

# Operating manual

## PFT ZP 3 L MULTIMIX Part 2 EC Declaration of Conformity Overview – Operation – Spare Parts Lists



Item number of operating manual: 00 41 53 52

Item number of the machine: 00 45 13 21

Item number of the machine: 00 45 13 65

Item number of the machine: 00 45 13 64

Item number of the machine: 00 43 23 95

Item number of the machine: 00 28 08 02

Item number of the machine: 00 29 20 48



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

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# 1 EG Konformitätserklärung

**Firma:** Knauf PFT GmbH & Co. KG  
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erklärt, in alleiniger Verantwortung, dass die Maschine:

**Maschinentyp:** ZP 3 L MULTIMIX  
**Geräteart:** Förderpumpe  
**Seriennummer:**  
**Garantierter Schalleistungspegel:** 95 dB

mit den nachfolgenden CE-Richtlinien übereinstimmt:

- Outdoor-Richtlinie (**2000/14/EG**),
- Maschinen-Richtlinie (**2006/42/EG**),
- Richtlinie über die elektromagnetische Verträglichkeit (**2014/30/EG**).

Angewandtes Konformitätsbewertungsverfahren nach Outdoor-Richtlinie 2000/14/EG:

Interne Fertigungskontrolle nach Artikel 14 Absatz 2 in Verbindung mit Anhang V.

Diese Erklärung bezieht sich nur auf die Maschine in dem Zustand, in dem sie in Verkehr gebracht wurde. Vom Endnutzer nachträglich angebrachte Teile und/oder nachträglich vorgenommene Eingriffe bleiben unberücksichtigt. Die Erklärung verliert ihre Gültigkeit, wenn das Produkt ohne Zustimmung umgebaut oder verändert wird.

## Bevollmächtigter für die Zusammenstellung der relevanten technischen Unterlagen:

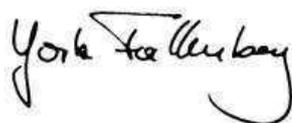
Dipl.-Wirtsch.-Ing. (FH) Michael Duelli, Einersheimer Straße 53, 97346 Iphofen.

## Die Technischen Unterlagen sind hinterlegt bei:

Knauf PFT GmbH & Co.KG, Technische Abteilung, Einersheimer Straße 53, 97346 Iphofen.

Iphofen,

Ort, Datum der Ausstellung



Name und Unterschrift

Dr. York Falkenberg

Geschäftsführer  
Angaben zum Unterzeichner



## 2 Check list for annual inspection by specialist

### 2.1 Information service

Information service
Application reports
Newsletter
Brochures
Technical documentation
Videos   Animations
Imprint
Privacy
General Terms and Conditions
Purchasing terms
Contact PFT worldwide
Business Login
Spare parts service

- This inspection must be carried out once a year by a specialist in accordance with BGR 183 (German Association for Health and Safety at Work). The machine and control box receive an inspection label as verification of this inspection. The inspection protocol is to be presented on demand.
- Inspection suggestions for annual expert inspection can be downloaded.

## 3 Examination

### 3.1 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 the machine 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 machine has to be stopped to eliminate the defects.

### 3.2 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.



## 4 General information

### 4.1 Information regarding the operating manual

This manual provides important information and instructions on the correct use of the equipment. Adherence to all defined safety and handling instructions is a prerequisite for a safe working environment.

Additionally, the on-site accident prevention regulations and general safety guidelines for the equipment must be followed at all times.

Read the manual carefully before starting any work! It is an integral part of the product and must be kept near the machine and accessible to operators at all times.

Always include the operating manual when transferring the machine to third parties.

The diagrams and illustrations shown in the manual are intended for better understanding of tasks and descriptions. They are not necessarily shown to the correct scale and may vary slightly from the actual equipment used.

### 4.2 Keep the manual for later use

The operating manual must be available during the entire service life of the product.

### 4.3 Layout

The operating manual is comprised of three booklets:

- Part 1: Safety

General safety instructions for mixing pumps/conveying pumps

Item number: 00 17 27 09

General safety instructions for the horizontal screw mixer

Item number: 00 14 63 78

- Part 2: Overview, operation, servicing and spare part lists (this booklet).

Both parts must be read and adhered to in order to ensure safe operation of the equipment. Together, they are valid as one operating manual.



## 5 Technical data ZP 3 L MULTIMIX

### 5.1 General specifications

	Specification	Value	Unit
<b>Weight:</b>	ZP 3 L 2L6 mit Zubehör Item no.00451331	292	kg
	ZP 3 L MULTIMIX 2L6 Item no. 00292222	304	kg
	ZP 3 L MULTIMIX 2L6 kpl. Item no. 00280802	366	kg
	ZP 3 L MULTIMIX R7-3 S kpl. Item no. 00292048	366	kg
	ZP 3 L MULTIMIX R7-3 S Item no. 00292223	360	kg
	Length approx.	2200	mm
	Width approx.	860	mm
	Height approx.	630 / 1100	mm
	Max. container capacity ZP 3 L	120	litres
	Container capacity ZP 3 L up to protective grille	80	litres
	Max. mixing hopper MULTIMIX	140	litres
	Capacity for ready-mixed product approx.	80	litres
	Maximum particle size	6	mm

### 5.2 Connected load

Electrical	Specification	Value	Unit
	Voltage, 3-phase current 50 Hz	400	V
	Max. current consumption	18	A
	Max. power consumption	9	kW
	Fuse	at least 3 x 25	A
	Pump motor drive	5.5	kW
	Pump motor speed approx.	70 - 260	rpm
	Max. pump motor current consumption	11	A
	Mixer motor drive	2.2	kW
	Mixer motor speed approx.	56	rpm
	Max. mixer motor current consumption	5.2	A



Fig. 1: Motor protection switch

Specification	Output	Setting value	Designation
Pump motor	5.5 kW	15 A	Q3
Mixer motor	2.2 kW	5.2 A	Q2
Air compressor	0.9 kW	1.8	

**Technical data ZP 3 L MULTIMIX****5.3 Operating requirements****Ambient conditions**

Specification	Value	Unit
Temperature range	2–45	°C
Relative humidity (maximum)	80	%

**Operating period**

Specification	Value	Unit
Maximum continuous operating period	8	hours

**5.4 Output values****Pump output****2L6 standard equipment**

Specification	Value	Unit
Pump output approx.	10 - 39	l/min.
Max. operating pressure	20	bar
Granulation max.	6	mm
Pumping distance*, max. for 35 mm Ø	30	m

\* Recommended value, depending on conveying height, condition and version of pump, mortar quality (composition and consistency).

**5.5 Sound power level**

Guaranteed sound power level LWA

95dB (A)

**5.6 Vibrations**Weighted effective acceleration value to which the upper limbs are exposed = < 2.5 m/s<sup>2</sup>



## 6 Dimension sheet ZP 3 L MULTIMIX



Fig. 2: Dimension sheet PFT ZP 3 L MULTIMIX

## 7 Type plate



Fig. 3: Type plate

The type plate is found on the pump-side material hopper and contains the following details:

- Manufacturer
- Type
- Year built
- Machine number
- Permissible operating pressure

## 8 Quality control sticker



Fig. 4: Quality control sticker

The quality control sticker contains the following information:

- Bestätigt CE gemäß EU Richtlinien
- Serial number
- Controlled by / signature
- Date of control

## 9 Design ZP 3 L MULTIMIX

### 9.1 Overview

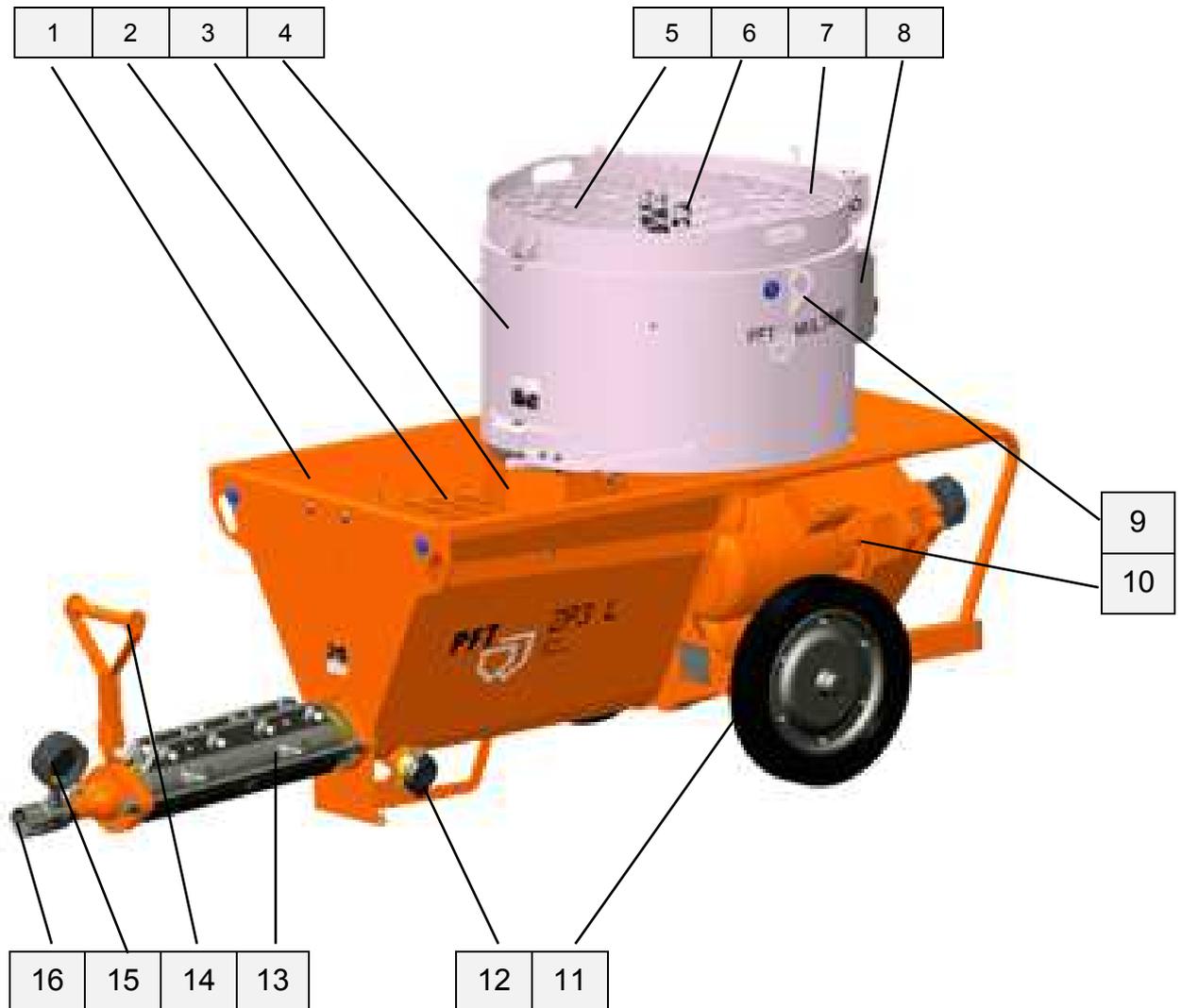


Fig. 5: Overview ZP 3 L MULTIMIX

- |  |   |
|--|---|
| <ul style="list-style-type: none"> <li>1. Material hopper ZP 3 L with frame</li> <li>2. Protective grille ZP 3 L</li> <li>3. Multimix material outlet</li> <li>4. Multimix material hopper</li> <li>5. Protective grille for MULTIMIX with bag opener</li> <li>6. Water inlet</li> <li>7. MULTIMIX limit switch</li> <li>8. Multimix main switch ON / OFF</li> </ul> | <ul style="list-style-type: none"> <li>9. Crane eyelet</li> <li>10. Gear motor Vario</li> <li>11. Wheel with rim</li> <li>12. Cleaning nozzle</li> <li>13. Pump unit 2L6</li> <li>14. Push handle</li> <li>15. Mortar pressure gauge</li> <li>16. Mortar hose connection</li> </ul> |
|--|---|



## 10 Description of subassemblies

### 10.1 ZP 3 L for MULTIMIX item number 00280801

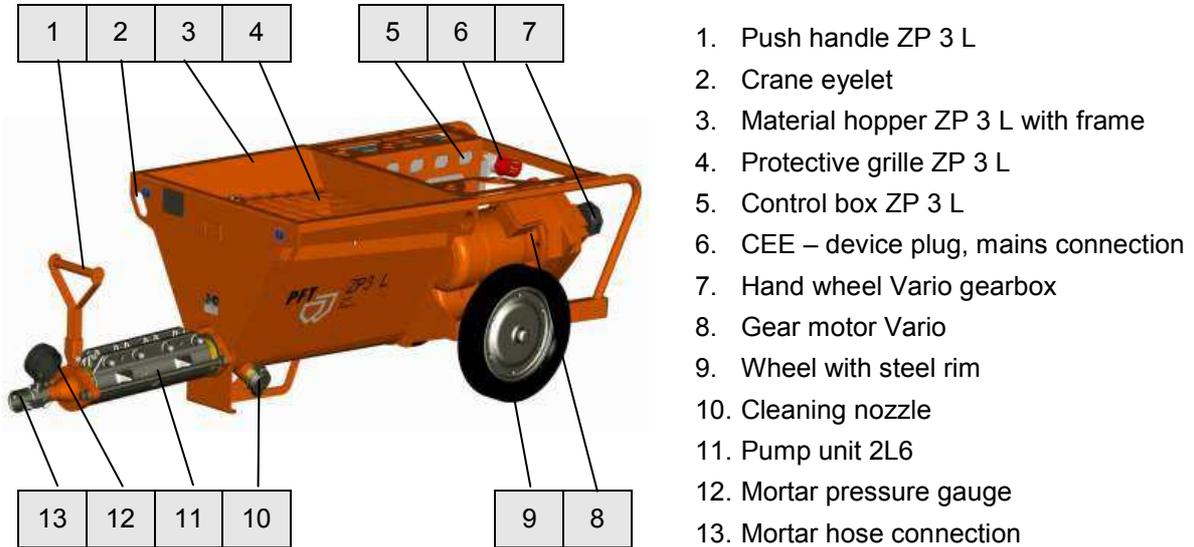


Fig. 6: ZP 3 L

### 10.2 MULTIMIX for ZP3 L item number 00284887

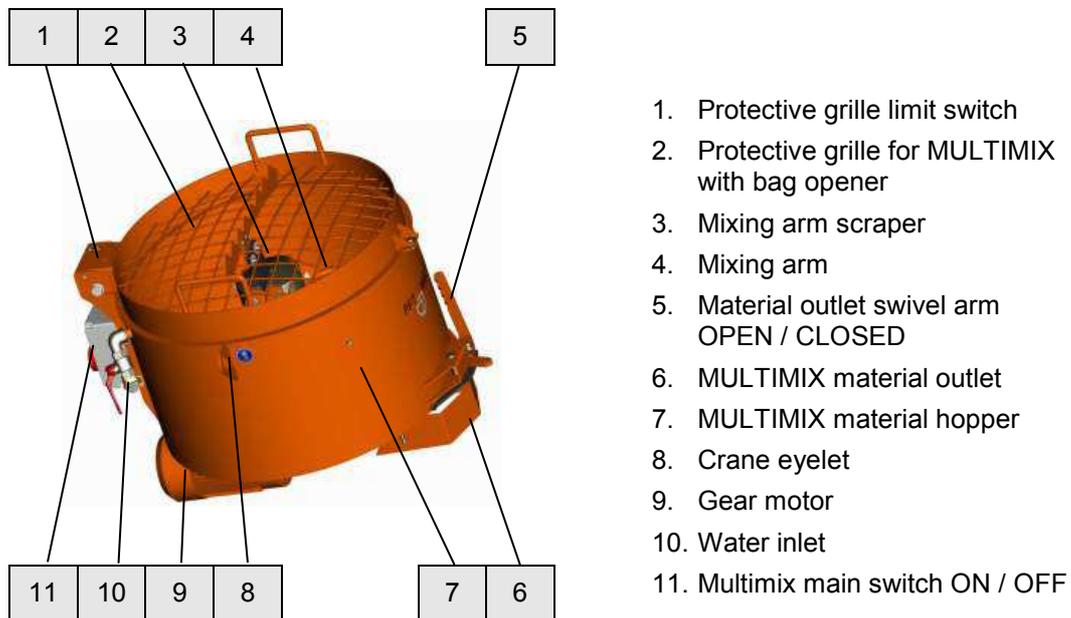
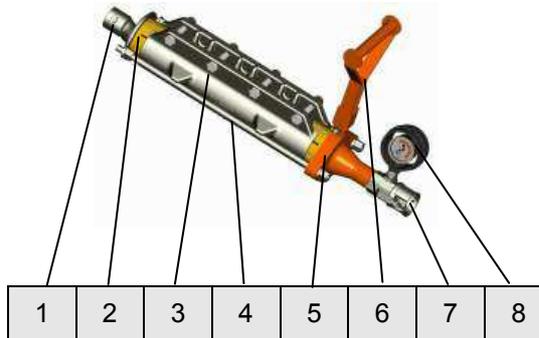


