



Operating manual

Mixing pump G 4 X FU 230/400V

Part 2 Overview, operation and service



Item no. of the operating manual:

00437545

G 4 FC-230/400V, 1/3 Ph, 50 Hz with AVO 500

Item no.: 00260621

G 4 FC-230/400V, 1/3 Ph, 50 Hz without booster pump
with accessories

Item no.: 00422135

G 4 FC-230/400V, 1/3 Ph, 50 Hz without booster pump

Item no.: 00423408

G 4 FC-230/400V, 1/3 Ph, 50 Hz with AVO 500 with accessories

Item no.: 00423950



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 divided into 2 books:

- Part 1 Safety/drinking water protection

General safety instructions mixing pumps/conveying pumps

Item no.: 00172709

- 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 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.



General information



Structure of the safety and warning notices

All safety and warning notices consist of:

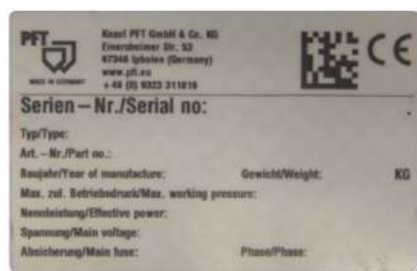
- The danger sign and signal word
- Information on the nature of the hazard
- Information on the source of the hazard
- Information on possible consequences of disregarding the hazard
- Measures to avert the hazard

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.

1.4 Keep the manual for future reference

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

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: G 4 X
Type of equipment: Mixing pump
Serial number:
Guaranteed sound power level: 95 dB

is in conformity with the following CE directives:

- Outdoor Directive (2000/14/EC),
- 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 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.

1.8.2 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.



1.8.3 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.

1.8.4 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.

1.8.5 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.

1.8.5.1 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.



1.8.5.2 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.

1.8.5.3 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.

1.8.5.4 Air compressor pressure cut-off

WARNING



Danger of death due to missing safety equipment!

We expressly point out that the compressor must not be operated without a pressure switch-off. External pressure switches in machines have to have the same switching cycles as the factory-set pressure switch.

If no pressure switch is positioned upstream, the compressor can be easily retrofitted.

Technical data

PFT

2

Technical data

2.1

General information

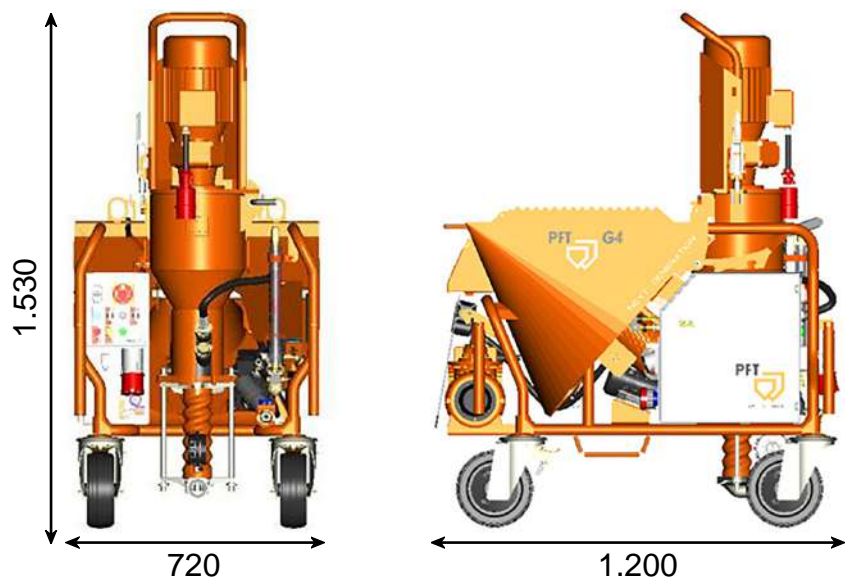


Figure 3: Dimension sheet

Detail	Value	Unit
Empty weight approx.	308	kg
Length	1200	mm
Width	720	mm
Height	1530	mm

Individual weights

Detail	Value	Unit
Pump motor with tilt flange	51	kg
Mixing pump	81	kg
Material hopper	162	kg
Air compressor	14	kg

Material hopper dimensions

Detail	Value	Unit
Filling height	910	mm
Material hopper volume	145	l
Material hopper volume with attachment	200	l



2.2 Power connection



Figure 4: Motor protection switch

Electrical details

Detail	Performance	Setting value	Designation
Star wheel	0.3 kW	0.95 A	Q4
Pump motor	6.05 kW	11 A	Q5
Water pump	0.37 kW	2.5 A	Q6
Compressor	0.52 kW	3.3 A	Q6

Water connection

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

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 230V

Detail	Value	Unit
Voltage, three-phase current 50 Hz	230	V
Power consumption, max.	18	A
Fuse protection, minimum	1 x 16	A
Power input, max.	7.5	kW
Speed pump motor approx.	385	Rpm
Speed star wheel motor	12	Rpm

Technical data



Electrical - 400V

Detail	Value	Unit
Voltage, three-phase current 50 Hz	400	V
Power consumption, max.	18	A
Fuse protection, minimum	3 x 25	A
Power input, max.	7.5	kW
Speed pump motor approx.	385	Rpm
Speed star wheel motor	12	Rpm

2.4 Capacity values, SD 6–3 SLIMLINE pump unit

SD 6–3 SLIMLINE pump output

Detail	Value	Unit
Pump capacity, approx.	17	l/min at 385 rpm
Operating pressure, maximum	20	bar
Maximum grain size	2	mm
Feed range *, max. with 25 mm Ø	15	m
Feed range *, max. with 35 mm Ø	20	m

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

Compressor output DELTA 2

Detail	Value	Unit
Compressor output	0.180	Nm ³ /min

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 Crane transport



Figure 5: Attachment points

Attachment points

Anchor the machine at the anchor points for transport by crane.

Observe the following conditions:

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

Attachment:

1. Anchor the hooks to both crane hooks accordingly.
2. Ensure that the package is straight, possibly observe eccentric centre of gravity.

3.5 Transport in van



Figure 6: Transport

1. Remove the water hose from the mixing tube.
2. Loosen the locking lever and lift the mixing tube.
3. Insert the hook of the protective grille at the motor protection handle.
4. Lock the castors of the machine.

⚠ 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.

3.6 Transport in individual parts



Figure 7: Transport

Disassemble the machine in the units mixing tube and hopper for easier transport. These can be transported separately.

