



Operating manual

CMP 4.0, 400 V, 3 Ph, 50 Hz

Part 2 Overview, operation and service



Item no. of the operating manual:

00686687

CMP 4.0, 400 V, 3 Ph, 50 Hz RAL9003

Item no.: 00627857



Read the operating manual prior to starting any work!

About us



About us

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1 General information

1.1 Information regarding the operating manual

- This operating manual provides important information and instructions on the correct use of the machine. A prerequisite for safe working is the observance of all stated safety guidelines and instructions.
- Furthermore, the local accident prevention guidelines and general safety instructions for the application area of the device are to be adhered to.
- Read the operating manual thoroughly before starting any work! It is a part of the product and has to be kept near the device and easily accessible to the personnel at all times.
- If the device is given to third parties, also include the operating manual.
- The figures in this manual are for presentation purposes of facts, not necessarily to scale and may slightly differ from the actual model of the device.

1.2 Division

The operating manual is comprised of three booklets:

- Part 1 Safety/drinking water protection

General safety instructions mixing pumps/conveying pumps

Item no.: 00172709

General safety instructions horizontal continuous mixer/compulsory mixer

Item no.: 00146378

- Part 2 Overview, operation and service (this manual).

WARNING



Danger of injury due to incorrect operation!

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

- To ensure safe and proper operation of the machine, all parts of the operating manual must be read before starting work; all parts together are considered to be a single operating manual.

1.3 Keep the manual for future reference

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

General information



1.4 Display of safety and warning notices

In this manual, safety and warning notices are used in conjunction with signal words to raise safety awareness, indicate degrees of danger and explain safety measures.

Such safety and warning information may also be attached to the product in the form of signs, stamps or stickers.

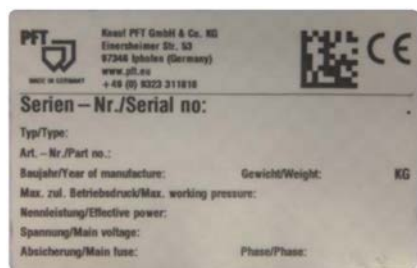
Structure of the safety and warning notices

All safety and warning notices consist of:

- The danger sign and signal word
- Information on the nature of the hazard
- Information on the source of the hazard
- Information on possible consequences of disregarding the hazard
- Measures to avert the hazard

Danger sign	Signal word	Significance
	Danger	Death or serious injury will occur if you do not take the precautions described.
	Warning	Death or serious injury may occur if you do not take the precautions described.
	Caution	Minor injury may occur if you do not take the precautions described.
	Note	Property damage may occur if you do not take the precautions described.
	Tip	An important piece of information about the product or the particular section of the manual to which special attention is to be drawn.

1.5 Name plate



The following details can be found on the name plate:

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

Figure 1: Name plate



1.6 EC Declaration of Conformity

Company: Knauf PFT GmbH & Co. KG
Einersheimer Straße 53
97346 Iphofen
Germany

declares under our sole responsibility that the machine:

Type of machine: CMP 4.0
Type of equipment: Container mixing pump
Serial number:
Guaranteed sound power level: 95 dB

is in conformity with the following CE directives:

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

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

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

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

Person authorised to compile the relevant technical documentation:

- (Dipl. in Industrial Engineering, University of Applied Sciences) Michael Duelli, Einersheimer Straße 53, 97346 Iphofen.

The technical documentation is available from:

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

Iphofen

Dr York Falkenberg
Managing Director

Town/city

Name and signature

Details of signatory

General information



1.7 Quality Control sticker



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

- CE confirmed as per EU directives
- Serial no / serial number
- Controller / signature
- Date of control

Figure 2: Quality Control sticker

1.8 Intended use

1.8.1 Intended use of the CMP 4.0

- The CMP 4.0 container mixing pump is an open, continuously operating silo mixing and delivery pump for factory premixed ready-mixed dry mortar.
- Feeding with ready-mixed dry mortar is primarily carried out via a silo.
- Operation without a flange-mounted silo is not intended and is not permitted.
- Operation without the rubber mixing tube in place is not intended and is not permitted.
- All electrical drives (pump motor, mixer motor, water pump, vibrating unit, air compressor) may only be supplied with power via the permanently installed control box. Any other method of supply is not intended use and is not permitted.
- Smaller quantities of material (1-2 bags) can be filled via the integrated bag feed hopper.
- The CMP 4.0 has an integrated air compressor without pressure accumulator, which is used to spray the mortar onto the wall. Any other use of the air compressor is not intended and is not permitted.
- Observe all processing guidelines from the material manufacturer.
- The CMP 4.0 is not intended for processing flammable or explosive substances.



1.8.2 Purpose of fitting block

The fitting block has been designed and constructed only for the intended use described below.

NOTE



Application range!

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

- Maximum operating pressure (initial pressure) 16 bar.
- After-pressure infinitely adjustable from 1.5 to 6 bar.
- Smallest possible initial pressure 2.5 bar.
- Minimum pressure gradient (initial/after-pressure) 1 bar.
- Maximum media and ambient temperature 75 °C.
- Assembly position as desired, preferable vertical.

1.8.3 Purpose of solenoid valve

NOTE



Application range!

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

Type 6213 is a 2/2 way solenoid valve with straight passage, normally closed, with a permanently coupled membrane system. It switches from 0 bar and is universal in use for liquids. A minimum differential pressure of 0.5 bar is necessary for complete opening.

General information



1.8.4 Purpose of flowmeter

NOTE



Application range!

The flowmeter serves for measuring the volume of transparent liquid and gas flows in closed pipes. Optionally, the flowmeter can also be used for flow monitoring.

⚠ CAUTION



Danger due to improper use!

Any use beyond the specified purpose of use and/or any other form of use of the flowmeter can lead to dangerous situations.

Therefore:

- Only use the flowmeter as intended.
- Always adhere to the usage directives of the material manufacturer.
- Strictly follow all instructions in this operating manual.

We accept no responsibility for damages caused by improper or unauthorised use.

The operator of the device is solely responsible for any damage arising from improper use.

1.8.5 Intended purpose of booster pump

NOTE



The PFT pressure booster pump only serves for pumping clean water, recommended for water relatively polluted with impurities and chemically non-aggressive liquids. Media with fibrous and abrasive constituents must be avoided.

Its use is subject to the regulations of the local legislation.



1.8.6 Purpose of air compressor

The air compressor has been designed and constructed only for the intended use described in this document.

NOTE



The air compressor is only intended for generating compressed air and may only be used with connected work devices. 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 manual!

In particular faults that can impair safety must be rectified immediately before the compressor is put back into operation.

1.8.6.1 Safety devices of air compressor

⚠ WARNING



Danger to life due to non-functioning safety equipment!

Safety equipment ensures highest level of safety in operation. Even if safety devices make work processes more complicated, they must never be disabled. Safety is only assured when the safety devices are intact.

Therefore:

- Check that the safety devices and functional and correctly installed before starting work.
- Use safety equipment at all times.
- Do not obstruct access to safety systems such as EMERGENCY STOP pushbuttons, emergency off buttons, pull cords etc.

General information



1.8.6.2 General setup of the air compressor

The air compressor corresponds to the national and international safety regulations and can therefore also be used in damp rooms or in the open air. Areas with as clean and dry air as possible should be preferred. Make sure that the air compressor can suck in the air unimpeded. This applies in particular when an installation is intended.

The air compressor must be set up so that no hazardous admixtures, 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.

1.8.6.3 Hot surfaces on the air compressor

General information

WARNING



Risk of injury due to hot surface!

Surface temperatures can reach up to 100 °C during operation of the air compressor.

- Therefore, always ensure that the air compressor does not come into contact with exposed body parts during use as well as for some time after use, depending on the temperature.



2 Technical data

2.1 General information

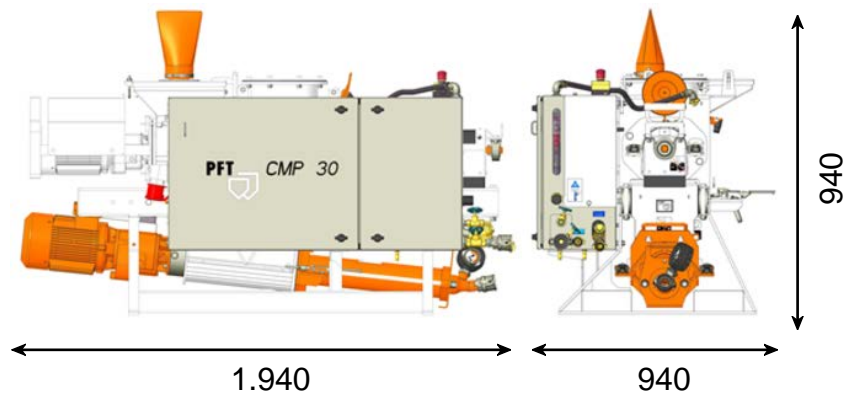


Figure 3: Dimension sheet in mm

Detail	Value	Unit
Empty weight approx.	507	kg
Length with pump unit retracted	1940	mm
Length with pump unit extended	2620	mm
Width	940	mm
Height	1230	mm

Silo / container connection

Detail	Value	Unit
Flange connection	D=250	mm

2.2 Power connection



Figure 4: Motor protection switch

Electrical details

Detail	Performance	Setting value	Designation
Pump motor	7.5 kW	15 A	
Mixer motor	4.0 kW	8.3 A	Q2
Water pump	1.1 kW	0.37 A	Q4
Compressor	0.9 kW	1.8 A	Q6
Vibrating unit			Q6

Water connection

Detail	Value	Unit
Operating pressure, minimum	2.5	bar
Connection	$\frac{3}{4}$	inch

Technical data**2.3 Operating conditions**

Environment	Detail	Value	Unit
	Temperature range	2 - 45	°C
	Relative humidity, max.	80	%
Duration	Detail	Value	Unit
	Max. operating time at a stretch	8	hours
Electrical details	Detail	Value	Unit
	Voltage, three-phase current 50 Hz	400	V
	Fuse protection, minimum	3 x 25	A
	Power consumption, max.	32	A
	Power input, max.	15	kW
	Quantity	32	A

2.4 Performance values of pump unit R 7–3 S

Pump capacity R 7–3 S	Detail	Value	Unit
	Pump capacity, approx.	7 - 26	l/min
	Operating pressure, maximum	30	bar
	Feed range *, maximum with 50 mm Ø	50	m

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

2.5 Sound power level

Guaranteed sound power level L_{WA}

■ 95 dB(A)

2.6 Vibrations

Weighted effective value of acceleration to which the upper body parts are exposed $<2.5 \text{ m/s}^2$



3 Transport, packing and storage

3.1 Safety instructions for transport

Improper transport

NOTE



Damage from improper transport!

Improper transport may cause substantial property damage.

Therefore:

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

Suspended loads

⚠ WARNING



Danger to life from suspended loads!

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

Therefore:

- Never step under suspended loads.
- Observe the instructions regarding the provided anchorage points.
- Do not attach to projecting machine parts or eyelets of attached components and ensure safe fit of the sling gear.
- Only use approved lifting gear and accessories with a sufficient load-bearing capacity.
- Do not use torn or frayed ropes and belts.
- Do not lay ropes and belts over sharp edges and corners, do not knot or twist.
- When ropes and chains are used in construction operations, the provisions contained in the accident prevention regulation "Load suspension devices in lifting gear operations" (VBG 9a) should be complied with. The following sections contain instructions for scenarios in which ropes and chains are used as lifting means.

Transport, packing and storage



3.2 Transport inspection

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

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

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

NOTE



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

3.3 Packaging

For packaging

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

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

Handling packaging materials

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

NOTE



Environmental damage due to incorrect disposal!

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

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



3.4 Transport information for the distributor/operator

NOTE



The distributor of silo including the mounted machine must ensure that the silo flange and the weld seams on the silo can withstand the weight of the machine and the forces that occur are designed. It is not only the static load of the machine that is affected into account, but also the dynamic forces. Kick during the transport of the silo and machine dynamic forces that are many times higher, like the static load.