Fig. 7: MULTIMIX for ZP 3 L

## Description of subassemblies

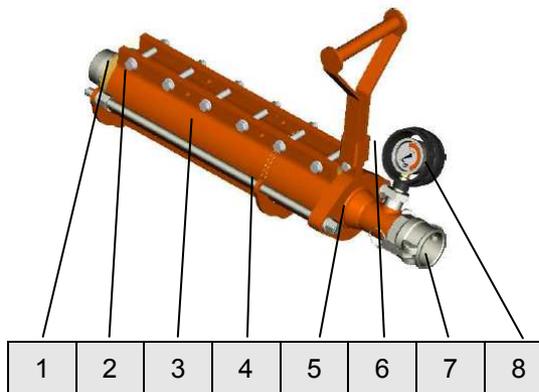
### 10.3 Pump unit 2L6 ZP 3 L



1. Rotor 2L6
2. Stator 2L6
3. Clamp 2L6
4. Tie rods
5. Pressure flange
6. Push handle
7. Coupling 35M - part
8. Mortar pressure gauge

Fig. 8: Pump unit

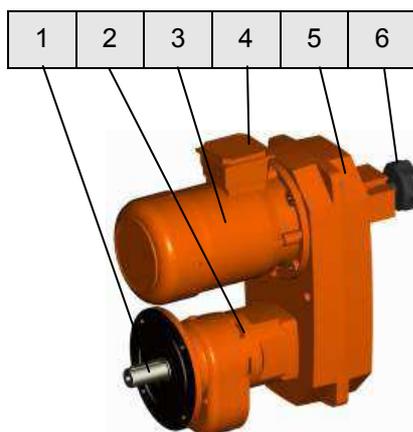
### 10.4 Pump unit R7-3S



1. Rotor R7-3S
2. Stator R7-3S
3. Clamp
4. Tie rods
5. Pressure flange
6. Push handle
7. Coupling 50M-part
8. Mortar pressure gauge

Fig. 9: Pump unit

### 10.5 VARIO gear motor 5.5 kW, item number 00280460



1. Drive shaft
2. Vario gearbox
3. Gear motor
4. Terminal box
5. Vario gearbox adjustment unit
6. Hand wheel Vario gearbox

Fig. 10: Vario gearbox



## 10.6 Control box ZP 3 L, item number 00280800

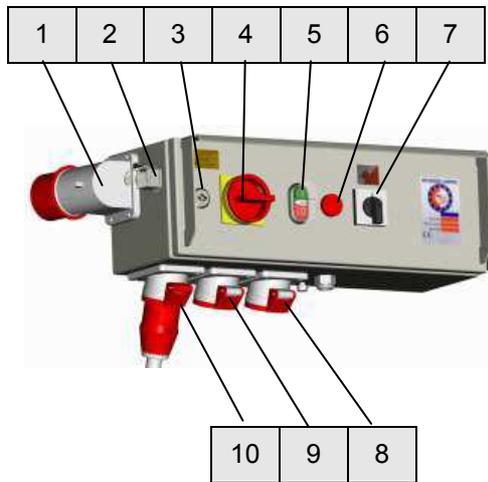


Fig. 11: Control box

1. Mains connection 400 V, 32A
2. Dummy plug / remote control connection
3. Control box lock
4. Main switch, also functions as "EMERGENCY OFF" switch
5. Machine ON / OFF operating switch (control voltage)
6. Red LED indicator lamp - motor protection switch activated
7. Selector button for vibrator, spring return
8. CEE – panel mounted socket 4 x 16A vibrator
9. CEE – panel mounted socket 4 x 16A air compressor
10. CEE – panel mounted socket 5 x 16A MULTIMIX



### WARNING!

#### Danger to life from rotating parts!

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

- The motor must be operated only with the control cabinet of the machine.

## 11 Accessories



Fig. 12: Mortar hose

RONDO mortar pressure hose 35 mm, 10 m with hydraulic connection

**(item number 00 02 11 04)**



Fig. 13: Tool bag

Tool bag **(item number 00103307)**

Contents:

Tool set, sponge ball 50 mm, sponge ball 70 mm, gasket 50M-part, gasket 65M-part, control box key, gasket 35M-part



Fig. 14:hose

Water/air hose 1/2", 11 m with Geka coupling and EWO coupling, V-part

**(Item number 20211600)**



FIG. 15: Power cable

Power cable 5 x 4 25m with plug and coupling CEE 5 x 32A 6h red

**(Item number 20423920)**

## Recommended accessories



## 12 Recommended accessories



Fig. 16: Remote control cable

Remote control cable 25 m, cpl with on/off switch and indicator lamp

**(Item number 20456929)**



Fig. 17: Vibrator screen

Vibrator screen ZP 3 L MULTIMIX RAL2004 cpl.

**(Item number 00255376)**

## 13 Intended use air compressor

### 13.1 Intended purpose air compressor

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



#### **Attention!**

The air compressor is intended exclusively for the generation of compressed air and is to be used with connected implement. Any other use or use beyond what is specified, such as with freely accessible and/or open hoses and pipelines, is deemed to be not for the intended purpose. Connected implements or components are to be designed for the maximum generated pressure of 5.5 bar.

The air compressor is to be used only in technically perfect condition as well as for its intended use and while taking into account the safety and hazard information in the operating instructions!

Particularly malfunctions that may compromise safety have to be eliminated immediately prior to putting the compressor back into operation.



### 14 Safety systems air compressor



#### WARNING!

#### Danger of death due to non-functioning safety equipment!

Safety equipment ensures highest level of safety in operation. Even if work processes become a little more complicated due to safety equipment, they must never be decommissioned. The safety is guaranteed only with intact safety equipment.

Therefore:

- Before starting work, check if the safety equipment is functioning properly and has been correctly installed.
- Use safety equipment at all times.
- Do not obstruct access to safety systems such as emergency stop buttons, pull cords etc.

#### 14.1 General positioning of the air compressor

The air compressor complies with the national and international safety regulations and can therefore also be used in damp rooms and/or outdoors. Areas with clean and dry air should be preferred. Ensure that the device can freely suck in the air. This applies in particular if an installation is intended.

The air compressor should only be set up in such a way that no dangerous additives, such as solvents, vapours, dusts or other harmful substances can be sucked in. The device should be positioned only in rooms where the hazard of a potentially explosive atmosphere is not given.

#### 14.2 Hot surface of the air compressor

##### General information



#### WARNING!

#### Danger of injury due to hot surface!

During operation the compressor can reach a surface temperature of up to 100 °C. Therefore it has to be ensured that the device does not get into contact with bare body parts during use as well as for some time after use, in relation to the heating temperature.

## 15 Function ZP 3 L MULTIMIX

### 15.1 Description



Fig. 18: Description

If individual construction site mixtures are required on site, the PFT ZP 3 L MULTIMIX is the right choice.

The mixed material can be added straight into the hopper and be prepared using the specified quantity of liquid. Powerful mixing arms save time while producing homogeneous mortar mixtures. The mixed material is quickly and cleanly drained using a flat slide valve on the hopper base.

The mortar booster pump ZP 3 L pumps the mixed material directly to the application site.

The pumping capacity can be adapted to the material requirements.

The PFT ZP 3 L MULTIMIX can be switched on and off using a remote control.

## 16 Areas of application

For all materials such as:

- Construction site mixtures
- Masonry mortar / light masonry mortar
- Reinforcement mortar
- Cement plaster
- Loam render, earth-moist
- Lime plaster
- Restoration mortar

... and much more

### 16.1 Advantages at a glance

- Large pumping capacity and delivery range
- Integrated control unit
- Optional remote control
- Application in batches from PFT MULTIMIX
- Sealing unit between gearbox and material hopper
- Sturdy construction
- Minimal servicing and cleaning work
- Integrated crane eyelets and forklift tabs
- Rounded-off material hopper, ensuring little residual



## 17 Material

### 17.1 Flow characteristics



#### NOTE!

- The 2L6 pump can be used with an operating pressure of up to 20 bar.
- The minimum conveying distance depends mainly on how the material flows.
- It is recommended to reduce the length of the mortar hose if you exceed an operating pressure of 20 bar.
- To avoid machine breakdowns and excessive wear on pump motor, pump shaft and pump, always use original PFT spare parts such as:
  - PFT - Rotors
  - PFT - Stators
  - PFT - Mixing unit
  - PFT - Material hoses.
- These components are compatible with one another and form a single constructive unit together with the machine.
- Failure to follow these recommendations will result not only in the voiding of the warranty, but the quality of the mortar you are producing will also suffer.

## 18 Mortar pressure gauge



#### Important!

For reasons of safety, the use of a mortar pressure gauge is recommended.



Fig. 19: Mortar pressure gauge

#### PFT- PFT mortar pressure gauge

Benefits of the mortar pressure gauge:

- Exact regulation of correct mortar consistency.
- Constant monitoring of correct conveying pressure.
- Early detection of clogging or overloading of pump motor.
- Produces zero pressure.
- Contributes significantly to the safety of operating personnel.
- Long lifespan for PFT pump components.

## 19 Safety regulations



#### Important!

When performing any work, observe the regional safety regulations for mortar conveying and spraying machines!



## 20 Transport, packaging and storage

### 20.1 Safety instructions for transport

#### Improper transport

**CAUTION!****Damage can be caused by improper transport!**

Significant damage may occur if the equipment is transported incorrectly.

Therefore:

- Proceed with care when unloading packages and transporting goods on site. Always observe the symbols and instructions on the packaging.
- Only use the suspension points provided.
- Only remove packaging shortly before assembly.

#### Suspended loads

**WARNING!****Danger of death due to suspended loads!**

Falling or swinging parts can pose a fatal hazard when heavy loads are lifted.

Therefore:

- Never step underneath suspended loads.
- Follow instructions regarding the suspension points provided.
- Do not attach lifting tackle to protruding machine parts or to eyelets of add-on components. Ensure the lifting gear is fastened securely.
- Only use approved lifting gear and accessories with a sufficient load-bearing capacity.
- Do not use torn or frayed ropes and belts.
- Do not attach ropes and belts to sharp edges and corners. Do not knot or twist the ropes.



### 20.2 Transport checklist

Inspect the goods for damage and missing parts immediately after delivery.

If external transportation damage can be seen, proceed as follows:

- Do not accept the delivery, or accept it only under reservations.
- Note the damage on the transportation documents or the delivery note of the carrier.
- Submit the appropriate claim.



**NOTE!**

*Always submit a claim for the defects as soon as they are detected. Damage claims can only be accepted within the applicable deadlines for submission.*

### 20.3 Transport by crane



When using a crane for transport, observe the following requirements:

- The crane and lifting equipment must be suitable for the package weight.
- The operator must be authorised to operate the crane.

**Fastening the lifting gear:**

1. Attach the machine at the eyelets (1) indicated using ropes or straps.
2. Ensure that the package is suspended so it is level. Adjust for off-centre balancing points if necessary.
3. Begin transport.

Fig. 20: Transport by crane

### 20.4 Transportation of operational machines



**DANGER!**

**Danger of injury due to leaking mortar!**

Injury to the face and eyes can occur.

Therefore:

- Make sure all hoses are depressurised before opening the couplings (note the indicator on the mortar pressure gauge).

Carry out the following steps before transporting:

1. Unplug the cable from the mains connection.
2. The mixing hopper MULTIMIX and the ZP 3 L material hopper must be empty.
3. Remove the mortar and water hoses.
4. Begin transport.



## 20.5 Packaging

### Packaging information

Individual packages are packed according to the applicable transportation requirements. Only environmentally-friendly materials were used for the packaging.

The packaging is intended to protect individual components from harm during transportation, corrosion and other damage up to the point of assembly. Do not destroy the packaging and only remove it shortly before assembly.

### Handling the packaging materials

Provided no agreements for the return of the packaging have been made, separate the materials according to type and size and reuse or recycle them accordingly.



#### **CAUTION!**

**Environmental damage can result from improper disposal of materials!**

Packaging materials are valuable resources and can often be reused or recycled.

Therefore:

- Dispose of packaging materials in an environmentally sound manner.
- Observe locally applicable waste disposal guidelines. If necessary, contract a specialist waste disposal company.

## 21 Operation

### 21.1 Safety

#### Personal protective equipment

All machine operators must wear the following protective equipment:

- Protective work clothing
- Safety goggles
- Safety gloves
- Safety shoes
- Ear protection
- Respirator mask



#### **NOTE!**

*The warning signs illustrated in this chapter relate to additional protective equipment that must be worn for particular working conditions.*



## Basic information



### **WARNING!** **Danger of injury due to improper operation!**

Improper operation can lead to serious injuries or equipment damage.

- Carry out all operating steps as described in this operating manual.
- Before starting any work, ensure that all covers and protective devices are installed and functioning properly.
- Never disable protective devices during operation.
- Keep the operating area clean and tidy. Components and tools that are stacked on one another or left lying around can cause accidents.
- An increased noise level can cause permanent hearing loss. Operation can result in noise that exceeds 95 dB (A) in close proximity to the machine. Close proximity is defined as the area within 5 metres of the machine.

## 22 Preparation of the machine

### 22.1 Setting up the machine

Before operating the machine, carry out the following work steps as preparation:



Fig. 21: Danger of injury



### **Danger!** **Rotating parts**

Reaching into the material hopper poses a risk of injury.

Therefore:

- The protective grille (1) should not be removed while preparing or operating the machine.
- Never reach into the machine while it is running.

## Preparation of the machine



Fig. 22: Set-up

Install the machine on stable and even ground and secure it against accidental movements.

If necessary, place an underlay under the support foot (1) to ensure the machine cannot subside during operation.

- Place the machine where it cannot be hit by any falling objects.
- The controls must be freely accessible.

## 22.2 Mains voltage connection

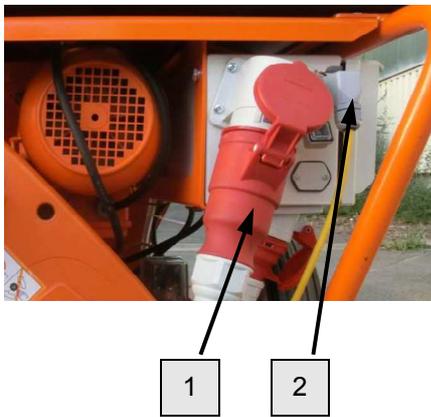
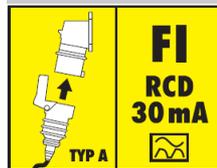


Fig. 23: Electrical connection

Only connect the machine (1) to AC current with 400 V.



### DANGER!

#### Danger of death due to electric current!

The electrical connection must be fused correctly:

Only connect the machine to a power source with an approved FI circuit breaker (30 mA) RCD (residual current device) of type "A".

Disconnect the control circuit by removing the dummy plug (2) on the control box.



### WARNING!

Before starting operation, either remove the dummy plug or press the remote control.

Fill the ZP 3 L material hopper with approx. 5 l of water to ensure the screw pump does not run dry when starting up.



### WARNING!

#### Danger to life from rotating parts!

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

- The motor must be operated only with the control cabinet of the machine.



### NOTE!

Never allow the pump to run dry, since this will shorten its service life.



## 23 Mortar pressure gauge



Fig. 24: Mortar pressure gauge



### **DANGER!** Operating pressure too high!

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

- Do not operate the machine without the mortar pressure gauge.
- Only use mortar hoses with a permissible operating pressure of at least 40 bar.
- The burst pressure of the mortar hose must be at least 2.5 times the operating pressure.

## 24 Checking the direction of rotation of the MULTIMIX



Fig. 25: Checking the direction of rotation

1. Check the direction of rotation of the mixing arms.
2. The mixing unit runs anticlockwise.

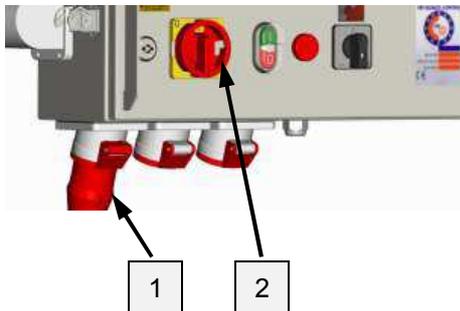


Fig. 26: ZP 3 L Switching on

1. Check whether the connector plug MULTIMIX (1) is connected to the control box.
2. Switch on the ZP 3 L using the main reversing switch (2).
3. If the direction of rotation is incorrect, change the direction of rotation using the MULTIMIX main reversing switch (3).



Fig. 27: Changing the direction of rotation

4. Turn the main reversing switch (3) on the MULTIMIX to the "I" position.



### **NOTE!**

*If the direction of rotation is incorrect:*

*The main reversing switch is locked in the zero position by pushing the selection switch (4) to the left or right. This defines the direction of rotation. If the switch is set to the left, the switch can be reset to zero but is blocked for the right-side position.*

6. Switch off the MULTIMIX again at the main reversing switch.



## 25 Water supply connection



Fig. 28: Water connection

1. Connect the water hose to the water inlet.
2. Close the tap on the water inlet.

### 25.1 Water from water barrel connection

Booster pump AV3000

Item number 00 13 02 05

Float switch for AV3000

Item number 00 13 09 32



**NOTE!**

*When working with water from the barrel, the inlet strainer must be fitted with a filter screen (item no. 00136619)*

*(Bleed the booster pump).*



Fig. 29: Booster pump



Fig. 30: Filter screen

## 26 Checking the direction of rotation of the ZP 3 L



Fig. 31: Checking the direction of rotation

1. Check the direction of rotation of the pump shaft.
2. The pump unit 2L6 rotates to the left when viewed from the mortar pressure gauge.