3.7 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

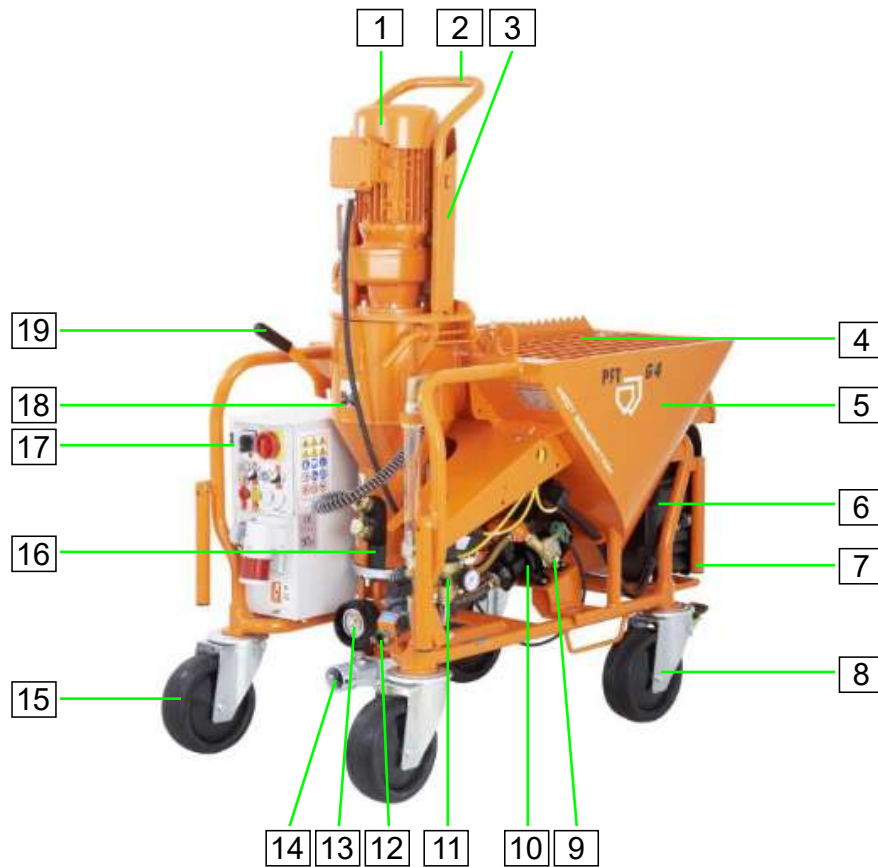


Figure 8: Table of the assembly groups

[1] Pump motor	[2] Motor protection handle
[3] Deflector plate	[4] Protective grille with sack opener
[5] Material hopper	[6] Air compressor
[7] Carrying handle	[8] Double stop castor
[9] Water sampling valve	[10] Pressure booster pump
[11] Water manifold	[12] Water inlet
[13] Mortar pressure gauge	[14] Connection for mortar hose
[15] Castor	[16] Rubber mixing section
[17] Control box	[18] Mixing tube
[19] Locking lever	

Description



4.2 Operating principle G 4 X FU 230/400V



The dry section to accommodate the ready-mixed mortar is separated from the mixing and pumping section. The dry mortar is thrown into the mixing chamber via the inclined star wheel. The PFT G 4 X FU 230/400V can be started and refilled at any time. The star wheel is powered separately and can be quickly disassembled using a central locking mechanism.

Figure 9: G 4 X FU 230/400V

4.3 Brief description G 4 X FU 230/400V



Figure 10: Functional description

The new mixing pump G 4 X with 230V AC or 400V three-phase drive was specially developed for pumping, spraying and applying dry mortar, pasty materials for machine use and much more up to 2 mm grain size.

The pump output can be adjusted by means of a quick pump change depending on the requirements.

In 230V operation, the litre output can be set in the control cabinet via the potentiometer.

The machine can be filled with bagged material as well as directly from a silo/container by means of delivery hood or injection hood and PFT SILOMAT installation.

4.4 Fields of application

For pumpable pre-mixed dry mortar such as:

- gypsum plasters
- lime/gypsum plasters
- cement plasters
- lime plasters
- fango material
- insulation plasters
- filling plasters
- armour and glueing mortar
- floor screed
- masonry mortar
- and much more

Flowability / flow characteristics



- The SD 6–3 SLIMLINE pump unit can be used up to 20 bar operating pressure.
- The possible conveying distance depends mainly on the flowability of the material.
- If 20 bar operating pressure are exceeded the mortar hose length has to be reduced.
- To avoid machine breakdowns and excessive wear on pump motor, mixing shaft and pump, always use original PFT spare parts such as:
 - PFT rotors
 - PFT stators
 - PFT mixing shaft
 - 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.

4.5 Description of assemblies

The PFT G 4 X mixing pump consists of the main components described in the following chapters.

4.5.1 Material hopper



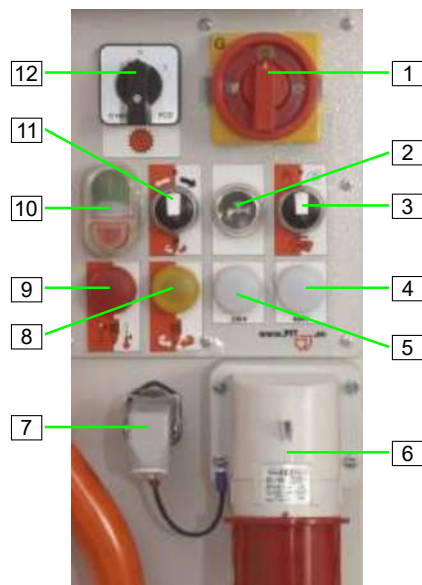
- Hopper with frame and protective grille

Figure 11: Material hopper assembly

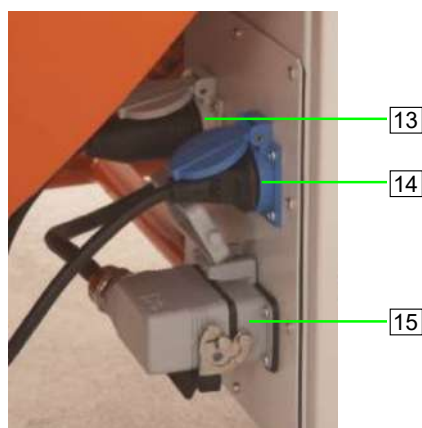
Description



4.5.2 Control box item no. 00254651



- [1] Main reversing switch is also emergency-stop switch
- [2] Water supply button
- [3] Selector switch booster pump "manual-0-automatic"
- [4] Control lamp operation 400V
- [5] Control lamp operation 230V
- [6] Main terminal
- [7] Dummy connector / connection for remote control
- [8] Yellow control lamp, wrong direction of rotation
- [9] Red control lamp, motor protection switch activated
- [10] Pushbutton for control voltage "ON/ OFF"
- [11] Pump motor selector switch
- [12] Selector switch star wheel



- [13] Safety socket, controlled for connection of booster pump
- [14] Safety socket for air compressor connection
- [15] Connection of pump motor

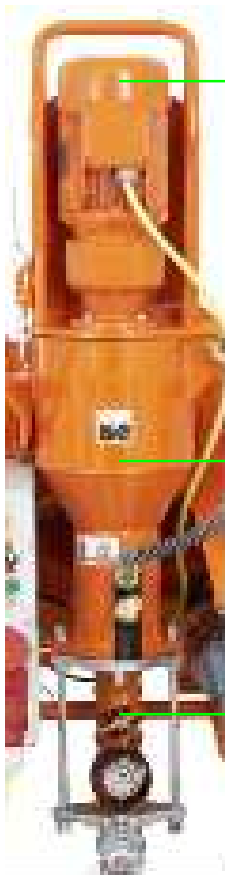
NOTE



In 230V operation, switch off the booster pump. The 16A fuse could trip due to the current draw of the machine.

Figure 12: Assembly unit control box

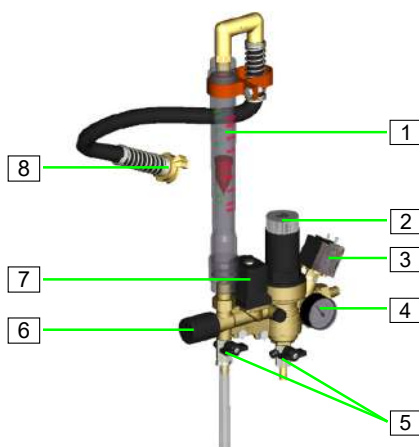
4.5.3 Mixing tube with motor and pump



- [1] Pump motor 6.05 kW
- [2] Mixing tube with rubber mixing section
- [3] SD 6–3 SLIMLINE pump unit

Figure 13: Assembly unit mixing tube with motor

4.5.4 Water manifold



- [1] Water flow meter 150 – 1,500l/h
- [2] Pressure reducer
- [3] Water pressure switch
- [4] Water pressure gauge
- [5] Drain tap for frost protection
- [6] Needle valve
- [7] Solenoid valve
- [8] Water to mixing tube

Figure 14: Water tap assembly

Description



4.5.5 Air compressor



- Air compressor DELTA 2 230V with pressure switch-off

Figure 15: Air compressor

4.5.5.1 Dry running air compressor

Runs completely without oil

Benefits:

High operational life, no downtime due to wear, like e.g. for a membrane compressor, as the wear of the sleeves and piston seals has a linear basis. The use of high-quality components lets the compressor reach high durability. Safety on multiple levels by virtue of a robust aluminium casing and sophisticated filter system. Changing filter insert for motor cooling air, easy access from the outside and easy replacement. The actual intake air for the compressor is taken in via two internal intake filters with silencer function.

