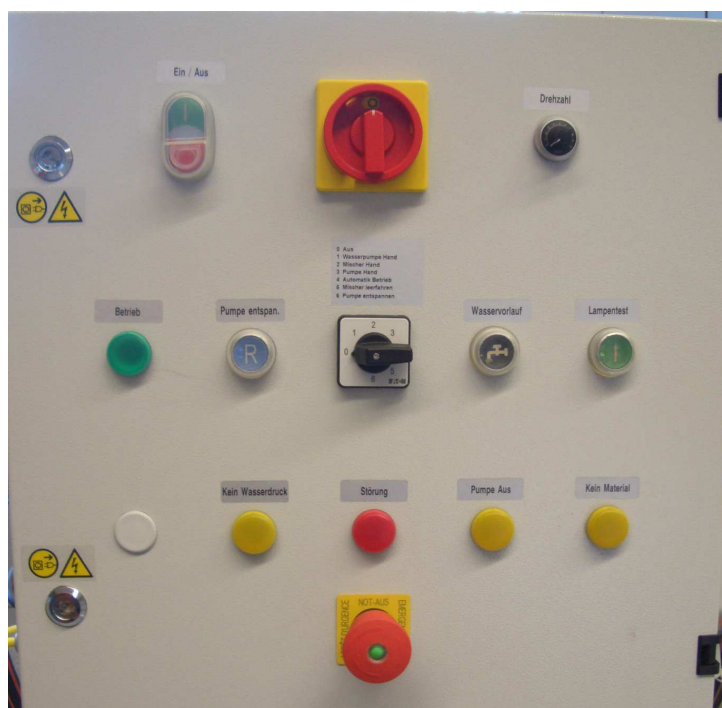
### 44.9 Control cabinet with FU Article number 00250808





## Spare parts drawing / spare parts list

Pos.	Quantity	Art. no.	Name
1	2	00 09 11 52	Protective hood of filter fan RAL7035
2	1	00 03 63 23	Exit filter for control box
3	2	00 03 62 49	Lock for control box (double bit)
4	1	20 44 45 00	Key for control box 5 mm
5	1	00 45 40 83	Empty housing CAYMAN FC RAL7035
6	1	00 45 40 78	Door CAYMAN FC RAL7035
7	1	00 28 98 80	Filter fan 24 V DC for control box
8	1	20 43 20 01	Socket housing 10-pin, HAN 10 E
9	1	20 43 22 00	Socket insert 10-pin HAN 10E
10	1	00 06 69 81	EMC cable gland M25 x 1.5
11	1	00 06 69 84	EMC counter nut M20 x 1.5
12	1	00 07 02 88	Strain relief for EMC cable gland, galvanised M 25 x 1.5
13	1	00 14 74 84	Frequency converter V1000 7.5 KW 400 V not programmed
14	1	00 52 62 73	EMC filter for frequency converter 7.5 kW, 400 V, 16 A, low leakage current
15	1	00 28 98 77	Switch-mode power supply unit

