



Operating manual

PFT Conveying Pump ZP 3 XXL FU

EC Declaration of Conformity

Part 2: Overview, operation and spare part lists



Item number of operating manual: 00 25 58 40

Item number of the machine parts list: 00 15 11 74

Item number of the machine parts list: 00 41 74 79



Read the operating manual prior to beginning any work!

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1	EC Declaration of Conformity.....	5	13	Remote control operation.....	17
2	Examination.....	6	14	Transport, packaging and storage	17
2.1	Examination by machine operator	6	14.1	Safety instructions for transport	17
2.2	Periodic inspection	6	14.2	Transport.....	18
3	General information.....	7	14.3	Transport checklist	18
3.1	Information regarding the operating manual	7	15	Packaging.....	19
3.2	Keep the manual for later use	7	16	Operation.....	19
3.3	Layout	7	16.1	Safety	19
4	Technical data	8	17	Preparation of the machine	20
4.1	General specifications	8	17.1	Setting up the machine	20
4.2	Connected load	8	17.2	Preparing the control box.....	21
4.3	Operating requirements.....	9	17.3	Mortar pressure gauge.....	21
4.4	Output values.....	9	18	Mortar hoses	22
4.5	EMV examination	9	18.1	Preparing the mortar hoses.....	22
4.6	Sound power level	9	18.2	Connecting the mortar hose.....	22
4.7	Vibrations.....	9	18.3	Connecting the spraying gun	23
5	Dimensions.....	10	18.4	Switch on air compressor.....	23
6	Type plate, inspection label.....	10	19	Hazardous dust.....	23
7	Quality Control sticker	10	19.1	Mortar consistency	24
8	Overview	11	20	Putting the machine into operation	24
9	Description of assemblies	12	20.1	Processing material.....	24
9.1	Description of control box module, item number: 00148011.....	12	20.2	Switching on the machine	25
9.2	Assembly description for frame and vibrator screen	13	20.3	Open the air tap at the spraying gun..	25
9.3	Assembly description for pump unit 2L8.....	13	20.4	Interruption of work	26
9.4	Gear motor DB62-G132M4 7,5kW	13	20.5	In case of longer interruption of work/break.....	26
10	Description of functions	14	20.6	Switch off air compressor.....	26
10.1	Advantages at a glance	14	20.7	Applying masonry mortar	27
11	Operating modes of vibrator selection switch.....	15	21	Stopping in case of emergency	
12	Operating modes of pump motor selection switch	16		Emergency-stop switch	27
			21.1	Emergency-stop switch	27
			22	Interruption of work	28
			23	Cleaning	28
			23.1	Running the machine empty	28
			23.2	Checking the mortar pressure.....	29

Contents



23.3	Cleaning the mortar hose	30	29.1	Safety	37
24	Danger of frost	30	29.2	Cleaning	38
25	Troubleshooting	31	29.3	Maintenance plan	39
25.1	Handling malfunctions	31	29.4	Lubricating the sealing unit.....	39
25.2	Fault displays	32	29.5	After performing maintenance	40
25.3	Malfunctions	32	30	Disassembly	40
25.4	Safety	32	30.1	Safety	40
25.5	Table of malfunctions.....	33	30.2	Disassembly	41
26	Pumping stopped / blockage	34	30.3	Disposal	41
26.1	Indications of clogged hoses	34	31	Spare parts drawing, spare parts list	42
26.2	Causes of clogged hoses:	34	31.1	Drive unit and sealing unit	42
26.3	Pre-existing damage on mortar hose.	34	31.2	Frame with material hopper ZP 3 XXL	44
26.4	Clearing hose blockages	34	31.3	Pump unit 2L8	46
26.5	Reversing the rotational direction of the pump motor	35	31.4	Control box item no. 00148011	48
26.6	Detaching coupling connections	35	31.5	Control box item no. 00148011	50
27	Measures to be taken in the event of a power failure	36	32	Circuit diagram 00148011	52
28	Cleaning the pump	36	32.1	Circuit diagram 00148011	53
28.1	Retightening the pump.....	37	33	Index.....	54
29	Maintenance	37			



1 EC Declaration of Conformity

Company: Knauf PFT GmbH & Co. KG
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 Germany

declares, with exclusive responsibility, that the machine

Machine model: ZP 3 XXL
Device type: Conveying pump
Serial number:
Guaranteed sound power level: 78 dB

conforms to the following CE regulations:

- Outdoor Noise Directive (2000/14/EC),
- Machine Directive (2006/42/EC),
- Directive on Electromagnetic Compatibility (2004/108/EC).

Applied conformity assessment procedure according to Outdoor Noise Directive 2000/14/EC:
 Internal manufacturing inspection as per Article 14, Section 2 in conjunction with Appendix V.

This declaration applies only to the machine in the condition it was in when sold. Components attached or modifications undertaken by the end customer after purchase remain unconsidered. This declaration becomes invalid if the product is converted or altered without approval.

Agent responsible for putting together the relevant technical documentation:

Dipl.-Wirtsch.-Ing. Michael Duelli, Einersheimer Straße 53, 97346 Iphofen, Germany.

The technical documentation is held at:

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

Iphofen, Germany

Dr. York Falkenberg
 General Manager

Place and date of issue

Name and signature

Information on signee

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 manual provides important notes 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.

3.2 Keep the manual for later use

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

3.3 Layout

The operating manual is comprised of two booklets:

- Part 1: General safety instructions for mixing pumps.
Item number 00 17 27 09.
- 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.

Technical data

4 Technical data

4.1 General specifications

Item number of PFT ZP 3 XXL FU	00 15 11 74
Item number of PFT ZP 3 XXL FU	00 41 74 79

Specification	Value	Unit
Weight	389 / 380	kg
Overall length	3072	mm
Overall width	723	mm
Overall height	745	mm
Container capacity PFT ZP 3 XXL	130	litres

4.2 Connected load

Electrical

Specification	Value	Unit
Voltage, 3-phase current 50 Hz	400	V
Max. current consumption	32	A
Max. power consumption	13	kW
Connection	32	A
Fuse	at least 3 x 25	A

Motor protection switch



Fig. 1 Motor protection switch

Specification	Output	Setting value	Designation
Pump motor	7.5 kW	15 A	Q2
Vibrator	0.25 kW	0.65 A	Q4



Technical data

4.3 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

4.4 Output values

Pump output 2 L 8

Specification	Value	Unit
Pumping capacity,* approx.	200	l/min
Operating pressure,* max.	20	bar

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

4.5 EMV examination

The machine is EMV-examined and fulfils the strict requirements of the EMV-guideline Filter class B.
The control cabinet is equipped with a network filter.

4.6 Sound power level

Guaranteed sound power level: **78 dB (A)**

4.7 Vibrations

Weighted effective acceleration value to which the upper limbs are exposed = < 2.5 m/s²

Dimensions



5 Dimensions

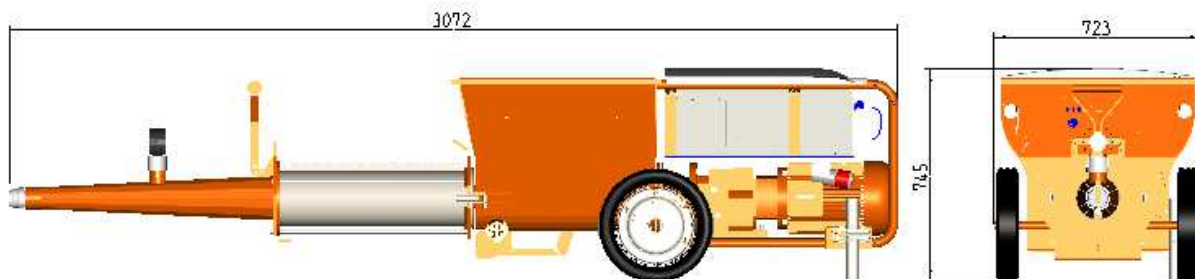


Fig. 2: Dimensions

6 Type plate, inspection label



The type plate and inspection label are found on the mounting plate and contain the following information:

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

Fig. 3: Type plate, inspection label

7 Quality Control sticker



The following details can be found on the Quality Control sticker:

- CE confirmed as per EU directives
- Serial number
- Controller / signature
- Date of control