4.5.6 Mortar pressure gauge



Figure 16: 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.

4.6 Connections



- [1] Main terminal
- [2] Mortar hose connection on mortar pressure gauge
- [3] Connection water supply from mains
- [4] Connection air to spray gun

Figure 17: Connections

4.7 Operating modes



Figure 18: Selector switch star wheel

Selector switch star wheel

The star wheel can be operated in three operating modes:

Switch position "0":

- The star wheel is switched off and thus the material supply to the mixing section is interrupted, e.g. for cleaning the mixing section using the cleaning shaft or carrying out a pressure test of the pump.

Switch position "1":

- The star wheel is running in sync with the mixing pump motor and is switched on and off using the air control or remote control.



Figure 19: Pump motor selector switch

Pump motor selector switch

The pump motor has three operating modes:

Switch position "0":

- The machine is switched off.

Switch position "right" (latching):

- The machine starts up when the power supply is correctly and completely switched on.

Switch position "left" 230V (spring return):

- The pump motor goes into reverse, thereby relieving the pump and locking other functions.

Switch position "left" 400V (spring return):

- Change the direction of rotation at the main switch.
- The pump motor goes into reverse, thereby relieving the pump and locking other functions.

Description



Figure 20: Selector switch pressure booster pump

Selector switch pressure booster pump

The pressure booster pump can be operated in three different operating modes.

Switch position "0":

- Booster pump is switched off (e.g. if the water pressure is continuously at 2.5 bar).

Switch position "AUTO" (right):

- The booster pump runs synchronously with the mixing pump.

Switch position "HAND" (left):

- The booster pump runs continuously (e.g. for cleaning the hoses).

4.8 Voltage 230V/400V changing



Figure 21: Change voltage

Voltage change-over switch (1) 230V, 1 phase or 400V, 3 phase is located in the control cabinet

- Delivery state position of voltage selector to 400V

Change voltage:

1. Turn the main switch to position "0".
2. Open the control cabinet door.
3. Switch the voltage switch (1) to 230V or 400V.
4. Close the control cabinet door.
5. Turn the main reversing switch to position "I".
6. Press the green pushbutton control voltage "ON".

4.9 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.



Figure 22: Pressure booster pump

Configuration example

Item no. of pressure booster pump AV1000/1: 00493686



Figure 23: Suction strainer with stainless steel filter screen, suction hose 1", 2.5m

Accessories

Item no. 00136619

4.10 Accessories



Injection hood for G 4, RITMO XL, HM 24

- Item no. 20600213

The PFT injection hood is used for feeding dry material to the mixing pump using the PFT SILOMAT pneumatic conveying system.



Delivery hood with idle running protection for G 4, HM 24

- Item no. 20600500

The PFT delivery hood is used for feeding dry material to the mixing pump PFT G 4 directly from the silo / container. In case of an empty alarm in the hopper, the mixing pump is switched off via the remote control socket.

Description



ROTOMIX D pumps cpl. with size 35 coupling

- Item no. 20118000

Remixer for better decomposition and mixing of the material. Direct drive via tang of the rotor. Contents approx. 1.2 l



ROTOQUIRL II cpl. with size 35 coupling

- Item no. 20118400

Remixer for better decomposition and mixing of the material. Direct drive via tang of the rotor. Contents approx. 4.2 l



Water hose/air hose DN19 Geka | Geka - 40 m

- Item no. 20212100



Remote control cable with switch - 25 m

- Item no. 20456929



Description



Adapter cable of RITMO XL, reversible safety socket/coupling 32A, 5-pin (400 V, 3 Ph)

■ Item no. 00226538



Extension cable 5 x 4 mm², RED 5-32 A – 25 m (400 V, 3 Ph)

■ Item no. 20423920



Extension cable 5 x 4 mm², RED 5-32 A – 50 m (400 V, 3 Ph)

■ Item no. 20423900

You can find further accessories on the internet at www.pft.net or from your PFT construction machinery dealer.

Operation

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.

5.1.1 Safety rules

CAUTION



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

5.1.2 Monitoring the machine

⚠ WARNING



Access by unauthorised persons!

- The machine may only be operated when monitored.

5.1.3 Hazardous dusts



Figure 24: 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).

5.1.3.1 DUSTCATCHER G 4 SET



Figure 25: DUSTCATCHER

DUSTCATCHER for G 4 item no. 00539716 includes:

- Class M dust remover - iPulse (for conveyance assembly the following information is required:
iPulse M-1635 Safe - No. 018935)
- Supplementary set for dust remover M
- Extension hopper DUSTCATCHER G 4
- Deflector plate with outlet connections

Operation

5.1.4 Safety system

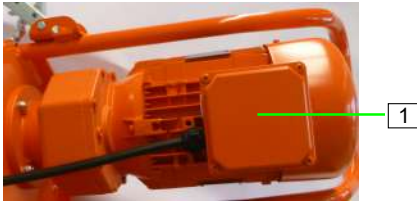


Figure 26: Inclination switch

Inclination switch (1) in the terminal box of the geared motor.

- The inclination switch triggers as soon as the quick closure is opened and the geared motor is tilted on the side.
- If the machine is on rough terrain, the inclined position of the machine can also trigger the inclination switch.

5.1.5 Mortar pressure gauge



Figure 27: 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 from running star wheel



Figure 28: Grille cover

⚠ WARNING



Running star wheel!

Risk of injury when reaching into the running star wheel.

- During machine preparation and operation the grille cover (1) must not be removed.
- Never reach into the running machine.

5.3.2 Positioning machine



Figure 29: Lockable castor

1. Lock the lockable castor prior to operating the machine.
2. Put up the machine on a stable, even surface and secure against unwanted movements:
 - Do not tilt or roll the machine away.
 - Place the machine where it cannot be hit by any falling objects.
 - The controls must be freely accessible.
 - Maintain a clearance of approx. 1.5 metres around the machine.

5.3.3 Connecting the power supply

5.3.3.1 Connecting the power supply 230V



Figure 30: Changing voltage

Changing voltage

1. Open the control cabinet door.
2. Switch the voltage changeover switch (1) to the left to 230V.
3. Turn the potentiometer (2) for the motor speed or for the material quantity to level 10.
4. Close the control cabinet door again.

Operation



Figure 31: Connecting the adapter cable

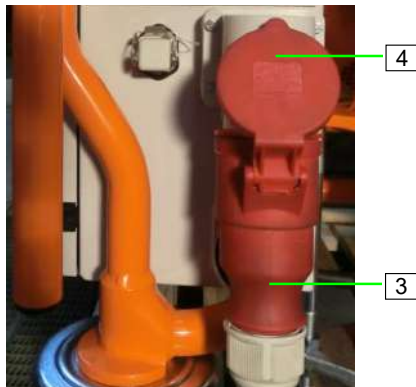


Figure 32: Connecting the power supply

Connecting the power supply

1. Only connect adapter cable (1) to the 230V AC network (2).
2. Connect the adapter cable with the permissible extension cable (3) ([see accessories](#)) and connect to the main power connection of the machine (4).

⚠ 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.

NOTE



To ensure trouble-free operation of the machine, make sure that the adapter cable is connected on the mains side and not on the machine side.