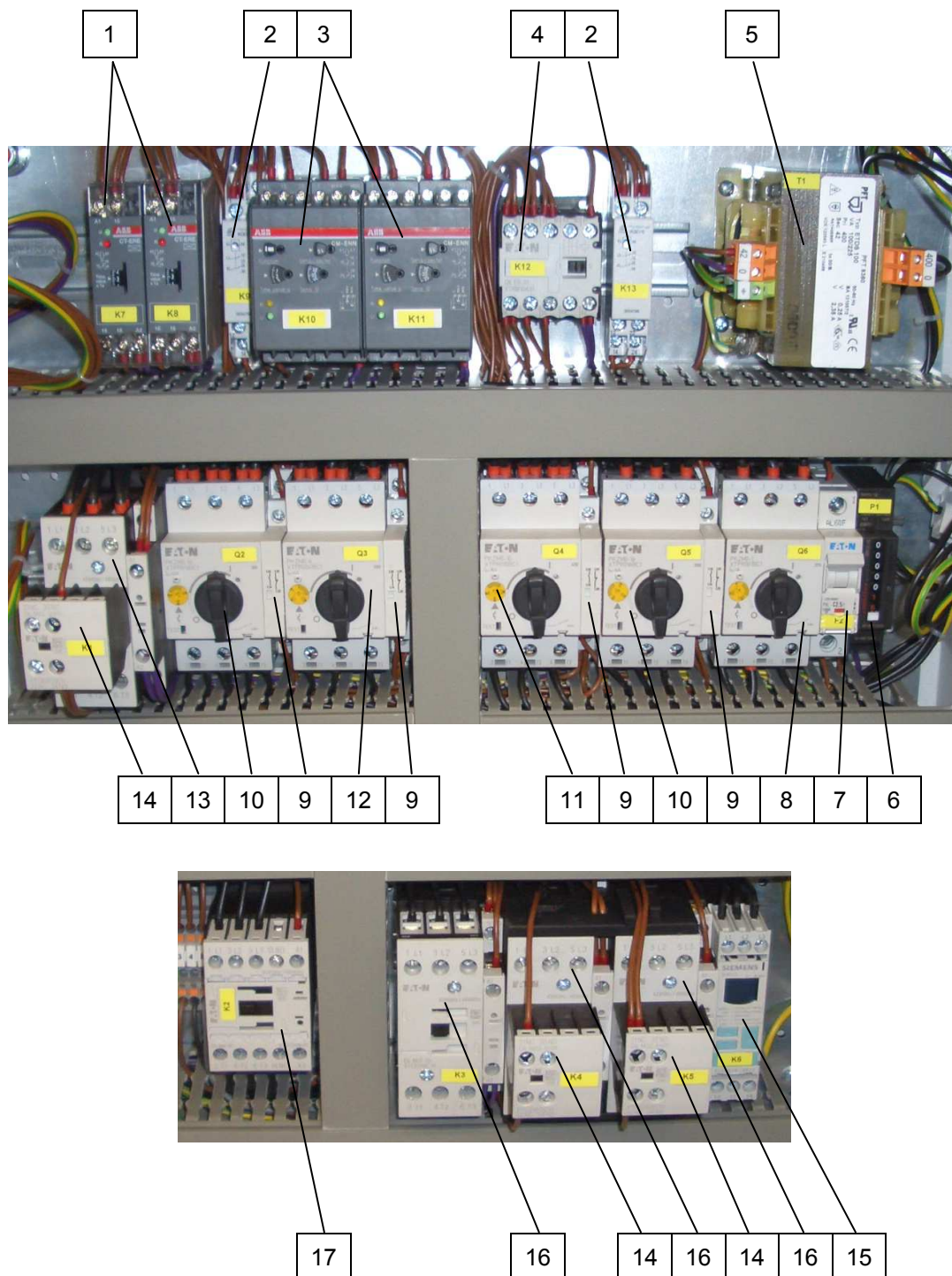




## Spare parts drawing / spare parts list



### 44.10 Control cabinet without FU Article number 00280799







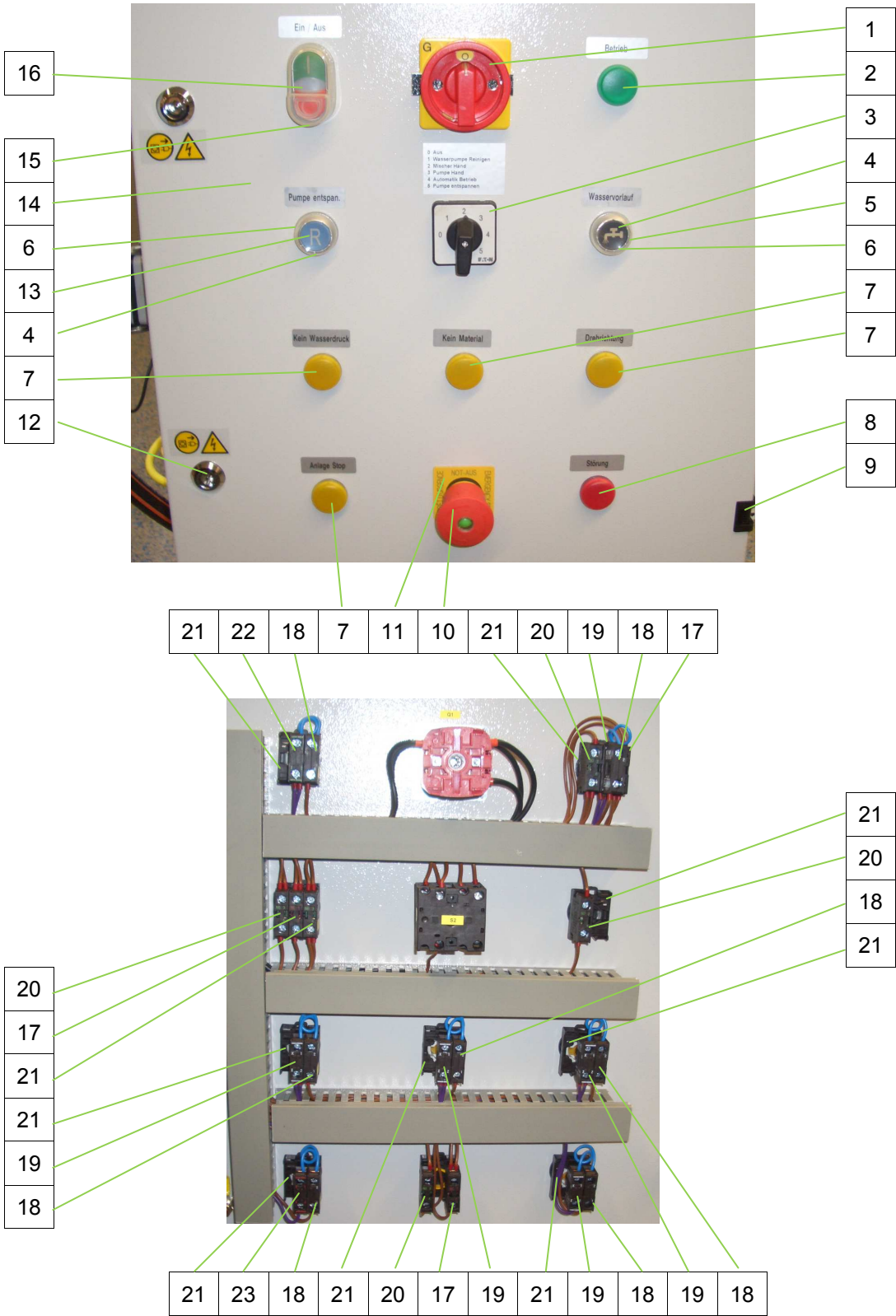
## Spare parts drawing / spare parts list

Pos.	Quantity	Art. no.	Name
1	2	20452740	Time relay 42 V, 0.5-10 sec.
2	2	20 44 81 20	Coupling relay 42 V 2 changer
3	2	20 45 27 15	Evaluation device humidity sensor
4	1	20 44 73 10	Air-break contactor DIL ER 31, 42 V
5	1	00 00 93 60	Control transformer 400 V, 42 V (100VA) without fuse
6	1	20 45 31 01	Operation-hour counter 42 V
7	1	00 25 46 00	Miniature circuit breaker C 2.5A, 1-pin
8	1	00 04 25 99	Motor protection switch 0.63-1A PKZM 0-1
9	4	00 02 14 01	Auxiliary contactor NHI-11-PKZO
10	2	00 04 26 02	Motor protection switch 10-16A PKZM 0-16
11	1	00 04 38 42	Motor protection switch 6-10A PKZM 0-10
12	1	00 04 26 03	Motor protection switch 2.5-4A PKZM 0-4
13	1	00 08 42 26	Air-break contactor DIL M25-10 42 V
14	3	00 08 52 93	Auxiliary switch DILM 32-XHI11 1 closer / 1 opener
15	1	00 46 26 98	Phase monitor
16	3	00 08 42 25	Air-break contactor DIL M17-10, 42 V
17	1	00 08 42 23	Air-break contactor DIL M 9-10, 42 V



Spare parts drawing / spare parts list

44.11 Control cabinet article number 00280799





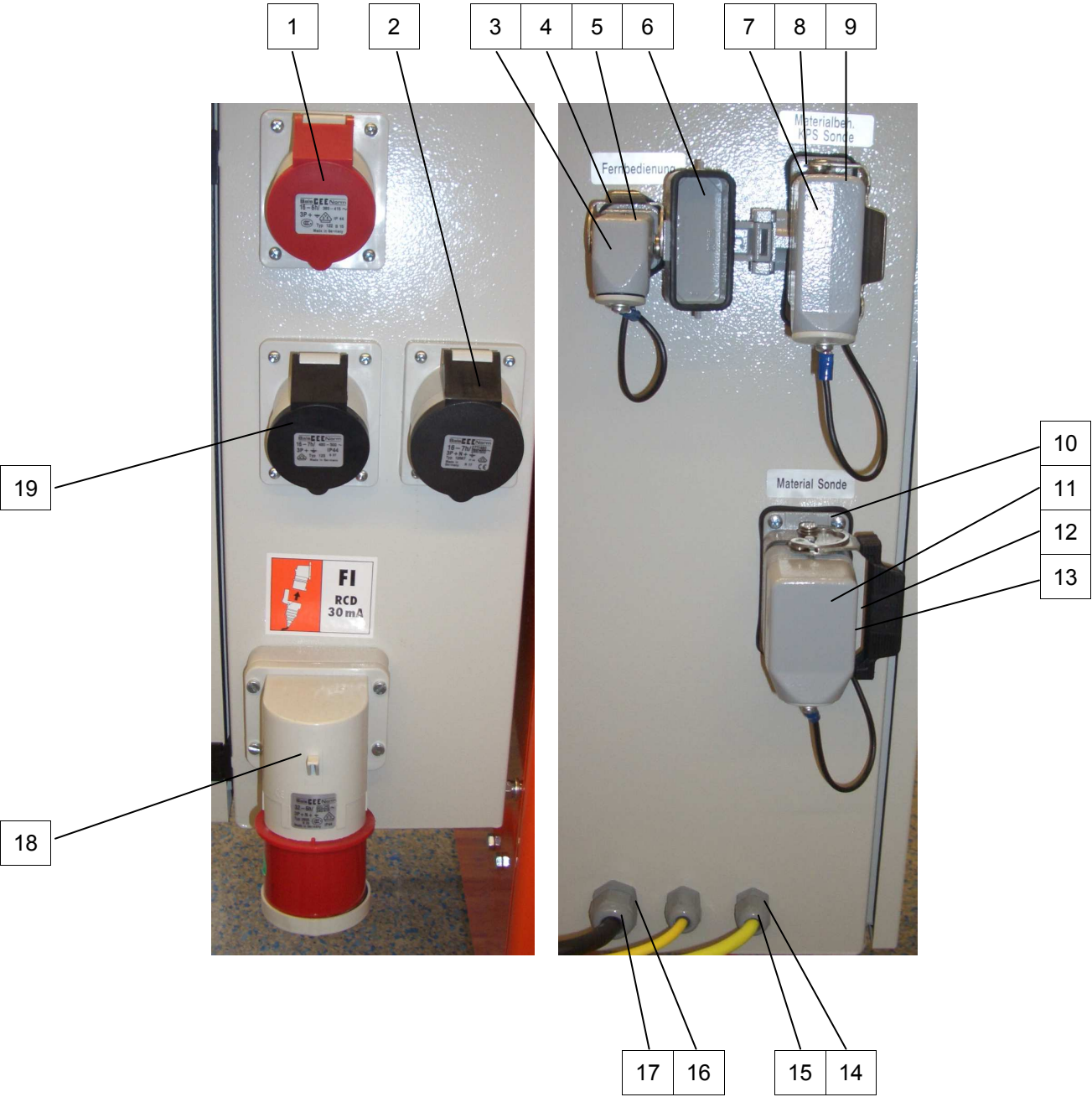
## Spare parts drawing / spare parts list

