# Operating manual

## Mixing pump BOLERO 230V, 2,2kW
## Part 2 EC Declaration of Conformity
## Overview - Operation

Article number of the operating manual: 00 25 58 50

Article number of the parts list-machine: 00 24 53 37

CE

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

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# 1 EC Declaration of Conformity

**Company:** Knauf PFT GmbH & Co. KG
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declare under our sole responsibility that the product:

| | |
|---|---|
| **Machine type:** | BOLERO |
| **Type of device:** | Mixing pump |
| **Serial number:** | |
| **Guaranteed sound power level:** | **78** dB |

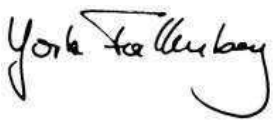
is in conformity with the following CE directives:

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

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 relates exclusively to the machinery in the state in which it was placed on the market, and excludes components which are added and/or operations carried out subsequently by the final user. The declaration ceases to be valid, if the product is modified without authorisation.

**Person authorised to compile the relevant technical documentation:**
Dipl.-Wirtsch.-Ing. (FH) Michael Duelli, Einersheimer Straße 53, 97346 Iphofen.
**The technical documentation is available from:**
Knauf PFT GmbH & Co.KG, Technische Abteilung, Einersheimer Straße 53, 97346 Iphofen.



Iphofen,

Dr. York Falkenberg
Managing Director

Place, Date of issue | Name and signature | Details about the signatory

# 2 Examination

## 2.1 Examination by machine operator

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

## 2.2 Periodic inspection

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

# 3 General information

## 3.1 Information regarding the operating manual

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

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

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

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

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

## 3.2 Keep the manual for future reference

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

## 3.3 Division

The operating manual is divided into 2 books:

- Part 1 Safety

General safety instructions mixing pumps/feed pumps

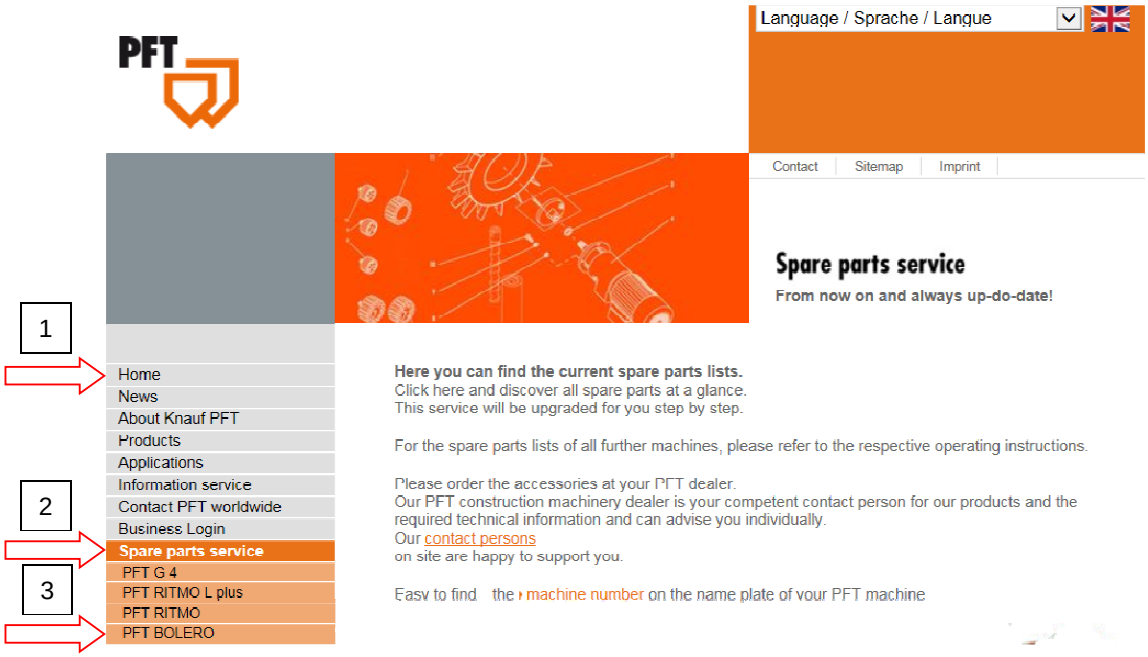
Article number: 00 17 27 09

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

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

# 4 Spare parts lists

Spare parts lists for the machine can be found on the internet at www.pft.net.