It must be clarified with the silo manufacturer at which points the weight of the machine can be absorbed at the silo for safe transport.

3.5 Securing for transport

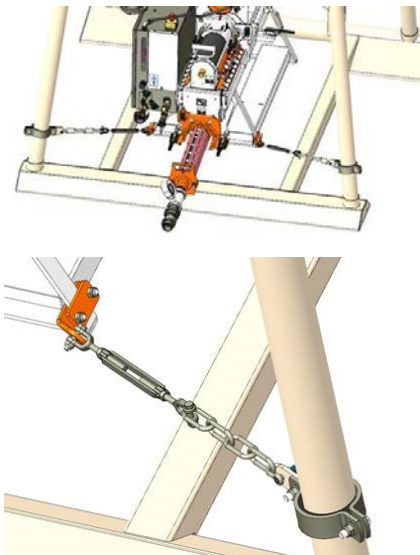


Figure 5: Securing the machine for transport

⚠ WARNING



Risk injury due to unsecured load!

Before starting transport, make sure that:

1. The machine is fixed to the silo by the chains.
2. None of the chains, clamps or screws are damaged or loose.
3. All chains are evenly tensioned.

3.5.1 Securing for transport

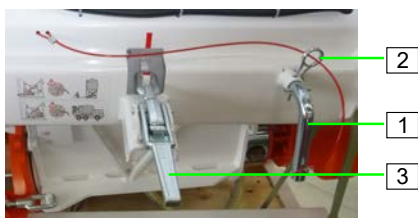


Figure 6: Securing for transport

NOTE



- Secure the pump unit with the hinge pin (1) before transport and additionally secure the hinge pin with the safety cotter pin (2).
- Secure the pump unit with the quick closure (3).
- Look for the red colour markings on the frame.
- The labels must always be fully legible.
- Replace damaged and illegible labels!

Transport, packing and storage

3.6 Transport

⚠ WARNING



Risk injury due to unsecured load!

If components are lost due to inadequate securing, this can lead to serious personal injury and damage to property.

NOTE



Transport only with empty water tank, empty water hoses and without material in the machine.

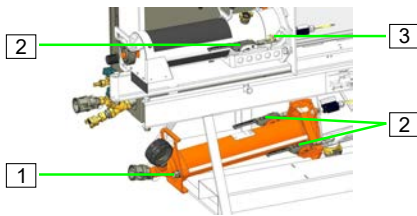


Figure 7: Folding cotter pins and quick closures

1. Check that the tie rods are secure by tightening the nuts on both sides (1).
2. Check that the quick-release fasteners (2) are properly closed and that the safety catch is locked.
3. Check the folding cotter pins (3) to ensure they are properly attached for securing the components.

3.7 Transport by car or truck

⚠ CAUTION



Risk injury due to unsecured load!

All persons involved in the loading are responsible for securing the load properly during road transport. The relevant vehicle driver is responsible for the operational loading.



Transport, packing and storage



Figure 8: Truck transport

⚠ CAUTION



If the silo is transported by truck with the machine attached, dynamic forces arise when the silo is transported in a horizontal position. These forces must be taken into account during transport.

The safety chains between the machine and the silo must be in place and tensioned before driving off.

NOTE



Truck transport

Ensure the following before every ride:

- Lock control box door.
- Secure the cleaning hose with a belt.
- Connect the water hose to the mixing tube.
- Secure loose parts, or remove them.
- Pump material container must be completely empty and clean.
- Check for loose screws or nuts.

3.8 Transport by forklift



1

Figure 9: Forklift transport

1. When transporting the CMP by forklift, use the forklift pockets provided (1).

3.9 Transporting a running machine

CAUTION



Danger of injury from discharged mortar!

Injuries to face and eyes can occur.

Therefore:

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

Carry out the following steps before beginning the transport:

1. First unplug the mains cable.
2. Undo all other cable connections, water supply lines and hoses.
3. Remove loose parts during crane transport.
4. Start transport.



4 Description

4.1 Overview

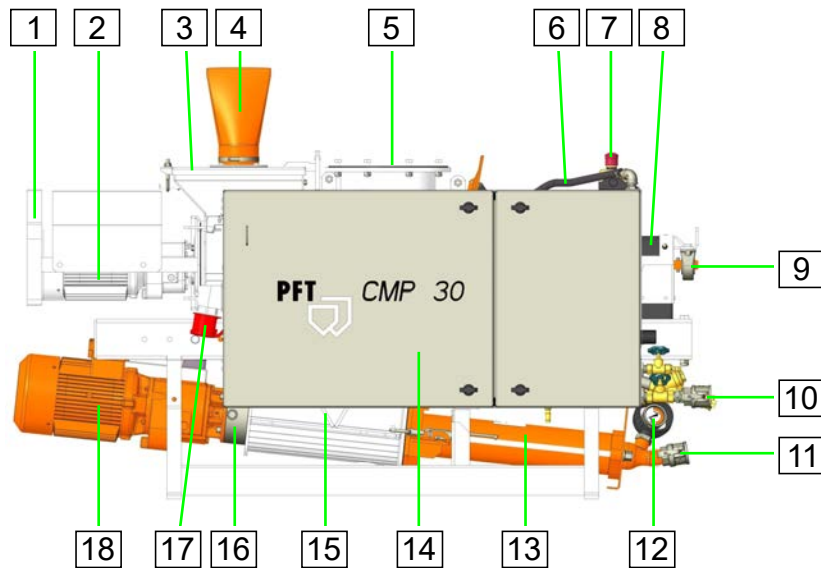


Figure 10: Table of the assembly groups

- | | |
|---|---|
| [1] Swivel-mounted motor flange | [2] Mixer motor |
| [3] Bag drop | [4] Filter bag/rain guard |
| [5] Silo connection | [6] Water supply for the mixing tube |
| [7] EMERGENCY STOP / EMERGENCY OFF button | [8] Rubber mixing tube |
| [9] Square external bearing | [10] Cleaner coupling for cleaning the mortar hoses |
| [11] Connection for the mortar hoses | [12] Mortar pressure gauge |
| [13] Pump unit R 7–3 S | [14] Control cabinet |
| [15] Pump container | [16] Oil sealing unit |
| [17] Main terminal | [18] Pump motor |

Description

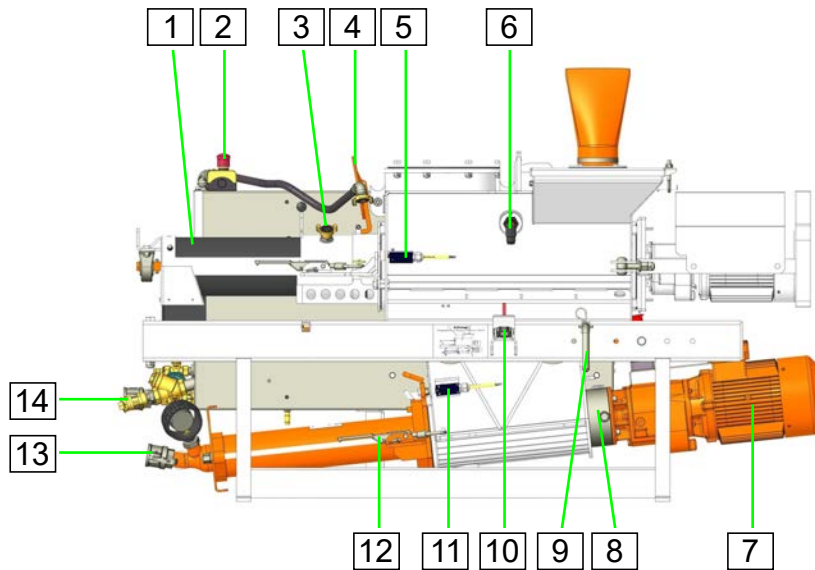


Figure 11: Table of the assembly groups

[1] Rubber mixing tube	[2] EMERGENCY STOP / EMERGENCY OFF button
[3] Water supply to the mixing tube	[4] Mixing tube cover
[5] Position switch	[6] Capacitive level sensor
[7] Pump motor	[8] Oil sealing unit
[9] Hinge pin for transport lock	[10] Quick closure with locking device
[11] Position switch for pump unit	[12] Quick closure with locking device
[13] Connection for the mortar hoses	[14] Water connection from mains/water barrel

4.2 Functional description

The machine combination PFT CMP 4.0 is a continuously working mixing and conveying pump for processing plastering mortar. The machine is attached directly to a silo with a size 250 outlet.

A horizontal continuous mixer mixes the ready-mixed dry mortar with water and transfers it to the supply tank of the delivery pump. The delivery pump can variably pump 7 - 26 litres of mortar per minute into the mortar hoses.

Due to the "open mixing pump system", the consistency check can be carried out at any time after mixing and not only at the end of the hose. The pump unit with pump container and pump motor can also be retracted, e.g. to fill mortar buckets.

The CMP 4.0 is automatically controlled via an integrated control box in conjunction with the remote control and the water supply.

The horizontal mixer, pump and water pump on the control box can be operated manually for driving in the CMP 4.0 and also for cleaning at the end of work.

An appropriate water pressure is necessary for faultless functionality of the CMP 4.0. With the integrated booster pump, even an external supply from a collection tank (water tank) is possible if the water quantity is not adequate. If the water pressure is too low, the pressure switch built into the water supply automatically switches off the CMP 4.0 to prevent malfunctions.

4.3 Fields of application

The CMP is especially suitable for the thermal insulation and composite system and the entire plaster mortar range, such as:

- Adhesive mortar
 - Reinforcing mortar
 - Finishing coats
 - Finishing plaster
- ... and much more

Flowability / flow characteristic



- The pump unit R 7–3 S can be used up to 30 bar operating pressure.
- The possible conveying distance depends mainly on the flowability of the mortar.
- It is recommended to reduce the length of the mortar hose if you exceed an operating pressure of 30 bar.
- In order to avoid machine faults and increased wear of the pump motor, pump shaft and the pump itself, only original PFT spare parts such as:
 - PFT rotors
 - PFT stators
 - PFT pump shafts
 - PFT mortar hoses
- These are compatible with each other and form a constructive unit with the machine.
- Non-compliance does not only cause loss of guarantee, but also bad mortar quality is to be expected.

Basic equipment

Depending on the construction site and application, the basic equipment of the mixing and pump unit consists of the following components:

- CMP 4.0 frame
- Mixing tube with metering and mixing shaft
- Capacitive level sensor
- Control box
- CMP 4.0 water fitting
- Material container with pump
- Pump shaft
- Pressure flange with pressure reducer and pressure gauge
- KPS1 level sensor

4.4 Description of assemblies

The CMP 4.0 machine combination consists of the main components described in the following chapters.