Pos.	Quantity	Art. no.	Name
1	1	20 45 52 00	Main switch
2	1	00 05 38 73	Indicating lamp insert for green luminous pushbutton
3	1	00 18 63 72	Step switch 0-6, 1-pin
4	2	00 05 38 39	Pushbutton without touch plate
5	1	00 05 38 42	Touch plate - black - "Liquid"
6	2	00 05 38 30	Flat switch protection membrane for pushbutton
7	4	00 05 38 74	Indicating lamp insert for yellow luminous pushbutton
8	1	00 05 38 75	Indicating lamp insert for red luminous pushbutton
9	2	00 05 37 67	Hinge 180°
10	1	00 41 35 82	Emergency-stop / emergency-halt switch
11	1	00 18 63 75	Emergency-stop shield, in four languages
12	2	00 03 62 49	Lock double bit
13	1	00 05 38 43	Touch plate - blue - "Reset"
14	1	00 45 39 54	Door CAYMAN
15	1	00 05 38 31	Square switch protection membrane for double pushbutton
16	1	00 05 38 32	Double luminous pushbutton On/Off
17	3	00 05 38 36	Contact element 1 opener M22 - K01
18	7	00 05 38 86	LED resistor ballast element for 42 V
19	5	00 05 38 81	Luminous element, white 12-30 V
20	5	00 05 38 35	Contact element 1 closer M22 - K10
21	10	00 05 38 34	Fastening adapter M22
22	1	00 05 38 80	Luminous element, green 12-30 V
23	1	00 05 38 79	Luminous element, red, 12-30 V