## Checking the direction of rotation of the ZP 3 L

### 26.1 Checking the direction of rotation of the R7-3S

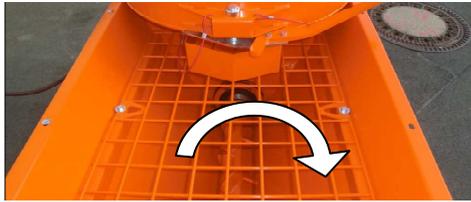


Fig. 32: Checking the direction of rotation

1. The pump unit 2L6 rotates to the right when viewed from the mortar pressure gauge.

### 26.2 Switching on the ZP 3 L

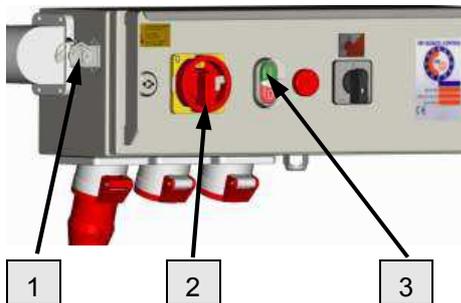


Fig. 33: Switching on the ZP 3 L

1. Close the control circuit by inserting the dummy plug (1) in the control box.
2. Turn the main reversing switch (2) on the control box to the “I” position.
3. Press the green push button (3) to switch the control voltage “ON”.

### 26.3 Changing the direction of rotation

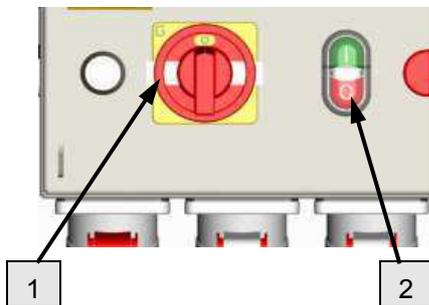


Fig. 34: Switching on the MULTIMIX



#### NOTE!

*If the direction of rotation is incorrect:*

*The main reversing switch is locked in the zero position by pushing the selection switch (1) to the left or right. This defines the direction of rotation. If the switch is set to the left, the switch can be reset to zero but is blocked for the right-side position.*

1. Switch off the control voltage to the ZP 3 L again at the red push button (2).

### 26.4 Draining residual water

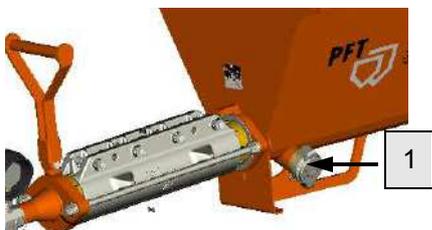


Fig. 35: Opening the cleaning nozzles

1. Remove the cover (1) from the cleaning nozzles and drain any water remaining in the material hopper.

## 27 Mortar hoses

### 27.1 Preparing the mortar hoses



1. Connect the cleaner coupling (1) to the water tap (2).
2. Connect and rinse the mortar hose (3).
3. Detach and remove the mortar hose and cleaner coupling.
4. Completely empty the mortar hose of water.
5. Prime the mortar hose by wetting it with about one litre of wallpaper paste.
6. The wallpaper paste is pumped through the mortar hose with the first mixture.

Fig. 36: Preparing the mortar hose



#### **DANGER!**

Hoses that tear off can lash wildly and injure those standing nearby!

Never detach hose couplings if the mortar hoses are under pressure (check mortar pressure gauge). Mixed material can escape under pressure and lead to serious injuries, especially eye injuries.

### 27.2 Connecting the mortar hose

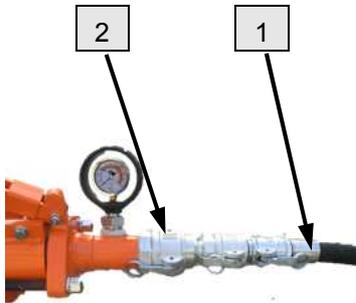


Fig. 37: Connecting the mortar hose

1. Connect the mortar hose (1) to the pressure flange (2).



#### **NOTE!**

*Make sure the couplings are clean and connected properly, and do not leak. Dirty couplings and rubber seals are leaky and allow water under pressure to escape, which inevitably leads to blockages.*

2. Lay mortar hoses with a radius large enough so that the hoses do not kink.
3. Carefully secure risers so that they do not tear away from their own weight.



## Switching on the MULTIMIX and putting it into service

### 28 Switching on the MULTIMIX and putting it into service



Fig. 38: Turn on the main switch

1. Open the tap (1) and allow the required quantity of water to flow into the material hopper.
2. Close the tap again.
3. Turn the main switch (2) to the “I” position.

#### 28.1 Hazardous dust



Fig. 39: Dust mask



#### WARNING!

Inhaled dust can lead to long-term lung damage or other health problems.

#### NOTE!



The machine operator or the person working in the dusty area must always wear a dust mask when filling the machine.

The decisions of the Committee for Hazardous Materials (AGS) can be read in the Technical Rules for Hazardous Substances (TRGS 559).

#### 28.2 Filling the MULTIMIX with material



Fig. 40: Bagged material

Filling with construction site mixture or bagged material.

Filling with bagged material:



#### DANGER!

#### Risk of injury from bag opener!

Sharp edges of the bag opener pose a risk of injury.

- Wear safety gloves.



#### NOTE!

Do not switch off the mixer when the mixing drum is full or during the mixing procedure.

Granulate larger than 6 mm should not be put in the material hopper!

This could cause the machine to block.

## Emptying MULTIMIX



### 28.3 Opening the protective grille

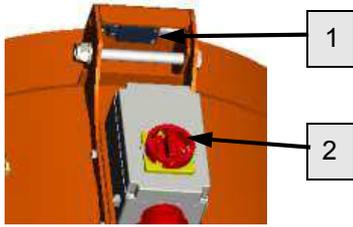


Fig. 41: Safety limit switch



**NOTE!**

The PFT MULTIMIX is fitted with a safety limit switch (1).

If the protective grille is opened, the machine switches off immediately. After closing the protective grille, the machine must be switched on again at the main reversing switch (2).

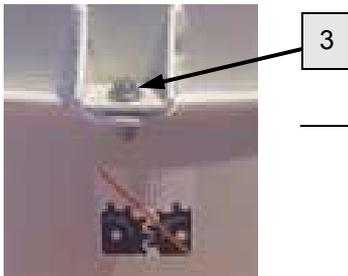


Fig. 42: Opening the protective grille

Undo the screws (3) and open the protective grille.



**Danger!**

**Rotating parts**

Reaching into the material hopper poses a risk of injury.

Therefore:

- Before opening the protective grille, always switch off the MULTIMIX at the main reversing switch.
- Never reach into the machine while it is running.

### 28.4 Danger of crushing by protective grille



Fig. 43: Danger of crushing



**Danger of crushing by protective grille!**

There is a danger of crush injuries when closing the protective grill.

- Never reach into the closing range of the protective grille.

## 29 Emptying MULTIMIX



Fig. 44: Emptying MULTIMIX

1. The content of the mixing hopper is emptied using the segment slide valve on the base of the hopper, directly into the material hopper of the ZP 3 L.
2. Empty the hopper when the mixing unit is running. The slide must be opened only as far as is necessary for emptying.



## 30 Switching off MULTIMIX



Fig. 45: Switching off MULTIMIX

1. Switch off the machine at the main reversing switch.

## 31 Switching on the ZP 3 L and putting it into service

### 31.1 Processing material



#### **DANGER!**

#### **Danger of injury due to leaking mortar!**

Escaping mortar can lead to injuries to the eyes and face.

Therefore:

- Never look into the spraying gun.
- Always wear protective goggles.
- Always position the machine so that you cannot be hit should mortar escape.



#### **NOTE!**

*The maximum pumping distance depends primarily on the flow characteristics of the mortar. Heavy, coarse-grained mortar does not flow well. Fluid materials have good flow characteristics.*

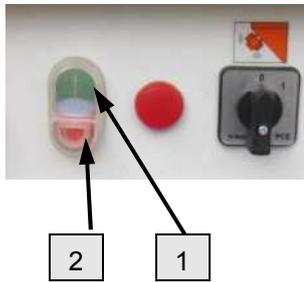
*Uniform spraying cannot be ensured if the amount of water is insufficient. This can clog the hoses and the pumping components are then subjected to greater wear.*

*If operating pressure exceeds 20 bar, either the length of the mortar hose must be reduced or thicker mortar hoses need to be used.*

## Switching on the ZP 3 L and putting it into service



### 31.2 Switching on the ZP 3 L briefly



1. Press the green push button (1) to switch the control voltage “ON”.
2. Allow the ZP 3 L to run until all the wallpaper paste has emerged from the end of the mortar hose.
3. Collect the wallpaper paste with a suitable container and dispose of it according to regulations.
4. Switch off the machine at the red push button (2) so the control voltage is “OFF”.

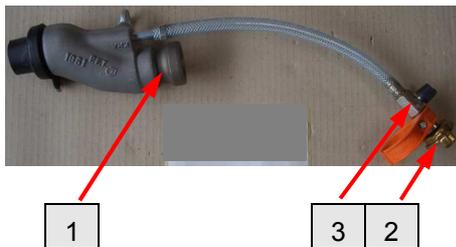
Fig. 46: Switching on



#### NOTE!

Never allow the pump to run dry, since this will shorten its service life considerably.

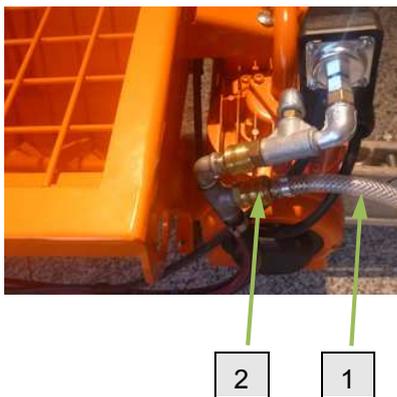
### 31.3 Connecting a spraying gun



1. Connect the mortar hose to the spraying gun (1).
2. Connect the air hose to the spraying gun (2).
3. Make sure that the air valve (3) on the spraying gun is closed.
4. The ZP 3 L can be switched on or off at the air valve (3) using the pressure control.

Fig. 47: Spraying gun

### 31.4 Connecting the air hose for the spraying gun



1. Connect the air hose (1) from the spraying gun to the EWO coupling (2).

Fig. 48: Connecting the air hose



## Switching on the ZP 3 L and putting it into service

### 31.5 Switching on the air compressor

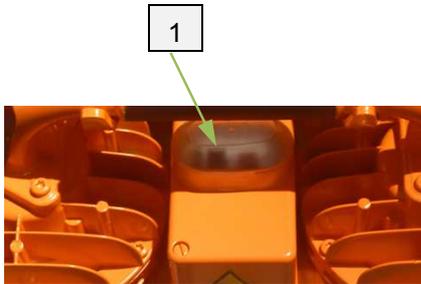


Fig. 49: Switching on the air compressor

1. Press the black button to switch on the air compressor.

### 31.6 Mortar consistency



Fig. 50: Filling the material into the hopper

The right mortar consistency is achieved if the material on the sprayed surface merges (we recommend applying material to wall surfaces from top to bottom).



#### NOTE!

##### Formation of tunnels:

Due to the material's physical properties, the material can partially adhere to the sides of the material hopper, resulting in the formation of tunnels. The mortar level in the material hopper should not be higher than absolutely necessary.

### 31.7 Switching on the ZP 3 L

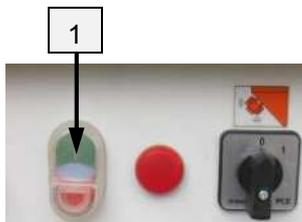


Fig. 51: Switching on

Press the green push button (1) to switch the control voltage "ON".



#### NOTE!

Never allow the pump to run dry, since this will shorten its service life considerably.

### 31.8 Opening the air valve on the spraying gun

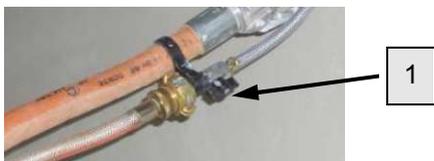


Fig. 52: Opening the air valve

1. Point the spraying gun toward the wall to be plastered.
2. Check that no-one is in the mortar spraying range.
3. Open the air valve (1) on the spraying gun. When pressure is switched off, the ZP 3 L starts automatically and mortar emerges.
4. For brief work interruptions, close the air valve (1) on the spraying gun.

## Interruption of work



### 31.9 Changing the motor speed on the ZP 3 L



Fig. 53: Changing the speed

The material quantity for spraying can be regulated by changing the speed using the hand wheel (1) of the gear motor.



**NOTE!**

*Do not adjust the Vario gearbox of the ZP 3 L when the machine is at a standstill, but only when it is running. The machine should also not be operated at one motor speed all the time, as otherwise the v-belt pulleys wear down too fast.*

### 31.10 Working without air



Fig. 54: Remote control



**NOTE!**

*If work is done without air (e.g. when pumping screed), the machine is switched on and off by a 42 V remote control coupling. To do this, the dummy plug (1) must be removed from the coupling and the remote control plug (2) must be connected.*

## 32 Interruption of work



Fig. 55: Closing the air valve

1. Close the air valve (1) on the spraying gun.
2. The machine stops.
3. By opening the air valve (1), the machine will start running again.

### 32.1 In the event of prolonged work stoppages

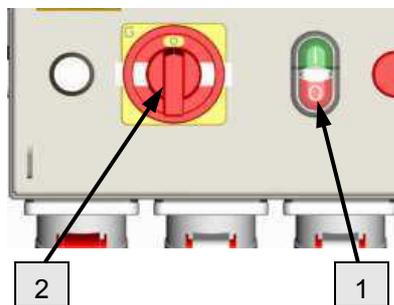


Fig. 56: Switching off

1. Press the red push button (1) to switch the control voltage "OFF".
2. Switch off the machine at the main reversing switch (2).



**NOTE!**

*Generally, the setting times of the materials to be processed must be observed:*

*Clean the equipment and hoses as appropriate for the setting time of the material and the length of the interruption (take outdoor temperature into account).*

*Observe the guidelines of the material manufacturer regarding interruptions.*



## 32.2 Switching off the air compressor

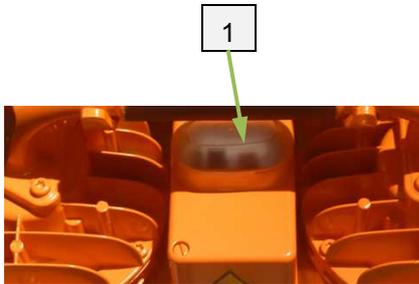


Fig. 57: Switching off the air compressor

1. Switch the compressor off using the red push button (1).

## 33 Switching off in an emergency

### Switching off in an emergency



Fig. 58: Switching off

Machine movements and the energy supply must be disabled as quickly as possible in dangerous situations.

Proceed as follows in the event of an emergency:

1. Switch off the main reversing switch immediately.
2. Secure the main reversing switch against being activated again using a padlock.
3. Inform supervisors at the site.
4. If necessary, call emergency services.
5. Remove persons from the danger zone and carry out first-aid measures.
6. Ensure emergency vehicles have unobstructed access.
7. If the seriousness of the emergency warrants this, inform the responsible authorities.
8. Assign specialist personnel to begin rectifying the fault.



**WARNING!**  
**Danger of death due to premature restarting!**

All persons in the danger zone are at extreme risk when the machine is switched back on.

- Ensure that the danger zone is clear before switching the machine back on.

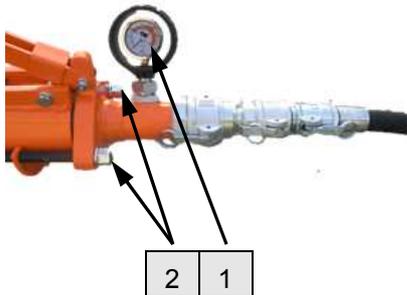
9. Check the equipment before switching it back on and ensure that all safety devices are in place and functioning properly.

## Measures to be taken in the event of a power failure



### 34 Measures to be taken in the event of a power failure

#### 34.1 Discharging mortar pressure



1. Check the mortar pressure gauge (1) to see if the pressure has fallen to “0 bar”. If necessary, discharge any mortar pressure by unscrewing the flanged nuts (2) slightly.
2. Then tighten the flanged nuts again.



#### **DANGER!**

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

When opening machine components, these can fly open in an uncontrolled manner and injure the operator.

- Only open the machine if the pressure has fallen to “0 bar”.



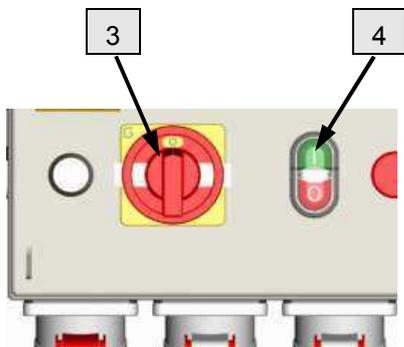
#### **DANGER!**

##### **Danger of injury due to leaking mortar!**

Escaping mortar can lead to injuries to the eyes and face.

Therefore:

- Never look into the spraying gun.
- Always wear protective goggles.
- Always position the machine so that you cannot be hit should mortar escape.



#### **NOTE!**

*In the event of a prolonged power failure, the ZP 3 L and the material hoses should be cleaned immediately.*



#### **NOTE!**

*The ZP 3 L is equipped with a starting lock. In the event of a power failure, the system must be started as follows.*

Fig. 59: Power failure

3. Turn the main switch (3) to the “0” position, and then turn it to the “1” position.
4. Press the green push button (4) to switch the control voltage “ON”.
5. The ZP 3 L starts up again.