Description

4.4.1 Control box

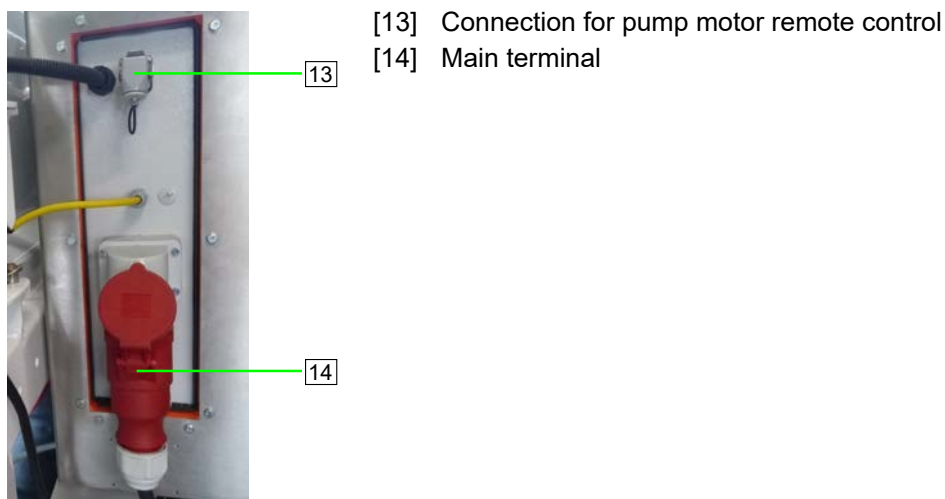
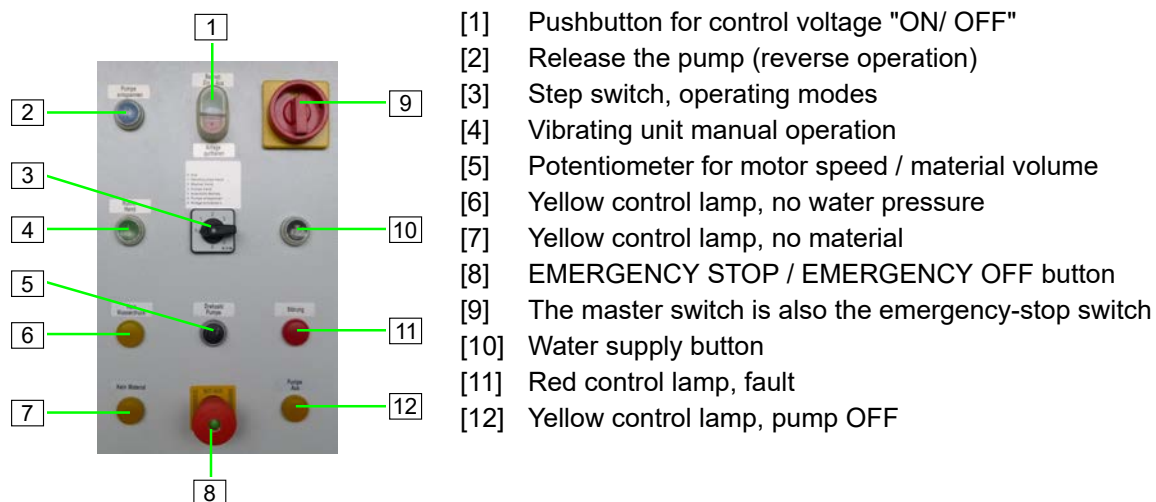


Figure 12: Assembly unit control box

4.4.2 Pump motor with container and pump

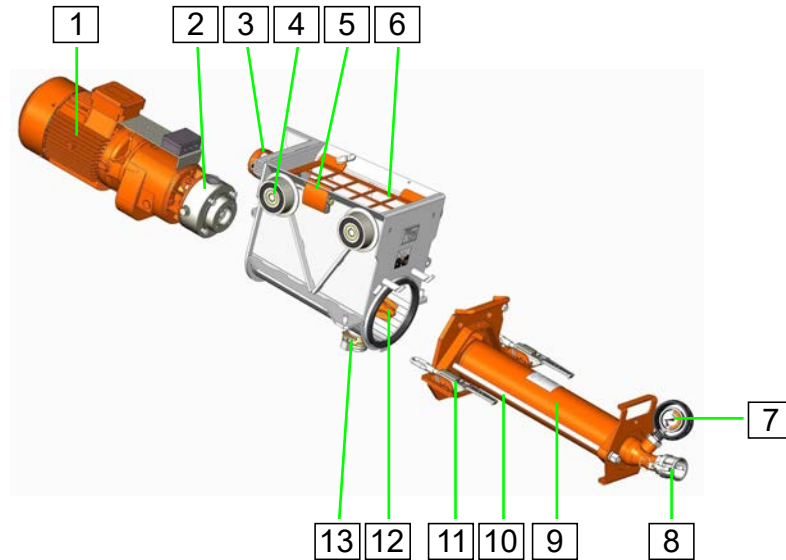


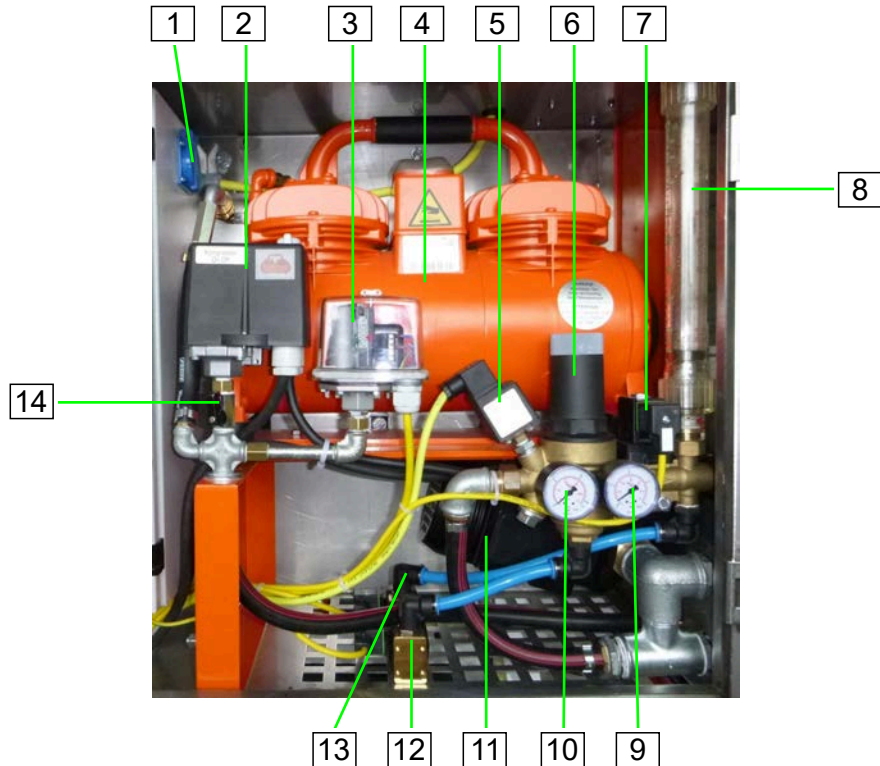
Figure 13: Pump motor assembly with container and pump

- | | |
|--|-------------------------------------|
| [1] Pump motor | [2] Oil sealing unit |
| [3] KPS1 level sensor for pump container | [4] Roller for pump container |
| [5] Safety switch for protective grille | [6] Protective grille |
| [7] Mortar pressure gauge | [8] Connection for the mortar hoses |
| [9] Pump unit R 7–3 S | [10] Tie rod M16 |
| [11] Quick closure with locking device | [12] Pump shaft |
| [13] Cleaning nozzles | |

Description



4.4.3 Water and air fitting



- | | |
|--|--|
| [1] Socket 230V continuous current | [2] Pressure switch compressor shutdown |
| [3] Pressure switch air, pump stops and mixer continues to run | [4] Air compressor |
| [5] Water safety switch | [6] Pressure reducer |
| [7] Solenoid valve | [8] Water flowmeter |
| [9] Water pressure gauge | [10] Water primary-pressure gauge |
| [11] Pressure booster pump | [12] Drainage valve for water flowmeter |
| [13] Drainage valve for water fitting | [14] Shut-off valve, continuous operation air compressor |

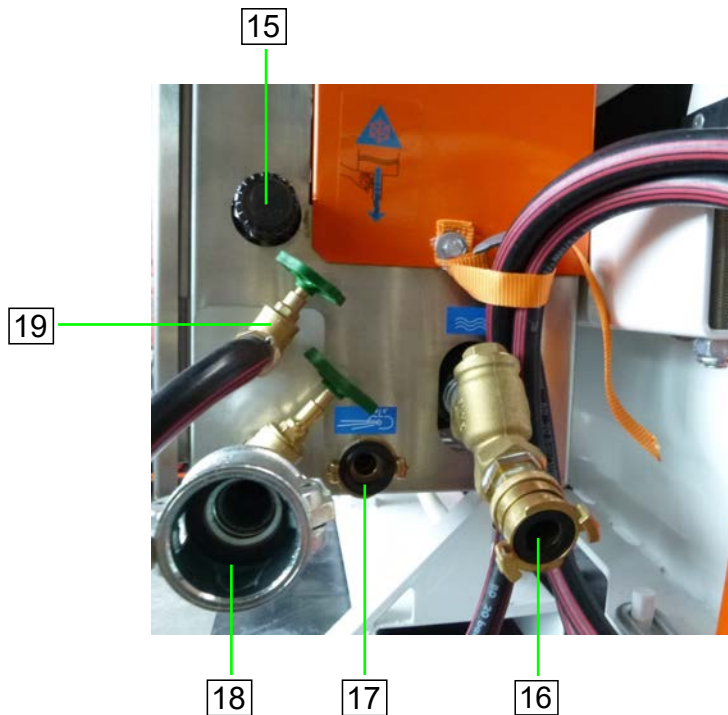


Figure 14: Overview of water and air fitting

[15] Needle valve water quantity

[17] Connection air to spray gun

[19] Water tap cleaning hose

[16] Water connection from water supply

[18] Water connection for cleaning the mortar hoses

4.4.4 Mortar pressure gauge



Figure 15: Mortar pressure gauge

PFT mortar pressure gauge

⚠ CAUTION



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

Some advantages of the mortar pressure gauge:

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

4.5 Operating modes

The step switch can be switched to six different operating modes:

Description



Figure 16: Step switch "0"

Switch position "0":

- Machine is ready for operation, no function.



Figure 17: Step switch "1"

Switch position "1":

- Booster pump is in operation (e.g. for cleaning the machine or mortar hoses).



Figure 18: Step switch "2"

Switch position "2":

- In switch position "2" the mixer motor is running.
- Mixer and booster pump run on manual operation.
- The mixer is switched off at full indication using the level sensor in the pump container.



Figure 19: Step switch "3"

Switch position "3":

- In switch position "3" the pump motor is running.
- Pump runs in manual mode.

NOTE



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



Figure 20: Step switch "4"

Switch position "4":

- Machine runs in automatic mode.

NOTE



Water factor must be set at prescribed value.



Figure 21: Step switch "5"

Switch position "5":

- In switch position "5" and by pressing the blue pushbutton, the pump is depressurised (reverse operation).



Figure 22: Step switch "6"

Switch position "6":

- Forced drainage of the water fitting if there is a risk of frost.

4.6 Pressure booster pump

The PFT pressure booster pump is used predominantly as a high-pressure pump for intermediate connection at the mortar mixer when the water pressure is too low. It can also be used as a primer pump for drawing liquids from containers, for emptying small tanks and ponds, for pumping water out of cellars and for irrigation.

The water supply is automatically ensured from a water tank by the PFT pressure booster pump for the constant water supply to the PFT machine engineering.

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

Description



Configuration example

Item no. of booster pump AV1000/1: 00492679

Figure 23: Pressure booster pump



Figure 24: Water tank

Accessories

Item no. 00136619



Figure 25: Suction strainer with stainless steel filter screen, suction hose 1", 2.5 m

5 Operation

5.1 Safety

Personal protective equipment

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

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



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

Basic information

WARNING



Danger of injury due to incorrect operation!

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

Therefore:

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

⚠ WARNING**Danger of injury due to incorrect use!**

The CMP 4.0 machine combination is not suitable for installation in rooms in which explosive atmospheres are likely to occur, or for processing materials in which explosive atmospheres consisting of gas/air or dust/air mixtures are likely to occur.

5.1.1 Safety rules**⚠ CAUTION**

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

5.1.2 Set up silo with CMP**⚠ WARNING****Danger of accident due to tilting silo!**

- No one is allowed to be in the danger zone during loading and unloading by the silo vehicle.
- Set up the silo or container with the machine in a stable position on a flat and firmly secured surface.
- Ensure that the ground cannot yield due to the load on the silo and that the silo is therefore unable to tip over.
- Set up the machine in such a way that it cannot be hit by falling objects.
- The controls must be freely accessible.