NOTE



Check extension cables and adapters for damage and ensure function before starting work or at regular intervals. (DGUV & VDE 701/702)



The machine can be switched to 230V, 1 phase and operated, although it is connected to a 400V, 3 phase supply.

Benefits:

- The motor speed can be controlled via the potentiometer.*

Disadvantage:

- As the machine is controlled via the frequency converter, the pump motor does not reach its full capacity (maximum 4 kW).*



Figure 33: Image showing example of impermissible connection variant

⚠ WARNING



Do not use cable drums!

If the adapter cable is used, the specified cross-section must be strictly adhered to. Working with cable drums is not permitted; likewise it is not permissible to connect the adapter cable to the main power connection of the machine.

5.3.3.2 Connecting the power supply 400V



Figure 34: Connecting the 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 an approved RCD (residual current device) of type A (30 mA).



The machine can be switched to 230V, 1 phase and operated, although it is connected to a 400V, 3 phase supply.

Benefits:

- The motor speed can be controlled via the potentiometer.*

Disadvantage:

- As the machine is controlled via the frequency converter, the gear motor no longer reaches its full capacity (maximum 4 kW).*

5.3.3.3 Connecting the individual connectors

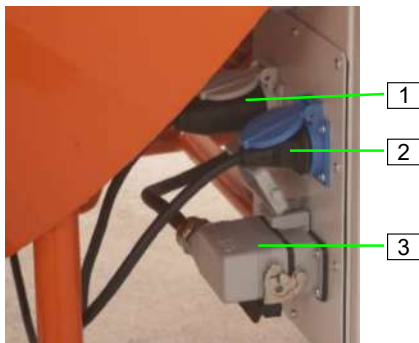


Figure 35: Power connections

⚠ 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 the booster pump (1).



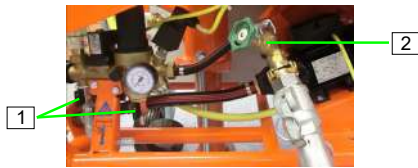
The booster pump is necessary if the water pressure falls below 2.5 bar during running operation of the machine.

2. Connect the power supply for the air compressor (2).
3. Connect the power supply for pump motor (3).

Operation

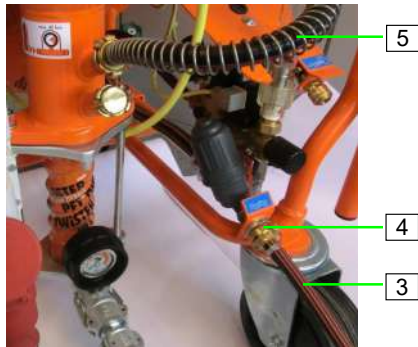


5.3.4 Connecting the water supply



1. Close the water draining cocks (1) at the water fitting.
2. Close the water sampling valve (2).
3. Close the water drain cock on the booster pump.

Figure 36: Closing the drainage cocks



4. Clean the water hose (3) from the water supply and bleed.
5. Connect the water hose (3) to the water inlet (4).
6. Remove the water hose (5) from the mixing tube.
7. Open the water tap from the water supply line.

Figure 37: Connecting the water

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.

5.3.4.1 Connection of water from water tank



Figure 38: Pressure booster pump



Figure 39: Suction strainer complete with filter screen

- Item no. of pressure booster pump AV1000/1 (1): 00493686
- The connected pressure booster pump ensures the required water pressure of at least 2.5 bar.

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!

5.3.5 Switching on the machine



Figure 40: Switching on the machine

Switching on the machine at 230V

1. Turn the main reversing switch (1) to position "I".

Operation

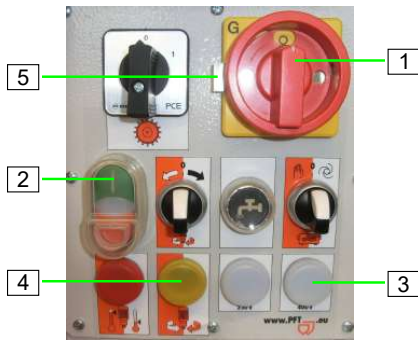


Figure 41: Switching on the machine

Switching on the machine at 400V

1. Turn the main reversing switch (1) to position "I".
2. Press the green push button (2) control voltage "ON" (only for 400V).
- ✓ Control lamp (3) "Operation 400V" lights up
3. If the yellow control lamp (4) "Change direction of rotation" lights up, the direction of rotation must be changed.
4. Turn the main reversing switch (1) to position "0".
5. Push the metal bracket (5) in the opposite direction.
6. Turn the main reversing switch (1) to position "I".



The machine only starts up if the yellow control lamp (4) does not light up.

5.3.5.1 Setting the water quantity

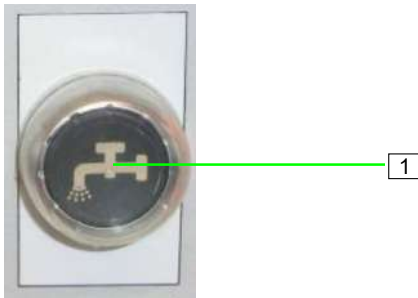


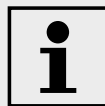
Figure 42: Press the water supply button

1. Press the water supply button (1) to adjust the water quantity.
2. At the same time, adjust the anticipated amount of water required at the needle valve (2), which can be seen at the cone (3) in the sight glass of the water flow meter (4).

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.

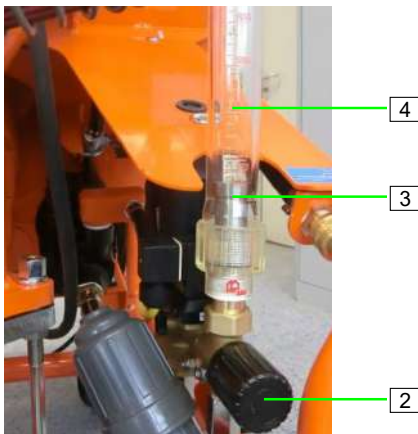


Figure 43: Setting the water quantity

5.3.5.2 Watering the mixing zone



Figure 44: Watering the mixing zone

NOTE



The pump must generally be flushed with water. Flushing with water makes it easier for the pump to start up.

1. Connect the water hose (1) to the mixing tube.
2. Remove the blind cover (2) from the lower water nozzle.
3. Press and hold the water supply button (3) until water emerges from the lower water nozzle.
4. Screw the blind cover (2) back on the lower water nozzle.

5.3.6 Mortar hoses

5.3.6.1 Preparing the mortar hoses

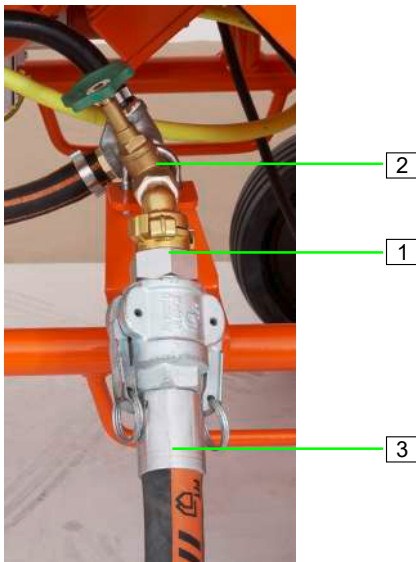


Figure 45: Preparing the mortar hose

1. Connect the cleaner coupling (1) at the water extraction valve (2).
2. Connect the mortar hose (3) to the cleaner coupling (2).
3. Open the water sampling valve (2) and water the mortar hose (3).
4. Remove mortar hose and cleaner coupling again and disconnect from each other.
5. Remove all the water from the mortar hose.
6. Pre-lubricate the mortar hose with about 2 litres of wallpaper paste.
7. The wallpaper paste is mixed through the mortar hose with the first mixing.