Fig. 4: Quality Control sticker

8 Overview

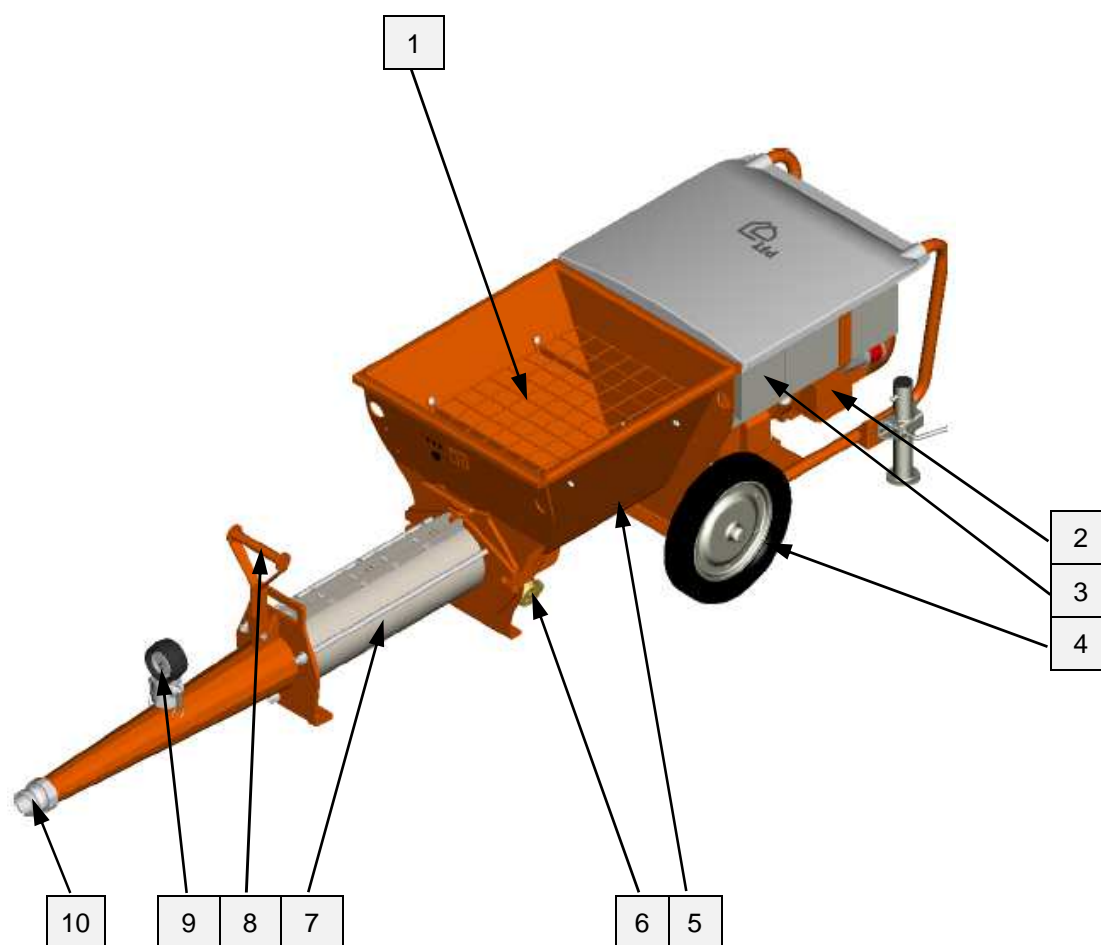


Fig. 5: Overview of the assemblies

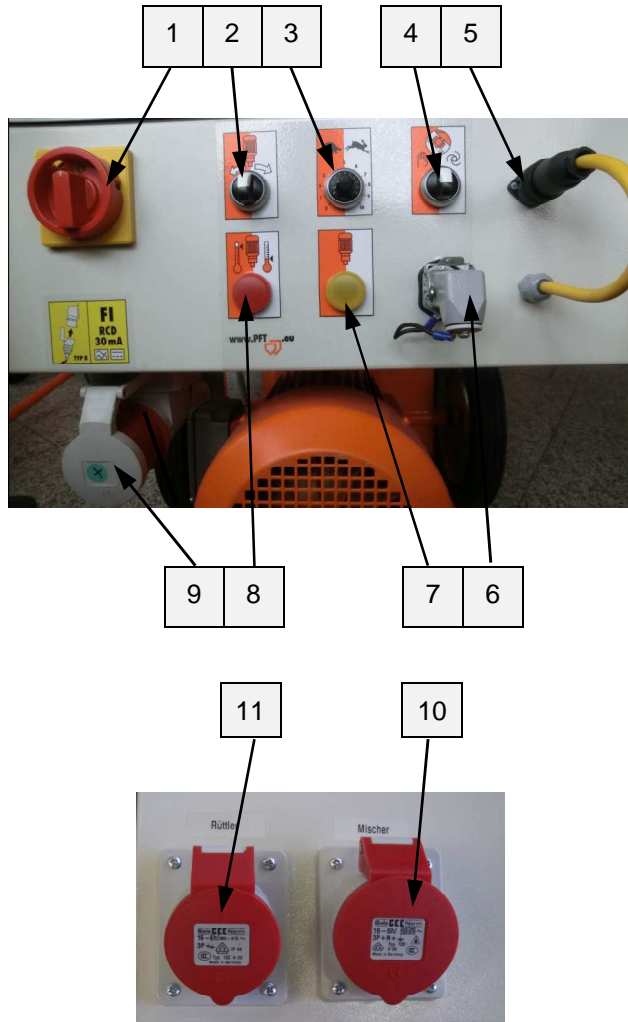
- | | |
|-------------------------|---|
| 1. Protective grille | 6. Cleaning nozzle |
| 2. Motor | 7. Pump unit 2L8 |
| 3. Control box | 8. Push handle |
| 4. Wheel with steel rim | 9. Mortar pressure gauge |
| 5. Pump material hopper | 10. Connection for material hose M-part |

Description of assemblies



9 Description of assemblies

9.1 Description of control box module, item number: 00148011



■ Control box

1. Main switch and emergency stop switch.
2. Selection switch for "Depressurise pump" / "0" / "Pumping".
3. Potentiometer for the rotary speed of the pump motor = greater or lesser quantity of material.
4. Selection switch for vibrator settings "Manual" / "0" / "Automatic".
5. Connection for remote control with speed control.
6. Remote control connection.
7. Control lamp lights up yellow when the pump motor runs.
8. Red control lamp - motor protection switch activated.
9. CEE device plug 5 x 32A mains connection.
10. Pump motor connection.
11. Vibrator connection.

Fig. 6: Control box module



9.2 Assembly description for frame and vibrator screen

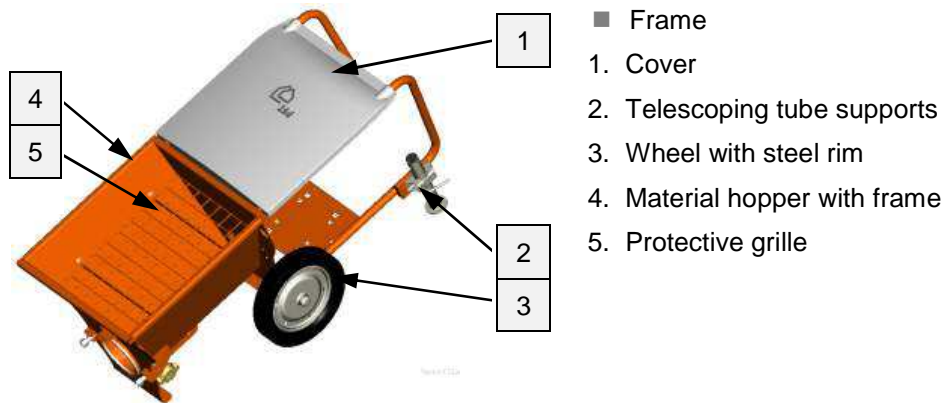


Fig. 7: Frame assembly

9.3 Assembly description for pump unit 2L8

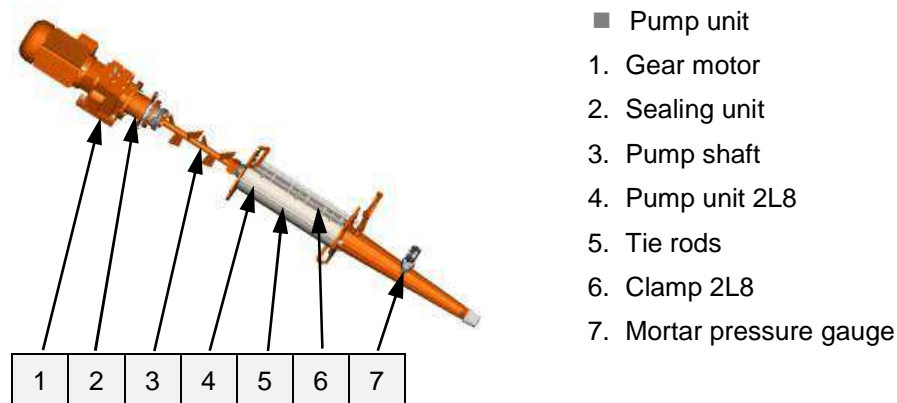


Fig. 8: Pump unit assembly

9.4 Gear motor DB62-G132M4 7,5kW



■ Gear motor DB62-G132M4 7,5kW

Fig. 9: Gear motor assembly

Description of functions



10 Description of functions

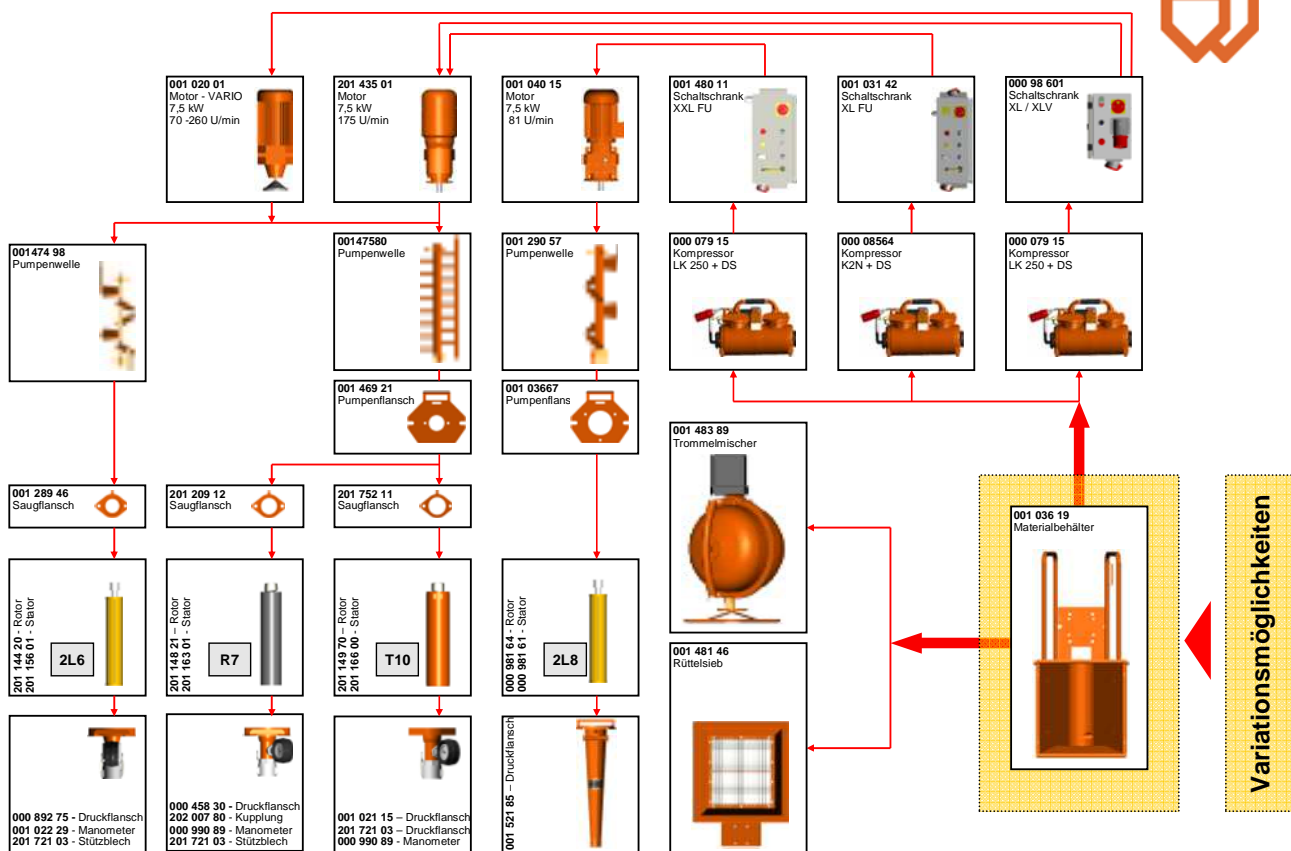
If individual construction site mixtures are required on site, the **PFT ZP 3 XXL FU** is the right choice.