5.1.3 Mounting on the silo**NOTE**

The distributor of silo including the mounted machine must ensure that the silo flange and the weld seams on the silo can withstand the weight of the machine and the forces that occur are designed. It is not only the static load of the machine that is affected into account, but also the dynamic forces. Kick during the transport of the silo and machine dynamic forces that are many times higher, like the static load.

It must be clarified with the silo manufacturer at which points the weight of the machine can be absorbed at the silo for safe transport.

⚠ WARNING**Danger of crushing, shearing and impact if used improperly!**

Improper use may lead to serious damage to persons and property.

- The machine may only be put into operation when it is mounted on a silo. Stand-alone operation is not permitted.

⚠ WARNING**Danger of crushing, shearing and impact in case of improper mounting on the silo!**

Improper mounting may lead to serious damage to persons and property.

- Only mount the machine on the silo with screws of strength class 8.8.
- It is essential that the machine is bolted to the silo at all possible threaded connections.

5.1.4 Monitoring the machine**⚠ WARNING****Access by unauthorised persons!**

- The machine may only be operated when monitored.

5.1.5 Hazardous dusts

Figure 26: Dust protection

⚠ WARNING**Danger of damage to health!**

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

- Use suitable face protection.

NOTE

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

The rules of the Committee on Dangerous Substances (AGS) can be found under Technical Rules for Dangerous Substances (TRGS 559).

Operation

5.1.6 Safety system

5.1.6.1 EMERGENCY STOP / EMERGENCY OFF button



1



2

Figure 27: EMERGENCY STOP / EMERGENCY OFF button

NOTE



Check the EMERGENCY STOP / EMERGENCY OFF button daily before starting work:

1. Switch on main switch/main reversing switch.
2. Control voltage "ON".
3. Press EMERGENCY STOP / EMERGENCY OFF button.
4. The control voltage is switched off by pressing the EMERGENCY STOP / EMERGENCY OFF button.
5. Unlock the EMERGENCY STOP / EMERGENCY OFF button by **turning** in the direction of the arrow.

NOTE



The EMERGENCY STOP / EMERGENCY OFF button quickly puts the machine into a safe state in the event of a hazard, or to avert danger.

- The EMERGENCY STOP / EMERGENCY OFF button must lock after actuation.
- This immediately disconnects the energy supply to the drive elements. **Turning** the EMERGENCY STOP / EMERGENCY OFF button returns it to its original position.
- An EMERGENCY STOP pushbutton is located on the control box door (1).
- An EMERGENCY STOP pushbutton is located on the control cabinet (2).

⚠ WARNING



Danger to life if safety devices are overridden!

Never perform improper actions on safety equipment that endanger the life or health of employees.

5.1.6.2 Position switch for pump unit



1

1. If the pump unit is released while the machine is running, the machine switches off via the position switch (1).

Figure 28: Position switch

5.1.6.3 Position switch for mixing tube



1. If the mixing tube is released while the machine is running, the machine switches off via the position switch (1).

Figure 29: Position switch

5.1.6.4 Hinge safety switch on the protective grille



1. If the protective grille is opened while the machine is running, the machine switches off via the hinge safety switch (1).

Figure 30: Hinge safety switch

5.1.7 Mortar pressure gauge



Figure 31: Mortar pressure gauge

⚠ WARNING



Operating pressure too high!

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

- Do not operate the machine without 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 reach at least 2.5 times the value of the operating pressure.

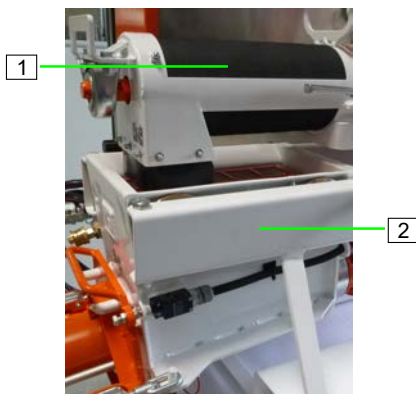
5.2 Inspection by machine operator

- 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.

5.3 Preparing the machine

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

5.3.1 Risk of injury due to rotating shafts



⚠ WARNING



Risk of injury due to rotating shafts!

Risk of injury when reaching into the mixing tube (1) or into the pump container (2).

- During machine preparation and operation, parts and covers must not be removed.
- Never reach into the running machine.
- Never reach into the stationary machine until the power supply is disconnected.

Figure 32: Risk of injury

5.3.2 Connecting the power supply



Figure 33: Connect power supply.

1. Connect machine to three-phase network 400V.

⚠ DANGER



Danger to life from electric current!

The electrical connection must be fused correctly:

- Only connect the machine to a power source with permissible 30 mA circuit breaker (RCD) of type B that is sensitive to all currents that are required for the operation of frequency converters.

5.3.2.1 Connecting the individual connectors

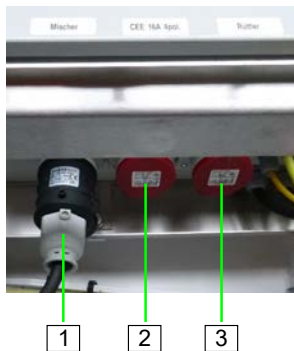


Figure 34: Power connections

⚠ WARNING



Danger to life from rotating parts!

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

- The respective drive (motors) must be operated only with the control box of the machine.

1. Connect the power supply for mixer motor (1).
2. Connect the power supply for the vibrating unit (2).
3. Reserve (3).

Operation



5.3.3 Connecting the water supply

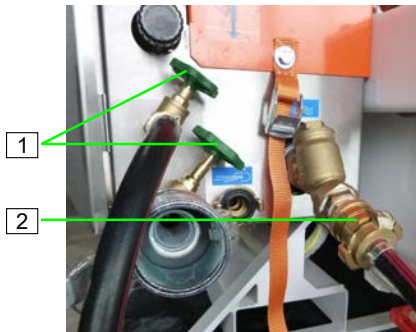


Figure 35: Water supply connection

1. Close the water taps (1).
2. Clean and vent the water hose of the water network and connect it to the water inlet (2).
3. Connect to water supply with $\frac{3}{4}$ " hose.

NOTE



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

■ Observe the Drinking Water Protection Ordinance in Part 1

NOTE



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

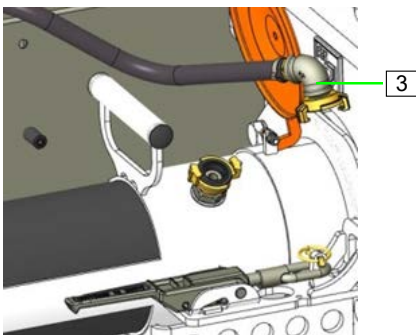


Figure 36: Remove the water hose

4. Remove the water hose (3) from the mixing tube.
5. Place the water hose (3) in the pump container.
6. Open the water tap of the water supply line.

5.3.3.1 Connection of water from water tank



Figure 37: Pressure booster pump



Figure 38: Water tank



Figure 39: Filter screen

■ Item no. of booster pump AV1000/1: 00492679

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)

NOTE



The booster pump must not run dry to avoid any damage!

Operation

5.3.4 Setting the water quantity

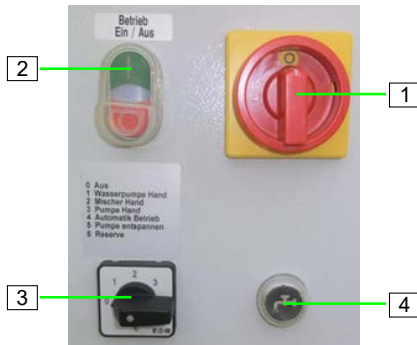


Figure 40: Switching on

1. Turn main switch (1) to position "I".
2. Press the green pushbutton (2) control voltage "ON".
3. Set the step switch (3) to position 0.
4. Press the water supply button (4) to adjust the water quantity.

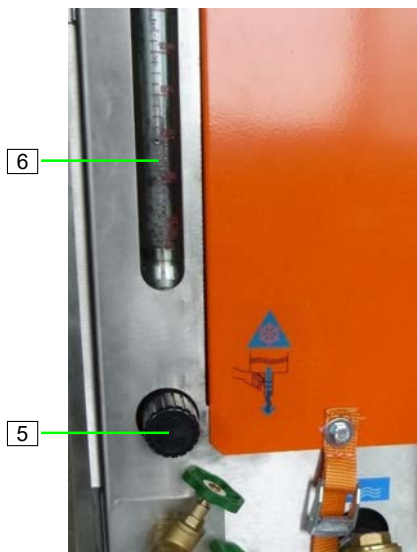


Figure 41: Setting the water quantity

5. Adjust the expected amount of water at the needle valve (5). Visible at the inspection glass (6) of the water flowmeter and the level of the float.

NOTE



Observe the specifications of the material manufacturer when setting the water factor.



Every interruption to the spraying process causes a slight irregularity in the consistency of the material. This irregularity normalises by itself as soon as the machine has been working for a short while.

Therefore it is important not to change the water quantity for each irregularity. Wait until the consistency of the material has set again.



Figure 42: Connecting the water hose

6. Take the water hose (7) out of the pump container and reconnect it to mixer tube.

5.3.5 Toggle the step switch



NOTE



As a general rule, before switching over from step switch (1) to other operating modes, the control voltage must be switched off with the control voltage "ON / OFF" pushbutton (2). Subsequently switch on the control voltage again using the pushbutton.

Figure 43: Toggle the step switch

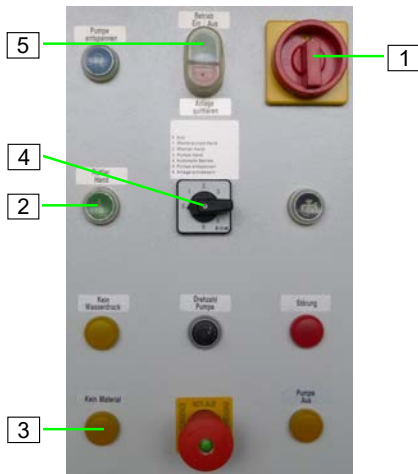
5.3.6 Checking the mortar consistency



1. Loosen transport locking mechanisms.
2. Push the pump with pump container (1) under the machine.
3. Place a bucket (2) or container under the mortar outlet of the horizontal mixer.

Figure 44: Moving the pump container

Operation

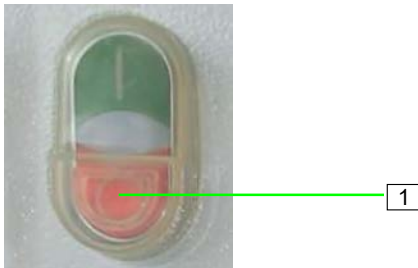


Switching on the mixer

1. Open the silo outlet flap.
2. Turn main switch (1) to position "I".
3. Press the green pushbutton (2) for "Vibrating unit manual mode".
4. The mixer does not start until the yellow control lamp (3) "No material" has gone out.
5. Turn step switch (4) to position 2 "Manual mixer".
6. Switch the machine on by pressing the green pushbutton (5) control voltage "ON".
7. Check consistency of mortar.

Figure 45: Switching on the mixer

5.3.6.1 Switching off the mixer



1. Switch the mixer off by pressing the red pushbutton (1) control voltage "OFF".

Figure 46: Switching off the mixer

5.3.6.2 Level sensor in the mixer



1. The material level in the material container of the horizontal mixer is monitored by the level sensor (1).
2. If an empty signal is detected, the level sensor (1) switches off the mixer motor.