Spare parts drawing / spare parts list

44.12 Control cabinet article number 00280799



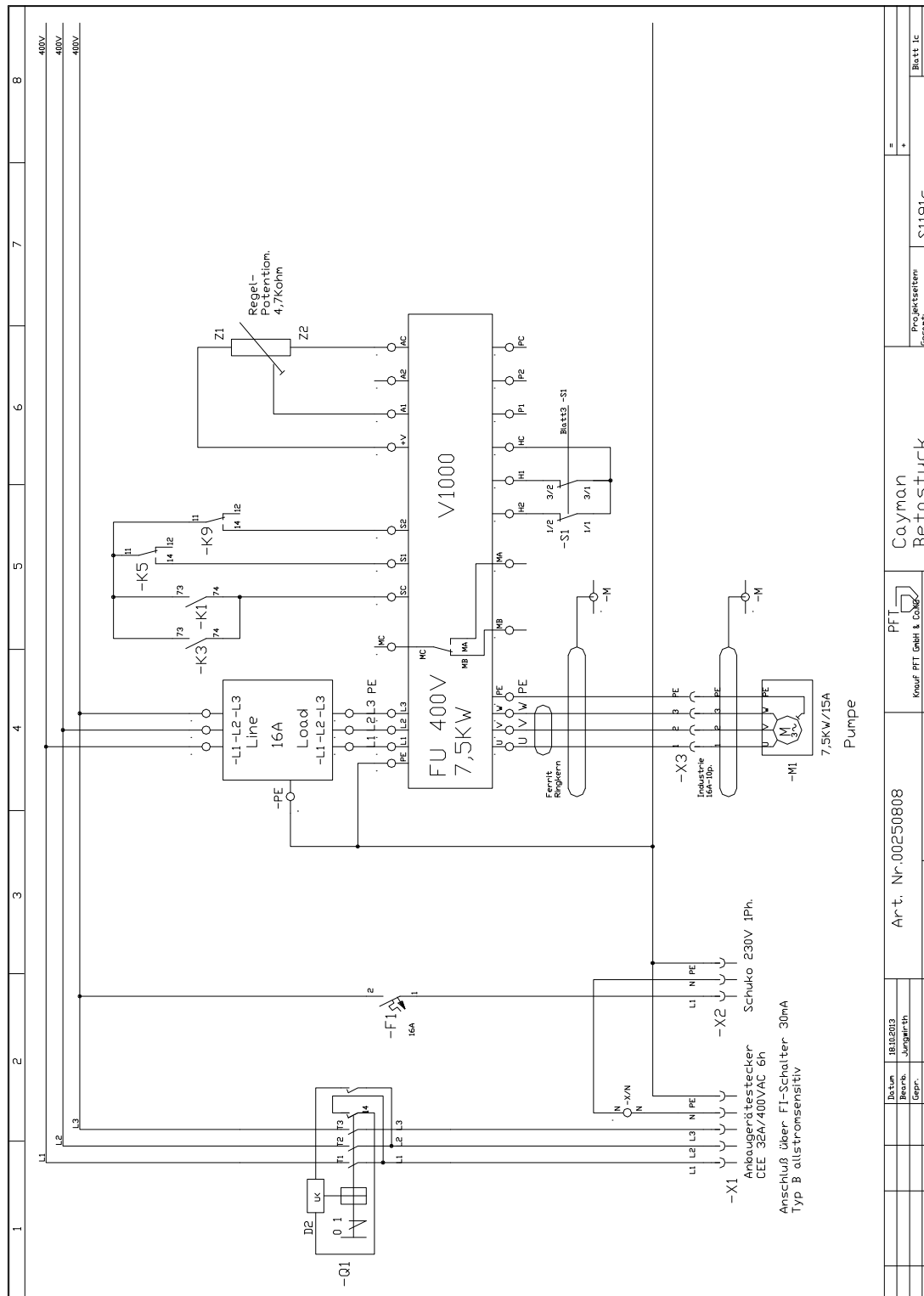


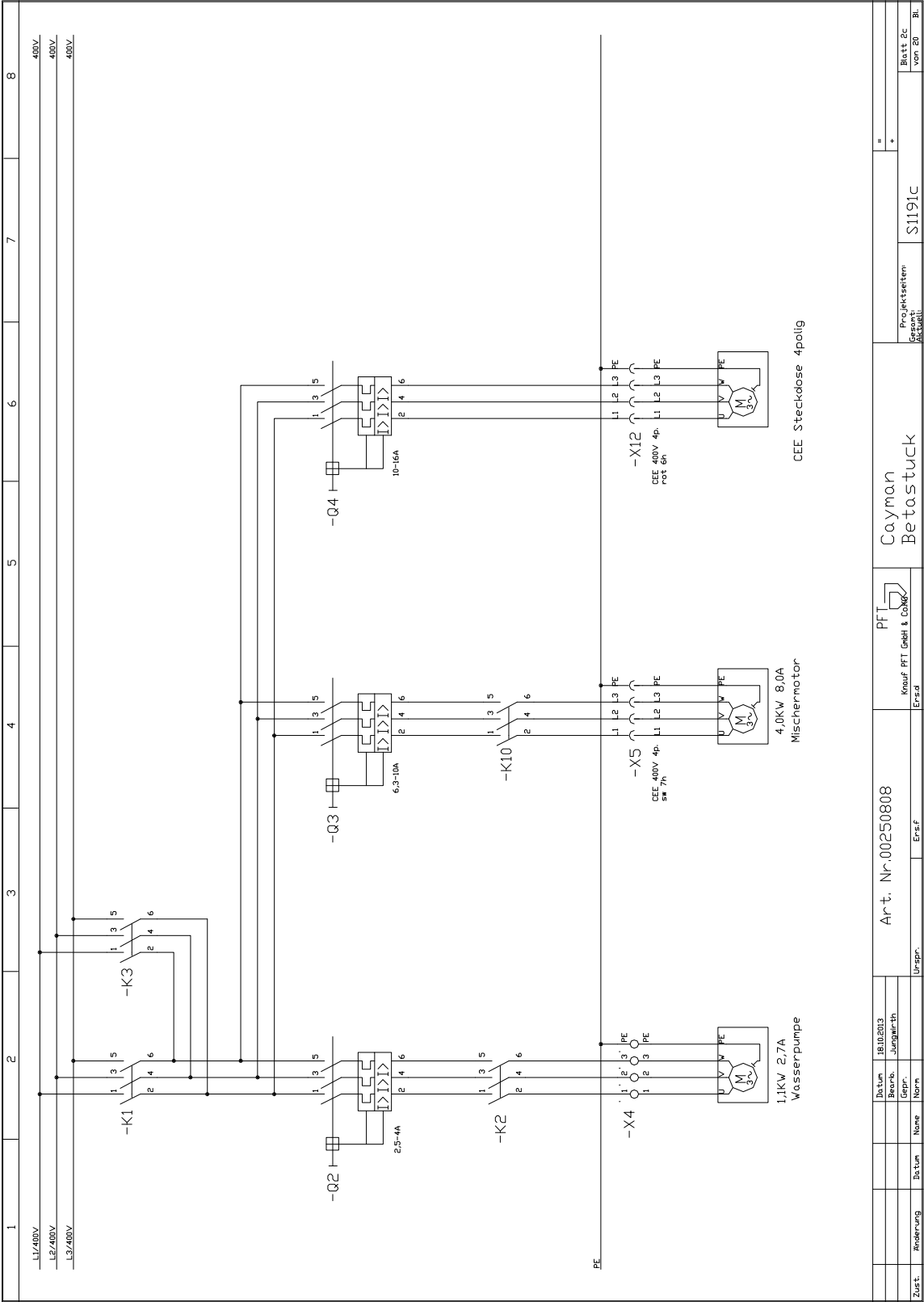
## Spare parts drawing / spare parts list

Pos.	Quantity	Art. no.	Name
1	1	20 42 66 10	CEE socket outlet 4 x 16A 6h, red, small
2	1	00 02 20 67	CEE socket outlet 5 x 16A 7h, black
3	1	20 42 85 01	Dummy plug, 4-pin
4	1	20 42 86 04	Socket housing, 4/5-pin
5	1	20 42 86 07	Female insert, 4-pin
6	1	00 03 63 03	Socket housing, 10-pin 10A with protective cover
7	1	20 42 98 23	Sleeve housing, 10-pin, angled 10A
8	1	20 42 98 22	Pin insert, 10-pin, narrow
9	1	20 42 98 22	Pin insert, 10-pin, narrow
10	1	00 00 10 80	6-pin socket housing
11	1	20 42 84 05	Sleeve housing, 6-pin
12	1	20 42 84 07	Pin insert, 6-pin
13	1	20 42 84 08	Female insert, 6-pin
14	2	00 04 11 41	Skintop screw coupling M16 x 1.5
15	2	00 04 11 43	Skintop counter nut M 16 x 1.5
16	1	00 04 11 27	Skintop screw coupling M20 x 1.5
17	1	00 04 11 45	Skintop counter nut M 20 x 1.5
18	1	00 00 21 29	CEE connection plug 5 x 32A 6h, red, hinged can
19	1	00 02 20 66	CEE socket outlet 4 x 16A 7h, black