⚠ WARNING



The mix could burst out under pressure and result in serious injuries, especially injuries to the eyes.

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

- Never loosen the hose couplings as long as there is pressure on the mortar hoses (check mortar pressure gauge)!

Operation

5.3.6.2 Connecting the mortar hose

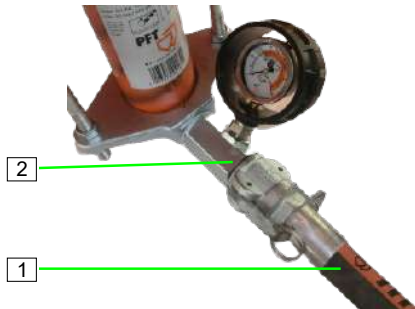


Figure 46: Connecting the mortar hose

1. Connect the mortar hose (1) to the mortar pressure gauge (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.

2. Lay mortar hoses with a radius large enough so that the hoses do not kink.
3. Carefully secure risers so that they do not tear away from their own weight.
4. Turn the pump motor selector switch (3) to "right" position.
5. Allow the machine to run until all the wallpaper paste has emerged from the end of the mortar hose.
6. Collect the wallpaper paste in suitable container and dispose of as per regulations.
7. Turn the pump motor selector switch (3) to the "0" position.



Figure 47: Switching on

5.3.7 Compressed air supply

5.3.7.1 Connecting the air hose



Figure 48: 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.

5.3.7.2 Connecting the spray gun

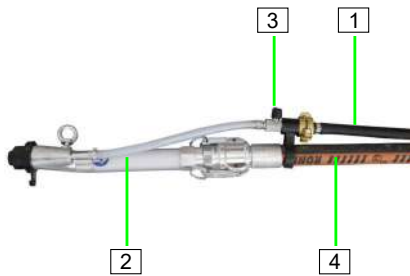


Figure 49: Spray gun

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).

5.3.7.3 Switching on the air compressor



Figure 50: Switching on the air compressor

1. Switch on the air compressor using the green toggle 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.

5.3.8 Feeding dry material to the machine



Figure 51: Bagged goods

Loading with bagged goods

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

CAUTION



Danger of injury at the sack opener!

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

- Wear safety gloves.

Operation



Figure 52: Delivery hood

Feeding with delivery hood

- Item no. 20600500
- Fit the delivery hood instead of the grille cover.

⚠ WARNING



Risk of injury at the star wheel!

- Do not open the delivery hood during the operation of the machine.
- Before opening, turn off the master switch/main reversing switch and interrupt the power supply.



Figure 53: Injection hood

Feeding with injection hood:

- Item no. 20600213
- Fit the delivery hood instead of the grille cover.

⚠ WARNING



Risk of injury at the star wheel!

- Do not open the machine during pneumatic conveying.
- Before opening, turn off the master switch/main reversing switch and interrupt the power supply.

NOTE



First feed material to the mixing pump G 4 X. Pull the dummy connector or switch off the machine using pressure control air. Start your work only when the level sensor indicates full.

5.3.9 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.

5.3.9.1 Initial start-up booster pump



Figure 54: Filling the 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.

5.3.9.2 Putting the pressure booster pump into operation



Figure 55: 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.

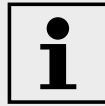
Operation



Figure 56: Suction strainer with filter screen item no. 00136619

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.



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.

In case of danger proceed as follows:

1. Switch off the main reversing 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.



After the rescue operations

⚠ 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 Putting the machine into operation

5.5.1 Checking the mortar consistency



Figure 57: Consistency inspection tube

1. Connect consistency inspection tube to the mortar pressure gauge.
2. Place a bucket or tray below the consistency inspection tube.

Mortar consistency inspection tube 25M

- Item no. 20104301

5.5.2 Feeding material to the machine

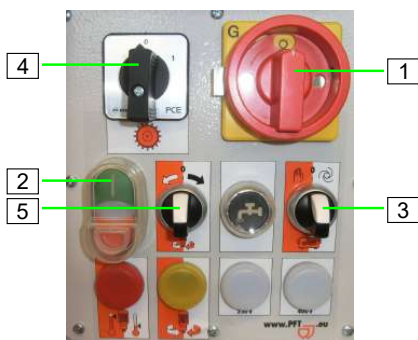


Figure 58: Switching on the machine

1. Turn the main reversing switch (1) to position "I".
 2. Press the green pushbutton (2) control voltage "ON".
 3. Turn the booster pump selector switch (3) to the "AUTO" position.
 4. Turn the star wheel selector switch (4) to the "1" position.
 5. Turn the pump motor selector switch (5) to "right" position.
- ✓ The machine starts.

Operation



Figure 59: Checking the consistency

6. Check mortar consistency at consistency inspection tube (6).
7. Turn the pump motor selector switch (5) to the "0" position.
- ✓ The machine stops.
8. Remove consistency inspection tube (6) and clean.

5.6 Remote control



Figure 60: Remote control

Working with the remote control

1. Remove dummy plug (1) from control box.
2. Connect remote control (2).
3. The G 4 X can be switched on or off using the remote control.

5.7 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 20 bar is exceeded, the hose length must be shortened or the hose thickness increased.

5.7.1 Opening the air tap on the spray gun



Figure 61: Switching on



Figure 62: Opening the air tap

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



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.

5.8 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 63: 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.

Operation



5.8.1 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 64: Closing the air tap

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

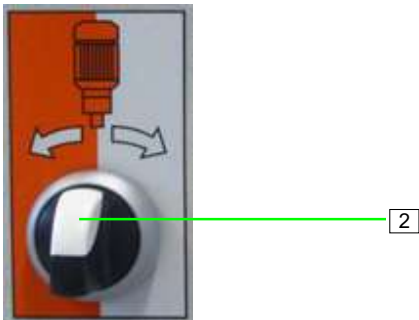


Figure 65: Switching off the machine

2. Turn the pump motor selector switch (2) to the "0" position.

5.9 Switching off the air compressor



Figure 66: Switching off the air compressor

1. Switch off the air compressor using the green toggle 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.

5.10 Switching off the machine



1. Turn the pump motor selector switch (1) to the "0" position.
2. Turn the main reversing switch (2) to position "0".

Figure 67: Switching off the machine

5.11 Action in case of power failure



Turn the main reversing switch to the "0" position

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

Figure 68: Turn the main reversing switch to the "0" position

Operation



5.11.1 Discharging mortar pressure

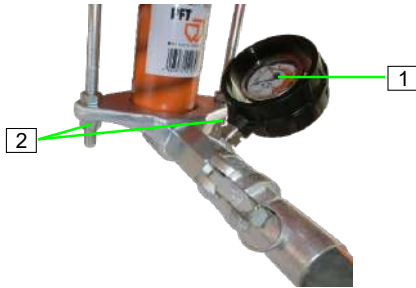


Figure 69: Check and relieve the mortar pressure

⚠ 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.

5.11.2 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.

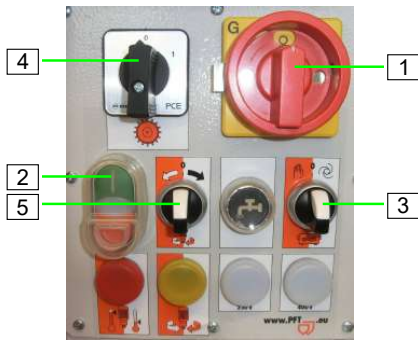


Figure 70: Switching on the machine after a power failure

1. Close the air tap on spray gun.
2. Turn the main reversing switch (1) to position "I".
3. Press the green pushbutton (2) control voltage "ON".
4. Turn the booster pump selector switch (3) to the "AUTO" position.
5. Turn the star wheel selector switch (4) to the "1" position.
6. Switch on the air compressor using the green toggle switch.
7. Turn the pump motor selector switch (5) to "right" position.
8. 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.