Figure 47: Level sensor

5.3.7 Pull pump unit from frame

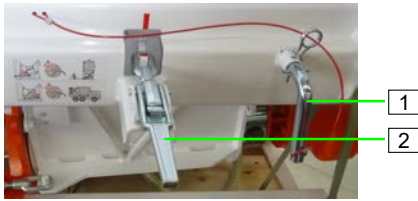


Figure 48: Release pump unit

Release pump unit locking mechanisms

1. Pull out the hinge pin (1) and loosen the quick closure (2).

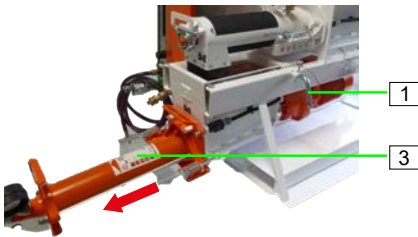


Figure 49: Pull out the pump unit

2. Pull the pump unit (3) (motor, pump motor and pump) in the direction of the arrow.
3. Lock the pump unit (3) with the hinge pin (1).

5.3.8 Mortar hoses

5.3.8.1 Connecting the mortar hoses

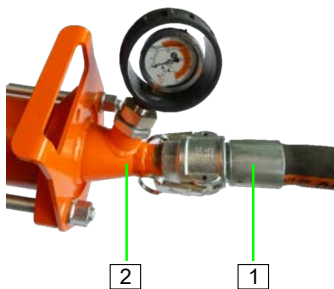


Figure 50: Connecting the mortar hose

1. Connect the requisite mortar hoses (1) to the pressure flange (2).

NOTE



Ensure clean and correct connection and tightness of the couplings! Dirty couplings and rubber seals are not watertight, and water might leak under pressure inevitably leading to blockages.

Operation

5.3.8.2 Pump water from pump container



1. Turn step switch (1) to position 3 "Manual pump".
2. Press the green pushbutton (2) control voltage "ON".
3. Pump the water out of the pump container.

NOTE



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

4. Uncouple the mortar hoses from the pressure flange and completely empty them of water.

⚠ WARNING



Overpressure on the machine!

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

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

Figure 51: Set pump to manual operation

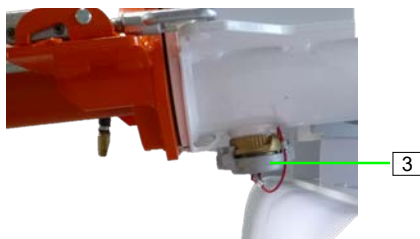


Figure 52: Opening the cleaning nozzles

5. Open the cleaning nozzles (3) and drain the residual water from the pump container.

5.3.8.3 Pre-lubricating mortar hoses

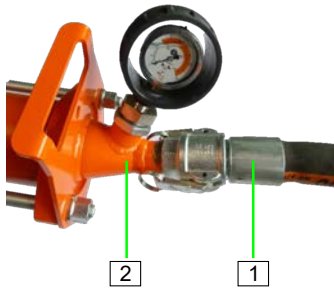


Figure 53: Connecting the mortar hose

1. Pre-lubricate mortar hoses (1) with approx. 2 litres of wallpaper paste and reconnect to the pressure flange (2).
2. The wallpaper paste is mixed through the mortar hose with the first mixing.
3. Lay mortar hoses with a radius large enough so that the hoses do not kink.
4. Carefully secure risers so that they do not tear away from their own weight.

NOTE



Ensure clean and correct connection and tightness of the couplings! Dirty couplings and rubber seals are not watertight, and water might leak under pressure inevitably leading to blockages.

5.3.9 Compressed air supply

5.3.9.1 Connecting the air hose



Figure 54: Connecting the air hose

1. Connect compressed air hose (1) at the air manifold.

⚠ WARNING



Never undo hose couplings while the compressed air hose is pressurised.

5.3.9.2 Connecting the spray gun

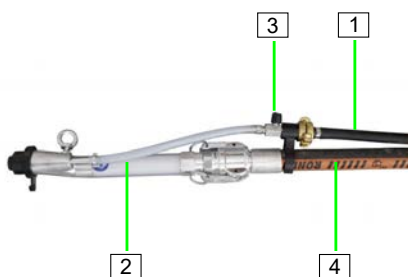


Figure 55: Spray gun

1. Connect compressed air hose (1) to the spray gun (2).
2. Make sure that the air tap (3) on the spray gun is closed.
3. Connect spray gun (2) to the mortar hose (4).

Operation

5.3.9.3 Switching on the air compressor



Figure 56: Switching on the air compressor

1. Switch on the air compressor at the rotary 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.

NOTE



Check that the compressor is switched on at the black pressure switch of the motor protection switch (2).

The compressor is only switched on or off via the rotary switch (1) on the pressure switch.

5.3.10 Filling the pump container with material

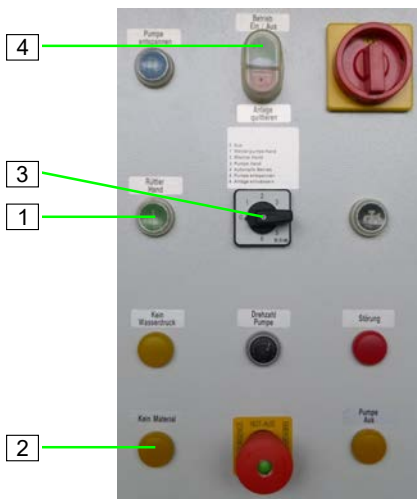


Figure 57: Switching on the mixer

1. Press the green pushbutton (1) for "Vibrating unit manual mode".
2. The mixer does not start until the yellow control lamp (2) "No material" has gone out.
3. Turn step switch (3) to position 2 "Manual mixer".
4. Switch the mixer on by pressing the green pushbutton (4) control voltage "ON".
5. Fill the pump container with material.
6. The mixer is automatically switched off by the level sensor in the pump container.

NOTE



Do not fill the pump container with material that is dry or too stiff. This leads to hose blockages.

NOTE



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

5.3.10.1 Level sensor in the pump container



Figure 58: Wet sensor

1. The material level in the pump container is monitored by the level sensor.



In order to ensure the functioning of the sensor, pay attention to the cleanliness of the sensor rod (1). We recommend cleaning every 3 - 4 hours.



2. Switch off the machine by pressing the red pushbutton (2) control voltage "OFF".

2

Figure 59: Switching off the machine

5.3.11 Booster pump (accessories)

Electrical system

⚠ WARNING



Danger due to electrical voltage!

Connect the pump only to plug sockets with PE contact. For increased safety we recommend an RCD with a GFCI switch with a rated residual current of 30 mA for the circuit to which the pump will be connected. This applies in particular for installation close to water tanks, ponds, etc.

Line connection

NOTE



Ensure that the suction line or intake line is connected at the marked position.

If the pump is operated in suction mode, ensure that the suction line is kept as short as possible.

5.3.11.1 Initial start-up booster pump



Fill the PFT booster pump with water prior to initial start-up to let the air escape from the pump housing.

- Fill water through the water inlet (1).
- Check the strainer at the water inlet (1).

Do not fill too quickly so that the air has time to completely escape from the housing.

It is best if the suction flange is also filled at that time.

Figure 60: Filling the pump

Operation



5.3.11.2 Putting the pressure booster pump into operation



Figure 61: Connect lines

The following instructions have to be observed before operating the pump.

The pump has to be installed in a horizontal position.

Before start-up both the suction line has to be connected to position 1 and the pressure line to position 2.

It is important that the lines are of adequate dimensions:

- At least 1" for the suction line
- At least 3/4" for the pressure line

Make sure that the hose is completely airtight and immersed in the liquid to be pumped, to avoid air being sucked in.

The end of the suction line (3) has to be equipped with a suction strainer with filter screen and built-in non-return valve.

We recommend an additional filter for fine particles in the suction line.



Figure 62: Suction strainer with filter screen item no. 00136619



The flow rate of the pump decreases with increasing length of the suction line. Connect the booster pump as close as possible to the water sampling point (pressure is better than suction).

If all these points have been observed the pump can be switched on. Depending on the length of the suction line, the suction time can be a few seconds.

If the pump is still not delivering after a short time, this may have one of the following causes:

- There is still air in the pump and this has to be completely vented again.
- The suction line has a leak and the pump draws air.
- The suction-side screen is clogged.
- There is a kink in the suction hose.
- The maximum suction head is exceeded.

NOTE



The booster pump must not run dry to avoid any damage!

5.4 Shutdown in case of emergency

Shutdown in case of emergency

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



After the rescue operations

In case of danger proceed as follows:

1. Switch off the main switch immediately.
2. Secure the main switch against reactivation.
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.

- Ensure that the danger zone is clear before switching the machine back on.
- Check the system before reactivation and ensure that all safety equipment is installed and functional.

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

5.5 Remote control



Figure 63: Switching off the air compressor

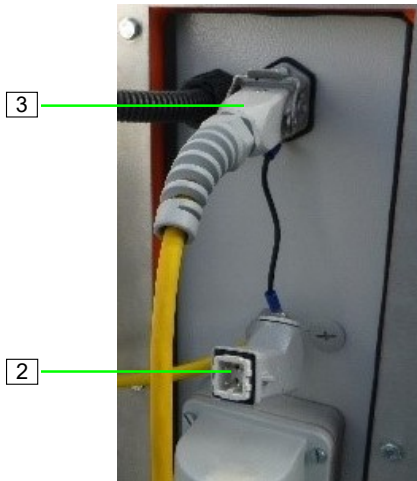
Using the remote control without spray gun

NOTE



It is also possible to operate the machine without compressed air, e.g. for pumping floor levelling compounds. To do this, switch off the air compressor at the rotary switch (1) and work without the spray gun.

Operation



1. Remove dummy plug (2) from control box.
2. Connect remote control (3).
3. The pump of the CMP can be switched on or off via the remote control.
4. The horizontal mixer continues to run until it is switched off by the level sensor in the pump container.

Figure 64: Connecting the remote control



5.6 Applying mortar

⚠ WARNING



Danger of injury from discharged mortar!

Discharged mortar may lead to injuries to eyes and face.

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



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

If an operating pressure of 30 bar is exceeded, the hose length must be shortened or the hose thickness increased.

5.6.1 Switching to automatic mode

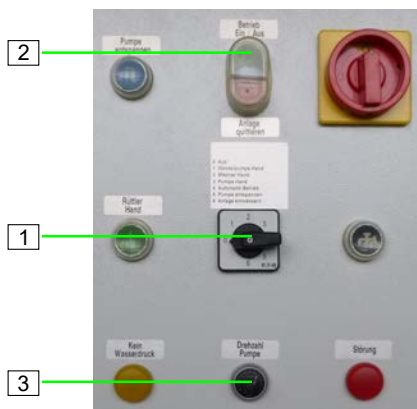


Figure 65: Activate automatic mode

1. Turn step switch (1) to position 4 "Automatic mode".
2. Switch the machine on by pressing the green pushbutton (2) control voltage "ON".
3. The speed of the pump motor and thus the flow rate can be adjusted at the potentiometer (3).

5.6.2 Opening the air tap on the spray gun



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). Uniform mixing and 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.

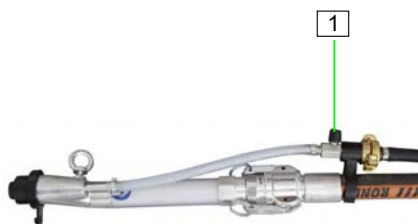


Figure 66: Opening the air tap

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

5.7 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.



Figure 67: Closing the air tap

1. Close the air tap (1) if you interrupt your work for a short while.

✓ The machine stops.

By opening the air tap (1), the machine will start running again.

5.7.1 In case of longer interruption of work / break

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.

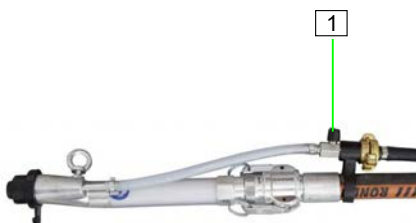


Figure 68: Closing the air tap

1. Close the air tap (1) if the work is interrupted for a longer period of time.



2. Switch off the machine by pressing the red pushbutton (2) control voltage "OFF".

Figure 69: Switching off the machine

5.8 Switching off the air compressor



1. Switch off the air compressor at the rotary switch (1).
2. Open air tap on the spray gun so that the residual pressure can escape.