# 5 Accessories

For recommended accessories/equipment, see PFT Machine and Equipment Catalogue or:

http://www.pft.eu/www/en/produkte/produktprogramm/mischpumpen/mischpumpe.php

# 6 Technical data

## 6.1.1 General information

| Description | Value | Unit |
|---|---|---|
| Weight | 112 | kg |
| Length approx. | 800 | mm |
| Width approx. | 696 | mm |
| Height approx. | 1480 | mm |
| Filling height | 950 | mm |

**Individual weights**

| Description | Value | Unit |
|---|---|---|
| Pump motor with protective grille | 42 | kg |
| Undercarriage with pump and control cabinet | 64 | kg |
| Agitator | 6 | kg |

**Hopper dimensions**

| Description | Value | Unit |
|---|---|---|
| Filling height | 950 | mm |
| Hopper content | 68 | l |

## 6.2 Power connection

**Electrical details**

| Description | Value | Unit |
|---|---|---|
| Voltage, AC 50 Hz | 230 | V |
| Power consumption, max. | 8,7 | A |
| Power input, max. | 2,2 | kW |
| Fuse protection | min. 3 x 16 | A |
| Drive pump motor | 2,2 | kW |
| Speed pump motor approx. | 0 - 170 | rpm |
| Power input pump motor, max. | 8,7 | A |

## 6.3 Operating conditions

**Environment**

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

**Duration**

| Description | Value | Unit |
|---|---|---|
| Max. operating time at a stretch | 8 | hours |

## 6.4 Power values

**Pump capacity**

**D4-2 standard equipment**

| Description | Value | Unit |
|---|---|---|
| Pump capacity, approx. | 0 - 11 | l/min. |
| Operating pressure, max. | 20 | bar |
| Grain size max. | 4 | mm |
| Feed range *, max. at 25 mm ∅ | 15 | m |
| Feed range *, max. at 35 mm ∅ | 25 | m |

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

# 7 Sound power level

Guaranteed sound power level $L_{WA}$ 78dB (A)

# 8 Vibrations

Weighted effective value of acceleration to which the upper body parts are exposed <2.5 m/s²

# 9 Dimension sheet


*Fig. 1: Dimension sheet PFT BOLERO*

# 10 Name plate


*Fig.2: Name plate*

The following details can be found on the name plate:

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

# 11 Quality Control sticker


*Fig.3: Quality Control sticker*

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

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

# 12 Assembly

## 12.1 Overview

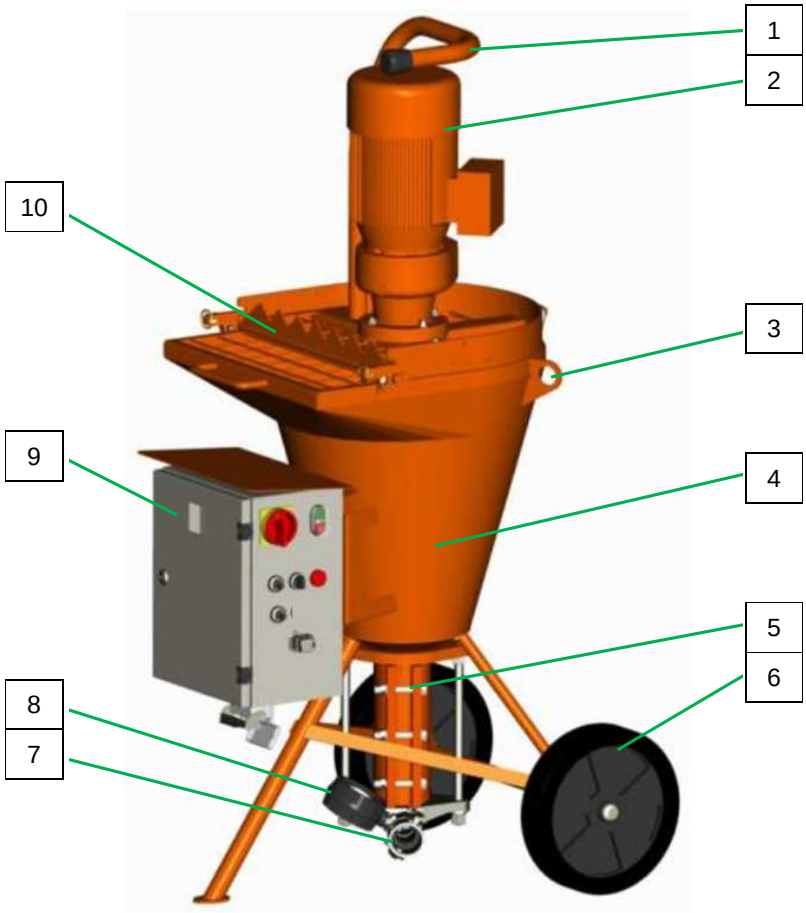



*Fig. 4: Overview BOLERO*

1 Motor protection handle
2 Gear motor
3 Crane eyelet
4 Material container
5 Pump unit
6 Plastic wheel
7 Connection mortar pressure hose
8 Mortar pressure gauge
9 Control cabinet
10 Protective grille with sack opener