## 35 Troubleshooting

### 35.1 Handling malfunctions

Generally, the following applies:

1. For all malfunctions posing the risk of material damage or personal injury, perform an emergency stop immediately.
2. Determine the cause of the malfunction.
3. If troubleshooting requires working in the danger zone, switch off the machine and secure it against being switched back on again.
4. Immediately inform supervisors at the site regarding the malfunction.
5. Depending on the malfunction, either rectify it yourself or have authorised specialists do so.



**NOTE!**

A table below lists particular malfunctions and who is authorised to handle them.

### 35.2 Fault displays

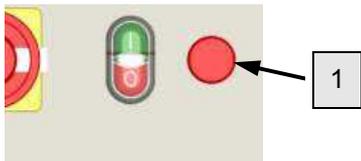


Fig. 60: Fault displays

The following equipment indicates a fault:

Pos.	LED signal	Description
1	Red control lamp	Lights up for a fault in the motor protection switch. Check the motor protection switch Q2.

### 35.3 Malfunctions

The following chapter details the possible causes of malfunctions and how to solve them.

Shorten maintenance intervals according to the actual load if malfunctions keep reoccurring.

Contact your dealer if malfunctions occur that cannot be solved using this manual.

### 35.4 Safety

#### Personal protective equipment

Wear the following protective equipment for all maintenance work:

- Protective work clothing
- Protective goggle, protective gloves, safety shoes, ear protection

## Troubleshooting



### Personnel

- Unless otherwise stated, the troubleshooting methods detailed here can be carried out by the machine operator.
- Some tasks may only be carried out by specialist personnel or the manufacturer. These are specially indicated in the description of the individual malfunctions.
- Work on electrical systems should only be carried out by qualified electricians.

### 35.5 Table of malfunctions

Malfunction	Possible cause	Solution	Performed by
Machine does not start: <b>Electricity</b>	Power cable is defective	Repair the power cable	Service
	Main switch not activated	Turn on the main switch	Operator
	Circuit breaker triggered	Reset the earth leakage circuit	Service
	Motor protection switch triggered	Turn the motor protection switch to the position "I" in the control box	Service technician
	Contactor is defective	Replace the contactor	Service
	Control plug not connected	Plug in control plug	Operator
	Fuse is defective	Replace the fuse	Service
	Limit switch on protective grille	Close the protective grille, check switch	Service technician
Machine does not start: <b>Material.</b>	Too much dried-on material in hopper. Tunnels may have formed	<b>Important:</b> Main switch <b>OFF</b> , unplug main power cable. Empty half the content of the material hopper. Restart machine.	Operator
	Hardened material is blocking the pump unit (rotor/stator)	<b>Important:</b> Main switch <b>OFF</b> , unplug main power cable. Dismantle the pump, clean it and then reinstall it.	Operator
	Material in pump component too dry	<b>Important:</b> Main switch <b>OFF</b> , unplug main power cable. Clean the material hopper	Operator
Machine does not respond <b>MULTIMIX</b>	Limit switch on protective grille	Close grille, check switch	Operator
	Material hopper too full	Disconnect and clean slide	Operator
	Mixing unit has jammed (stones too large)	Eliminate the cause of the jam and start up again	Operator
	Not enough water	Increase the quantity of water	Operator



Malfunction	Possible cause	Solution	Performed by
	Motor protection switch triggered – too full or mixing unit jammed	Open slide and empty, then start up again	Operator
ZP 3 L does not start <b>Air</b>	Insufficient pressure gradient in remote control due to blocked air line or air nozzle tube	Clean blocked air pipe or air nozzle tube	Operator
	Air safety switch incorrectly set	Adjust air safety switch	Service technician
	Air compressor not activated	Switch on compressor	Operator
Program does not start	Microfuse on transformer is faulty	Replace the microfuse	Service technician
Pump does not start	Pump motor defective	Replace the pump motor	Service technician
	Defective connection cable	Replace the connection cable	Service technician
	Rotor worn or faulty	Replace the rotor	Service technician
	Stator worn or clamped too loosely	Tighten the clamp or replace the stator	Service technician
	Part not original PFT spare part	Use an original PFT spare part	Service technician
Red control lamp lights up to show fault	Overload from the pump seizing up with dry material	Let the machine run in reverse	Operator

### 35.6 Indications of clogged hoses:

- Performed by operator:
- Blockages can occur in the pressure flange or in the material hoses.
- Indications of this are:
- Steep rise in feed pressure
- Seizing of pump
- Sluggishness or seizing of pump motor
- Widening and twisting of mortar hose
- No material emerges from hose end

### 35.7 Possible causes:

- Heavily worn material hoses
- Poorly lubricated material hoses
- Residual water in mortar hose
- Clogging of pressure flange
- Steep tapering of the couplings
- Kink in mortar hose
- Leaks in the couplings
- Unmixed materials or materials unsuitable for pumping

## Clearing hose blockages



### 35.8 Pre-existing damage on mortar hose



**NOTE!**

Should a machine malfunction due to a blockage cause the pressure in the mortar hose to only briefly exceed 60 bar replacement of the mortar hose is recommended, since unseen damage to the hose cannot be ruled out.

## 36 Clearing hose blockages



Fig. 61: Switching off



**DANGER!**

**Danger due to escaping material!**

Never detach hose couplings if the feed pressure has not been released. The conveyed material can escape under pressure and lead to serious injuries, especially eye injuries.

In accordance with the accident prevention regulations of the Builder's Guild, all personnel clearing blockages should wear personal safety equipment (safety goggles, protective gloves) and position themselves so as not to be hit by escaping material. Other persons are not permitted in the vicinity.

Turn the main reversing switch to position "0".

### 36.1 Reversing the direction of rotation of the pump motor in the event of clogged hoses

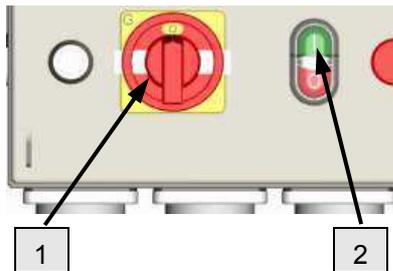


Fig. 62: Changing the direction of rotation



**NOTE!**

The main reversing switch is locked in the zero position by pushing the selection switch (1) to the left or right. This defines the direction of rotation. If the switch is set to the left, the switch can be reset to zero but is blocked for the right-side position.

1. Press the green push button (2) to switch the control voltage "ON"



### 36.2 Observe the mortar pressure shown by the mortar pressure gauge!

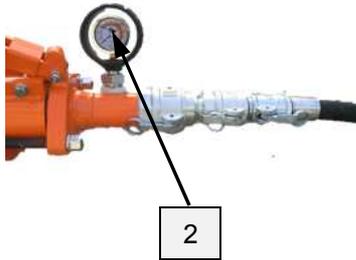


Fig. 63: Mortar pressure at 0 bar

1. Let pump motor run in reverse (1) briefly until the pressure on the mortar pressure gauge has fallen to “0 bar”.
2. Switch off the ZP 3 L using the main reversing switch.
3. Push the direction plate on the main reversing switch back to its starting position.



**DANGER!**  
**Overpressure on the machine!**

When opening machine components, these can fly open in an uncontrolled manner and injure the operator.

- Only open the mortar hoses if the pressure has fallen to 0 bar.

### 36.3 Detaching coupling connections



Fig. 64: Hose blockages

1. Cover coupling connections with tear-resistant film.
2. Undo both nuts (1) on the pressure flange (fig. 60) slightly to ensure the residual pressure can escape.
3. Loosen the hose coupling and clean the mortar hose immediately.
3. Knock or shake out the blockage.
4. If necessary, rinse out the material hoses using a PFT rinsing hose (item number 00113856) and then wet with wallpaper paste again.
5. Finally, reconnect the hoses to each other.
6. Tighten the nuts (1) and pressure flange (fig. 60) again.

## 37 Cleaning

### 37.1 Securing against restarting



Fig. 65: Cleaning

**Cleaning:**

Before prolonged interruptions to work and after the end of daily work, the ZP 3 L conveying pump must be cleaned thoroughly.

## Cleaning



### **DANGER!** Danger of death due to unauthorised restarting!

When working on the machine, there is a danger of unauthorised switching on of the electrical supply. This puts those in the danger area at extreme risk.

- Before starting work, switch off all electrical power supplies and secure them against being switched back on again. Do not start up the ZP 3 L during manual cleaning work.
- If the protective covers are removed for cleaning purposes, it is essential that they be properly reattached when work is finished.

### 37.2 Cleaning ZP 3 L MULTIMIX



### **CAUTION!** Water can enter sensitive machine parts!

- Before cleaning the machine, seal all openings where water could enter and impair the safety and functions of the machine (e.g. electric motors and control boxes).



1



2

The machine must be cleaned daily after work and in the event of prolonged pauses.

1. Spray out the inside of the mixing hopper with a water jet.
2. Clean the mixing unit (2) thoroughly, ensuring it is free of hardened and encrusted material.
3. The slide guide (1) must be completely clean at all times and lubricated slightly to ensure that it can open and close smoothly.



#### **NOTE!**

*Do not aim the water jet at electrical components, such as the gear motor or control box.*

Fig. 66: Cleaning



Fig. 67: Open the cleaning cover

1. At the end of work, run the ZP 3 L empty.
2. Clean residual material from the protective grille and material hopper with a water jet and pump it down.
3. Fill material hopper with water and switch on the machine so that the pump is rinsed with water.
4. Remove the cleaning cover (1) and allow the residual water to drain.

### 37.3 Checking the mortar pressure

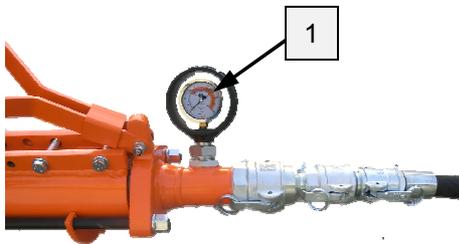


Fig. 68: Mortar pressure at 0 bar

Before disconnecting the mortar hoses, check the mortar pressure gauge (1) to see if the pressure has fallen to “0 bar”.



**DANGER!**  
**Overpressure on the machine!**

When opening machine components, these can fly open in an uncontrolled manner and injure the operator.

- Only open the mortar hoses if the pressure has fallen to “0 bar”.
- Wear protective clothing and goggles.



Fig. 69: Detaching connections

Release the cam lever and disconnect the material hoses.



**NOTE!**

*The mortar hoses and spray gun must be cleaned immediately at the end of work.*

### 37.4 Cleaning the mortar hose



**NOTE!**

*Residual material setting on the interior of the mortar hose can cause damage that only continues to build, narrowing the cross section. Clean mortar hoses are therefore imperative for problem-free pumping the next time they are used.*

## Cleaning the pump

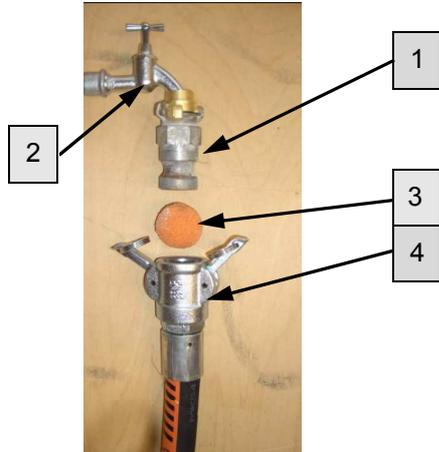


Fig. 70: Cleaning the mortar hoses

1. Connect the cleaner coupling (1) to the water tap (2).
2. Press the water-soaked sponge ball (3) into the mortar hose (4).



**NOTE!**

*Do not rinse the mortar hoses with water beforehand. The material must be pressed out of the hoses together with the sponge ball.*

3. Connect the mortar hose (4) with spraying gun to the cleaner coupling (1).
4. Remove the mortar nozzle from the spraying gun.
5. Open the water tap (2) until the sponge ball (3) emerges at the end of the spray gun.
6. Repeat this procedure if heavily soiled.
7. For different hose diameters, the mortar hoses should be cleaned separately with the appropriate sponge balls.

## 38 Cleaning the pump

### 38.1 Removing the pump



Fig. 71: Releasing the nuts

Release the nuts on both sides of the pressure flange.



**DANGER!**

**Overpressure on the machine!**

When opening machine components, these can fly open in an uncontrolled manner and injure the operator. Wear protective clothing and goggles.

Therefore:

- Only open the mortar hoses if the mortar pressure gauge indicates the pressure has fallen to "0 bar".

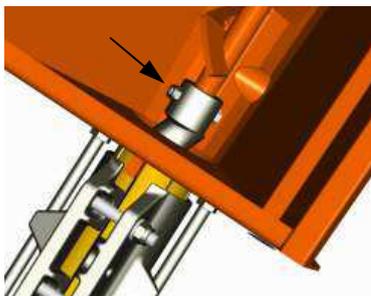


Fig. 72: Removing the pump

Undo the screw connections between the pump shaft and the rotor.



**WARNING!**

When removing the pump unit, bear in mind its weight.



## Measures to be taken if there is a risk of frost

### 38.2 Cleaning the pump

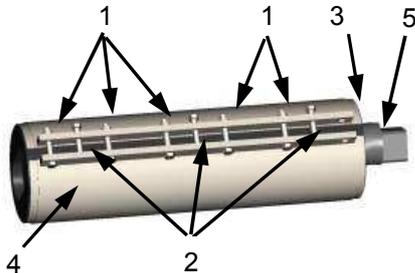


Fig. 73: Cleaning the pump

1. Remove the pump unit.
2. Release the nuts on the clamp (1).
3. Open the clamp with the aid of the jacking screws (2).
4. Press the stator (3) out of the clamp (4).
5. Press the rotor (5) out of the stator (3) and clean it.
6. Clean the pressure flange.
7. Clean the material hopper and mixing unit.
8. Completely reassemble the pump unit.

### 38.3 Retightening the pump

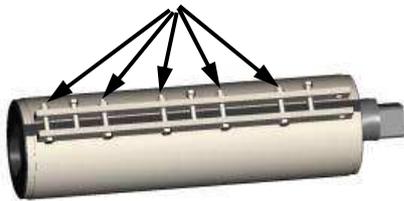


Fig. 74: Tightening the pump

1. If the feed pressure decreases, the stator can be retightened.
2. Do not retighten the pump during operation.
3. Pump components that are unable to produce the required feed pressure must be replaced.

When tightening or changing the pump, ensure the following:

- All screws on the clamp are uniformly tightened.
- The tie rod screws on rubber stators are not overly tightened and the liner ends are resting fully and centred in the flanges.



#### NOTE!

Only store assembled pumps (rotor in stator) for a few days, since longer storage may cause the rotor and stator to become inseparably joined.

## 39 Measures to be taken if there is a risk of frost



#### CAUTION! Damage due to frost!

Water that expands on freezing inside the machine can cause serious damage.

- Carry out the following steps when the pump is not operating and there is a danger of frost.

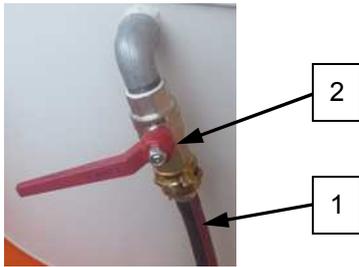


Fig. 75: Danger of frost

1. Remove the hose (1) from the water inlet.
2. Open the tap (2).

## 40 Maintenance ZP 3 L

### 40.1 Safety

#### Personnel

- Unless otherwise stated, the maintenance work detailed here can be carried out by the machine operator.
- Some tasks may only be carried out by specially trained personnel or only by the manufacturer.
- Work on electrical systems must always only be carried out by qualified electricians.

#### Basic information



#### **WARNING!**

#### **Danger of injury due to improperly performed maintenance work!**

Improper maintenance can lead to serious injuries or equipment damage.

- Ensure there is adequate space for assembly before starting any work.
- Keep the assembly area clean and tidy. Unattached components or tools left lying around or stacked on one another can cause accidents.
- If components have been removed, ensure that they are installed again correctly, reattach all fastening elements and adhere to the specified screw tightening torques.

#### Electrical system



Fig. 76: Removing the connection cable



#### **DANGER!**

#### **Danger of death due to electric current!**

Contact with live components can lead to death or serious injury. Live electrical components can move uncontrollably and cause serious injury.

Therefore:

- Before starting work, switch off the electrical power supply and secure it against being switched back on again.
- Interrupt the power supply by removing the connection cable.



### Securing against restarting



#### **DANGER!**

#### **Danger of death due to unauthorised restarting!**

When working on malfunctions, there is a danger of unauthorised switching on of the electrical supply. This puts those in the danger area at extreme risk.

Therefore:

- Before starting work, switch off all electrical power supplies and secure them against being switched back on again.

## 40.2 MULTIMIX Maintenance tasks

Provided no increase wear can be identified during regular inspections, reduce the required maintenance intervals as appropriate for the actual signs of wear.

For questions regarding maintenance tasks and intervals, contact the manufacturer (see service address on page 2).

## 40.3 Setting the mixing arm



Fig. 77: Open Protective grille



#### **WARNING!**

#### **Danger from falling of the protective grille!**

- Secure protective grille with bolts (1).

1. Clean turning bolt regularly and lightly grease.



Fig. 78: Setting the mixing arm

2. The interval between the scraper and the material hopper should total 1.5 times the granulate size.



## 40.4 Motor and gearbox maintenance



Fig. 79: Maintenance

No other maintenance tasks need to be performed on the motor and gearbox.