⚠ WARNING



Danger of injury from discharged mortar!

Discharged mortar may lead to injuries to eyes and face.

■ Beware of residual pressure.

Figure 70: Switching off the air compressor

5.9 Switching off the machine



1. Switch off the machine by pressing the red pushbutton (1) control voltage "OFF".
2. Turn the main switch (2) to position "0".

Figure 71: Switching off the machine

5.10 Action in case of power failure



Main switch to position "0"

1. Close the air tap on spray gun.
2. Turn the main switch to position "0".
3. Switch off air compressor.
4. Have the power supply connection checked by an expert.

Figure 72: Main switch to position "0"

Operation

5.10.1 Discharging mortar pressure

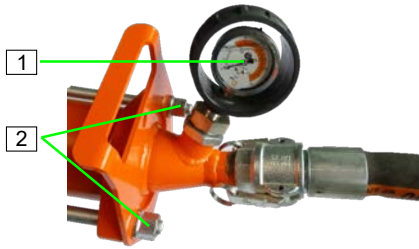


Figure 73: Check and relieve the mortar pressure

⚠ WARNING



Overpressure on the machine!

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

- Only open the mortar hoses if the mortar pressure gauge (1) indicates the pressure has fallen to "0 bar".

⚠ WARNING



Danger of injury from discharged mortar!

Discharged mortar may lead to injuries to eyes and face.

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

1. Open air tap on the spray gun.
2. Check the mortar pressure gauge (1) if the mortar pressure has fallen to "0 bar". If necessary, discharge any mortar pressure by unscrewing the nuts (2) slightly. When doing so, cover the work area with tear-proof film.
3. Tighten nuts (2) again.

5.10.2 Switching on the machine again after a power failure

NOTE



The machine is equipped with a restart interlock. In case of a power failure, this must be started as follows.

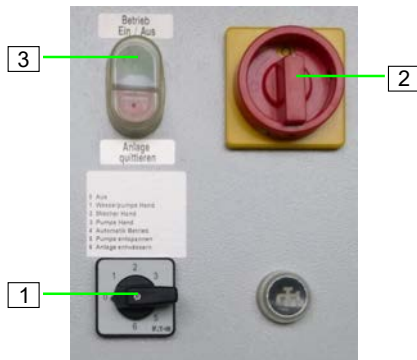


Figure 74: Switching on the machine after a power failure

1. Set the step switch (1) to position 0.
2. Close the air tap on spray gun.
3. Turn main switch (2) to position "I".
4. Switch on the compressor.
5. Turn step switch (1) to position 4 "Automatic mode".
6. Switch the machine on by pressing the green pushbutton (3) control voltage "ON".
7. The machine starts again as soon as the air tap at the spray gun is re-opened.

NOTE



In case of a longer power cut, the machine and the mortar hoses have to be cleaned immediately.

5.11 Measures to be taken in case of water outage

NOTE



Water can be supplied to the machine from a container by means of suction strainer (item no. 00136619).

5.12 Measures in case of risk of frost

⚠ CAUTION



Damage by frost!

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

Therefore:

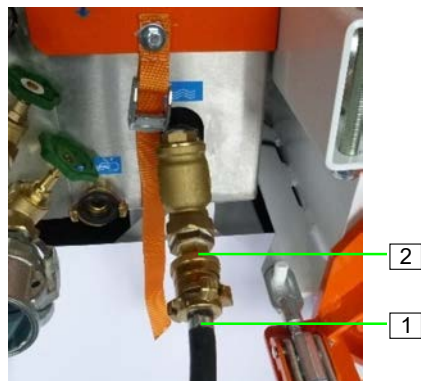
- Only install dry parts.

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

Operation



5.12.1 Remove the water hose



1. Close external water supply.
2. Disconnect the water hose (1) from the water inlet (2).

Figure 75: Remove the water hose

5.12.2 Drain water fitting



1. Uncouple water hose (1) from the mixing tube.

Figure 76: Remove the water hose

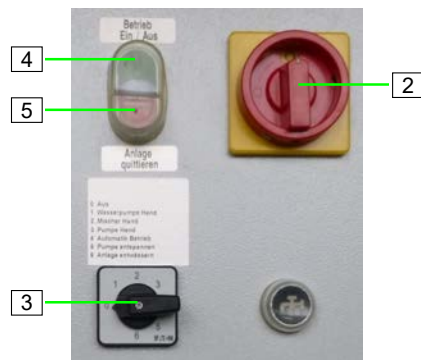


Figure 77: Dry water fitting

2. Turn main switch (2) to position "I".
3. Turn step switch (3) to position 6 "Drain system".
4. Press the green pushbutton (4) control voltage "ON".

NOTE



As long as the green pushbutton for control voltage "ON" is pressed, the water pump (approx. 35 seconds) and the drainage valves (approx. 60 seconds) are drained for the set time.

5. Switch off the machine by pressing the red pushbutton (5) control voltage "OFF".

5.13 Ending work / cleaning the machine

5.13.1 Cleaning

- Clean the machine daily at the end of work and in case of extended breaks.

NOTE

**Water can enter sensitive machine parts!**

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

5.13.2 Secure against restarting

WARNING

**Danger to life from unauthorised restarting!**

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

- Before starting work, switch off all electrical power supplies and secure them against being switched back on again.
- If the protective covers are removed for cleaning purposes, it is essential that they be properly reattached when work is finished.

5.13.3 Running the machine empty

The machine has to be cleaned daily after work:

1. Close the silo discharge flap shortly before the end of work.
2. The mixer continues to run until the dry material sensor in the material container switches off the mixer.
3. The pump continues to run until the level sensor in the pump container switches it off.

Operation

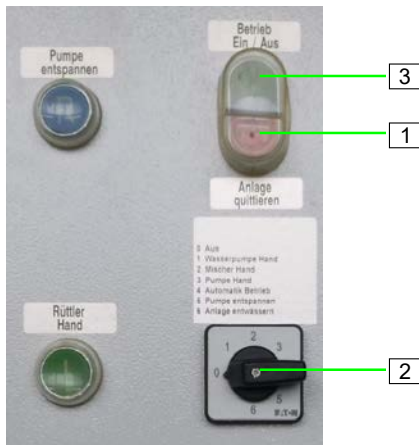


Figure 78: Running the machine empty

1. Switch off the machine by pressing the red pushbutton (1) control voltage "OFF".
2. Turn step switch (2) to position 3 "Manual pump".
3. Press the green pushbutton (3) control voltage "ON" and pump the remaining material out of the pump container.
4. Switch off the machine by pressing the red pushbutton (1) control voltage "OFF".
5. Switch off the air compressor at the rotary switch.
6. Open air tap on the spray gun.

⚠ WARNING



Danger of injury from discharged mortar!

Discharged mortar may lead to injuries to eyes and face.

- Beware of residual pressure.

5.13.4 Cleaning the machine

NOTE



Water can enter sensitive machine parts!

- Before cleaning the machine cover all openings in which no water must enter for safety and functional reasons (e.g. electric motors and control cabinets).

NOTE



The machine's plug connections and drives comply with the provisions of protection class IP54 and must not be cleaned with direct jets of water.

5.13.5 Disconnecting and cleaning the mortar hose

Disconnecting the water hose

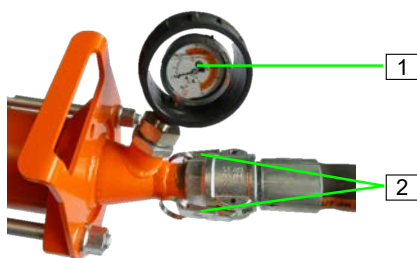


Figure 79: Disconnecting the water hose

1. Check the mortar pressure gauge (1) to determine whether the mortar pressure has fallen to "0 bar".

⚠ WARNING



Overpressure on the machine!

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

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

2. Loosen the cam lever (2) and decouple the mortar hose from the mortar pressure gauge.

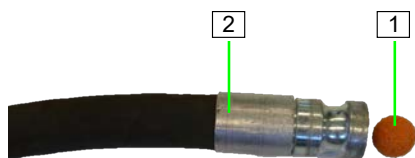


Figure 80: Inserting the sponge ball

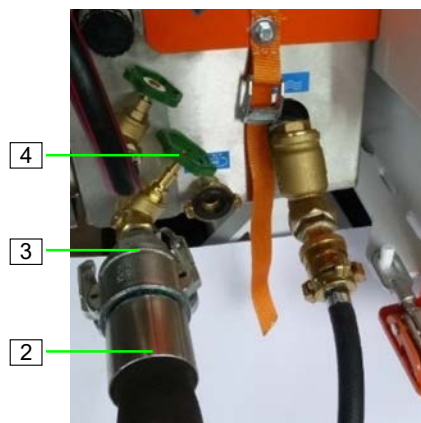


Figure 81: Connect the mortar hose at the cleaner coupling



Figure 82: Cleaning the spray gun

Cleaning the mortar hose

NOTE

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

1. Press the water saturated sponge ball (1) into the mortar hose (2).
2. Connect the mortar hose (2) with the sponge ball (1) to the cleaner coupling (3) on the water extraction valve (4) for cleaning the mortar hoses.

3. Remove fine plaster nozzle (5) from the spray gun.
4. Undo eye bolt (6) and pull air nozzle tube (7) out of the spray head.
5. Open the water extraction valve until the sponge ball exits the spray gun.
6. Repeat this procedure several times in case of heavy soiling.
7. For different hose diameters, the mortar hoses should be cleaned separately with the appropriate sponge balls.
8. Hose down spray gun with water jet.
9. Knock free air nozzle tube (7) with mandrel.
10. Switch on compressor and blow air nozzle tube free.
11. Reassemble spray gun.

5.13.6 Cleaning the mixer

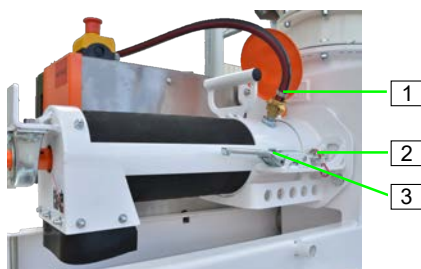


Figure 83: Loosening the mixing tube

1. Disconnect the water supply line (1) from the mixing tube.
2. Remove the folding cotter pins (2) on both sides.
3. Release the quick closures (3) on both sides.

CAUTION**Danger of crushing due to the mixing tube!**

Note the weight of the mixing tube when removing and installing it.

Operation

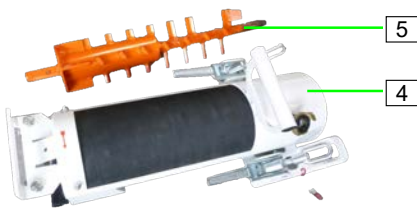


Figure 84: Cleaning the mixing tube and mixing shaft

4. Pull off mixing tube (4) with mixing shaft (5) and clean.
5. Lightly grease the bearing journals.



Figure 85: Closing the mixing tube cover

6. If the mixing tube is removed, close the mixing tube adapter with the mixing tube cover (6).

NOTE



Do not clean dry section with water.

Do not clean the machine with a steam sprayer or high-pressure cleaner. Water could get into the dry zone and also connections and seals will be damaged.

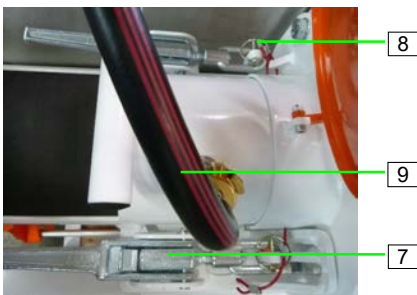


Figure 86: Replacing the mixing tube and mixing shaft

7. Insert cleaned rubber mixing tube with cleaned mixing shaft.
8. Close the quick closures (7) and secure them with the folding cotter pins (8).
9. Couple water hose (9) to the mixing tube.