## 45 Circuit diagrams

## 45.1 Circuit diagrams CAYMAN FU



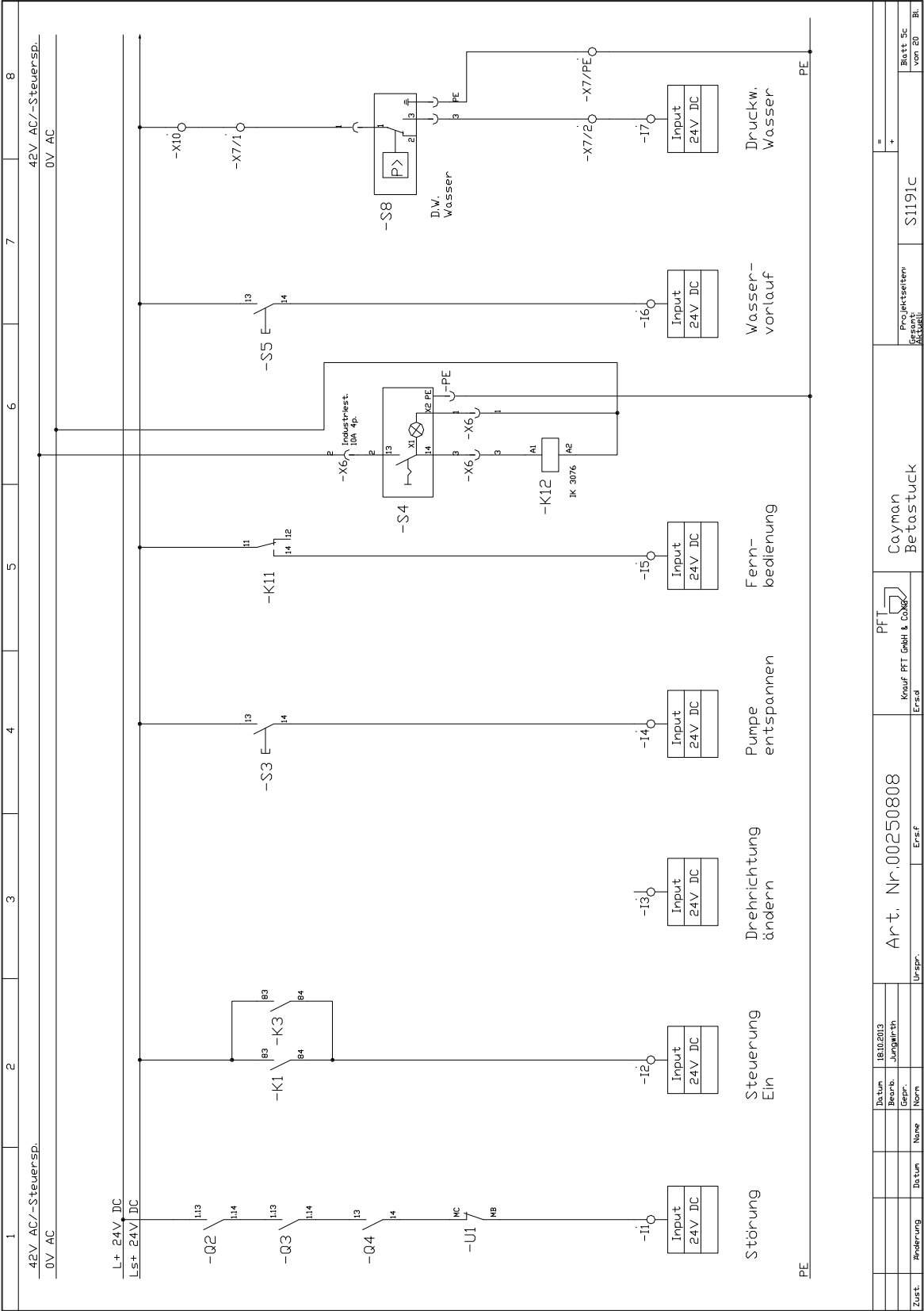




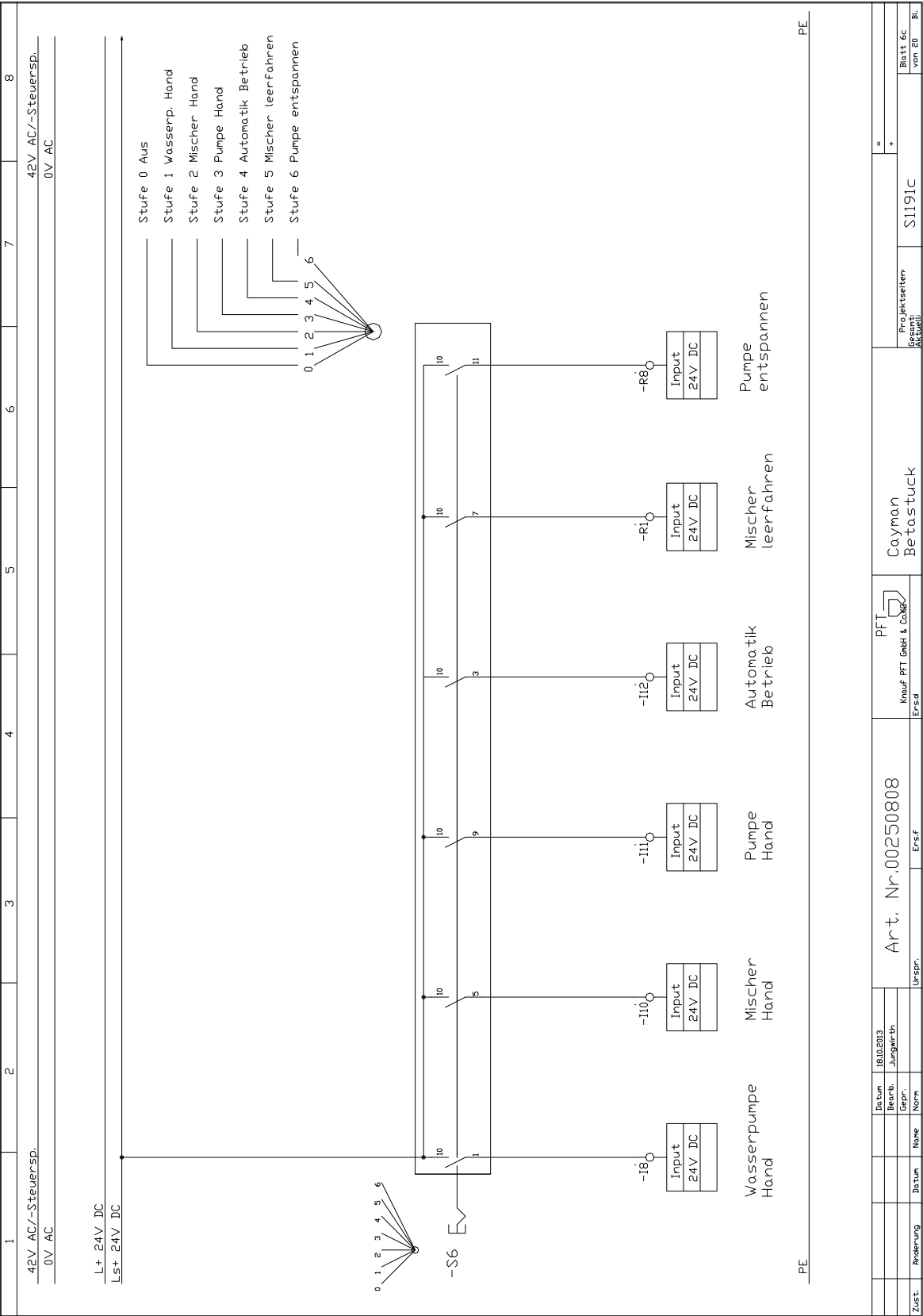


## 2017-03-22

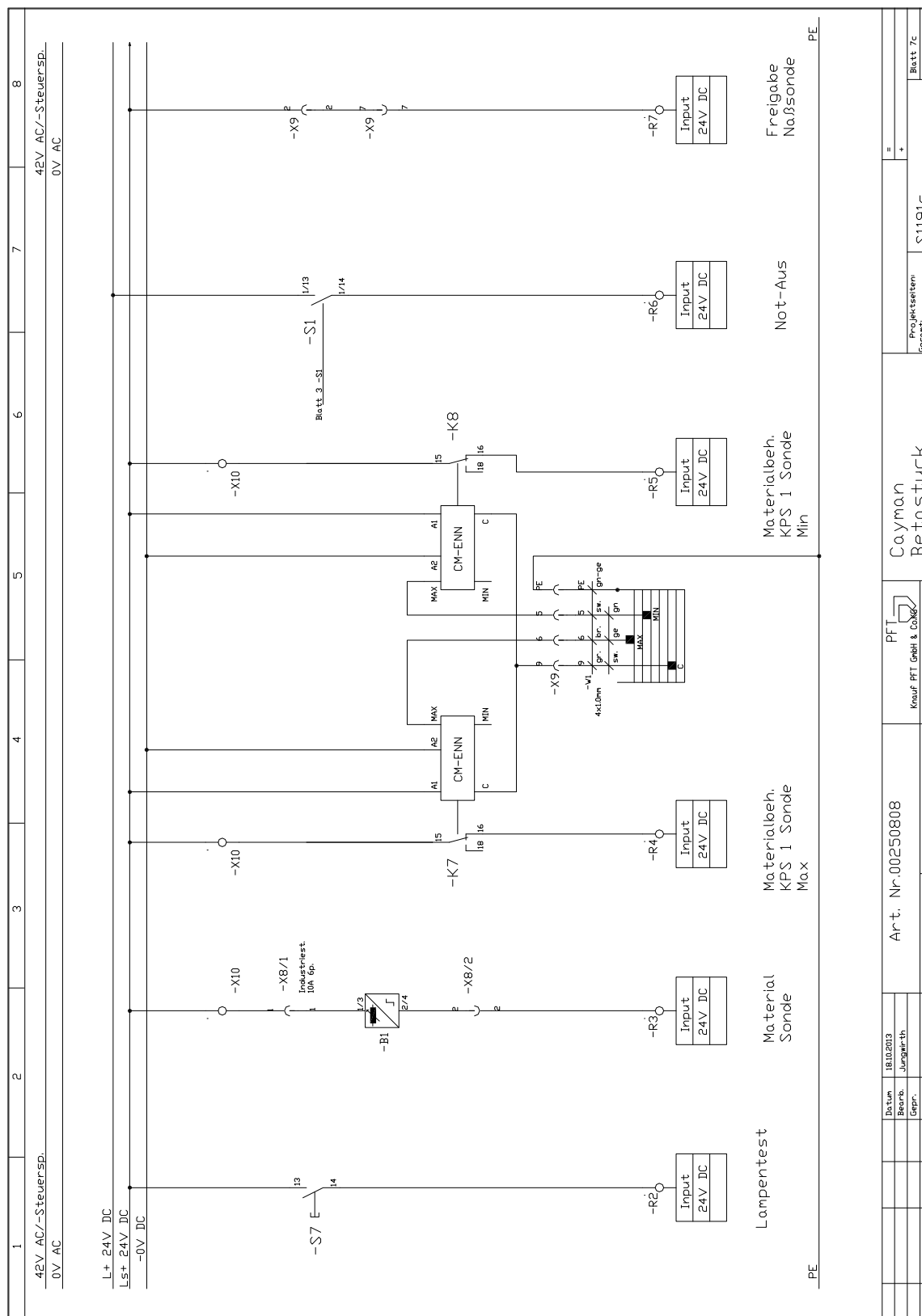
Circuit diagrams