5.12 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.

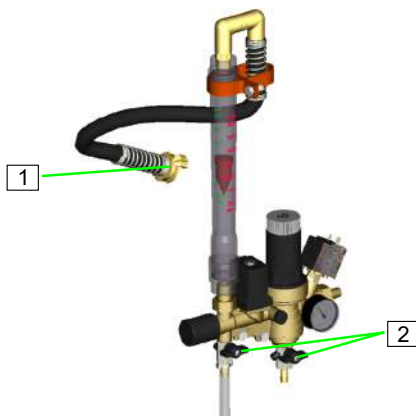


Figure 71: Disconnect water supply

1. Close external water supply.
2. Disconnect the water hose (1) from the mixing tube.
3. Open the water drain cock (2).
4. Open the water drain cock on the booster pump.

Operation



Figure 72: Strainer

5. Open and empty strainer.

NOTE



Make sure that the water fully flows out of the water manifold.

5.12.1 Blowing the water manifold dry

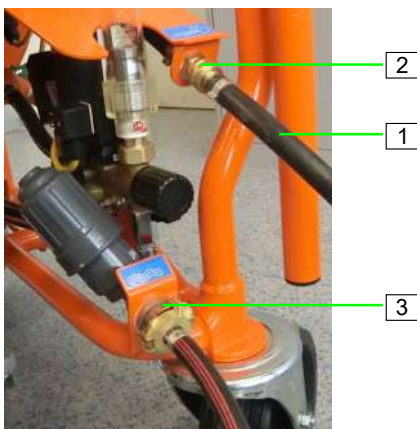


Figure 73: Connecting the air hose

1. Connect air hose (1) with Geka coupling and EWO coupling to the compressed air flange (2) and to the water inlet (3).



Figure 74: Blowing the water manifold dry

2. Turn the star wheel selector switch (4) to the "0" position.
3. Turn the booster pump selector switch (5) to the "0" position.
4. Turn the pump motor selector switch (6) to the "0" position.
5. Turn the main reversing switch (7) to position "I".
6. Switch on the air compressor using the green toggle switch.
7. Press and hold the water flow button (8) for approx. 15 seconds.
8. The water is now blown out of the manifold with compressed air.
9. Switch off the air compressor using the green toggle switch.
10. Turn the main reversing switch (7) to position "0".

NOTE



Make sure that the water fully flows out of the water manifold.

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 Emptying the mixing tube

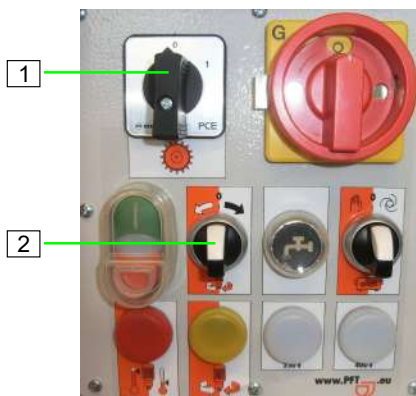


Figure 75: Switching off the star wheel

The machine must be cleaned daily after work and before prolonged pauses:

1. Shortly before the end of work, switch the star wheel selector switch (1) to the "0" position.
2. As soon as thinner material emerges from the spray gun, close the air valve at the spray gun.
3. Turn the pump motor selector switch (2) to the "0" position.
4. Switch off the air compressor using the green toggle switch.
5. 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.

Operation

5.13.4 Disconnecting and cleaning the mortar hose

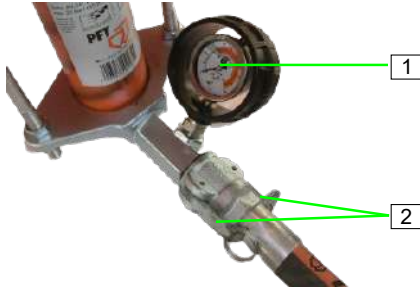


Figure 76: Disconnecting the water hose

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.

Cleaning the mortar hose

NOTE



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

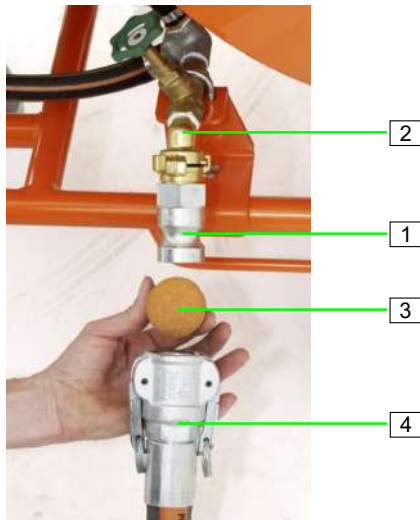


Figure 77: Cleaning the mortar hose

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



Figure 78: Cleaning the spray gun

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

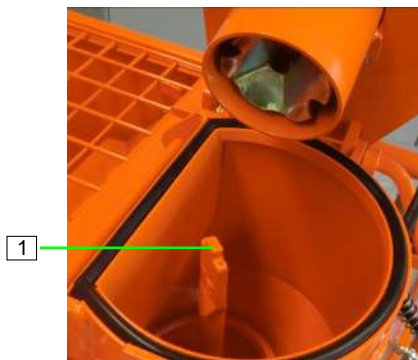
5.13.5 Connecting the water hose



1. Connect the water hose (1) to the mixing tube.

Figure 79: Connecting the water hose

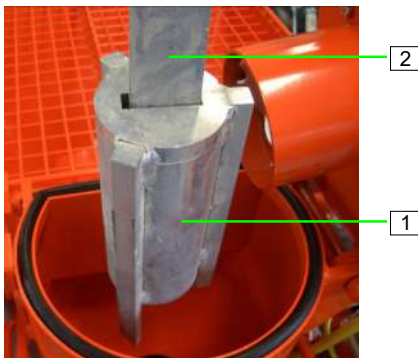
5.13.6 Cleaning the mixing tube



1. Open the quick closure at the motor tilt flange and tilt the motor.
2. Remove the mixing shaft (1) and clean it.

Figure 80: Opening the motor tilt flange

5.13.6.1 Inserting the mixing tube cleaner



1. Take the mixing tube cleaner (1) and cleaning shaft (2) from the tool box.



Insert the mixing tube cleaner (1) into the mixing tube with the scrapers pointing downward.

NOTE



When inserting the cleaner shaft ensure that the cleaner shaft engages correctly in the drive dog in the head of the rotor and when closing the motor flange.

Figure 81: Inserting the mixing tube cleaner

Operation

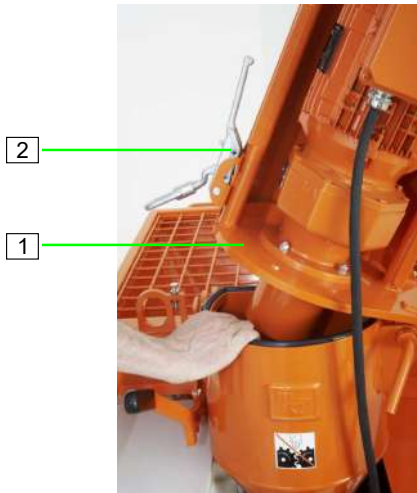


Figure 82: Closing the motor tilt flange

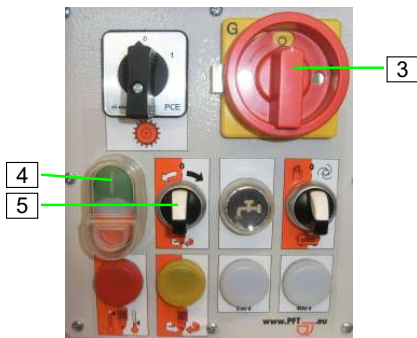


Figure 83: Cleaning the mixing tube

Cleaning the mixing tube

⚠ CAUTION



Danger of crushing at the motor tilt flange!