NOTE

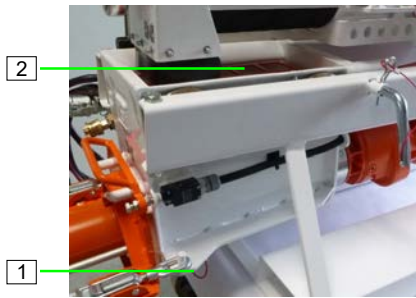


When installing the parts, make sure they are clean and dry.

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

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

5.13.7 Cleaning the pump container



1. Clean the pump container (2) with a water jet.
2. Open the cleaning nozzles (1).
3. Drain off residual material and cleaning water

Figure 87: Cleaning the pump container

5.13.8 Cleaning the level sensor



1. Clean the level sensor (1) in the pump container every 3 - 4 hours.

Figure 88: Cleaning the level sensor

Operation

5.13.9 Cleaning the pump

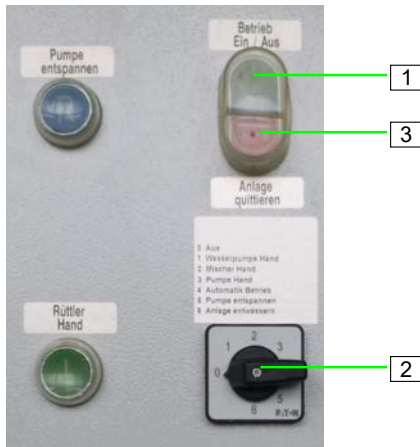


Figure 89: Cleaning the pump

1. Fill the pump container with water to flush the pump.
2. Switch the machine on by pressing the green pushbutton (1) control voltage "ON".
3. Turn step switch (2) to position 3 "Manual pump".
4. Pump water from the pump container.

NOTE



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

5. Switch off the machine by pressing the red pushbutton (3) control voltage "OFF".

NOTE



After the end of work, the power supply and the water line must be disconnected from the machine.

NOTE



If the machine is not used for several days, the rotor and stator should be disassembled and preserved with silicone spray.

5.14 Reaction in the event of faults

Reaction in the event of faults

The following applies as a general rule:

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



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

5.14.1 Safety

Personnel

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

Personal protective equipment

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

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

5.14.2 Faults

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

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

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

5.14.3 Fault displays



Figure 90: Fault displays

The following installation indicates faults:

Pos.	Light signal	Description
1	Yellow control lamp	Lights up when there is no material.
2	Yellow control lamp	Lights up when there is insufficient water pressure.
3	Red control lamp	Lights up on motor protection switch fault. → Check the motor protection switch

Operation



5.14.4 Table of faults

Fault	Possible cause	Troubleshooting	Rectification by
Machine does not start water	Yellow control lamp, water pressure too low	Check the water supply, clean the strainer screen	Operator/ service technician
	Pressure gauge shows less than 2.2 bar	Check pressure booster pump	Service technician
Machine does not start current	Power supply not in order	Repair power supply	Service technician
	Main switch not activated	Activate main switch	Operator
	RCD was triggered	Reset RCD	Service technician
	Motor protection switch triggered	Turn motor protection switch in control box to position 1	Service technician
	Pushbutton for control voltage "ON" is not pressed	Press pushbutton for control voltage "ON"	Operator
	Contactor defective	Change contactor	Service technician
Machine does not start air	Insufficient drop in pressure in the remote control due to blocked air duct or air nozzle pipe	Clean blocked air duct or air nozzle pipe	Operator
	Air safety switch is obstructed	Adjust the air safety switch	Service technician
	Air compressor not switched on	Switching on the air compressor	Operator
Machine does not start Material	Wet, hardened material in the dosing zone	Open and clean dosing zone	Operator
	Grouted and set material in the mixing zone	Cleaning the mixing tube	Operator
Water not flowing (flowmeter does not display anything)	Solenoid valve (hole in membrane blocked)	Clean solenoid valve	Service technician
	Solenoid coil defective	Change solenoid coil	Service technician
	Pressure reducing valve closed	Open pressure reducing valve	Operator
	Water inlet at mixing tube blocked	Clean water inlet at mixing tube	Operator
	Needle valve closed	Open needle valve	Operator
	Cable to solenoid valve defective	Replace cable to solenoid valve	Service technician
Pump motor will not start	Pump motor defective	Replace pump motor	Service technician
	Connection cable defective	Change connection cable	Service technician
	Plug or mounted socket defective	Replace plug or mounted socket	Service technician
	Motor protection switch defective or triggered	Replace or reset motor protection switch	Service technician
	Excessively dry material in pump container	Cleaning the pump container	Operator



Operation

Fault	Possible cause	Troubleshooting	Rectification by
Machine stops after a short while	Strainer screen is dirty	Clean or replace filter	Operator
	Filter of pressure relieve device contaminated	Clean or replace filter	Operator
	Hose connection or water supply line too small	Enlarge hose connection or water supply line	Operator
Machine does not switch off	Air pressure safety switch set incorrectly or defective	Set or replace air pressure safety switch	Service technician
	Compressed air hose or gaskets defective	Replace compressed air hose, replace gaskets or check compressor	Service technician
	Air tap on spray gun defective	Replacing the air tap	Service technician
	Power provided by compressor is too low.	Check compressor	Service technician
	Air duct is not connected to the compressor	Connect air supply to compressor	Operator
Mortar flow "thick-thin"	Too little water	Increase water supply by 10 % for approx. ½ minute and then reduce it slowly	Operator
	Water safety switch set incorrectly or defective	Set or replace water pressure safety switch	Service technician
	Mixing shaft defective; no original PFT mixing shaft	Replace mixing shaft with an original PFT mixing shaft	Operator
	Pressure reducer set incorrectly or defective	Adjust or replace pressure reducer	Service technician
No mortar flow (air bubbles)	Poor mixing in mixing tube	Add more water	Operator
	Mortar clogs and narrows mixing tube inlet	Add more water or clean/replace mixing shaft	Operator
	Mixing shaft defective	Replace the mixing shaft	Operator
	Material in mixing tube has become wet	Empty mixing shaft, dry and begin again	Operator
	Driving claw defective	Replace driving claw	Service technician
Red control lamp, fault lights up	Overload due to the pump getting blocked with dry material	Allow the machine to run backwards, otherwise remove pump and clean it	Service technician
	Overload due to low water volume	Increase water feed on start-up	Operator
	Motor protection switch pump motor triggered	Switch the motor protection switch on again	Service technician
	Overloading due to compacted material	Cleaning the material container Reactivate protection switch	Service technician

5.14.5 Hose blockages

Indications

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

Indications are:

- Rapidly increasing pressure head
- Blockage of pump
- Running difficulties or blockage of the pump motor
- Expansion and turning of the mortar hose
- No material leakage at the hose ends

Possible causes:

- Heavily worn mortar hoses
- Badly greased mortar hoses
- Residual water in mortar hose
- Clogging of the pressure flange
- Severe restriction at the couplings
- Kink in the mortar hose
- Leaks at the couplings
- Poorly pumping and separated materials

Earlier damage to the mortar hose



Should the pressure in the mortar hose exceed 60 bar in the event of a machine failure due to material clogging, replacement of the mortar hose is recommended as there might be damage in the hose that is not externally visible.

5.14.6 Removal of clogging in hoses

⚠ WARNING



Danger from discharged material!

Never detach hose couplings if the feed pressure has not been fully released! Material to be conveyed can be discharged under pressure and cause injuries particularly to the eyes.

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

5.14.6.1 Let the pump run backwards

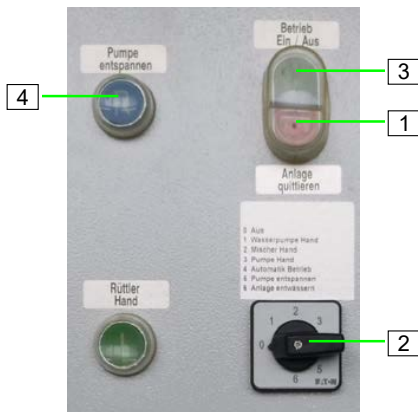


Figure 91: Reverse operation

⚠ WARNING



Danger of shearing and crushing when reaching into the cleaning opening!

- Never reach into the cleaning opening if it is blocked.

1. Press the red pushbutton (1) control voltage "OFF".
2. Turn step switch (2) to position 5 "Release pump".
3. Press the green pushbutton (3) control voltage "ON".
4. Move the blue "Release pump" pushbutton (4) backwards until the pressure at the mortar pressure gauge has dropped to "0 bar".

5.14.6.2 Blockage cannot be cleared

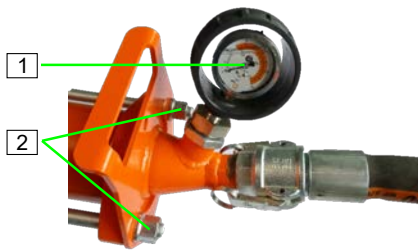


Figure 92: Mortar pressure gauge

⚠ WARNING



Overpressure on the machine!

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

- Only open the mortar hoses if the mortar pressure gauge (1) indicates the pressure has fallen to "0 bar".

⚠ WARNING



Danger of injury from discharged mortar!

Discharged mortar may lead to injuries to eyes and face.

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

1. Undo both nuts (2) on the pressure flange slightly to ensure the residual pressure can escape.
2. As soon as the pressure is down to "0 bar", tighten the nuts (2) again.

Operation



Figure 93: Detaching the coupling

NOTE



Clean mortar hoses immediately

3. Cover coupling connections with tear-proof film.
4. Release cam lever (3) and hose connections.
5. Remove blockage by tapping or shaking at the point of the blockage.
6. If necessary, insert a flushing hose into the mortar hose and flush out the mortar.

■ PFT flushing hose item no. 00113856

5.14.6.3 Switching on the machine after removing a blockage

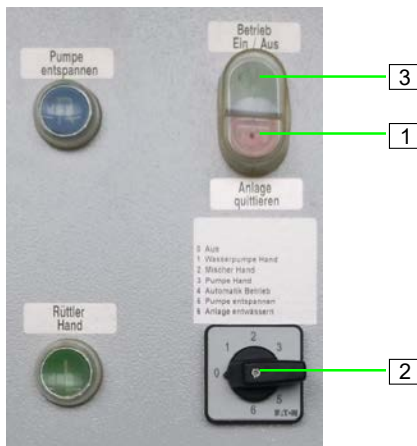


Figure 94: Switching on the machine

1. Press the red pushbutton (1) control voltage "OFF".
2. Turn step switch (2) to position 4 "Automatic mode".
3. Switch the machine on by pressing the green pushbutton (3) control voltage "ON".
4. Let the machine run for a short while without mortar hoses.
5. As soon as mortar emerges at the pressure flange, press the red pushbutton (1) control voltage "OFF".
6. Apply wallpaper paste to the cleaned mortar hoses and connect to the machine and spray gun.
7. Switch the machine on by pressing the green pushbutton (3) control voltage "ON".
8. The machine starts again as soon as the air tap at the spray gun is re-opened.



6 Maintenance

6.1 Safety

Personnel

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

Basic information

WARNING



Risk of injury due to improperly carried out maintenance work!

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

- Prior to starting the works ensure that there is enough space to carry out the works.
- Ensure order and safety at the assembly site! 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.

Electrical system

DANGER



Danger to life from electric current!

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

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

6.1.1 Remove connection cable



Figure 95: Remove connection cable

Electrical system

⚠ WARNING



Danger to life from electric current!

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

Therefore:

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

Secure against restarting

⚠ WARNING



Danger to life from unauthorised restarting!

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

Therefore:

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

6.2 Environmental protection

Environmental protection

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

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

6.3 Maintenance plan

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

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

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



The maintenance is limited to a few checks.