Zust.	Änderung	Datum	Name	Gepr.	Norm	Urspr.	Art. Nr.00250808	Kauf PFT GmbH & Co.KG	PFT	Cayman Betastück	Projektskizzen Gesamt: Bl. 20	S1191c	=	Blatt 5c von 20	Bl.
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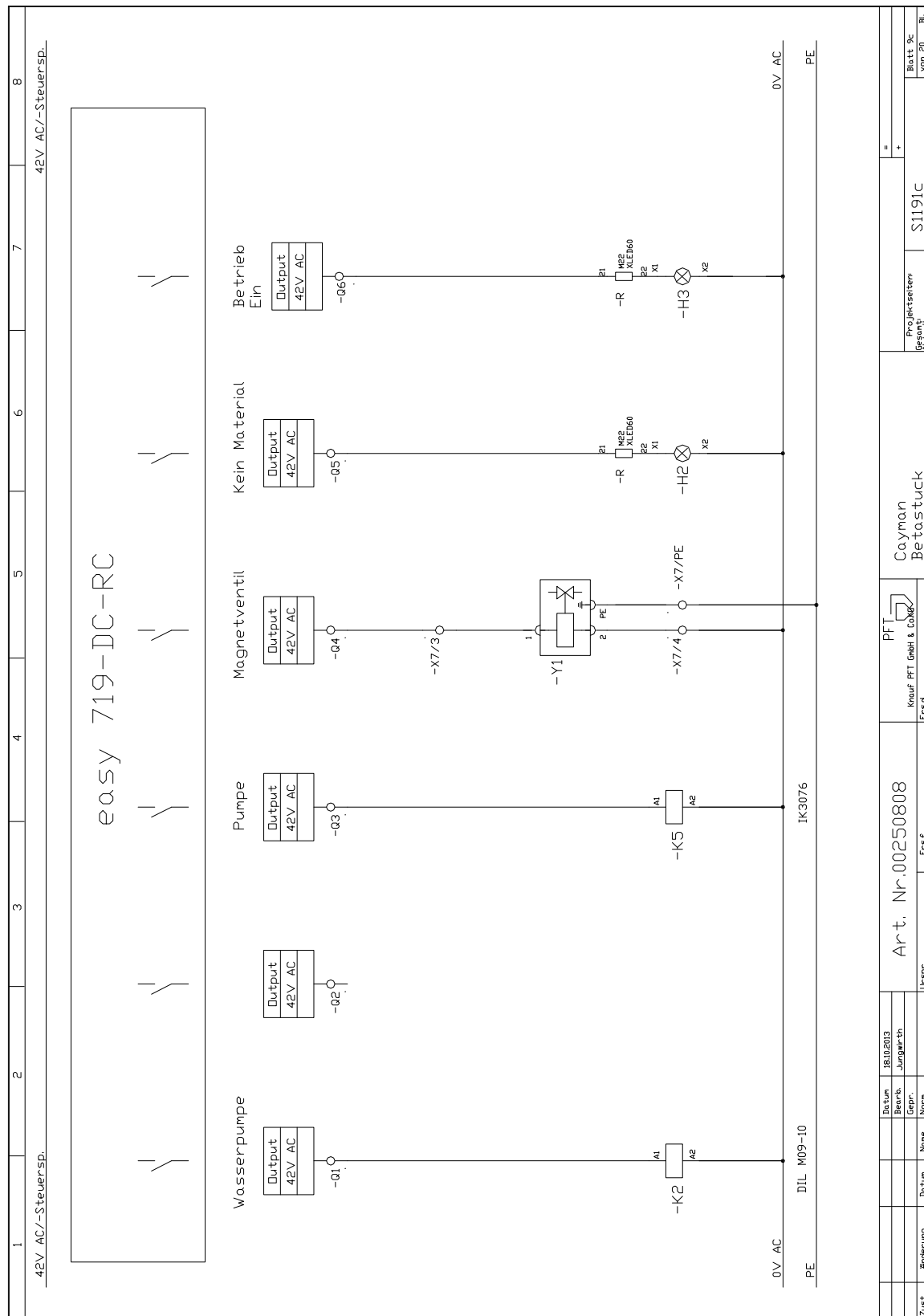