The mortar booster pump delivers the mixed material directly to the application site.

The pumping capacity can be adapted to the material requirements.

The **PFT ZP 3 XXL FU** can be switched on and off through remote control.

ZP 3 Variantenübersicht



10.1 Advantages at a glance

- Large pumping capacity and delivery range
- Optional remote control
- Sealing unit between gearbox and container
- Sturdy construction
- Integrated control unit
- Quick disassembly of pump
- Very mobile
- Minimal servicing and cleaning work



Operating modes of vibrator selection switch

11 Operating modes of vibrator selection switch



Fig. 10: Selection switch setting "0"

The selection switch for the external vibrator can be set to three different operating modes:

Position "0":

The vibrator is switched off.



Fig. 11: Selection switch setting "Manual"

Position "Manual":

In the position "Manual" ("spring return" type switch), the vibrator runs in continuous operation as long as the selection switch is held in this position.



Fig. 12: Selection switch setting "Automatic"

Position "Automatic":

The vibrator runs in automatic pulses and pauses.

12 Operating modes of pump motor selection switch



Fig. 13: Selection switch in middle position

The selection switch for the pump motor can be set to three different operating modes:

Selection switch in middle position:

The pump motor is switched off.



Fig. 14: Selection switch in left position

Selection switch in left position:

In the position "Manual" ("spring return" type switch), the pump motor runs backwards.

The pump motor depressurises the pump as long as the selection switch is held in this position.



Fig. 15: Selection switch in right position

Selection switch in right position:

The pump motor runs in continuous operation.



13 Remote control operation

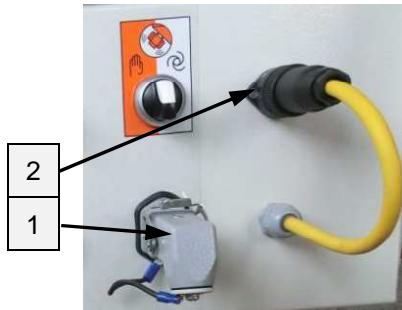


Fig. 16: Inserting dummy plug

1. If the dummy plug (1) is inserted, the machine must be switched on or off by hand at the control box.
2. If the plug has been pulled, the control current is interrupted.
3. In place of the dummy plug, a remote control with on/off switch can be inserted.
4. In place of the circular plug-in connector (2), a remote control with on/off switch can be inserted. (Remote control cable, 25 m, complete with potentiometer for ZP3 FU 400 V, item no. 00047489).

14 Transport, packaging and storage

14.1 Safety instructions for 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 provided suspension points.
- Only remove packaging shortly before assembly.



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 provided suspension points.
- 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.

Transport, packaging and storage

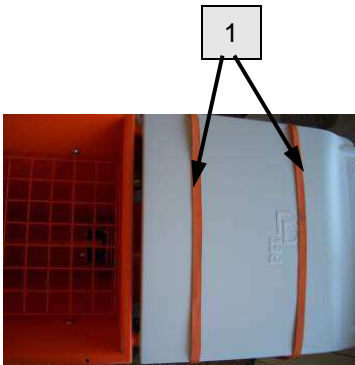


Fig. 17: Safety precautions

1. Carry out the following steps before transporting:
2. First unplug the main power cable.
3. Detach all other connected cables.
4. Remove components that are not fixed, such as the compressor, before transporting with crane.
5. When transporting with a trailer or lorry, secure the plastic hood with straps (1) or remove it.
6. Begin transport.

14.2 Transport

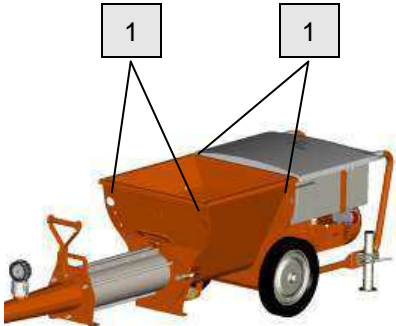


Fig. 18: Crane transport / suspension points

To transport using a crane, sling the machine with belts at the indicated four attachment eyelets (1).

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 ropes or belts as appropriate.
2. Ensure that the package is suspended so it is level. Adjust for off-centre balancing points if necessary.
3. Begin transport.

14.3 Transport checklist

Inspect the goods for damage and missing parts immediately on 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.



15 Packaging

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.

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.

16 Operation

16.1 Safety

Personal protective equipment

All machine operators must wear the following protective equipment:

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



NOTE!

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

Preparation of the machine



Basic information



WARNING!

Danger of injury due to improper operation!

Improper operation can lead to serious injuries or equipment damage.

Therefore:

- Carry out all operating steps according to 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 78 dB (A) in close proximity to the machine. Close proximity is defined as the area within 5 metres of the machine.

17 Preparation of the machine

17.1 Setting up the machine

Before operating the machine, carry out the following preparations:



Fig. 19: Danger of injury



Danger!

Rotating pump shaft!

Reaching into the material hopper poses a risk of injury.

Therefore:

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



Preparation of the machine



Fig. 20: Setting up

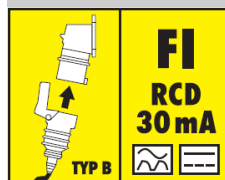
Install the machine on stable and even ground with the aid of the telescoping tube supports (1) and secure it against accidental movements:

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

17.2 Preparing the control box



Fig. 21: Electrical connection



DANGER!

Danger of death due to electric current!

The electrical connection must be fused correctly:

For the operation of frequency converters, only connect the machine to a power source with an approved FI circuit breaker (30mA RCD - residual current device) of type "B" that is sensitive to all currents.

17.3 Mortar pressure gauge

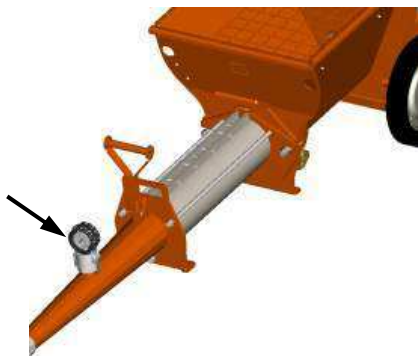


Fig. 22: Mortar pressure gauge



DANGER!

Operating pressure too high!

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

Therefore:

- Do not operate the machine without the mortar pressure gauge.
- Only use delivery hoses with a permissible operating pressure of at least 50 bar.
- The burst pressure of the mortar hose must be at least 2.5 times the operating pressure.

Mortar hoses



18 Mortar hoses

18.1 Preparing the mortar hoses

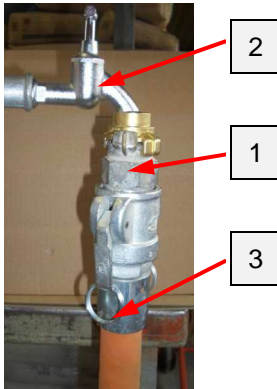


Fig. 23: Preparing the mortar hose

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. Wet the mortar hose with about two litres of wallpaper paste.
6. The wallpaper paste is pumped through the mortar hose with the first mixture.
7. Collect the wallpaper paste with a suitable container and dispose of it according to regulations.



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.

18.2 Connecting the mortar hose

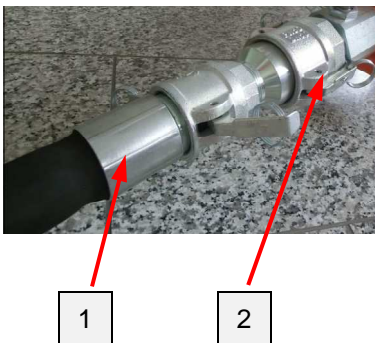


Fig. 24: Connecting the mortar hose

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



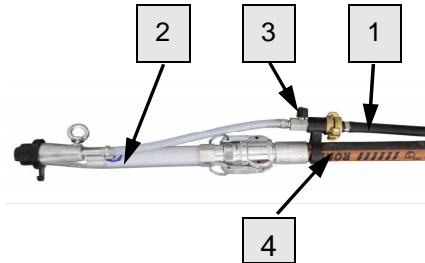
NOTE!

Make sure the couplings are clean and connected properly. Check that the seal is tight. 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. Connect the spray gun to the mortar hose.
4. Connect the air compressor.
5. Carefully secure risers so that they do not tear away from their own weight.



18.3 Connecting the spraying gun



1. Connect the compressed air hose (1) at the spraying gun (2).
2. Ensure that the air tap (3) is connected to the spraying gun.
3. Connect the spraying gun (2) at the mortar hose (4).

Fig. 25: Spraying gun

18.4 Switch on air compressor



1. Switch on the air compressor using the black switch (1).
2. As soon as the air compressor has built up pressure in the pipeline system, it switches off using the pressure switch-off.

Fig. 26: Air compressor

19 Hazardous dust



WARNING! **Danger of health problems due to dust!**

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).

Putting the machine into operation



19.1 Mortar consistency



Fig. 27: Filling material into the hopper

Fill 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). If the material is too dry, uniform pumping is no longer ensured. There may be clogging in the hose and pump components are subject to greater wear.



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.

20 Putting the machine into operation

20.1 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 spray 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 better flow characteristics.

If an operating pressure of 30 bar is exceeded, thicker mortar hoses must be used.



NOTE!

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.



Putting the machine into operation

20.2 Switching on the machine

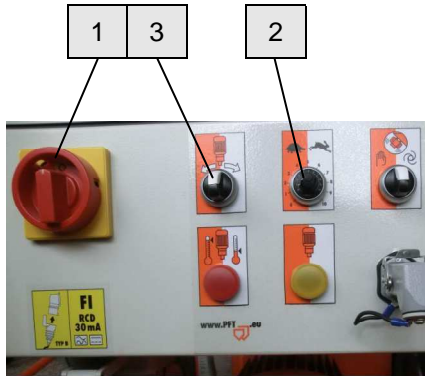


Fig. 28: Switching on

1. Turn the main switch (1) to the "I" position.
2. Set the approximate material quantity on the potentiometer (2).
3. Turn the selection switch (3) to the right to Automatic / Pumping.
4. The machine starts.



NOTE!

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

20.3 Open the air tap at the spraying gun



Fig. 29: Opening the air tap

1. Aim the spray gun at the wall to be plastered.
2. Ensure that nobody is in the discharge area of the mortar.
3. Open the air tap (2) at the spraying gun.
4. The machine will start-up automatically via the pressure switch-off and the mortar emerges.



NOTE!