# 13 Description of assemblies

## 13.1 Gear motor with protective grille

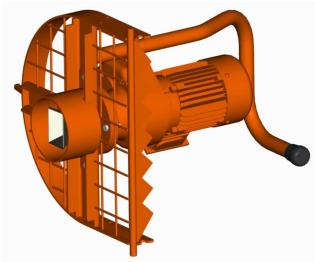


*Fig.5: Gear motor with protective grille*

The mixing pump PFT Bolero consists of the following main components:

- Protective grille with motor flange and gear motor.
- The gear motor with motor flange can be removed from the material container for transport purposes.

## 13.2 Agitator

*Fig.6: Agitator*

- Agitator BOLERO with freewheel and lubrication nipple.

## 13.3 Material container with control cabinet

*Fig. 7: Material container with control cabinet*

- Material container with control cabinet.

## 13.4 Control cabinet

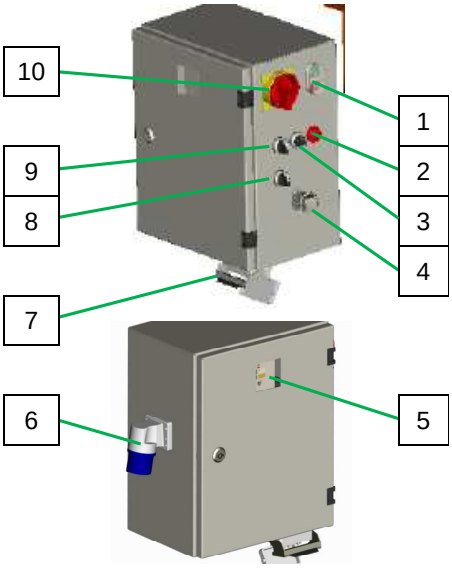



*Fig. 8: Control cabinet*

1. Operation button machine ON / OFF (control voltage).
2. Control lamp LED red, motor protection switch triggered.
3. Potentiometer for engine speed / material quantity.
4. Dummy plug / connection remote control.
5. Viewing window for frequency converter.
6. Main terminal 230V, 1phase, 16A.
7. Power connection 10 pin for pump motor.
8. Selector switch mixing backwards.
9. Selector switch operating mode "mixing OFF pumps".
10. Main switch is at the same time "EMERGENCY-OFF" switch.

# 14 Operating modes

## 14.1 Selector switch pump motor

*Fig. 9: Selector switch*

Selector switch pump motor:
Selector switch in middle position - agitator is switched off.
Selector switch in right position - pump.
Selector switch to left position - mix.

## 14.2 Selector switch mixing function in conveying breaks

*Fig. 10: Selector switch*

Selector switch mixing function:
Selector switch to "0" - mixing function is switched off.
Selector switch in position "1" - mixing function is switched on.

*NOTE!*

*For special mortar, an additional mixer function can be switched.*

*When the selector switch to position "1" on the machine with conveyor breaks (off by remote control) automatically in the mixing process. The material is mixed continuously.*

# 15 Connection

## 15.1 Connection mortar hose

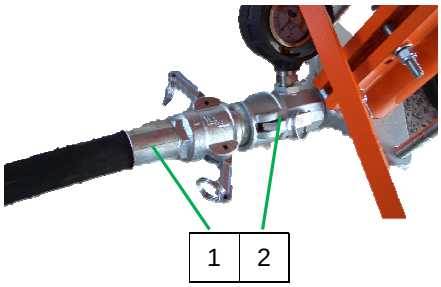



*Fig. 11: Connection mortar hose*

1. Connection mortar hose (1) at the mortar pressure gauge (2).

# 16 Recommended accessories

*Fig. 12: Power cable*

Power cable 3 x 2,5 25m with Schuko-plug and coupling CEE 3 x 16A 6h blue
**(article number 20423420)**