### Environmental protection

Observe the following environmental protection guidelines when carrying out maintenance work:

- Remove used, leaking or excess grease from all manual lubrication points and dispose of correctly according to the applicable local regulations.
- Collect used oil in suitable containers and dispose of according to the applicable local regulations.

## 40.5 Maintenance plan

The next sections describe the maintenance tasks required for optimal, problem-free operation.

Provided no increased wear can be seen during regular inspections, reduce the required maintenance intervals as appropriate for the actual signs of wear.

For questions regarding maintenance tasks and intervals, contact the manufacturer (see service address on page 2).

Interval	Maintenance task	To be performed by
Daily	Visual inspection and functional testing of all safety devices.	Operator
	Inspect all parts subject to wear.	
	Inspect delivery hoses and couplings.	
	Visual check of the electrical wiring.	
Yearly	Check all screw connections.	Service technician



**NOTE!**

Maintenance on the ZP 3 L is limited to a few checks. The most important maintenance task is thorough cleaning after use.



## 40.6 Lubricating the sealing unit

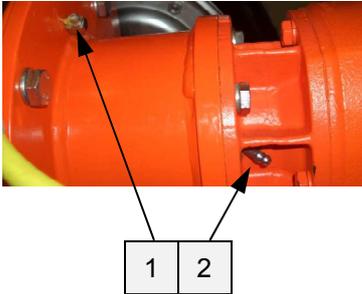


Fig. 80: Lubrication

Lubricate the seal for the material hopper on a weekly basis (1).  
Lubricate the gearbox seal monthly (2).

## 40.7 Compressor air filter

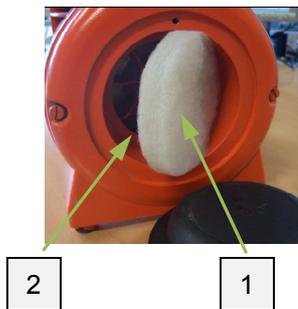


Fig. 81: Compressor filter

■ Performed by operator.

1. Unscrew the filter cover.
2. Remove the filter.
3. Blow out the filter from the inside to the outside, or tap it out.
4. Replace the filter if dirt is severe.
5. Insert the filter with the rigid side of the filter (2) facing inwards.  
Filter insert D=100 item number 20134000



Fig. 82: Filter cover opening

6. Unscrew the filter cover.



### NOTE!

The filter cover opening is at the bottom.

## 40.8 Environmental protection

Observe the following environmental protection guidelines when carrying out maintenance work:

- Remove used, leaking or excess grease from all manual lubrication points and dispose of it correctly according to the applicable local regulations.
- Collect used oil in suitable containers and dispose of it according to the applicable local regulations.



## 40.9 After performing maintenance

1. After maintenance has been completed, carry out the following steps before switching on again:
2. Check that all previously loosened screw connections have a tight fit.
3. Check that all previously removed protective devices and covers have been properly reattached.
4. Ensure that all tools, materials and other equipment have been removed from the work area.
5. Clean the work area and remove any traces of escaped material (e.g. liquids, processing material etc.).
6. Ensure that all safety devices are functioning properly.

## 41 Disassembly

The machine must be disassembled and disposed of in an environmentally sound manner after reaching the end of its useful life.

### 41.1 Safety

#### Personnel

- Disassembly may only be performed by specially trained personnel.
- Work on electrical systems may only be carried out by qualified electricians.

#### Basic information



#### **WARNING!** **Danger of injury due to improper disassembly!**

Residual energy, sharp-edged components and corners on and around the device or on the tools required can cause injuries.

Therefore:

- Ensure there is adequate space before starting any work.
- Exercise caution when working with open, sharp-edged components.
- Keep the work area clean and tidy. Components and tools that are stacked on one another or left lying around can cause accidents.
- Disassemble components properly. Bear in mind that individual components can be heavy. Use lifting equipment if necessary.
- Secure components so they do not fall or tip over.
- Consult your dealer if questions arise.



## Electrical system



### **DANGER!** **Danger of death due to electric current!**

Contact with live components can lead to death or serious injury. Live electrical components can move uncontrollably and cause serious injury.

Therefore:

- Switch off and completely disconnect the power supply before starting disassembly.

## 41.2 Disassembly

When decommissioning, clean the unit and dismantle it according to valid work safety and environmental protection regulations.

Before beginning with disassembly:

- Switch off the unit and secure it against being switched on again.
- Disconnect the entire energy supply from the unit and discharge the residual energy.
- Remove operating and auxiliary materials as well as residual processing materials and dispose of them in an environmentally sound manner.

## 41.3 Disposal

Provided no return or disposal agreements have been made, recycle the disassembled parts:

- Metallic parts are scrapped.
- Plastic elements are recycled.
- Remaining components are disposed of sorted by individual material.



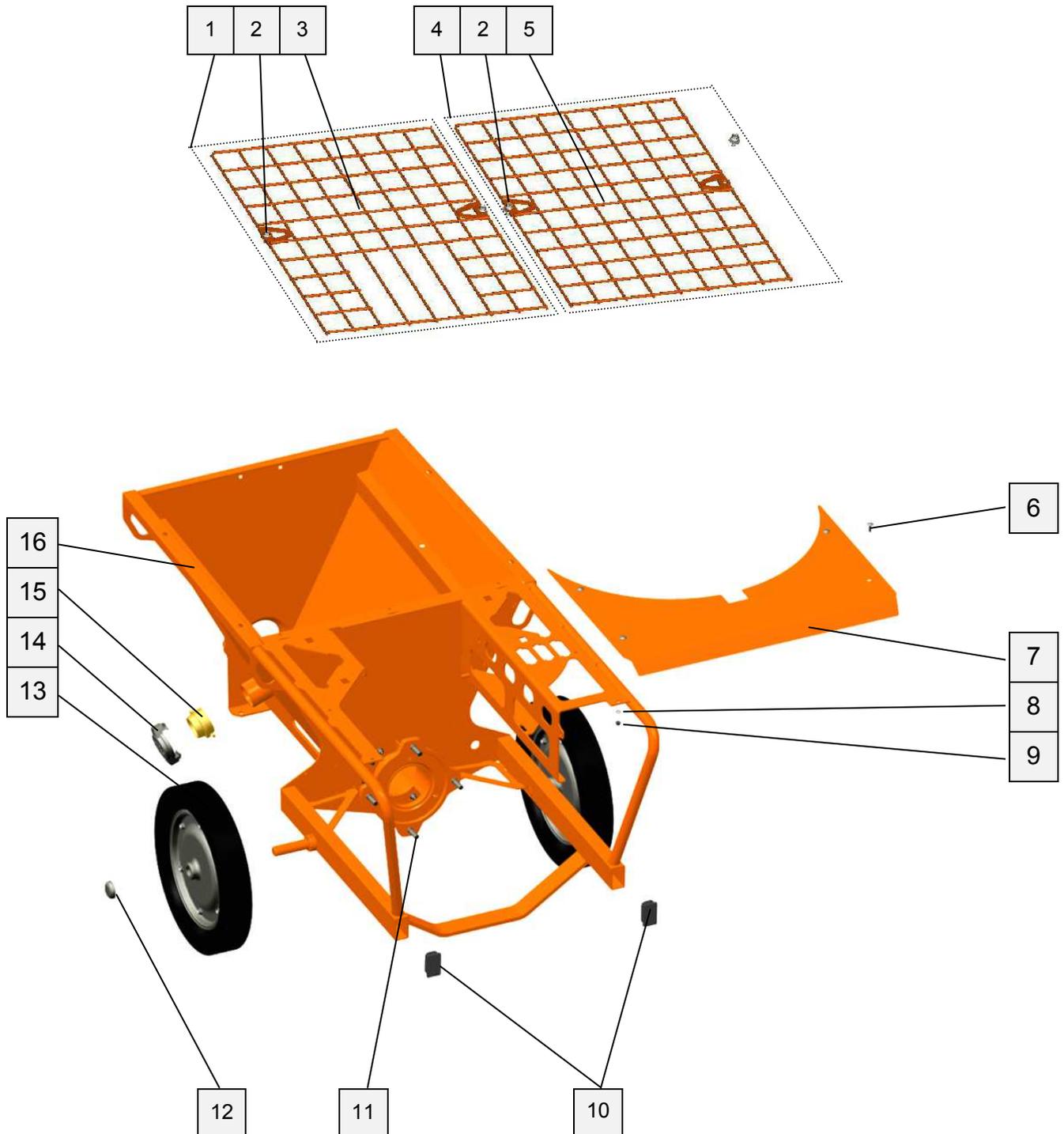
### **CAUTION!** **Environmental damage can result from improper disposal of materials!**

Electrical scrap and components, lubricants and other process materials are subject to special guidelines and may only be disposed of by approved waste disposal specialists!

Local authorities and waste disposal specialists can provide more details on the correct disposal of materials.

## 42 Spare parts drawing / spare parts lists

### 42.1 Frame and protective grille ZP 3 L



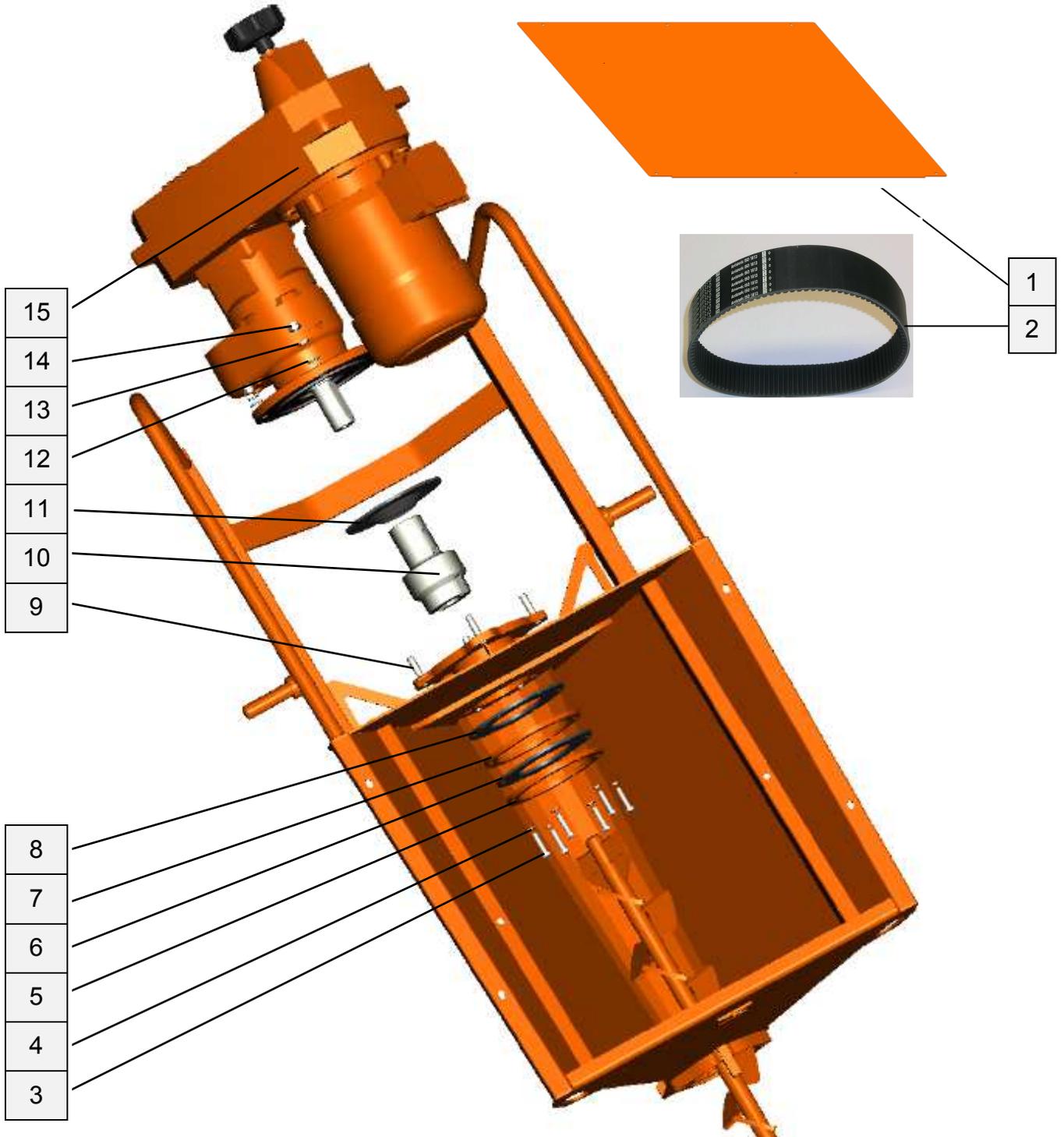


## 42.2 Spare parts list Frame and protective grille ZP 3 L

Pos.	Qty.	Item no.	Item description
1	1	00 28 44 05	Protective grille ZP 3 L with screws, cpl.
2	4	00 21 45 20	Round head screw M8 x 25 with retaining washer
3	1	00 28 08 04	Protective grille ZP 3 L RAL2004
4	1	00 45 13 18	Protective grille ZP 3 L without cut-out cpl.
5	1	00 45 13 21	Protective grille ZP 3 L without cut-out RAL2004
6	4	00 02 26 01	Round head screw M6 x 20, zinc-plated
7	1	00 45 13 29	Cover plate drive ZP 3 L RAL2004
8	4	20 20 93 00	Washer B 6.4, zinc-plated
9	4	20 20 62 00	Lock nut M6, zinc-plated
10	2	00 00 83 58	Cap (PVC), 60 x 35
11	4	00 28 42 26	Stud screw M12 x 40, zinc-plated
12	2	00 00 26 32	Quick fastener with cap, 20s x N 2 7
13	2	00 14 66 94	Wheel with steel rim GB 400/75
14	1	00 06 56 93	Dummy cap MB 50 AL
15	1	00 06 56 92	V coupling VK 50
16	1	00 28 42 19	Material hopper ZP 3 L RAL2004



### 42.3 Gear motor and sealing unit



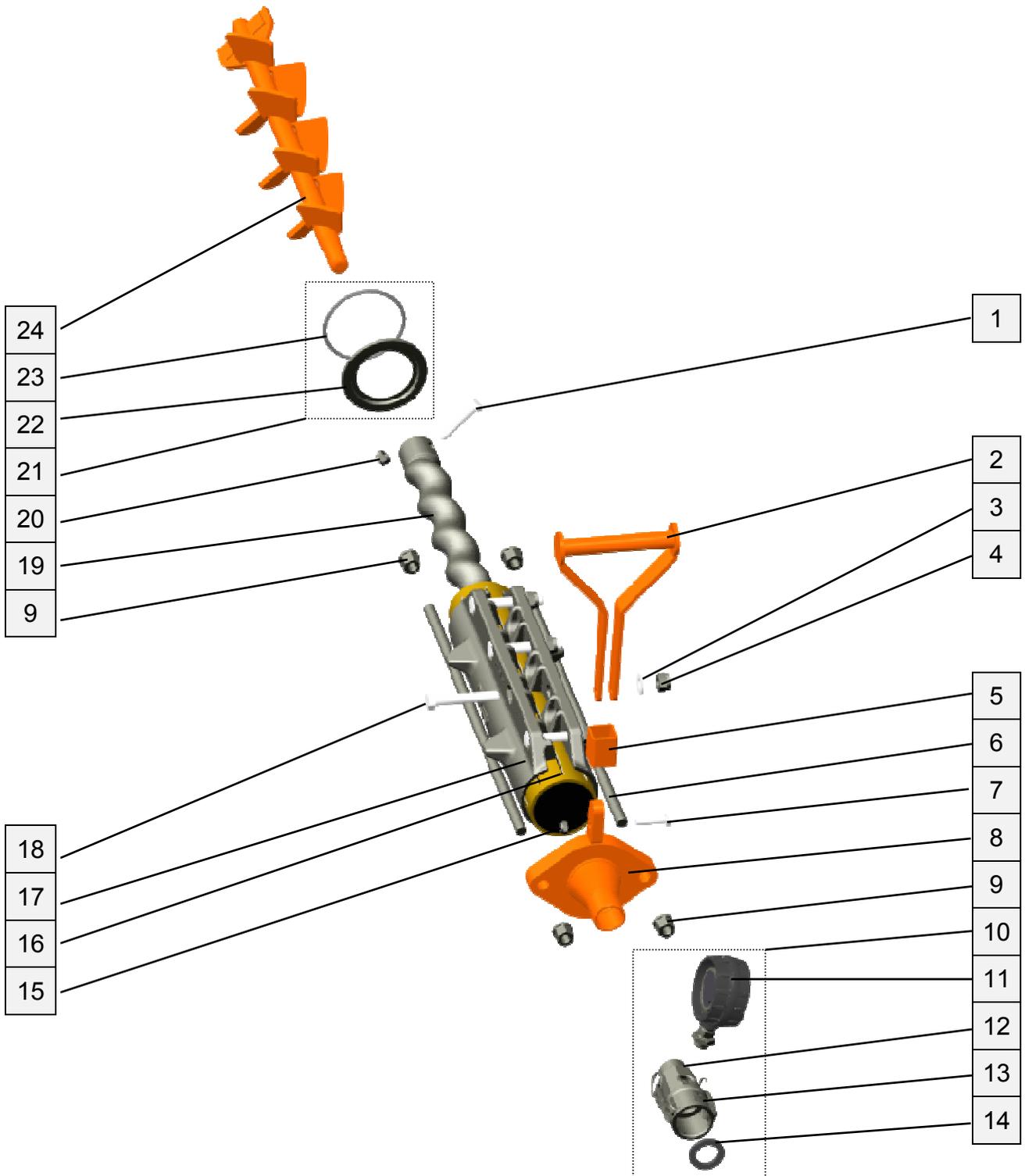


#### 42.4 Spare parts list Gear motor and sealing unit

Pos.	Qty.	Item no.	Item description
1	1	00 45 13 29	Cover plate drive ZP 3 L RAL2004
2	1	20 14 40 05	V-belt for variable speed drive SK32
3	6	00 03 58 33	Hex screw M8 x 45, zinc-plated
4	6	20 20 91 00	Spring washer B 8, zinc-plated
5	1	00 10 41 38	Clamping flange without lubrication groove ZP 3 XXL RAL2004
6	1	00 40 49 55	Gasket without grease hole D180, d90
7	1	00 10 41 30	Clamping flange with lubrication groove ZP 3 RAL2004
8	1	00 40 49 54	Seal with grease hole D180, d90
9	4	00 28 42 26	Stud screw M12 x 40, zinc-plated
10	1	00 28 05 13	Driver claw ZP 3 L, zinc-plated
11	1	00 10 35 21	Seal with grease hole D180; (d50)
12	4	20 20 90 00	Washer B 13, zinc-plated
13	4	20 20 91 10	Spring washer B 12, zinc-plated
14	4	20 20 89 00	Lock nut M12, zinc-plated
15	1	00 28 04 60	VARIO gear motor 5.5 kW, 70 - 260 rpm