There is a danger of crushing injuries when closing the motor tilt flange.

- Never reach into the closing range of the motor tilt flange.

1. Close the motor tilt flange (1) and lock with the quick closure (2).
2. Turn the main reversing switch (3) to position "I".
3. Press the green pushbutton (4) control voltage "ON".
4. Turn the pump motor selector switch (5) to "right" position.
5. Allow the machine to run for approx. 5 - 10 seconds until the mixing tube is cleaned.
6. Turn the pump motor selector switch (5) to the "0" position.
7. Turn the main reversing switch (3) to position "0".
8. Open the quick closure (2) and tilt the motor.
9. Take mixing tube cleaner with cleaner shaft out of the mixing tube.

5.13.6.2 Inserting the mixing shaft



Figure 84: Inserting the mixing shaft

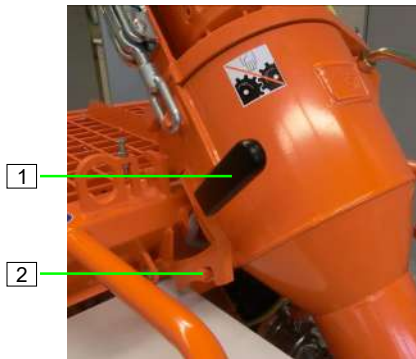
1. Insert mixing shaft (1) and ensure correct positioning at the rotor (2).
2. When closing the tilt flange ensure that the mixing shaft (1) engages properly into the drive dog (3).
3. Close the quick closure at the mixing tube.

5.13.7 Cleaning the material hopper



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

5.13.8 Cleaning the pump



Fold up mixing tube

1. Secure the machine against switching on by removing the connection cable.
2. Loosen locking lever (1).

CAUTION



- Ensure that the locking lever engages at the mixing tube (2).

Figure 85: Fold up mixing tube



Cleaning the rubber mixing zone

1. Remove the water hose (1) from the mixing tube.
2. Undo nuts (2).
3. Remove pump unit (3) with pressure flange (4) and mortar pressure gauge and clean.

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

4. Pull rubber mixing zone out of the material hopper and clean.
5. Reinsert or mount rubber mixing zone and pump unit after cleaning.
6. Ensure that the parts fit correctly.



Figure 87: Cleaning the rubber mixing zone

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

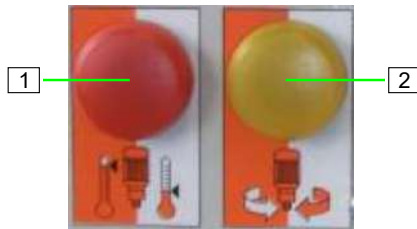


Figure 88: Fault displays

The following installation indicates faults:

Pos.	Light signal	Description
1	Red control lamp	Lights up on motor protection switch fault. → Check the motor protection switch
2	Yellow control lamp	Lights up if direction of rotation is wrong (400V). → Change direction of rotation

Operation



5.14.4 Table of faults

Fault	Possible cause	Troubleshooting	Rectification by
Machine does not start water	Water pressure too low	Check the water supply, clean the strainer screen	Operator/ Service technician
	Pressure gauge shows less than 2.2 bar	Connect booster pump	Service technician
Machine does not start current	Power supply not in order	Repair power supply	Service technician
	Main switch/main reversing switch not switched on	Switch on main switch/main reversing switch	Operator
	RCD was triggered	Reset RCD	Service technician
	Yellow control lamp, fault direction of rotation lights up	Push the metal bracket at the main switch in the opposite direction	Operator
	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
	Fuse defective	Change fuse	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	Too much thickened material in hopper or mixing section	Empty half of the hopper and start again	Operator
	Excessively dry material in pump part	Allow the machine to run backwards, otherwise remove pump and clean it	Operator
	Level sensor triggered	Deactivate level sensor or top up material	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



Operation

Fault	Possible cause	Troubleshooting	Rectification by
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
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
	Water inlet pipe too long or inlet pressure too low	If necessary, connect additional water pressure booster pump.	Service technician
	Booster pump not switched on	Switch on booster pump	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 the water quantity by 10 % for approx. ½ minute and then turn down 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
	Rotor worn or defective	Replace rotor	Service technician
	Stator worn or clamped too loosely	Replace stator or re-tighten clamp	Service technician
	Clamping bracket defective (oval)	Replace clamping bracket	Service technician
	Inner wall of mortar hose defective	Replace mortar hose	Operator

Operation

Fault	Possible cause	Troubleshooting	Rectification by
	Rotor too deep in pressure flange	Replace pressure flange	Service technician
	No original PFT spare parts	Use original PFT spare parts	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 mixing shaft	Operator
	Material in mixing tube has become wet	Empty mixing shaft, dry and begin again	Operator
	Driving dog defective	Replace driving dog	Service technician
During operation water rises in the mixing tube	Backpressure in mortar hose higher than pump pressure	Retighten or replace stator	Service technician
	Rotor or stator worn	Replace rotor or stator	Service technician
	Hose blockage due to mortar being too thick (high pressure due to low water factor)	Remedy hose blockage, increase water factor	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
	Overload due to compacted material in mixing tube	Clean mixing tube Switch the motor protection switch on again	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

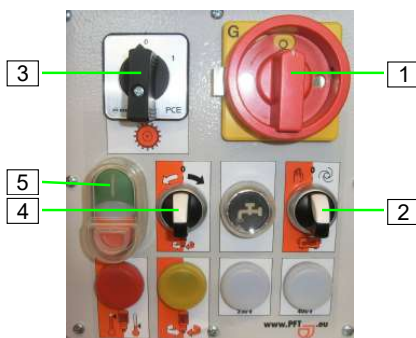


Figure 89: Reverse operation

Operation 230V

1. Turn the main reversing switch (1) to position "0".
2. Turn the booster pump selector switch (2) to the "0" position.
3. Turn the star wheel selector switch (3) to the "0" position.
4. Turn the pump motor selector switch (4) to the "0" position.
5. Switch off the air compressor using the green toggle switch.
6. Turn the main reversing switch (1) to position "I".
7. Press the green pushbutton (5) control voltage "ON".
8. Switch selector switch of the pump motor (4) to the "left" position, until the pressure at the mortar pressure gauge has dropped to "0 bar".
9. Turn the pump motor selector switch (4) to the "0" position.
10. Turn the main reversing switch (1) to position "0".

Operation

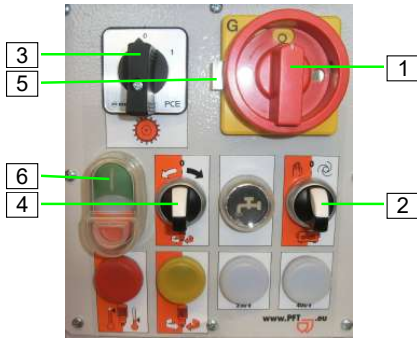


Figure 90: Reverse operation

Operation 400V

1. Turn the main reversing switch (1) to position "0".
2. Turn the booster pump selector switch (2) to the "0" position.
3. Turn the star wheel selector switch (3) to the "0" position.
4. Turn the pump motor selector switch (4) to the "0" position.
5. Switch off the air compressor using the green toggle switch.
6. Push the metal bracket (5) in the opposite direction.
7. Turn the main reversing switch (1) to position "I".
8. Press the green pushbutton (6) control voltage "ON".
9. Switch selector switch of the pump motor (4) to the "left" position, until the pressure at the mortar pressure gauge has dropped to "0 bar".
10. Turn the pump motor selector switch (4) to the "0" position.
11. Turn the main reversing switch (1) to position "0".

5.14.6.2 Blockage cannot be cleared



Figure 91: 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. 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.