The correct mortar consistency is reached, if the material mixes on the surface to be sprayed (we recommend application on wall surfaces from top to bottom). If the water quantity is too little even mixing and spraying is no longer guaranteed; blockages may form inside the hose and high wear of the pump parts will become an issue.



NOTE!

It is also possible to operate the machine without compressed air, e.g. for pumping screed. Switch off the compressor at the red switch.

Connect the remote control (see chapter 37 remote control) and use it to switch on/switch off the machine.

Putting the machine into operation



20.4 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.

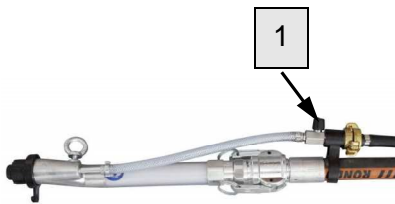


Fig. 30: Closing the air tap

1. Close the air tap (1) if you interrupt your work for a short while.
2. The machine stops.
3. Once you open the air tap (1), the machine will start-up again.

20.5 In case of longer interruption of work/break

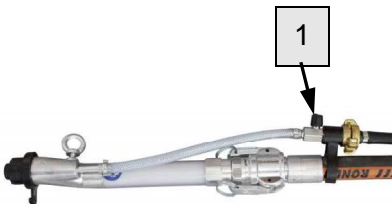


Fig. 31: Closing the air tap

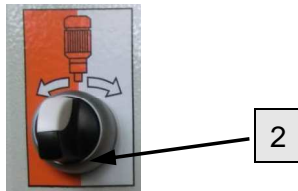


Fig. 32: Switching off

1. Close air tap (1).
2. Switch off the machine.
3. Turn the selection switch (2) to the middle position.

20.6 Switch off air compressor



Fig. 33: Air compressor

1. Switch off the air compressor at the red switch (1).
2. Open the air tap at the spraying gun.



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

Discharged mortar may lead to injuries to eyes and face.

➤ Attention, residual pressure.



Stopping in case of emergency Emergency-stop switch

20.7 Applying masonry mortar

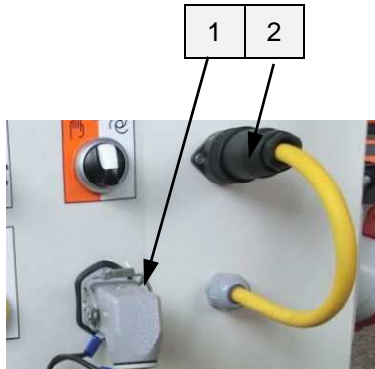


Fig. 34: Remote control



NOTE!

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

1. Remote control connection (1).
2. Remote control connection with speed control (2).

21 Stopping in case of emergency Emergency-stop switch

21.1 Emergency-stop switch

Stopping in case of emergency



Fig. 35: 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. Turn main switch (0) to position "0".
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 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.



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.

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

Interruption of work



22 Interruption of work

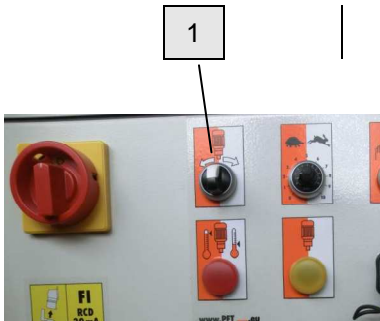


Fig. 36: Switching off

1. Turn the selection switch (1) to the position "0".



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.

23 Cleaning

Securing against restarting



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.

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

23.1 Running the machine empty

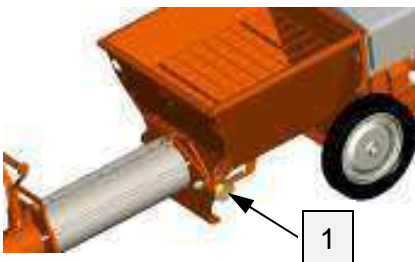


Fig. 37: Running the machine empty

1. Clean residual material from the protective grille and material hopper with a water jet and pump it down.
2. Fill material hopper with water and switch on the machine so that the pump is rinsed with water.
3. Remove the cleaning cover (1) and allow the residual water to drain.

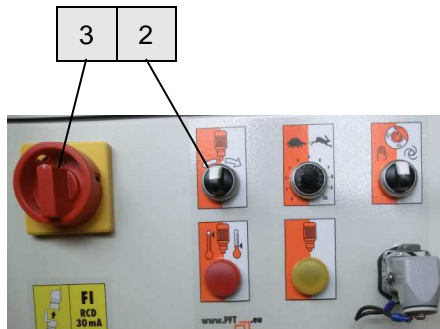


Fig. 38: Switching off

To switch off the machine:

1. Turn the selection switch (2) to the position "0".
2. Turn the main switch (3) to the position "0".

23.2 Checking the mortar pressure

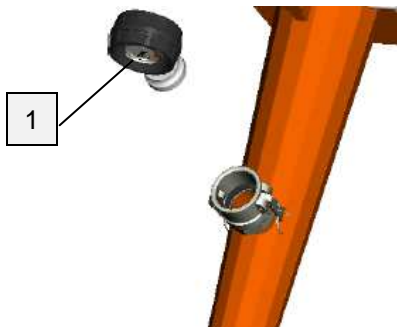


Fig. 39: Mortar pressure at 0 bar

1. 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 machine if the pressure has fallen to 0 bar.



NOTE!

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

2. Decouple the mortar hose from the pressure flange.



Fig. 40: Detaching connections

1. Release the cam levers and disconnect the mortar hoses.

Danger of frost



23.3 Cleaning the mortar hose

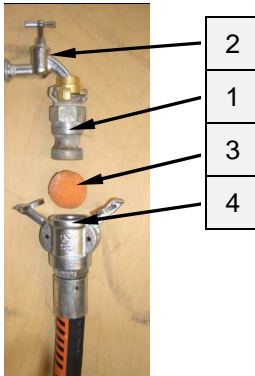


Fig. 41: Cleaning the mortar hoses



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 at the next usage.

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

24 Danger of frost



CAUTION!

Damage due to frost!

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

- If there is a danger of frost, the machine and lines must be completely drained of residual water.



25 Troubleshooting

25.1 Handling malfunctions

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.

Troubleshooting



25.2 Fault displays



Fig. 42: 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.

25.3 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.

25.4 Safety

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.

Personal protective equipment

Wear the following protective equipment for all maintenance work:

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



Troubleshooting

25.5 Table of malfunctions

Malfunction	Possible cause	Solution	Performed by
Machine does not start: Electricity	Main switch not activated	Turn on the main switch	Operator
	Power cable is defective	Repair the power cable	Service technician
	Circuit breaker triggered	Reset the earth leakage circuit breaker	Service technician
	Motor protection switch triggered	Turn the motor protection switch to the position "1" in the control box	Service technician
	"Operating switch on" not pressed	Press "Operating switch on"	Operator
	Contactor is defective	Replace the contactor	Service technician
	Control plug not connected	Plug in control plug	Operator
	Fuse is defective	Replace the fuse	Service technician
Machine does not start: Material	Too much dried-on material in hopper. Tunnels may have formed	Important: Main switch OFF , unplug main power cable. Half-empty the material hopper. Restart machine.	Operator
	Hardened material is blocking the pump unit (rotor/stator)	Important: Main switch OFF , unplug main power cable. Dismantle the pump, clean it and then reinstall it.	Operator
	Material in pump component too dry	Important: Main switch OFF , unplug main power cable. Clean the material hopper	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
	Rotor too deep in pressure flange	Replace pressure flange	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	Allow the machine to run backwards, remove pump and clean it	Operator

26 Pumping stopped / blockage

When the conveyed material remains stuck in the mortar hose and cannot be pumped out through the hose end, this is a blockage, which can occur in mortar hoses for a number of reasons.

26.1 Indications of clogged hoses

Made by operator:

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

26.2 Causes of clogged hoses:

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

26.3 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.

26.4 Clearing hose blockages



Fig. 43: 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.

For reasons of safety, all personnel clearing blockages must 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.



26.5 Reversing the rotational direction of the pump motor

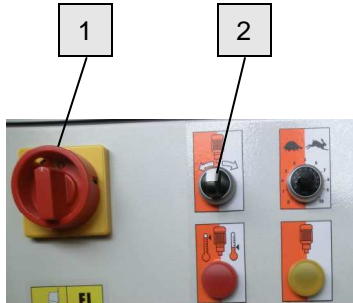


Fig. 44: Changing the direction of rotation

1. Turn the main switch (1) to the "I" position.
2. Turn the selection switch (2) to the left and hold it until the pressure on the mortar pressure gauge has fallen to 0 bar.
3. Turn the main switch (1) to the position "0".

26.6 Detaching coupling connections



Fig. 45: Mortar pressure gauge



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.



Fig. 46: Hose blockages

1. Cover coupling connections with tear-resistant film.
2. Release cam lever and hose connections.



NOTE!

The mortar hoses must be cleaned immediately.

3. Knock or shake out the blockage.
4. If necessary, use a water hose to flush out the mortar hoses and then relubricate with a slurry mixture again.
5. Finally, reconnect the hoses with one another.

Measures to be taken in the event of a power failure



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

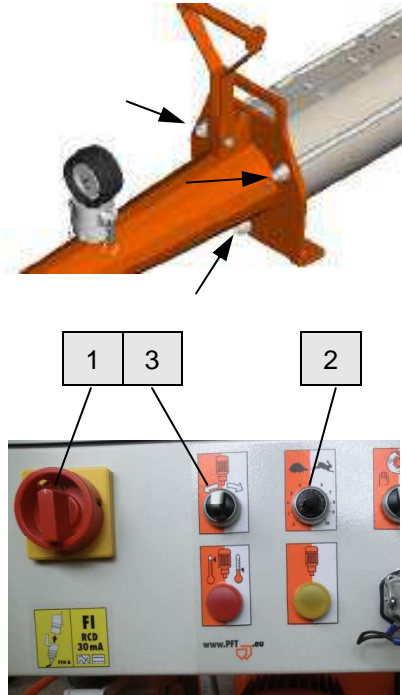


Fig. 47: Power failure

In the event of a lengthier power failure:

1. Check the mortar pressure gauge to see if the pressure has fallen to 0 bar. If necessary, release the pressure by slightly unscrewing the flanged nuts.
2. Immediately clean the mortar hoses.



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.



NOTE!

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

1. Turn the main switch (1) to the "I" position.
2. Set the approximate material quantity on the potentiometer (2).
3. Turn the selection switch (3) to the right to Automatic / Pumping.
4. The machine starts.