### 42.5 Pump unit 2L6 with pump shaft



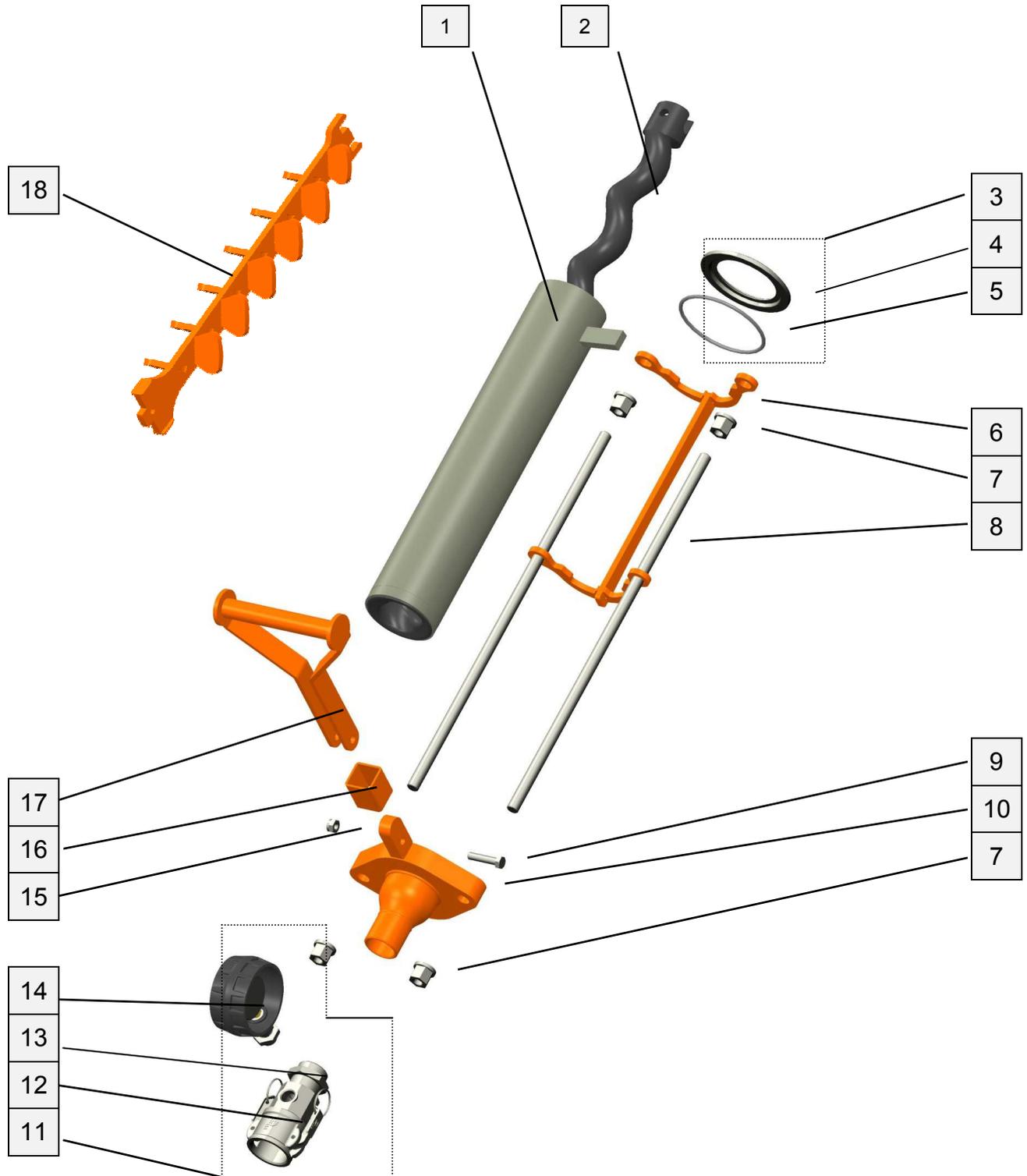


## 42.6 Spare parts list Pump unit 2L6

Pos.	Qty.	Item no.	Item description
1	1	00 46 99 94	Hex screw M12 x 70, zinc-plated
2	1	00 10 18 60	Push handle ZP 3 XL RAL 2004
3	4	20 20 67 00	Washer B 17, zinc-plated
4	4	20 20 73 00	Lock nut M16, zinc-plated
5	1	00 10 26 60	Square tube 40x40x3x50, alloyed RAL2004
6	1	00 28 08 55	Tie rods M16 x 600 mm (1 set = 2 pieces)
7	1	20 20 96 01	Hex screw M10 x 45, zinc-plated
8	1	00 40 66 03	Pressure flange ZP 3 L, cross web 2L6 RAL2004
9	4	20 20 99 21	Flanged nut M16, zinc-plated
10	1	00 10 22 29	Mortar pressure gauge 50 mm galv. cpl.
11	1	00 09 90 88	Pressure gauge with plastic housing, 0-100 bar, 1/2" pressure transmitter VA
12	1	00 09 94 51	Coupling for gauge 2" int./ext. thread with 1/2" boring
13	1	20 20 07 80	Coupling 50 female 2" int. thread with gasket
14	1	20 20 07 13	Gasket 50 female coupling
15	1	20 20 72 10	Lock nut M10, zinc-plated
16	1	00 45 91 86	Stator 2L6 8-fold partially slotted KTO RAL1021
17	1	00 28 11 62	Clamp 2L6, aluminium
18	4	00 02 32 05	Hex screw M16 x 100, zinc-plated
19	1	00 45 91 82	Rotor 2L6 with hole KTO
20	1	20 20 89 00	Safety nut M12 galv.
21	1	00 28 05 18	Suction flange adapter ZP 3 L-2L6 cpl.
22	1	00 28 05 20	Suction flange ZP 3 -2L6 galv.
23	1	20 10 42 30	O-ring 117 x 5 for suction flange
24	1	00 28 40 47	Pump shaft 2L6 ZP 3 L RAL2004



42.7 Pump unit 2L6 with pump shaft Render Star



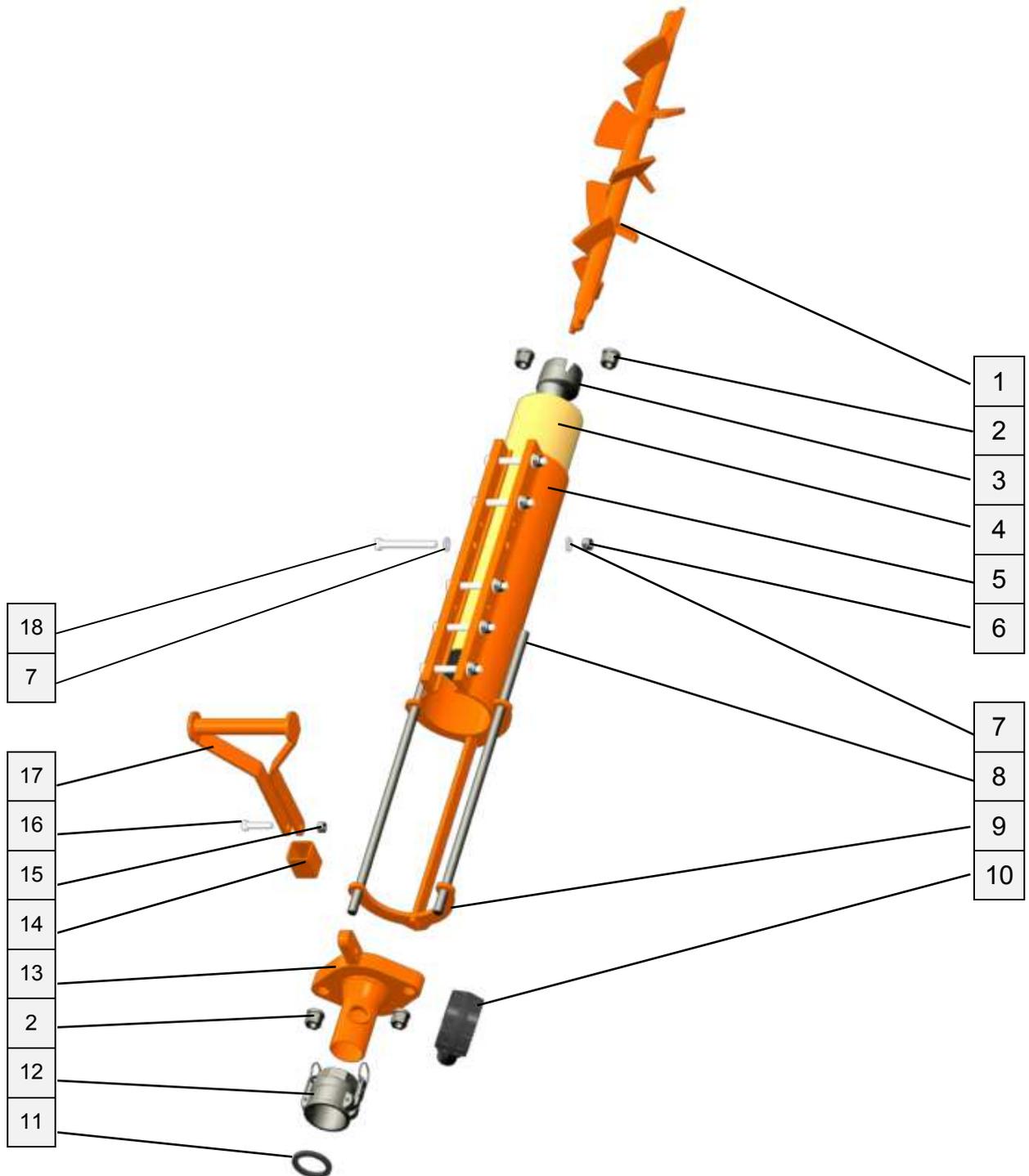


## 42.8 Spare parts list Pump unit 2L6 Render Star

Pos.	Qty.	Item no.	Item description
1	1	00 53 67 57	Stator RENDER STAR
2	1	00 53 67 58	Rotor RENDER STAR
3	1	00 28 05 18	Suction flange adapter ZP 3 L-2L6 cpl.
4	1	00 28 05 20	Suction flange ZP 3 -2L6 galv.
5	1	20 10 42 30	O-ring 117 x 5 for suction flange
6	1	00 53 08 18	Flange mounting aid L-pump ZP 3 M
7	4	20 20 99 21	Flanged nut M16, zinc-plated
8	1	00 28 08 55	Tie rods M16 x 600 mm (1 set = 2 pieces)
9	1	20 20 96 01	Hex screw M10 x 45, zinc-plated
10	1	00 40 66 03	Pressure flange ZP 3 L, cross web 2L6 RAL2004
11	1	00 10 22 29	Mortar pressure gauge 50 mm galv. cpl.
12	1	20 20 07 80	Coupling 50 female 2" int. thread with gasket
13	1	00 09 94 51	Coupling for gauge 2" int./ext. thread with 1/2" boring
14	1	00 09 90 88	Pressure gauge with plastic housing, 0-100 bar, 1/2" pressure transmitter VA
15	1	20 20 72 10	Lock nut M10, zinc-plated
16	1	00 10 26 60	Square tube 40x40x3x50, alloyed RAL2004
17	1	00 10 18 60	Push handle ZP 3 XL RAL 2004
18	1	00 54 92 45	Pump shaft ZP 3 L RAL2004



### 42.9 Pump unit R7-3S



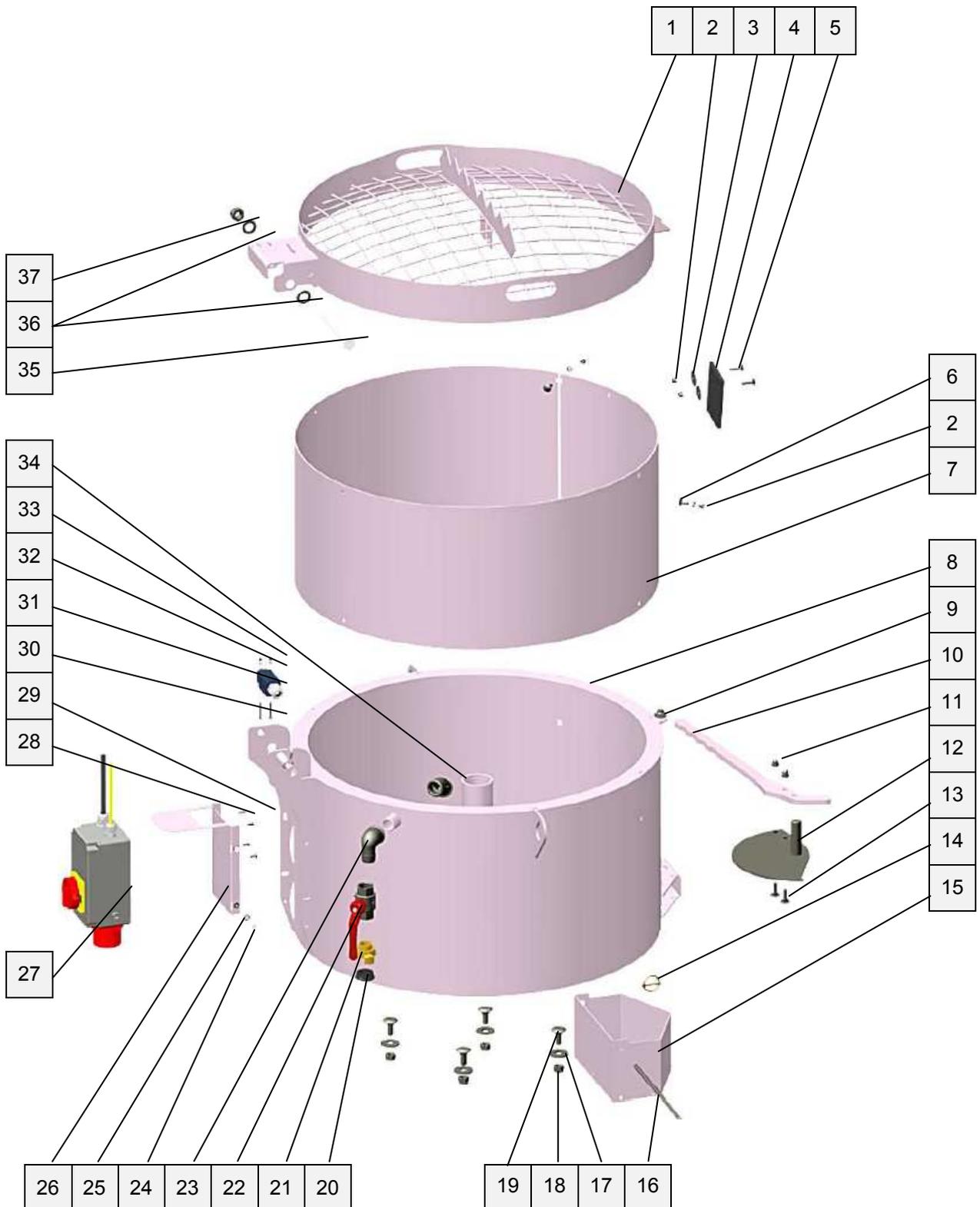


#### 42.10 Spare parts list Pump unit R7-3S

Pos.	Qty.	Item no.	Item description
1	1	00 28 61 07	Pump shaft R-7 ZP 3 L RAL2004
2	4	20 20 99 21	Flanged nut M16, zinc-plated
3	1	20 11 48 21	Rotor R7-3S
4	1	20 11 63 01	Stator R7-3S
5	1	20 11 79 00	Clamp 515 mm for R pumps 545 mm RAL2004
6	6	20 20 89 00	Lock nut M12, zinc-plated
7	12	20 20 90 00	Washer B 13, zinc-plated
8	1	00 28 08 55	Tie rods M16 x 600 mm (1 set = 2 pieces)
9	1	00 47 82 12	Assambling aid R-pump RAL2004
10	1	00 09 90 89	Pressure gauge with plastic housing, 0 - 100 bar, 1/2" pressure transmitter
11	1	20 20 07 13	Gasket 50M-part (pack of 50)
12	1	20 20 07 80	Coupling 50M part 2" female thread w/ gasket
13	1	00 47 66 08	Pressure flange R-pump 2" ZP 3 RAL2004
14	1	00 10 26 60	Square tube 40x40x3x50, alloyed RAL2004
15	1	20 20 72 10	Lock nut M10, zinc-plated
16	1	20 20 96 01	Hex screw M10 x 45, zinc-plated
17	1	00 10 18 60	Push handle ZP 3 XL RAL 2004
18	6	20 20 70 00	Hex screw M12 x 100, zinc-plated