Figure 92: 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

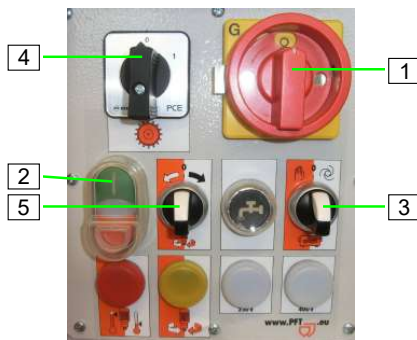


Figure 93: Switching on the machine again

Operation 230V

1. Turn the main reversing switch (1) to position "I".
2. Press the green pushbutton (2) control voltage "ON".
3. Switch on the air compressor using the green toggle switch.
4. Turn the booster pump selector switch (3) to the "AUTO" position.
5. Turn the star wheel selector switch (4) to the "1" position.
6. Turn the pump motor selector switch (5) to "right" position.
7. Let the machine run for a short while without mortar hoses.
8. As soon as material flows out of the pressure flange, switch the pump motor selector switch (5) to the "0" position.
9. Apply wallpaper paste to the cleaned mortar hoses and connect to the machine and spray gun.
10. Turn the pump motor selector switch (5) to "right" position.
11. The machine starts again as soon as the air tap at the spray gun is re-opened.

Operation

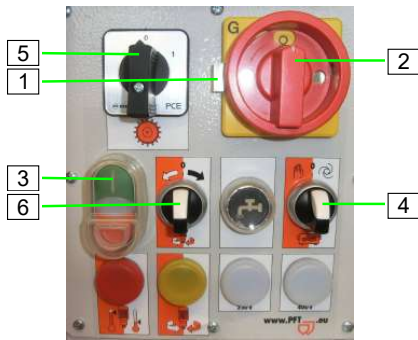


Figure 94: Switching on the machine again

Operation 400V

1. Push the metal bracket (1) in the opposite direction.
2. Turn the main reversing switch (2) to position "I".
3. Press the green pushbutton (3) control voltage "ON".
4. Switch on the air compressor using the green toggle switch.
5. Turn the booster pump selector switch (4) to the "AUTO" position.
6. Turn the star wheel selector switch (5) to the "1" position.
7. Turn the pump motor selector switch (6) to "right" position.
8. Let the machine run for a short while without mortar hoses.
9. As soon as material flows out of the pressure flange, switch the pump motor selector switch (6) to the "0" position.
10. Apply wallpaper paste to the cleaned mortar hoses and connect to the machine and spray gun.
11. Turn the pump motor selector switch (6) to "right" position.
12. 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

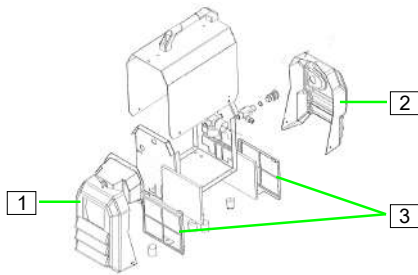


A service technician is responsible for the assembly and commissioning of machines. In addition, service technicians carry out maintenance and repair work. If work is required on the control box or on other electrical parts, the service technician must have completed vocational training as an electrician.

Maintenance



6.4.2 Air filter compressor



Implementation by a service technician

1. Unscrew the covers (1 & 2).
2. Remove the filter frame (3).
3. Blow through the filter frame from the inside to the outside or tap it.
4. Replace the filter in case of heavy contamination.
5. Insert filter frame and screw on covers (1 & 2).

Figure 96: Cleaning the filter

6.4.3 Plastic screen in the strainer

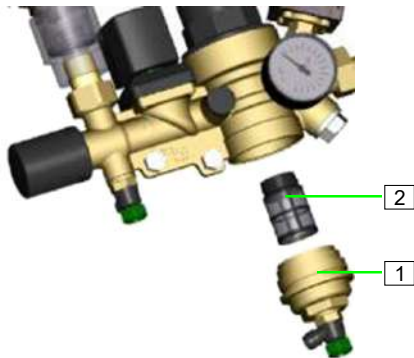


Implementation by operator.

1. Remove the closure cap (1) from the strainer.
2. Take out the plastic screen (2) from the strainer (monthly).
3. Clean the screen.
4. Replace the screen if dirt is severe.
5. Refit the screen.
6. Replace the closure cap.

Figure 97: Plastic screen

6.4.4 Strainer screen in pressure reducer



Implementation by a service technician

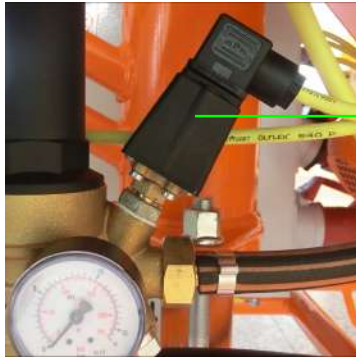
1. Remove the closure cap (1) from the pressure reducer.
2. Take out the strainer screen (2) and clean (monthly).
3. Replace the strainer screen if dirt is severe.
4. Insert strainer screen and screw on the closure cap.

Screen for pressure reducer:

■ Item no. 20156000

Figure 98: Strainer screen

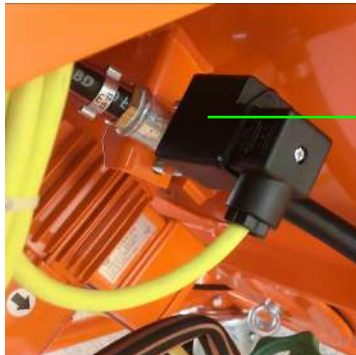
6.4.5 Setting value pressure switch water



Pressure switch water (1)	Machine switches "ON"	Machine switches "OFF"
Water	2.2 bar	1.9 bar

Figure 99: Pressure switch water

6.4.6 Setting value pressure switch air



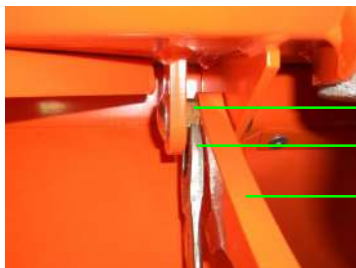
Pressure switch air (1)	Machine switches "ON"	Machine switches "OFF"
Air	0.9 bar	1.2 bar

Figure 100: Pressure switch air

6.4.7 Setting value pressure switch air compressor

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

6.5 Adjusting the locking lever



By turning the eccentric bushing (1) with the special wrench (2) in the tool bag, the locking lever (3) can be adjusted.

1. Loosen locking lever and turn eccentric bushing.
2. Close the locking lever and check if this action closes the mixing tube again tightly.

Figure 101: Eccentric bushing

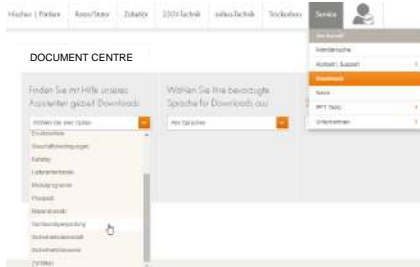
6.6 Actions after completed maintenance

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

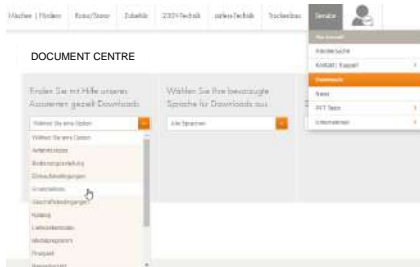
1. Check all previously loosened screw connections for secure fit.
2. Check if all previously removed safety systems and covers are properly reinstalled.
3. Ensure that all tools, materials and other equipment used have been removed from the work area.
4. Clean the work area and remove any spilled materials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

6.7 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.



6.8 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.



6.8.1 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.



Disposal





PFT - ALWAYS AT YOUR SITE



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