28 Cleaning the pump

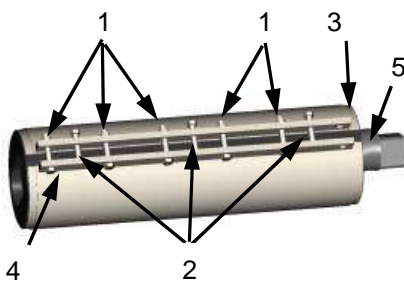


Fig. 48: Clean the pump.

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.



WARNING!

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



28.1 Retightening the pump

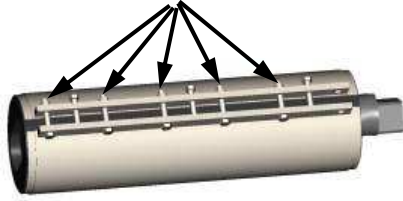


Fig. 49: Tighten the pump.

1. If the feed pressure reduces, 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 exchanging the pump, ensure the following:

- All screws on the clamp are evenly 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 fixedly merged.

29 Maintenance

29.1 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 sufficient space to carry out the work before beginning.
- Keep the work area clean and tidy. Unattached components or tools left lying around or stacked on one another can cause accidents.

If components have been previously removed, ensure that they are mounted again correctly, reattach all fastening elements and adhere to the specified screw tightening torques.

Maintenance



Electrical system

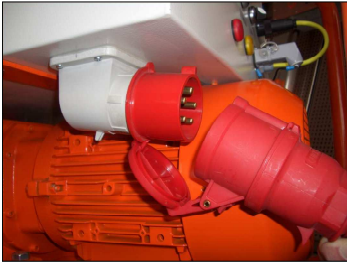


Fig. 50: Removing the connection cable

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.

29.2 Cleaning

- Clean the material hopper with a water hose.



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).
- Remove all coverings completely after cleaning.



29.3 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 screw connections.	Service technician

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.



NOTE!

The maintenance of the ZP 3 XXL FU is limited to a few checks. The most importance maintenance task is thorough cleaning after use.

29.4 Lubricating the sealing unit

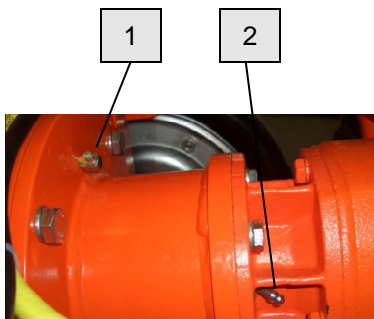


Fig. 51: Lubrication

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

29.5 After performing maintenance

After maintenance has been completed, carry out the following steps before switching on again:

1. Check that all previously loosened screw connections have a tight fit.
2. Check that all previously removed protective devices and covers have been properly reattached.
3. Ensure that all tools, materials and other equipment have been removed from the work area.
4. Clean the work area and remove any traces of escaped material (e.g. liquids, processing material etc.).
5. Ensure that all safety devices are functioning properly.

30 Disassembly

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

30.1 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 necessary tools 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.

30.2 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.

30.3 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!

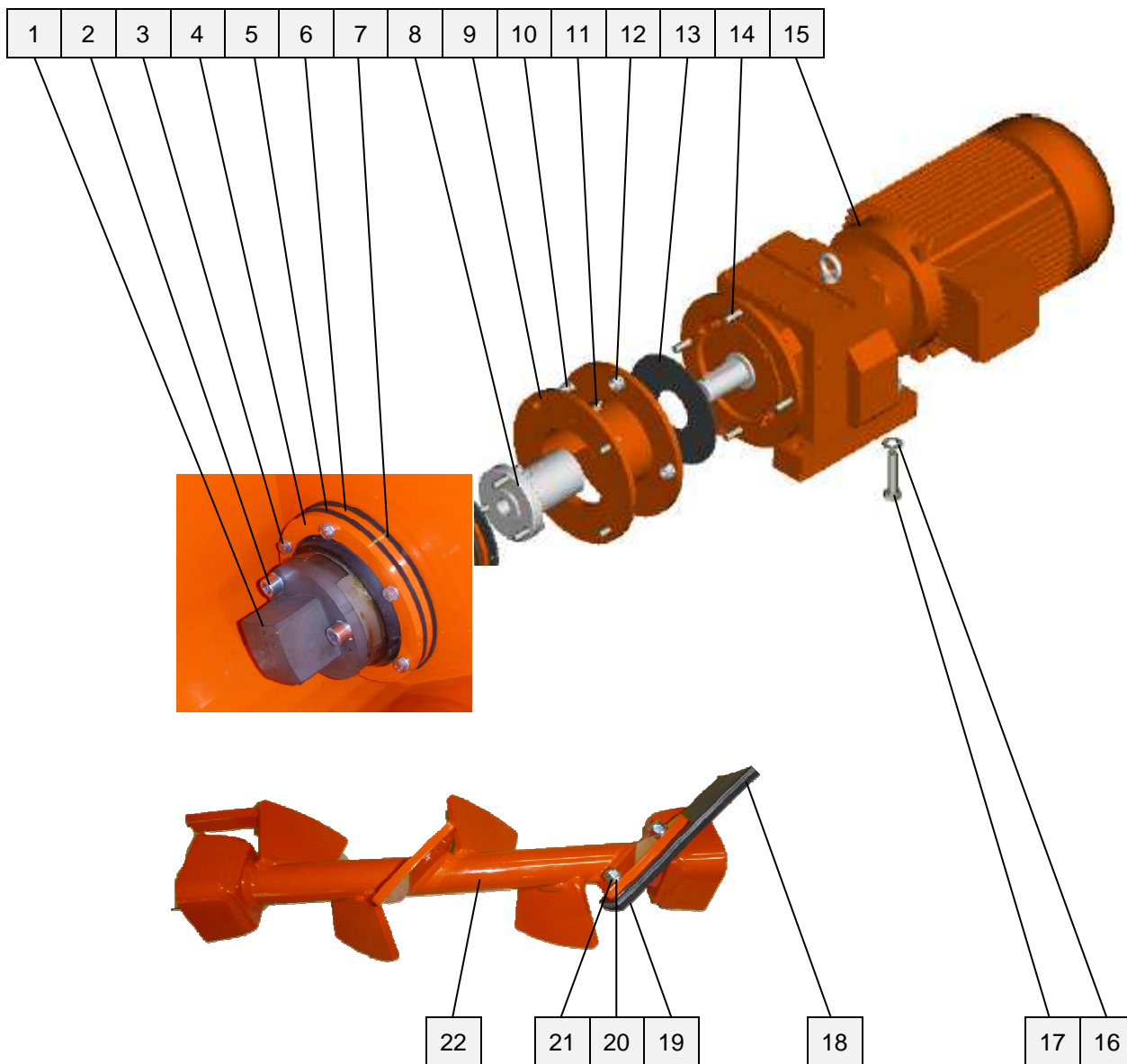
Local authorities and waste disposal specialists can provide more details on the correct disposal of materials.