### 42.11 MULTIMIX material hopper





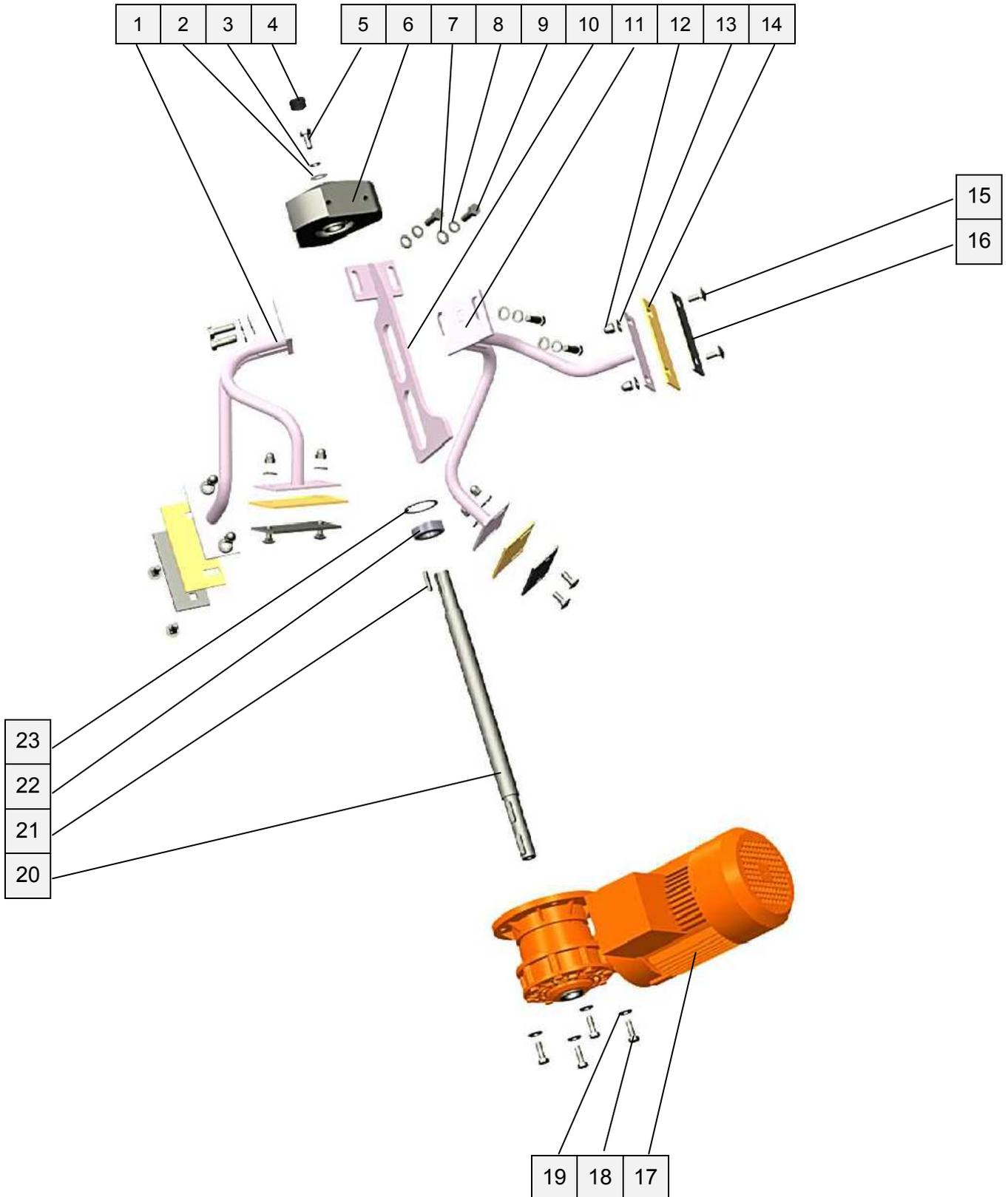
## 42.12 Spare parts list MULTIMIX material hopper

Pos.	Qty.	Item no.	Item description
1	1	00 25 15 73	Protective grille MULTIMIX model 2012 RAL9002
2	2	20 20 62 00	Safety nut M6 galv.
3	2	20 20 93 11	Washer, 6.4 x 30 x 1.5, zinc-plated
4	1	00 25 17 92	Mixing arm scraper MULTIMIX model 2012
5	2	20 20 63 09	Round head screw M6 x 25, zinc-plated
6	2	20 20 63 04	Round head screw M6 x 16, zinc-plated
7	1	00 25 15 21	Armour plate, screwed for MULTIMIX (model 2012)
8	1	00 25 16 44	Material hopper MULTIMIX model 2012 RAL9002
9	1	00 21 45 19	Round head screw M8 x 25 with retaining washer
10	1	00 25 15 28	Handle for slide MULTIMIX model 2012 RAL9002
11	2	20 20 66 03	Locking cap nut M8, zinc-plated
12	1	00 25 15 98	Slide MULTIMIX model 2012, zinc-plated
13	2	20 20 63 23	Round head screw M8 x 25, zinc-plated
14	1	20 10 10 10	Splint, D 4.5 with ring
15	1	00 28 42 98	Mortar outlet, canted ZP 3 L RAL9002
16	1	00 00 79 86	Pin, MULTIMIX outlet, zinc-plated
17	4	20 20 93 19	Washer, 13 x 37 x 3, zinc-plated
18	4	20 20 89 00	Safety nut M12 galv.
19	4	00 42 04 07	Round head screw M12 x 30, zinc-plated
20	1	20 20 17 00	Geka coupling gasket
21	1	20 20 09 10	Geka coupling, 3/4" male thread
22	1	00 05 79 59	Tap 3/4"
23	1	20 20 36 01	Curved section 3/4" int. thread-ext.thread galv.
24	4	20 20 71 03	Hex screw M6 x 20, zinc-plated
25	4	20 20 93 00	Washer B 6.4, zinc-plated
26	1	00 25 15 94	Assembly plate switch MULTIMIX model 2012 RAL9002
27	1	00 25 56 37	On/off switch MULTIMIX 400V 3-ph. for interchangeable hopper
28	4	20 26 20 01	Washer V 5.3, zinc-plated
29	4	20 20 64 07	Cylindrical screw M5 x 10, zinc-plated
30	2	00 03 56 94	Hexagonal M 4x30 DIN 912-8.8, galv.
31	1	00 00 73 81	MULTIMIX limit switch
32	2	00 03 59 60	Washer 4.3, zinc-plated
33	2	20 20 62 03	Safety nut M4 galv.
34	1	00 03 60 44	Elbow, 3/4" 45° female/female thread, zinc-plated
35	1	20 20 81 04	Hex screw M16 x 150, zinc-plated
36	2	20 20 67 00	Washer B 17, zinc-plated
37	1	20 20 73 00	Lock nut M16, zinc-plated

**Spare parts drawing / spare parts lists**



**42.13 Mixing unit with gear motor**





#### 42.14 Spare parts list Mixing unit with gear motor

Pos.	Qty.	Item no.	Item description
1	1	00 28 47 22	Mixing arm, inside and bottom, MULTIMIX RAL9002
2	1	20 20 93 26	Clamp washer 10,5 x 30 x 2,5 zinc-plated
3	1	20 20 91 11	Spring washer B 10, zinc-plated
4	1	00 12 62 99	Gills stopper D 34 x 14,5 x 1 mm
5	1	20 20 99 31	Hex. screw M10 x 25 galv.
6	1	00 25 15 71	Body holder for mixing arm MULTIMIX model 2012, zinc-plated
7	6	20 20 90 00	Washer B 13, zinc-plated
8	6	20 20 91 10	Spring washer B 12, zinc-plated
9	6	20 20 99 62	Screw M12 x 35, zinc-plated
10	1	00 28 47 16	Mixing arm, inside, MULTIMIX RAL9002
11	1	00 28 47 35	Mixing arm, outside and top, MULTIMIX RAL9002
12	8	00 05 09 70	Locking cap nut M10 A2
13	8	00 00 12 74	Washer B 10.5 A2
14	4	00 28 48 31	MULTIMIX mixing arm scraper
15	8	00 05 10 71	Round head screw M10 x 25 A2
16	4	00 28 48 32	Clamp plate for rubber scraper VA MULTIMIX
17	1	00 47 65 97	Geared motor 2,2kW 230/400V for Multimix
18	4	20 20 99 31	Hex screw M10 x 25, zinc-plated
19	4	20 20 91 11	Spring washer A 10 galv.
20	1	00 00 79 93	MULTIMIX drive shaft
21	3	20 13 65 03	Key A 8 x 7 x 36
22	1	20 12 16 14	Grooved ball bearing
23	1	20 13 65 15	Circlip D52 x 2



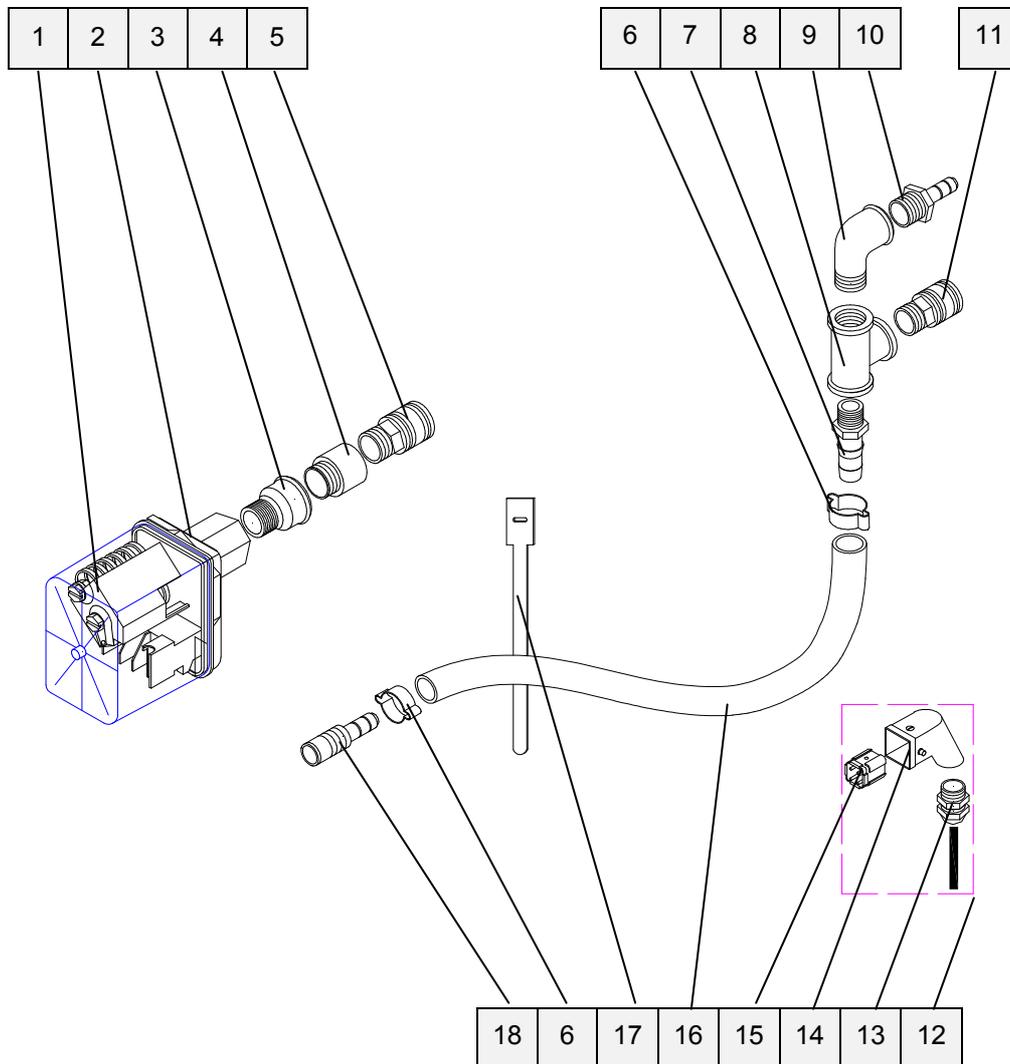


## 42.16 Spare parts list Air compressor Item no. 00414337

Pos.	Qty.	Item no.	Item description
1	1	00 42 43 75	Set air compressor ZP 3 L MULTIMIX cpl.
2	1	00 41 43 37	Air compressor K2 N with pressure switch-off G 4 X RAL2004
3	1	20 42 41 11	Motor connection cable 1,6m CEE plug 4 x 16A 6h red and cable lug
4	1	20 42 79 00	CEE plug 4 x 16A, 6h red
5	1	20 20 20 00	EWO coupling female 1/4" ext. Thread non-blocking
6	1	20 20 45 70	T-piece 1/4" int. thread galv.
7	3	20 20 36 50	Angle 1/4" int. thread - ext. thread galv.
8	3	20 20 37 12	Screwed joint 1/4" ext. thread brass for pressure switch
9	1	20 21 90 51	Double counter flow valve 1/4"int. thread
10	1	20 13 51 10	Pressure switch Typ PT/5 1/4" 1,5-2,5bar 3-polig Öffner
11	1	20 13 12 00	Safety valve 1/4" 3.5bar with washer
12	2	20 20 63 14	Saucer-head screw M8 x 16 galv.
	2	20 20 93 13	Washer B 8,4 galv.
	2	20 20 72 00	Safety nut M 8 galv.
13	1	00 28 09 99	Compressor beam ZP 3 L RAL2004
14	1	20 13 00 15	Air compressor K2 N without pressure control cpl. with cable 1.5 m and plug CEE 4 x 16 A unpacked RAL2004
15	1	20 13 40 00	Filter diam. 100mm
16	1	00 01 01 57	Filter cover with silencer K2
17	2	20 20 74 12	Countersunk screw M5 x 10 galv.



**42.17 Pressure switch-off**





## 42.18 Pressure switch-off

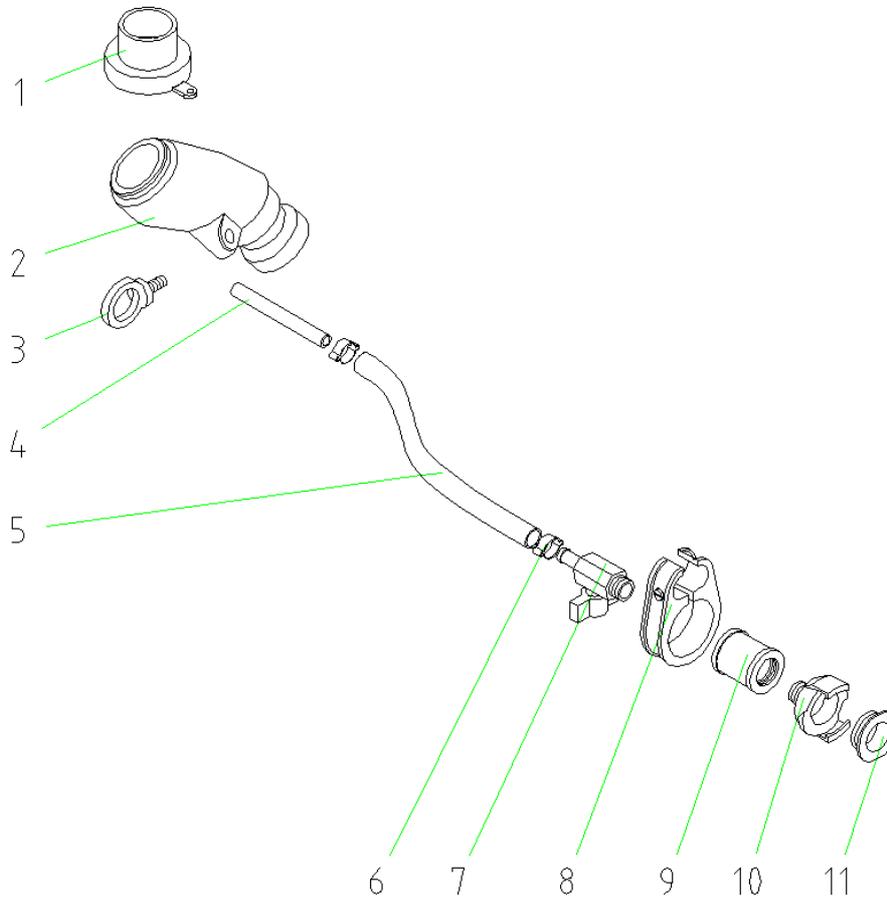
Pos.	Qty.	Item no.	Item description
1	1	20 44 86 00	Protection cover for pressure switch (20 44 76 00) FF4
2	1	20 44 76 00	Druckschalter Typ MDR-F 0,22-4bar (FF4-4)
3	1	00 02 36 19	Reducing socket 1/2"int.thread 3/8"ext.thread galv.
4	1	20 20 34 20	Faucet prolongation 1/2" x 20mm
5	1	20 20 20 02	EWO-coupling female 1/2" ext. Thread non-blocking
6	2	00 05 91 96	Hose clamp 19-21
7	1	20 19 04 11	Hose screw joint 1/4" ext. thread socket 1/2"
8	1	20 20 45 70	T-piece 1/4" int. thread galv.
9	1	20 20 36 50	Angle 1/4" int. thread - ext. thread galv.
10	1	20 20 21 03	EWO-coupling male 1/4" ext. thread
11	1	20 20 20 00	EWO coupling female 1/4" ext. Thread non-blocking
12	1	20 44 76 33	Connection cable for pressure switch
13	1	20 43 05 00	Skintop screw connection PG 11
14	1	20 42 86 05	Socket housing 4 and 5 pins, angled
15	1	20 42 86 06	Male insert 4 pins HAN 3A
16	1	20 21 35 02	Water-/air hose 1/2" x 960mm
17	2	00 46 16 85	Cable tie TY GRIP / 228 mm
18	1	20 20 21 00	EWO-coupling male with socket 1/2"