Thorough cleaning after use is the most important maintenance.

Interval	Maintenance work	To be carried out by
Monthly	Clean/replace filter of compressor.	Service technician
Monthly	Clean/replace plastic screen in strainer.	Operator
Monthly	Clean/replace the strainer screen in the pressure reducer.	Service technician

6.4 Maintenance work

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

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

6.4.1 Implementation by a service technician



A service technician is responsible for the assembly and commissioning of machines. In addition, service technicians carry out maintenance and repair work. If work is required on the control box or on other electrical parts, the service technician must have completed vocational training as an electrician.

6.4.2 Air filter compressor

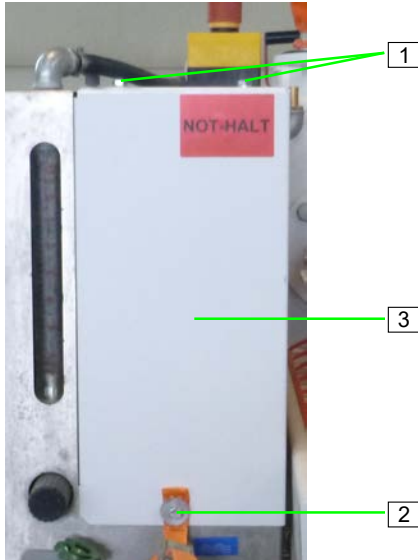


Figure 96: Removing the cover

Implementation by a service technician

To access the air compressor, the cover must be removed from the control cabinet.

1. Undo nuts (1).
2. Remove the screw (2).
3. Remove the cover from the control cabinet (3).



Figure 97: Removing the filter cover

4. Unscrew the filter cover (4).



Opening of the filter cover is at the bottom.

6.4.3 Removing the air compressor from bracket

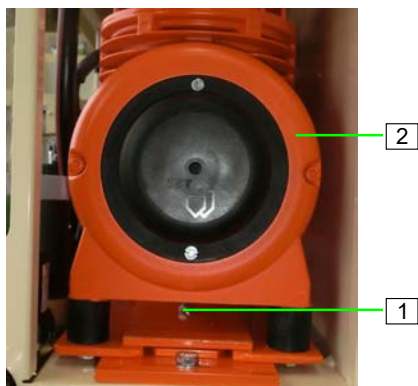


Figure 98: Removing the air compressor

Implementation by a service technician

1. Loosen air hose from the air compressor.
2. Loosen the two screws (1) from the clamping plate and pull out the air compressor (2).

NOTE



Take the weight of the air compressor into consideration.

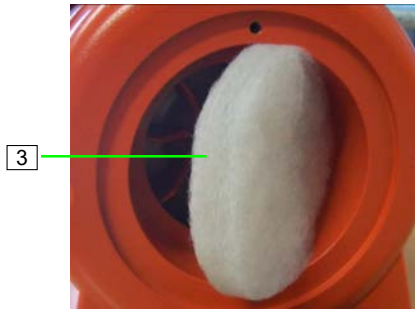


Figure 99: Air compressor filter

3. Remove filter cover.
4. Take out the filter.
5. Blow through the filter from the inside to the outside or tap it.
6. Replace the filter in case of heavy contamination.
7. Insert the filter with the solid side of the filter (3) pointing inwards.

6.4.4 Strainer screen in pressure reducer

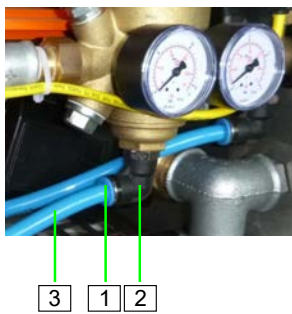


Figure 100: Removing the polyamide hose

Implementation by a service technician

1. Press the blue ring (1) of the push-in L-fitting (2).
2. Pull the polyamide hose (3) out of the screw connection.

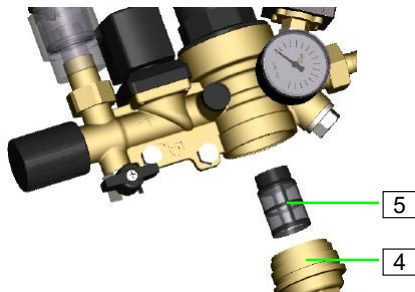


Figure 101: Cleaning the dirt trap screen

3. Remove the closure cap (4) from the pressure reducer.
4. Take out the strainer screen (5) and clean (monthly).
5. Replace the strainer screen if dirt is severe.

Screen for pressure reducer:

■ Item no. 20156000

6. Insert strainer screen (5) and screw on cap (4).
7. Put the polyamide hose (3) back into the screw connection.
8. Press the blue ring (1) back onto the push-in L-fitting (2).

6.4.5 Setting value pressure switch water



Figure 102: Pressure switch water

	Machine switches "ON"	Machine switches "OFF"
Water	2.2 bar	1.9 bar

6.4.6 Setting value pressure switch air



Figure 103: Pressure switch air

	Machine switches "ON"	Machine switches "OFF"
Air	0.9 bar	1.2 bar

6.4.7 Setting value pressure switch air compressor

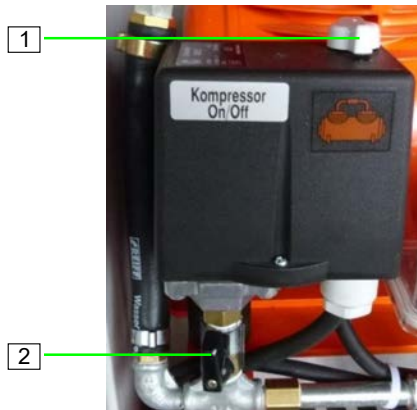


Figure 104: Pressure switch air compressor

	Air compressor switches "ON"	Air compressor switches "OFF"
Compressor	2.5 bar	3.1 bar

1. Switch the air compressor on or off at the rotary switch (1).
2. For continuous operation of the air compressor, close the ball valve (2).

6.4.8 Pump replacement

NOTE



If the delivery pressure decreases and the material flow fluctuates, the pump must be replaced.

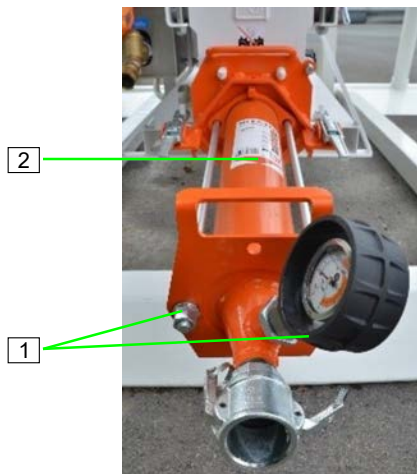


Figure 105: Changing the pump

⚠ CAUTION



Danger of crushing by the pump unit!

Note the weight of the pump unit when removing and installing it.

1. Loosen the collar nuts (1).
2. Remove pump unit (rotor and stator) (2).
3. Insert new rotor and stator and tighten collar nuts (1).
4. When inserting the pump, make sure that it is properly seated.

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.

NOTE



It is essential to spray the pump (rotor in stator) with assembly spray before assembly, as otherwise the break-away torque required for the pump motor is too high.

- Assembly spray for PFT rotor/stator item no. 00588821

6.4.9 Change pump motor

If the pump motor (1) is replaced, the following information must be observed:

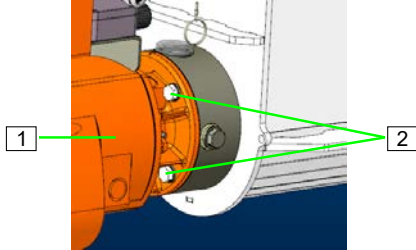


Figure 106: Outside pump motor

NOTE



In general, when changing the pump motor, also replace the hexagon head screws and lock washers.

Hexagonal screw M10 x 30 - 10.9, galvanised

■ Item no. 00766900

Lock washer 10 - RPL

■ Item no. 00728564

NOTE



The tightening torque for the hexagon head screws on the pump motor (2) is 54 +/- 2 Nm, please note and comply with this information!

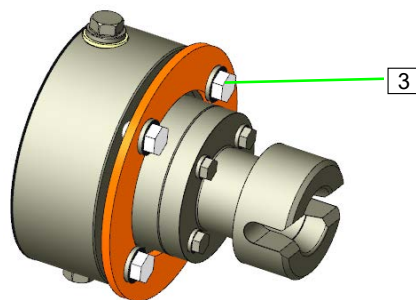


Figure 107: Inside pump container

NOTE



In general, when changing the pump motor, also replace the hexagon head screws and lock washers.

Hexagonal screw M12 x 35 - 8.8 galvanised

■ Item no. 20209962

Lock washer 12 - RPL

■ Item no. 00740487

NOTE



The tightening torque for the hexagon head screws on the inside of the pump container (3) is 93 +/- 2 Nm, please note and comply with this information!

6.4.10 Checking the sealing unit



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

Figure 108: Sealing unit

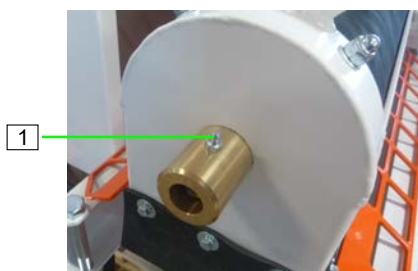
6.4.11 Lubricating the mixer motor



1. Lubricate the mixer motor every six months with commercially available transmission grease.

Figure 109: Mixer motor

6.4.12 Lubricating the mixing tube



1. Lubricate the mixing tube monthly with 5 grams of grease at the grease nipple (1) during regular use.

Figure 110: Lubricating the mixing tube

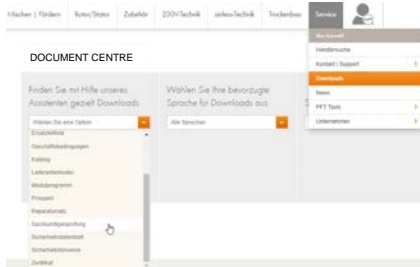
6.5 Actions after completed maintenance

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

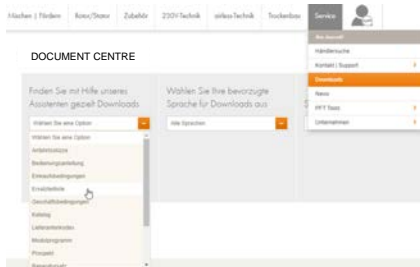
1. Check all previously loosened screw connections for secure fit.
2. Check if all previously removed safety systems and covers are properly reinstalled.
3. Ensure that all tools, materials and other equipment used have been removed from the work area.
4. Clean the work area and remove any spilled materials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

6.6 Periodic inspection/expert inspection

- Construction machinery has to be inspected for 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.
- The documents for the expert inspection can be found on the internet at www.pft.net.
- Open the Document Centre under Service → Downloads.
- In this area, select the expert inspection category to access all relevant inspection documents.



6.7 Spare parts lists



The spare parts lists for the machine can be found on the Internet at www.pft.net.

- Open the Document Centre under Service → Downloads.
- In this area, select the spare parts list category.
- In addition, select the machine you are looking for.



6.7.1 Accessories



Recommended accessories/equipment can be found in the PFT machine and equipment catalogue or under www.pft.net

Disassembly



7 Disassembly

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

7.1 Safety

Personnel

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

Basic information

WARNING



Risk of injury in case of improper disassembly!

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

Therefore:

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

Electrical system

DANGER



Danger to life from electric current!

Contact with live components can lead to death or serious injury. Activated electrical components can carry out uncontrolled movements and cause serious injuries.

Therefore:

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

7.2 Disassembly

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

Prior to starting the disassembly:

- Switch off device and secure against restarting.
- Disconnect the entire energy supply from the machine 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.

Disposal



8 Disposal

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

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

NOTE



Environmental damage due to incorrect disposal!

- 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.



PFT - ALWAYS AT YOUR SITE



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