Spare parts drawing, spare parts list



31 Spare parts drawing, spare parts list

31.1 Drive unit and sealing unit





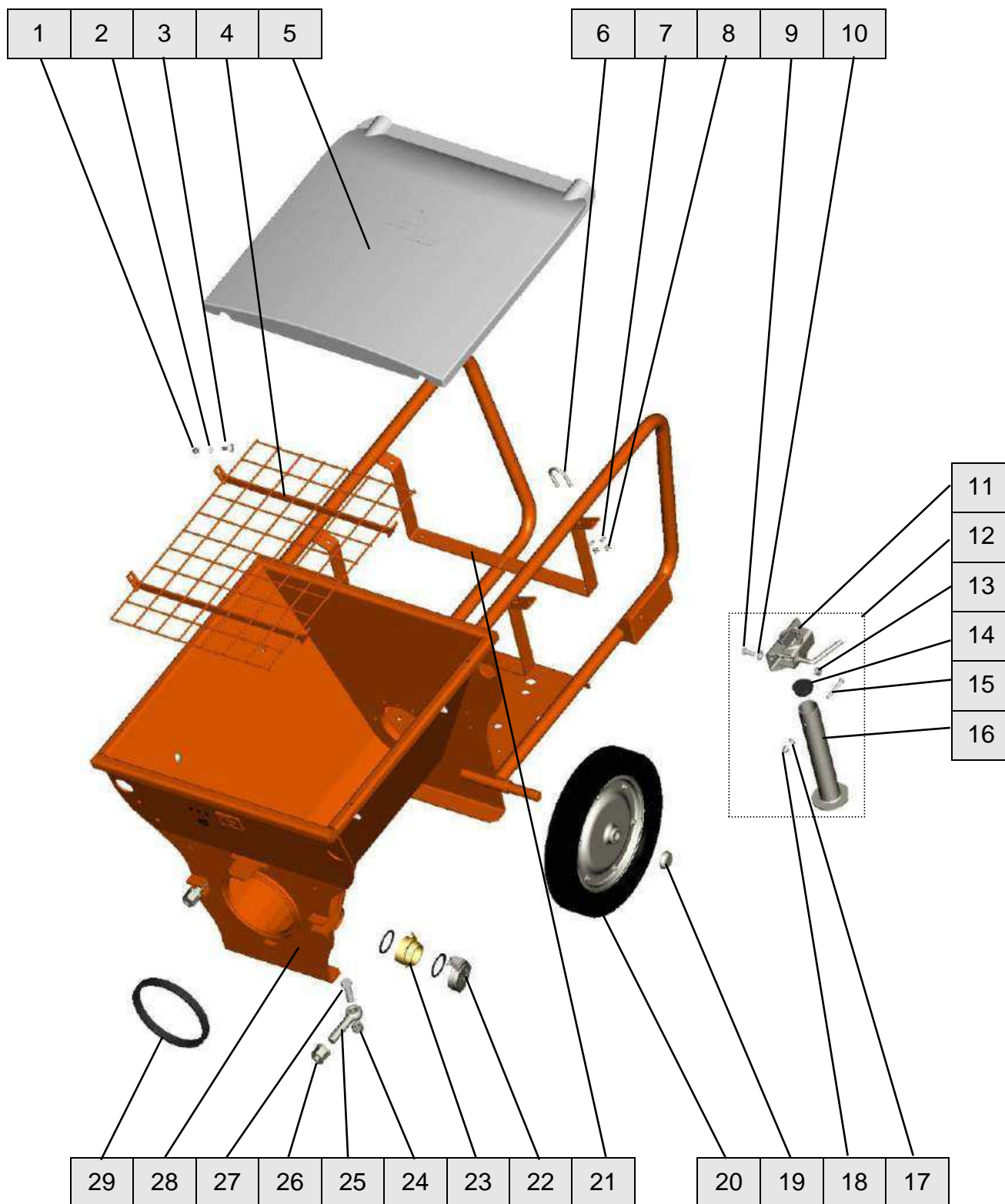
Spare parts drawing, spare parts list

Pos.	Qty.	Item no.	Description
1	1	00 17 48 72	Hauling bracket CMP 100
2	3	00 15 18 64	Cylinder screw hex socket M 12 x 40 zinc-plated
3	6	00 03 58 33	Hex screw M8 x 45, zinc-plated
4	1	00 10 41 38	Clamping flange without lubrication groove ZP 3 XXL RAL2004
5	1	00 10 41 23	Seal without grease hole D180, d98
6	1	00 10 41 30	Clamping flange with lubrication groove ZP 3 XXL RAL2004
7	1	00 10 41 22	Seal with grease hole D180, d98
8	1	00 10 36 58	Hollow shaft ZP 3 XXL
9	1	00 10 36 59	Housing for motor seal XXL RAL2004
10	4	20 20 99 61	Hex screw M12 x 20 zinc-plated
11	1	00 03 55 72	Lubricating nipple M 6 (45 degrees)
12	4	20 20 89 00	Lock nut M12, zinc-plated
13	1	00 10 41 24	Seal D180, d65, 5 mm
14	4	20 20 87 03	Hex screw M12 x 45, zinc-plated
15	1	00 46 54 79	Gear motor DB62-G132M4 7,5kW RAL2004
16	4	20 20 91 13	Spring washer B 16, zinc-plated (10 pcs.)
17	4	20 20 78 17	Hex screw M16 x 70, zinc-plated
18	1	00 15 14 96	Rubber scraper 170 x 55 x 12
19	2	20 20 63 24	Saucer-head screw M8 x 30 zinc-plated
20	2	20 20 93 13	Washer B 8,4 zinc-plated
21	2	20 20 72 00	Safety nut M 8 zinc-plated
22	1	00 17 48 44	Pump shaft 2L8 CMP100 with scraper RAL2004

Spare parts drawing, spare parts list



31.2 Frame with material hopper ZP 3 XXL





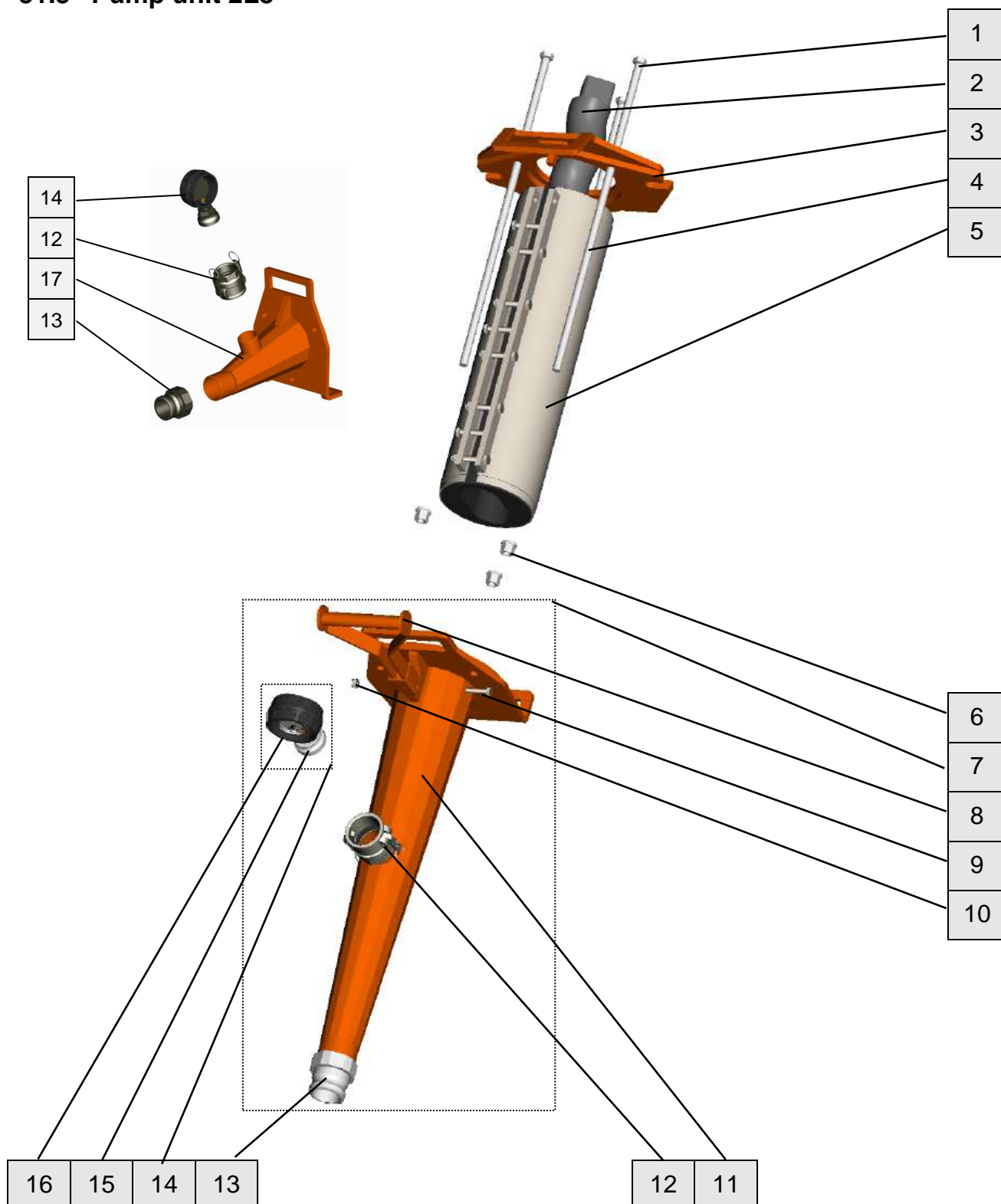
Spare parts drawing, spare parts list

Pos.	Qty.	Item no.	Item description
1	4	20 20 66 03	Locking cap nut M8, zinc-plated
2	4	20 20 93 13	Washer B 8.4, zinc-plated
3	4	20 20 63 22	Round head screw M8 x 20, zinc-plated
4	1	00 10 21 27	Protective grille ZP 3 XL
5	1	00 10 24 92	Plastic hood ZP 3 XL
6	4	20 20 99 86	Round steel rod M8 x 1", zinc-plated
7	4	20 20 93 13	Washer
8	2	20 20 72 00	Lock nut M8, zinc-plated
9	2	20 20 99 31	Hex screw M10 x 25, zinc-plated
10	2	20 20 90 10	Washer B 10.5, zinc-plated
11	1	20 17 17 51	Clamp bracket D=48 cpl.
12	1	00 15 06 70	Telescoping tube supports ZP 3 XL cpl.
13	2	20 20 72 10	Lock nut M10, zinc-plated
14	1	00 14 86 38	Lamellar plugs
15	1	20 20 77 00	Hex screw M 8 x 60, zinc-plated
16	1	00 14 84 45	Telescoping tube supports 300 lg.
17	1	20 20 93 13	Washer B 8.4, zinc-plated
18	1	20 20 72 00	Lock nut M8, zinc-plated
19	2	00 00 26 32	Quick fastener with cap
20	2	00 14 66 94	Wheel with steel rim GB 400/75
21	2	00 14 70 46	Control box holder ZP3 XXL/XL FU RAL 2004
22	1	00 06 56 93	Dummy cap MB 50 AL
23	1	00 06 56 92	V-coupling VK 50
24	2	20 20 73 00	Lock nut M16, zinc-plated
25	2	20 20 85 01	Eyebolt M20 x 100, zinc-plated
26	2	00 13 69 16	Flanged nut M20, zinc-plated
27	2	20 20 78 50	Hex screw M16 x 55, zinc-plated
28	1	00 10 36 19	Material hopper with frame ZP 3 XXL RAL2004
29	1	20 17 21 05	Seal for material hopper ZP 3