## Spare parts drawing / spare parts lists



## 42.19 Spraying gun 35V without bore hole

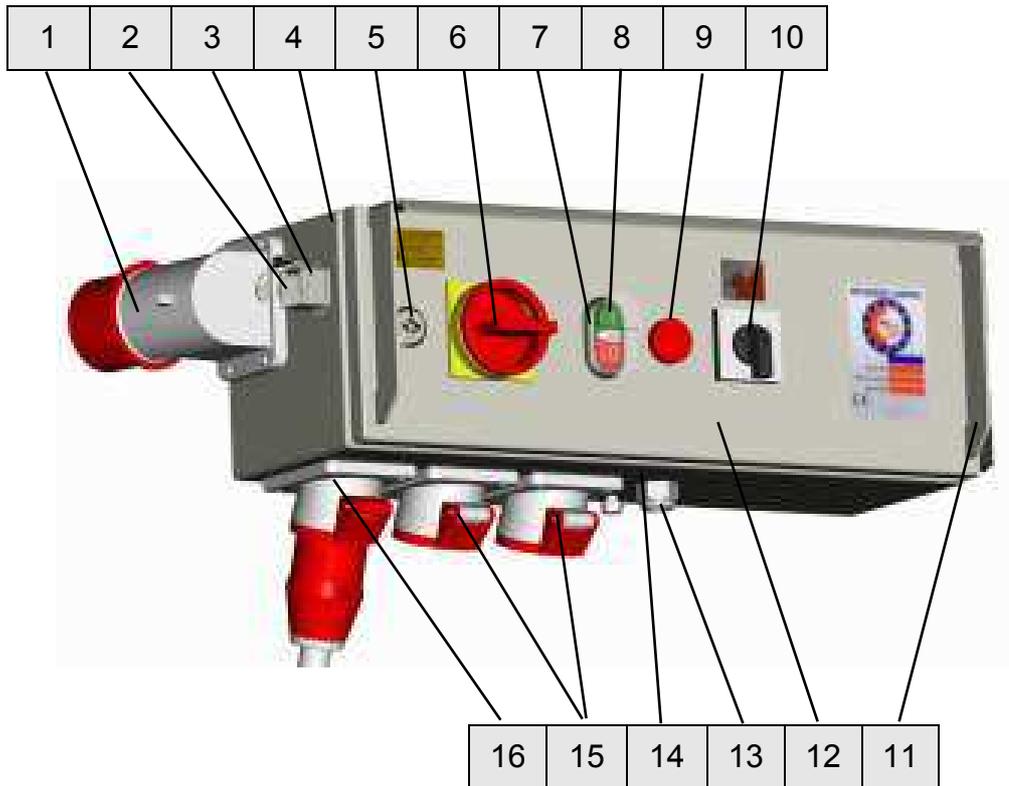
Item number: 00 14 83 84



Pos.	Qty.	Item no.	Designation
1	1	20 19 66 00	Mortar nozzle 20 mm
2	1	20 19 61 00	Spray head 35 mm
3	1	20 20 99 80	Ring bolt, M10 x 19, zinc-plated
4	1	20 19 01 00	Air nozzle tube 140 mm
5	1	20 19 05 10	Hose section 9 mm x 310 mm
6	2	20 20 261 1	Hose clip 14-17
7	1	20 19 03 20	Tap, 3/8" male thread, with 10 mm socket, pack of 10
8	1	20 19 62 00	Fastening mechanism 35 mm
9	1	20 20 30 02	Socket 3/8", zinc-plated
10	1	20 20 10 00	Geka coupling, 3/8" male thread (pack of 10)
11	1	20 20 17 00	Geka coupling gasket

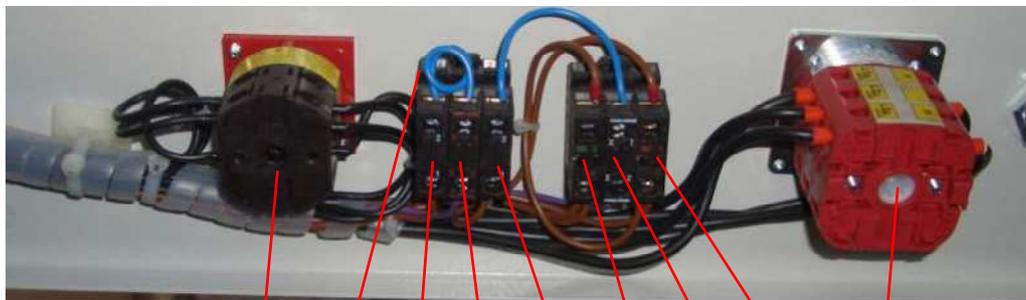
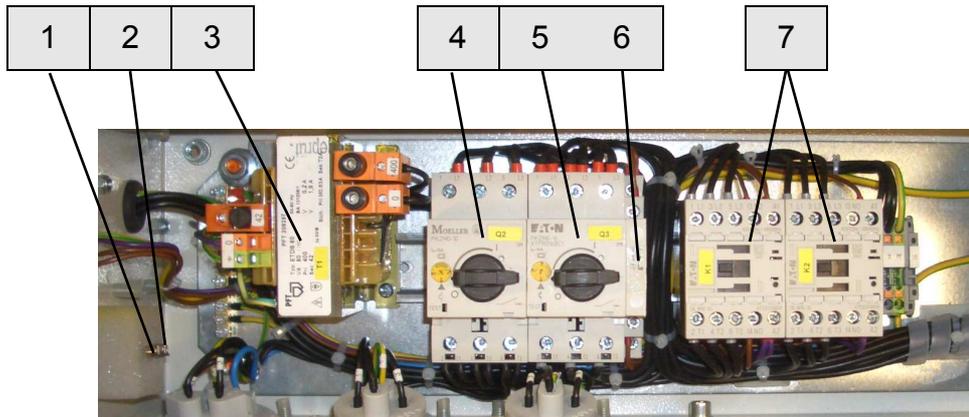


## 42.20 Control box ZP 3 L, 400V 3-ph. 00280800



Pos.	Qty.	Item no.	Designation
1	1	20425100	CEE device plug 5 x 32A, 6h red
2	1	00104568	Dummy plug, 4-pin, 10A plastic
3	1	20428604	Housing, 4/5-pin, HAN 3A/HA 4
4	1	00280538	Empty housing ZP 3 L RAL 9002/structure
5	1	00036249	Lock for switching box (double-bit key)
6	1	00206458	Main reversing switch, 4-pin
7	1	00053832	Light switch On/Off twin button
8	1	00053831	Membrane rectangular for twin button
9	1	00053875	Indicator lamp attachment, red, M22
10	1	00290738	On/Off switch 3-pin with retractor
11	2	00178073	Control box hinge
12	1	00280547	Door ZP 3 L RAL 9002/structure
13	1	00041127	Skintop connection, M20 x 1.5
14	1	00041145	Skintop counternut, M20 x 1.5
15	2	20426610	CEE panel mounted socket 4 x 16A, 6h red
16	1	00019416	CEE panel mounted socket 5 x 16A, 6h red

**Spare parts drawing / spare parts lists**

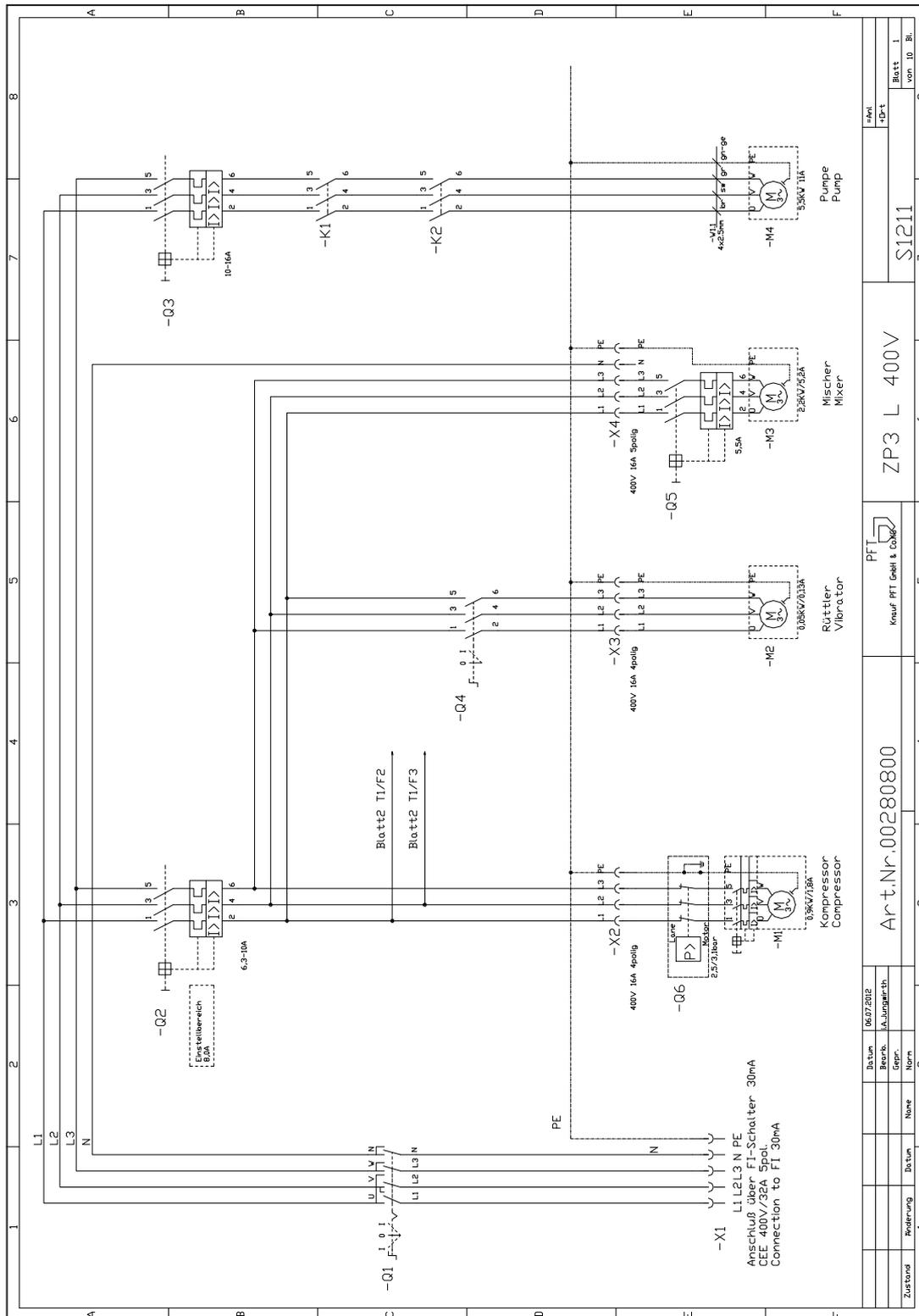


Pos.	Qty.	Item no.	Designation
1	2	00087253	Fuse 5 x 30, 0,63A
2	1	20419021	Fuse 5 x 20, 2,0A
3	1	00208297	Transformer unit 400V - 42V 80VA with fuse
4	1	00043842	Motor protection switch 6-10A PKZM0-10
5	1	00042602	Motor protection switch 10-16A PKZM 0-16
6	1	00021401	Auxiliary contact NHI-11-PKZO
7	2	00084224	Air-break contactor DIL M15-10 42 V
8	1	00206458	Main reversing switch, 4-pin
9	1	00053836	Contact element 1 opener M22 - K01
10	1	00053881	Light element, white, 12 - 30V
11	1	00053835	Contact element, 1 closer M22 - K10
12	2	00053886	LED - resistor series element for 42V
13	1	00053879	Illuminated element, red 12 - 30V M22
14	2	00053834	Fastening adapter for switch elements
15	1	00290738	On/Off switch 3-pin with retractor



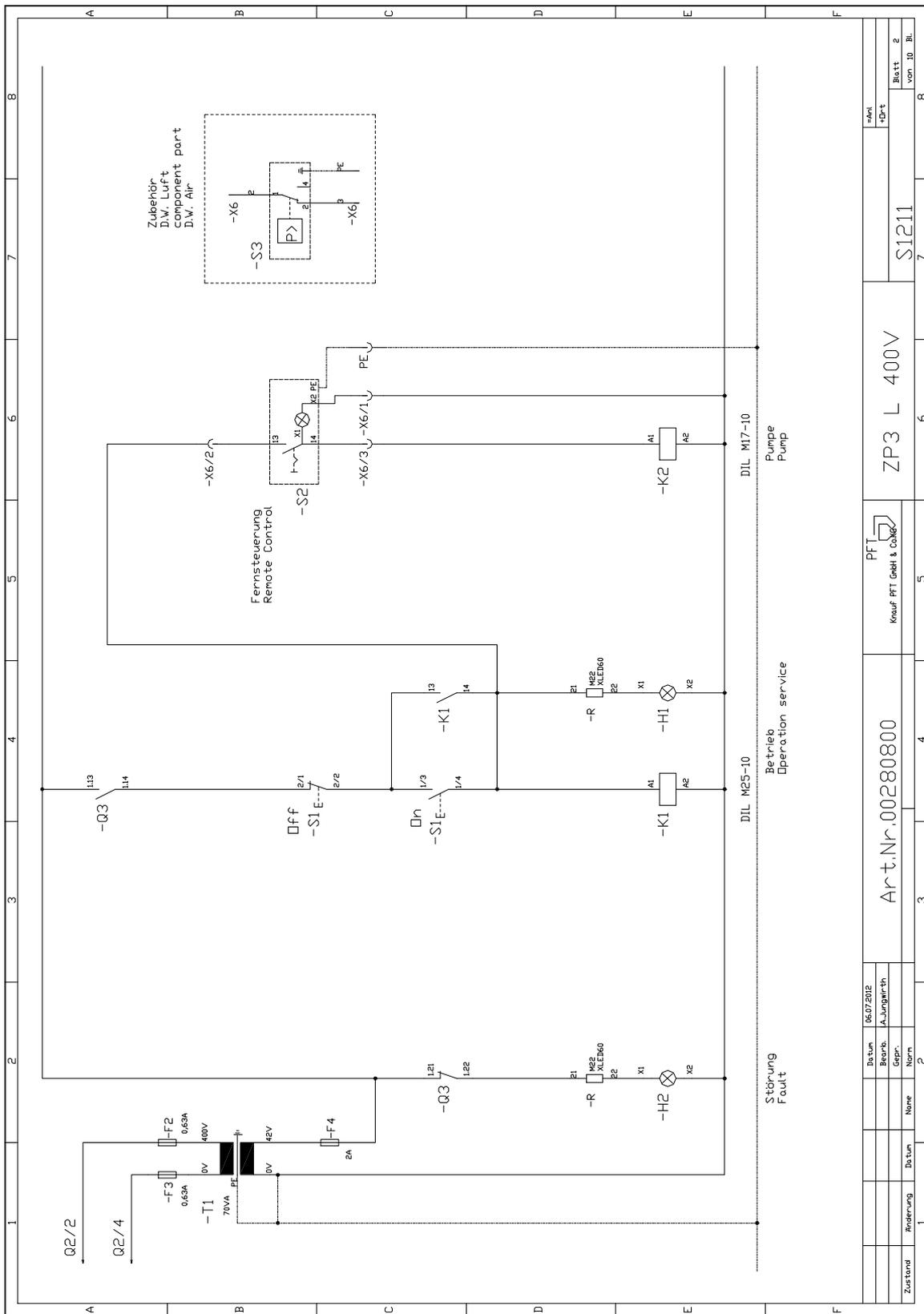
Spare parts drawing / spare parts lists

42.21 Circuit diagram S1211



Art.Nr. 00280800		ZP 3 L 400V		S1211	
Kauf PFT GmbH & Co. KG		PFT		Blatt 1 von 10 Bl.	
06.07.2012		05.07.2012		8	
Zustand		Prüfung		2	
Name		Norm		2	
Bezeichnung		Abzug		2	
Datum		Name		2	
Zustand		Prüfung		2	

Spare parts drawing / spare parts lists



Zustand		Änderung		Datum		None	
Datum		06.07.2012		Bearb.		A. Jungwirth	
Grp.		Norm		Art.Nr.		00280800	
Kauf		PFT GmbH & Co. KG		ZP3 L 400V		Pumpe	
Blatt		2		S1211		von 10 Bl.	
ID-Nr.		8		7		8	



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