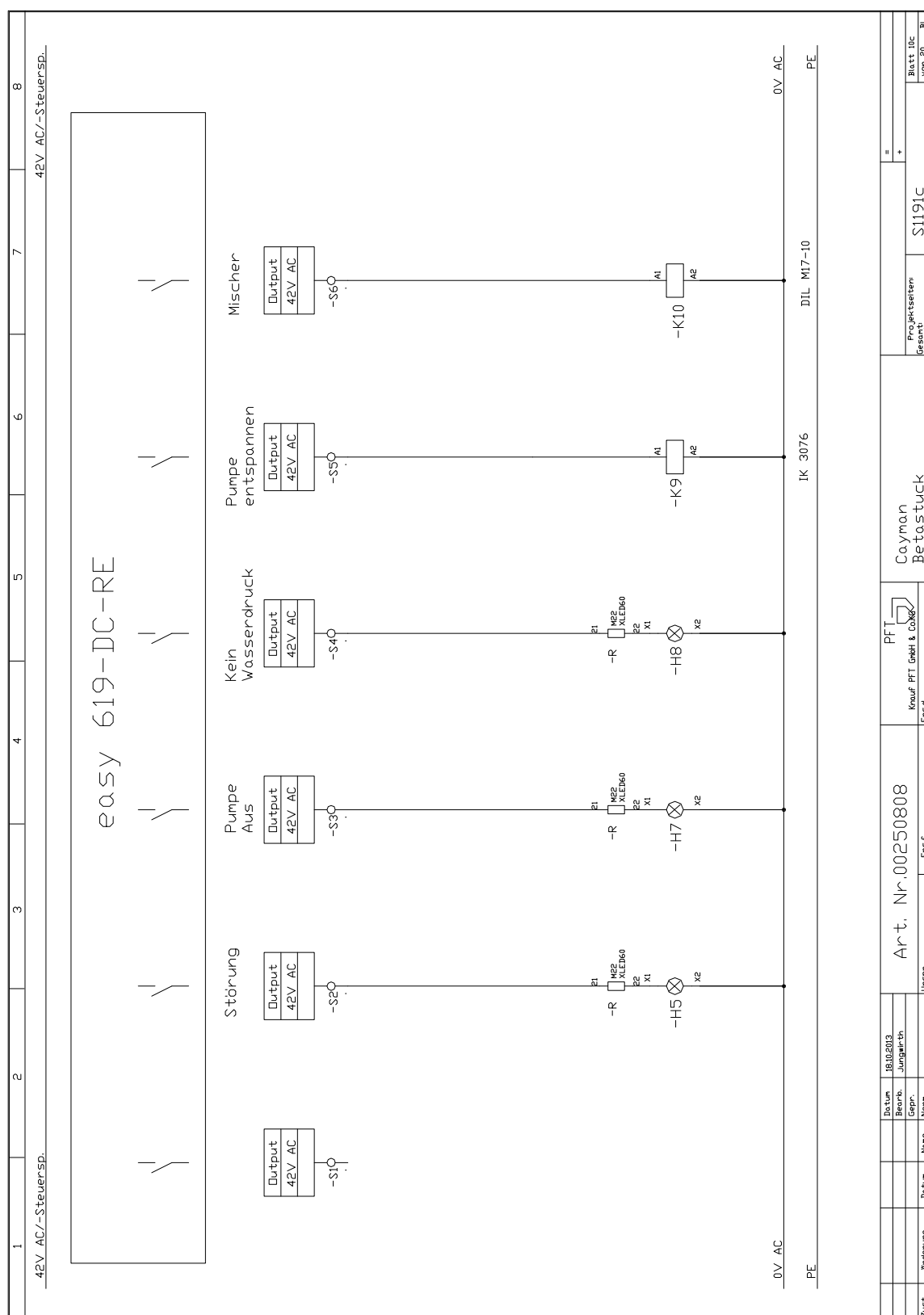
## Circuit diagrams



## 2017-03-22

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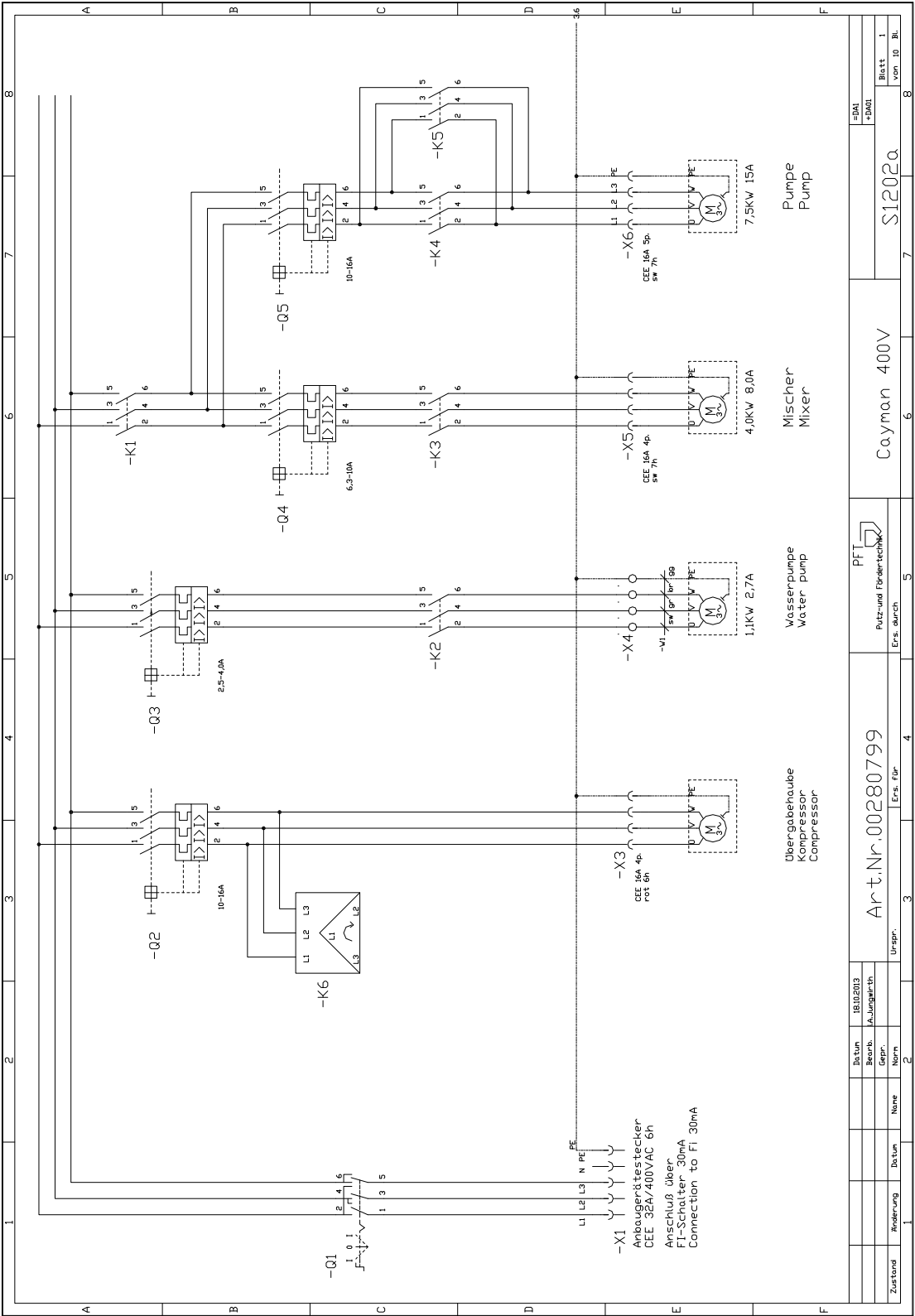