Spare parts drawing, spare parts list



31.3 Pump unit 2L8





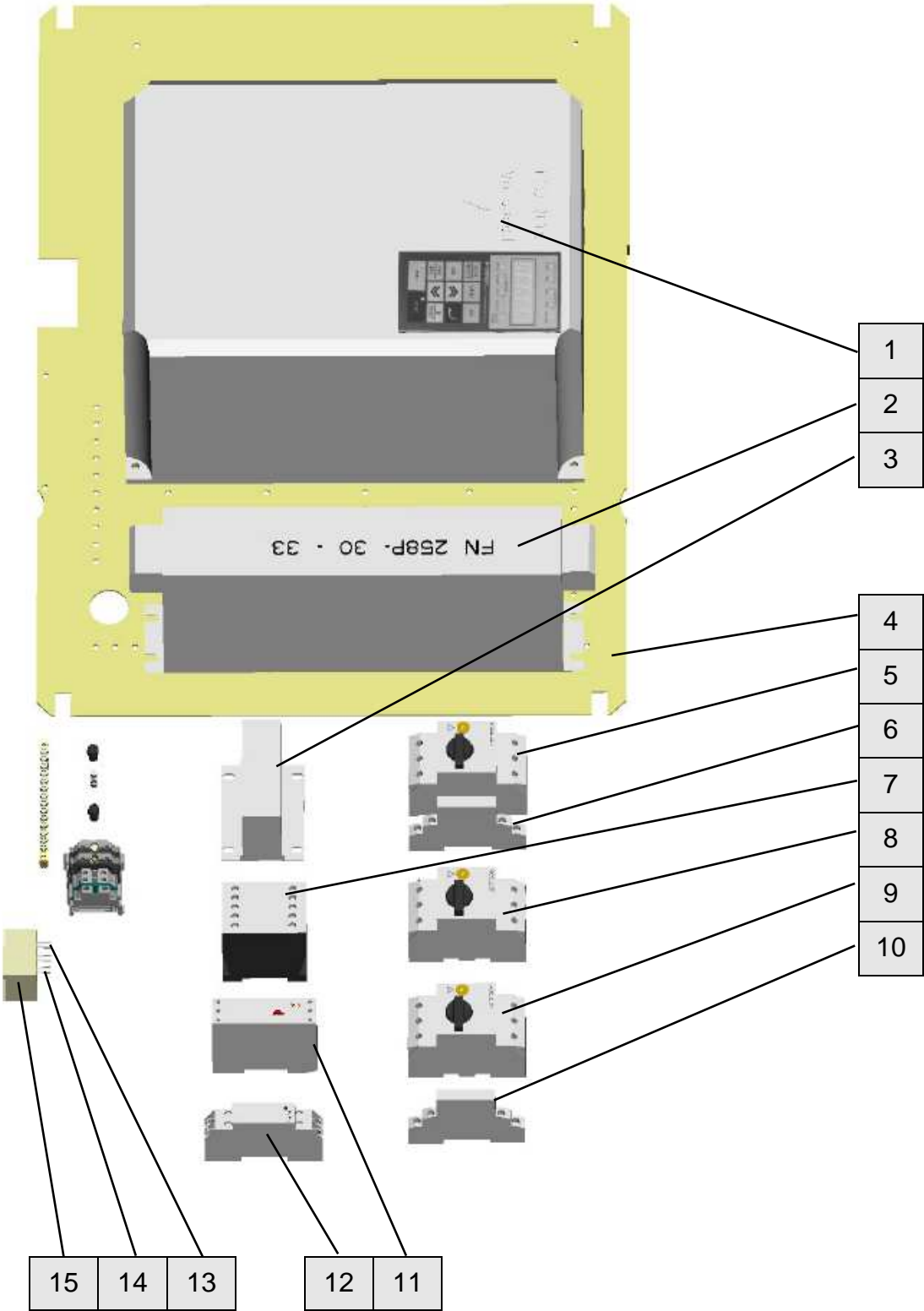
Spare parts drawing, spare parts list

Pos.	Qty.	Item no.	Item description
1	3	20 17 28 00	O-ring 16 x 2
2	1	00 47 88 01	Rotor 2L8 square head with hole KTO
3	1	00 10 36 67	Suction flange L-pump
4	3	00 10 37 81	Tensioning screw M16 x 680, zinc-plated
5	1	00 09 81 61	Stator 2L8 with clamping bar
6	3	20 20 99 21	Flanged nut M16, zinc-plated
7	1	00 15 21 85	Pressure flange 2L8, ZP 3 XXL 50M / 65V RAL 2004 cpl.
8	1	00 10 18 60	Push handle ZP 3 XL RAL 2004
9	1	20 20 96 01	Hex screw M10 x 45, zinc-plated
10	1	20 20 72 10	Lock nut M 10, zinc-plated
11	1	00 10 36 69	Pressure flange 2L8, ZP 3 XXL RAL 2004
12	1	20 20 07 80	Coupling 50M-part, 2" female thread with gasket
13	1	00 09 62 55	Coupling 65V-part, 2 1/2" female thread NW65
14	1	00 09 85 25	Mortar pressure gauge ZP 3 XL 50-V 100 bar
15	1	00 10 27 42	V-part of turned mortar pressure gauge
16	1	00 09 90 89	Pressure gauge with plastic housing, 0-100 bar, 1" pressure transmitter VA
17	1	00 28 43 20	Pressure flange 2L8 ZP 3 XXL RAL2004



Spare parts drawing, spare parts list

31.4 Control box item no. 00148011





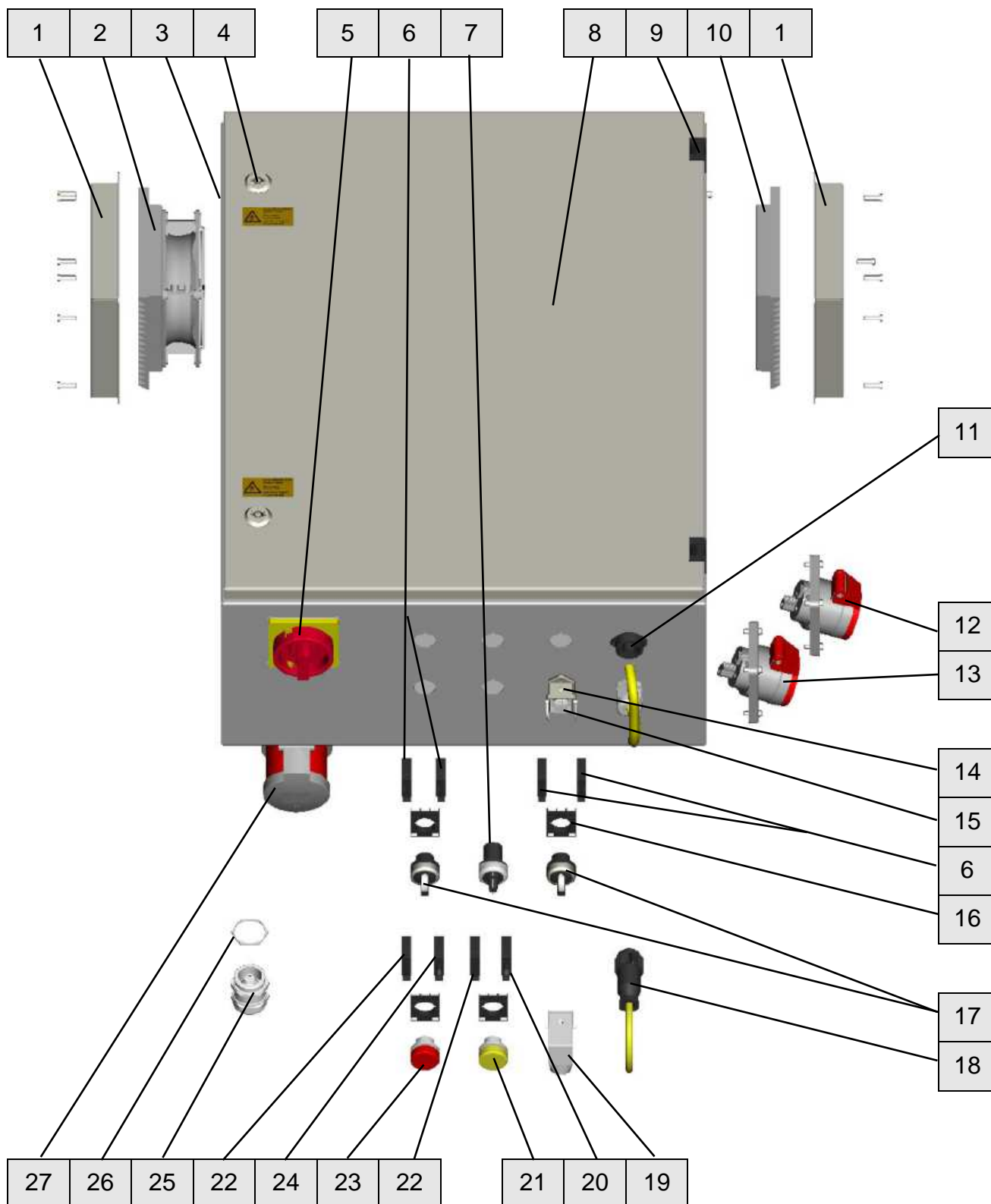
Spare parts drawing, spare parts list

Pos.	Qty.	Item no.	Item description
1	1	00 24 41 50	Frequency converter 400 V, 3-phase 15 kW, programmed
2	1	00 09 12 10	EMC filter for frequency converter 11 kW, 400 V, 30 A
3	1	00 02 21 73	Control transformer 400 V – 42 V / 230 V, 75 VA
4	1	00 14 83 66	Mounting plate of control box ZP 3 XXL -
5	2	00 04 25 99	Motor protection switch 0.63 - 1 A, PKZM 0-1
6	2	00 02 14 01	Auxiliary contact NHI-11-PKZO
7	1	00 08 42 23	Air-break contactor, DIL M9-10 42 V, 50 Hz 48 V, 60 Hz 4.0 kW, size I
8	1	00 04 26 02	Motor protection switch 10-16 A, PKZM 0-16
9	1	00 00 17 58	Pulse-pause relay 42 V 10 sec. cycle, 42 V 10 sec. cycle
10	1	20 44 81 20	Switching relay 42 V, 2 changeover contacts
11	3	20 41 90 21	Microfuse 5 x 20, 2.0 A
12	2	20 41 90 10	Microfuse 5 x 20, 0.315 A
13	1	00 02 22 25	Foam rubber block for fuses