Circuit diagrams

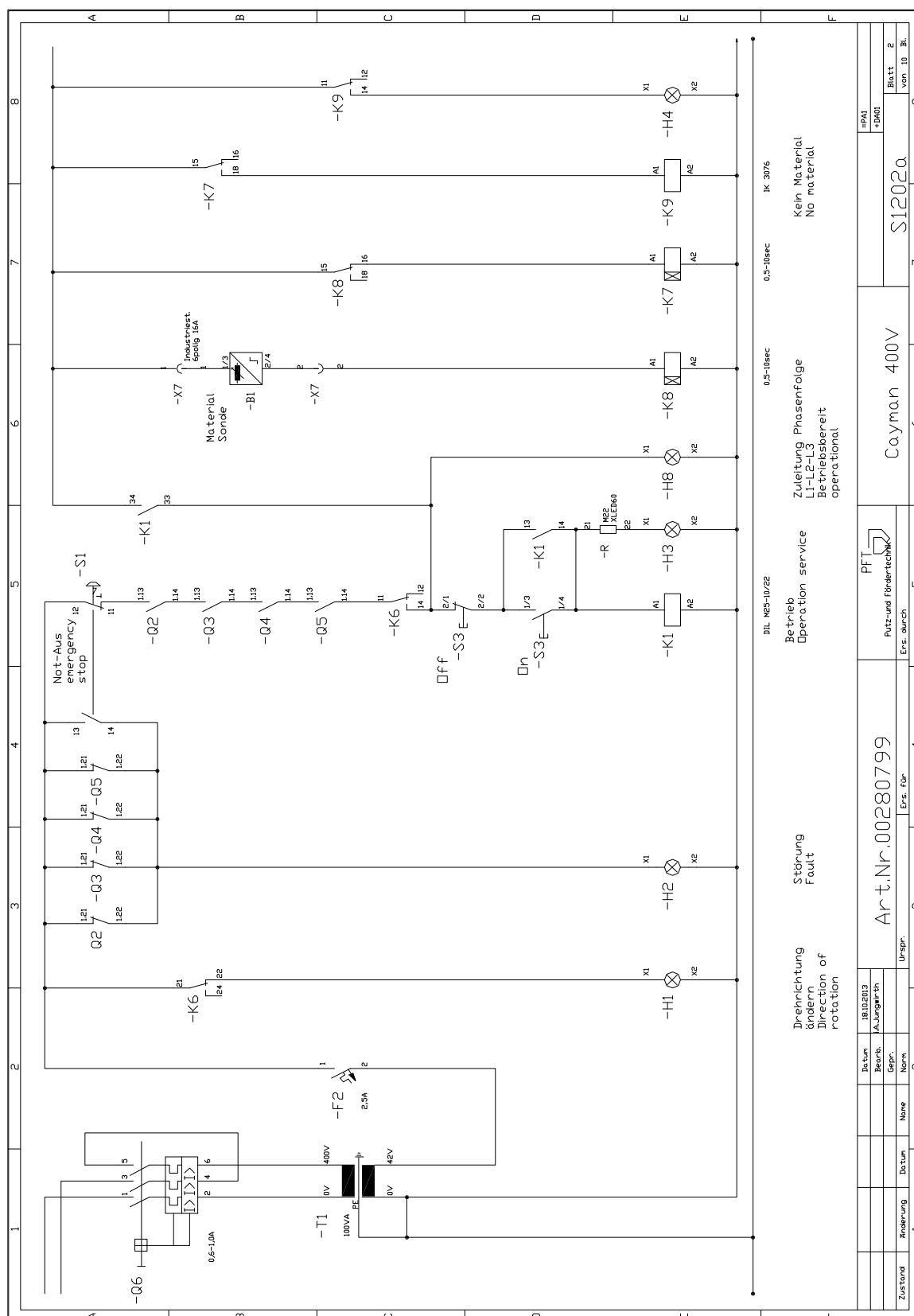


45.2 Circuit diagrams CAYMAN 400 V

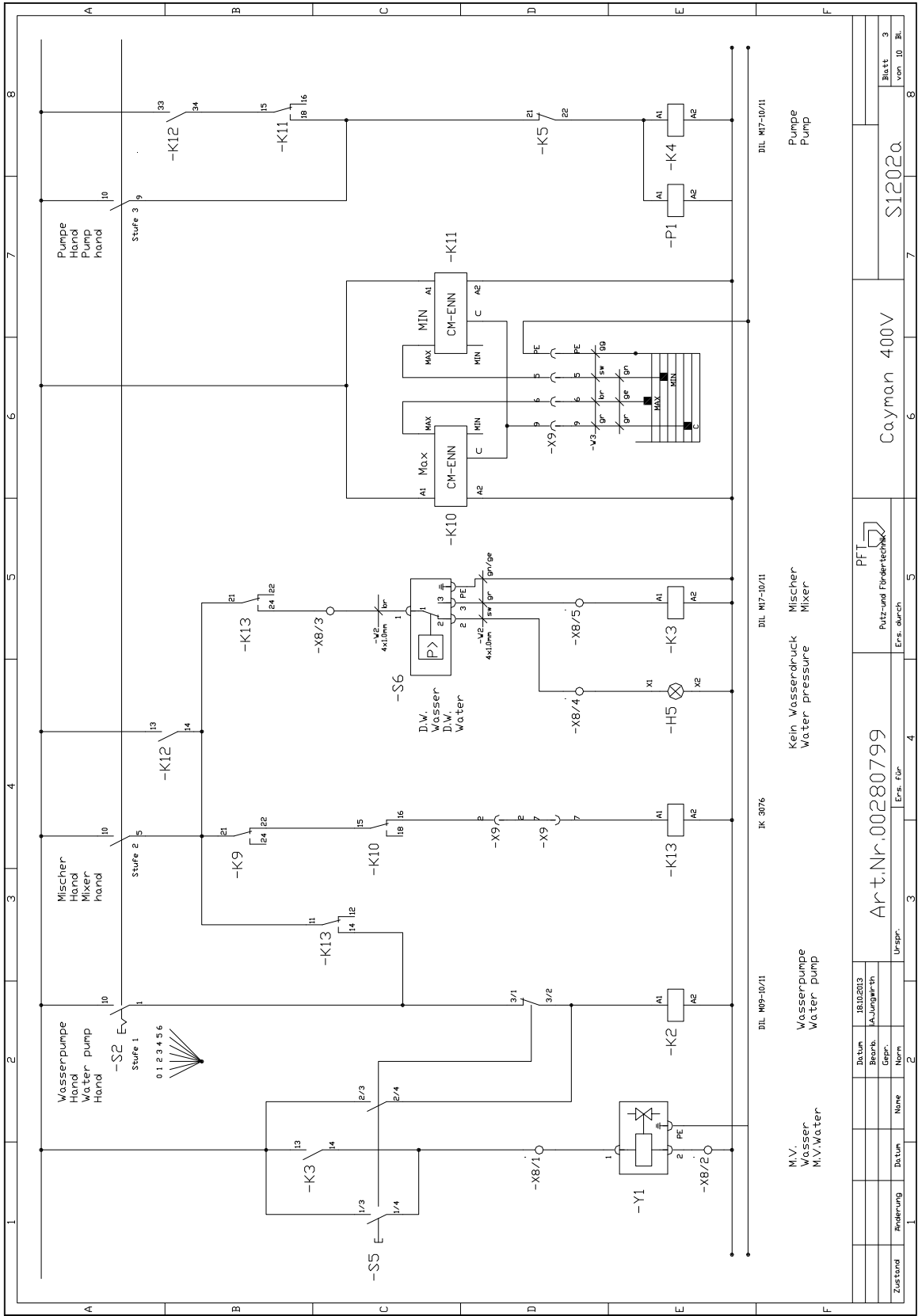


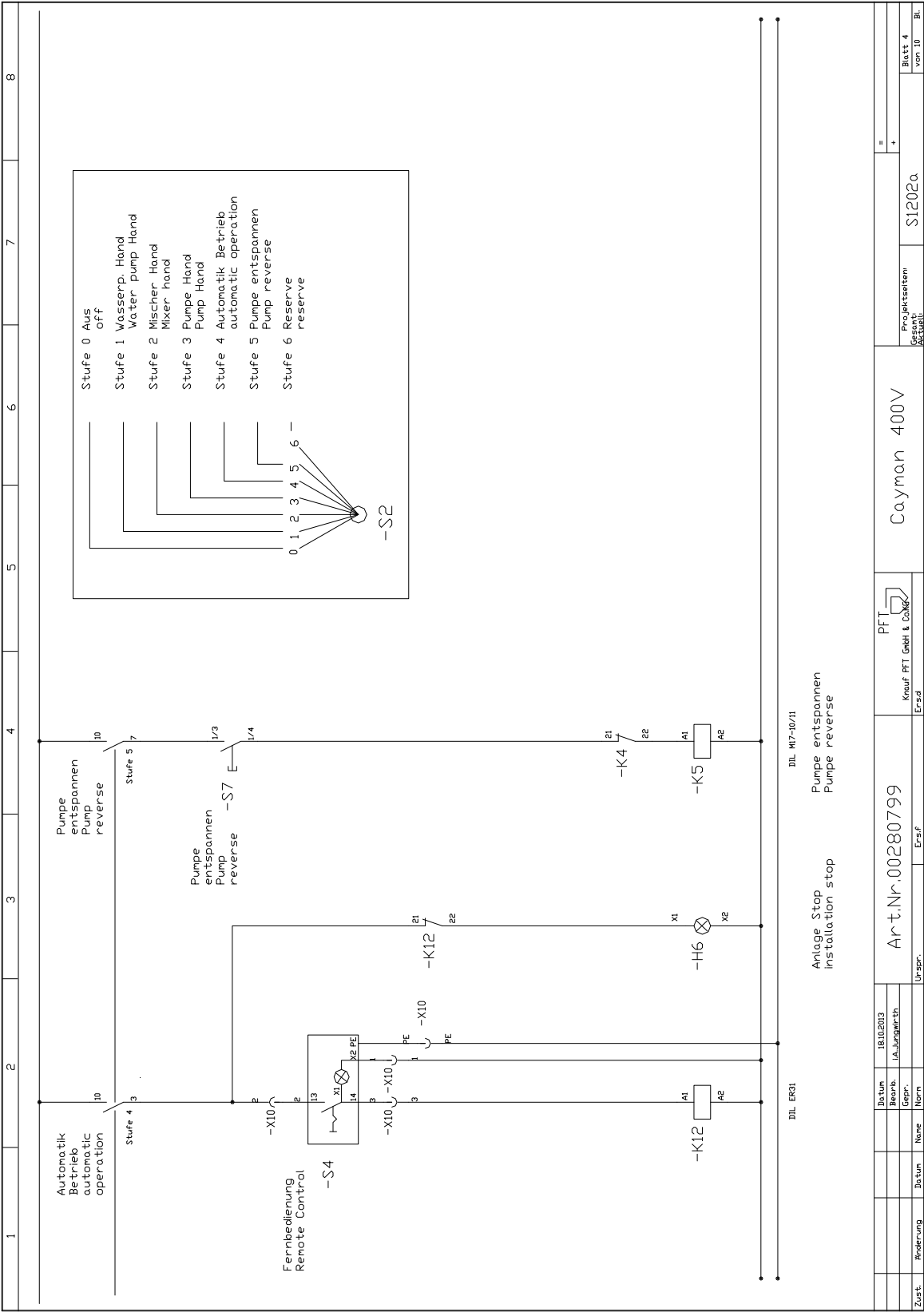


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Circuit diagrams





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