Spare parts drawing, spare parts list



31.5 Control box item no. 00148011

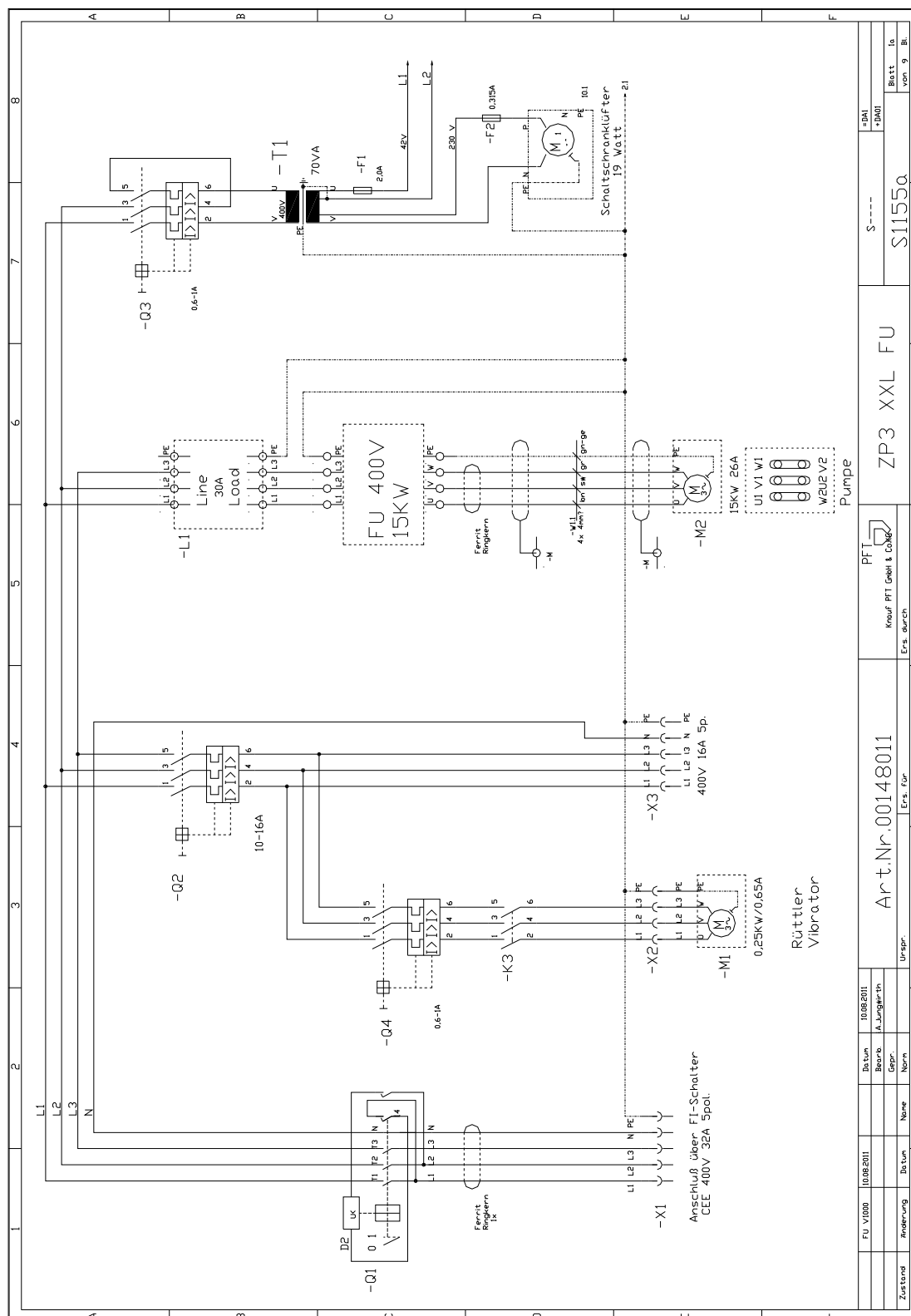




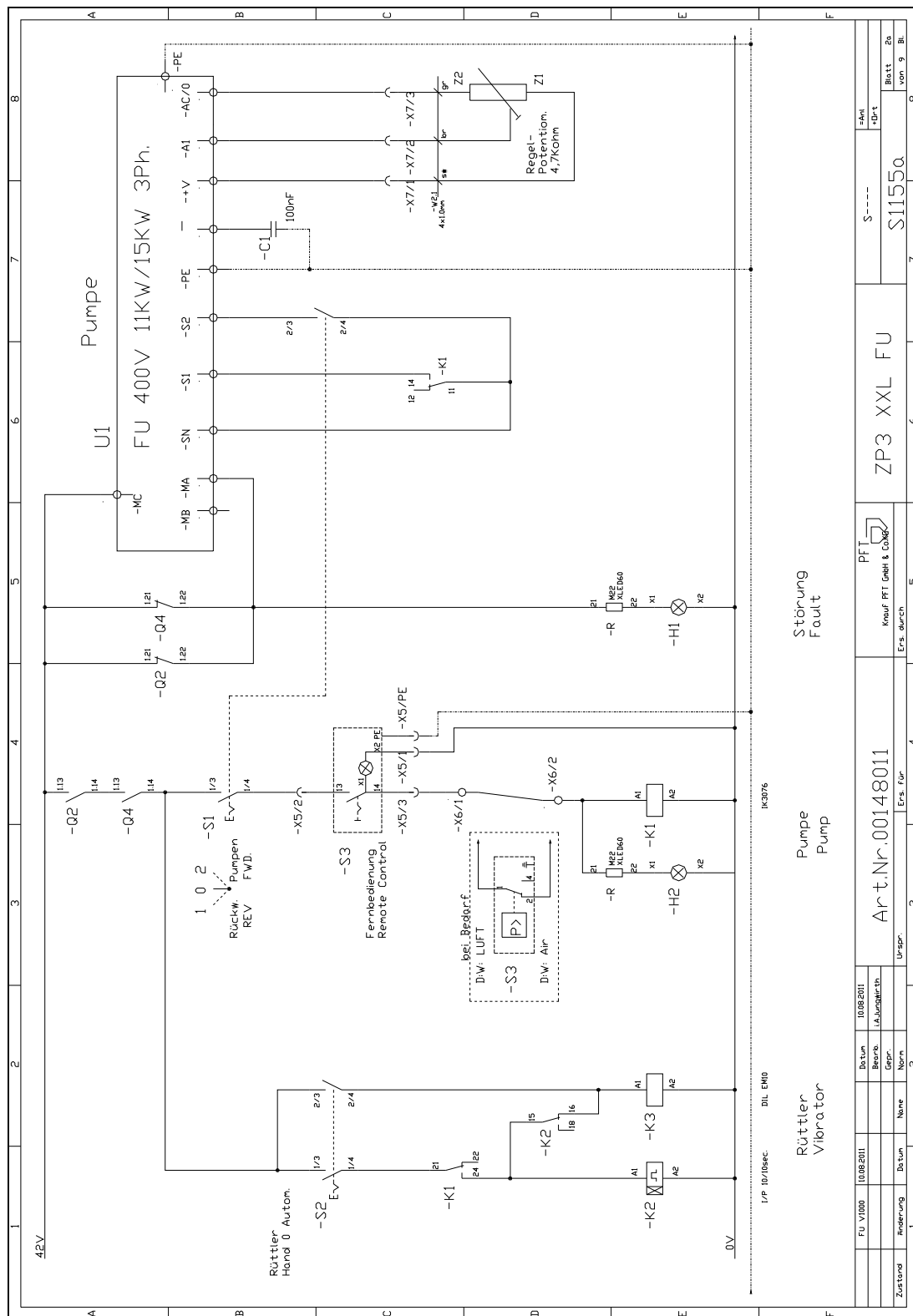
Spare parts drawing, spare parts list

Pos.	Qty.	Item no.	Item description
1	2	00 09 11 53	Protective cover for filter fan RAL 9002
2	1	00 03 63 22	Filter fan 230 V AC f. control box 150 x 150mm
3	1	00 14 80 12	Empty housing ZP3 XXL FU RAL 9002
4	2	00 03 62 49	Control box lock
5	1	00 09 08 78	Main switch 400 V / 50 Hz with undervoltage trigger
6	4	00 05 38 35	Contact element, 1 closer M22 - K10
7	1	00 05 07 83	Potentiometer
8	1	00 14 80 13	Door ZP 3 XXL FU RAL 9002
9	2	00 05 37 67	Hinge 180°, complete
10	1	00 03 63 23	Outlet filter 150 x 150mm
11	1	00 02 20 85	Round connector flanged socket
12	1	00 01 94 16	CEE panel mounted socket 5 x 16 A, 6h red
13	1	20 42 66 10	CEE panel mounted socket 4 x 16 A, 6h red
14	1	20 42 86 04	Attachment housing, 4/5-pin
15	1	20 42 86 07	Female insert, 4-pin, HAN 3A
16	4	00 05 38 34	Fixation adapter M22
17	2	00 05 38 78	Selection switch toggle, spring return 0, latching, M22
18	1	00 02 20 84	Round connector
19	1	20 42 85 01	Dummy plug, 4-pin, HAN 3A
20	1	00 05 38 81	Light element, white, 12-30 V
21	1	00 05 38 74	Indicator lamp attachment, yellow, M22
22	2	00 05 38 86	LED resistor series element 42 V
23	1	00 05 38 75	Indicator lamp attachment, red, M22
24	1	00 05 38 79	Illuminated element, red 12-30 V
25	1	00 15 17 55	EMC cable screw connection, M35 x 1.5
26	1	00 15 17 56	EMC counternut, M32 x 1.5
27	1	00 00 21 29	CEE device plug 5 x 32 A, 6h red with hinged cover

32 Circuit diagram 00148011



32.1 Circuit diagram 00148011



33 Index

A		
Advantages at a glance	14	
After performing maintenance	40	
Applying masonry mortar	27	
C		
Checking the mortar pressure	29	
Circuit diagram 00148011	52	
Circuit diagram 00148011	53	
Cleaning	38	
Cleaning	28	
Cleaning the mortar hose	30	
Cleaning the pump	36	
Clearing hose blockages	34	
Connected load	8	
Connecting the spraying gun	23	
Control box item no. 00148011	48, 50	
Control box module	12	
Control section	10	
D		
Danger of frost	30	
Description of assemblies	12	
Description of functions	14	
Detaching coupling connections	35	
Dimensions	10	
Disassembly	40	
Disassembly	41	
Disposal	41	
Drive unit and sealing unit	42	
E		
EC Declaration of Conformity	5	
Emergency-stop switch	27	
EMV examination	9	
Estrich	25	
Examination	6	
Examination by machine operator	6	
F		
Fault displays	32	
		Frame and vibrator screen assembly
		13
		Frame with material hopper ZP 3 XXL
		44
		G
		Gear motor DB62-G132M4 7,5kW
		13
		General information
		7
		General specifications
		8
		H
		Hazardous dust
		23
		I
		In case of longer interruption of work/break
		26
		Index
		54
		Indications of clogged hoses
		34
		Information regarding the operating manual
		7
		Interruption of work
		28
		Interruption of work
		26
		K
		Keep the manual for later use
		7
		L
		Layout
		7
		Lubricating the sealing unit
		39
		M
		Maintenance
		37
		Maintenance plan
		39
		Malfunctions
		32
		Measures to be taken in the event of a power
		failure
		36
		Mortar consistency
		24
		Mortar hose
		22
		Mortar hoses
		22
		Mortar pressure gauge
		21
		O
		Open the air tap at the spraying gun
		25
		Operating modes of pump selection switch
		16
		Operating modes of vibrator selection switch
		15
		Operating requirements
		9
		Operation
		19
		Output values
		9



Overview.....	11	Running the machine empty.....	28
P		S	
Packaging.....	17, 19	Safety.....	19
Periodic inspection	6	Safety.....	32
Personnel		Safety.....	40
Commissioning	32	Safety instructions for transport.....	17
Disassembly.....	40	Setting up the machine	20
Installation.....	32	Sound power level	9
Maintenance	37	Spare parts drawing, spare parts list.....	42
Possible causes:.....	34	Stillsetzen im Notfall	27
Pre-existing damage on mortar hose	34	Stopping in case of emergency Emergency-stop switch	27
Preparation of the machine	20	Storage	17
Preparing the control box	21	Switch off air compressor	26
Preparing the mortar hoses.....	22	Switch on air compressor	23
Processing material	24	Switching on the machine.....	25
Protective equipment		T	
Installation.....	32	Table of malfunctions.....	33
Protective equipment for operators	19	Technical data	8
Pump unit 2L8	46	Transport.....	17, 18
Pump unit 2L8 assembly	13	Transport checklist.....	18
Pumping stopped / blockage	34	Troubleshooting	31
Putting the machine into operation.....	24	Type plate, inspection label	10
R		V	
Remote control operation	17	Vibrations	9
Retightening the pump	37		
Reversing the rotational direction of the pump motor.....	35		



THE FLOW OF PRODUCTIVITY



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