*Fig. 13: Mortar hose*

RONDO mortar pressure hose 25mm 15m with hydraulically fitted couplings

**(article number 00021101)**

*Fig. 14: Sponge ball*

RONDO sponge ball 30mm diameter solid (pack.unit 20)

**(article number 20210500)**

*Fig. 15: Extension cable*

Extension cable 25m for remote control with plug and coupling

**(article number 20456931)**

# 17 Accessories

## 17.1 Remote control cable

*Fig. 16: Remote control cable*

Remote control cable 25m complete with ON/OFF switch and control lamp

**(article number 20456929)**

# 18 Functional description

The handy PFT BOLERO is a combined mixing, pumping and spraying machine. The new PFT BOLERO is the perfect machine if material which is roughened up intermittently are to be processed.

In anticlockwise mode of the mixing shaft the material is mixed continuously. In clockwise mode the feed pump is connected and pumps the ready-mixed material to the point of use.

# 19 Material

## 19.1 Flowability / Flow characteristics

*NOTE!*

- The pump D4-2 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.
- In order to avoid machine faults and increased wear of the pump motor, pump shaft and the pump itself, only original PFT spare parts such as
- PFT rotors
- PFT stators
- PFT agitator
- PFT mortar hoses must be used.
- These are compatible with each other and form a constructive unit with the machine.
- Non-compliance does not only cause loss of guarantee, but also bad mortar quality is to be expected.

# 20 Mortar pressure gauge

**Attention!**

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

Fig. 17: *Mortar pressure gauge*

**PFT mortar pressure gauge**

Some advantages of the mortar pressure gauge:

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

# 21 Safety rules

**Attention!**

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

# 22 Transport, packing and storage

## 22.1 Safety instructions for transport

**Improper transport**

**CAUTION!**
**Damage from improper transport!**

Improper transport may cause substantial property damage.

- 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.

- Never step under suspended loads.
- Observe the instructions regarding the provided anchorage points.
- Do not fix at projecting machine parts or eyelets of attached components and ensure safe fit of the sling gear.
- Use only approved lifting gear and sling gear with sufficient lifting capacity.
- Do not use any ruptured or frayed ropes and straps.
- Do not rest ropes and belts at sharp edges and corners, do not knot or twist.

## 22.2 Closing the motor tilt flange

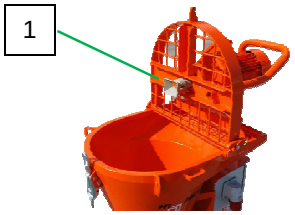



*Fig. 18: Closing the motor tilt flange*

**DANGER!**
**Danger of crushing at the motor tilt flange!**

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

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

## 22.3 Close quick closure during transport

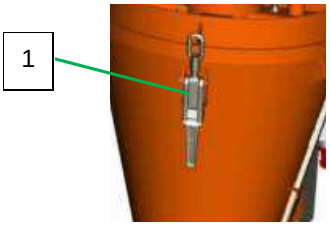



*Fig. 19: Close quick closure*

**CAUTION!**
Ensure in general terms that the quick closure (1) for the protective grille is closed when moving the machine.

## 22.4 Transport checklist

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

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

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

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

## 22.5 Transport in individual parts

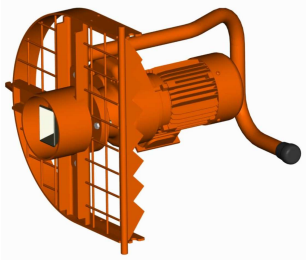


*Fig. 20: Gear motor with protective grille*

*Fig. 21: Material container and control cabinet*

1. Take the machine apart for easier transport.
2. The units gear motor with protective grille, material container with undercarriage and pump.
3. Loosen cable connections. Open linch pins, remove gear motor with protective grille from the undercarriage.

## 22.6 Transport by crane


Fig. 22*: Crane transport*

**Attachment:**

- Remove loose parts (1) at the machine.
- Attach ropes or belts at lifting rings (2).
- Ensure that the package is straight, possibly observe eccentric centre of gravity.

## 22.7 Transportation of operational machines

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

Injury to the face and eyes can occur.

Therefore:

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

1. Carry out the following steps before transporting:
2. First unplug the main power cable.
3. Detach all other connected cables.
4. Remove the water supply lines.
5. Begin transport.
6. Remove loose parts during crane transport.

# 23 Packaging

**On 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.

**CAUTION!**
**Environmental damage due to wrong disposal!**

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

Therefore:

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

# 24 Operation

## 24.1 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
- Breathing protection

*NOTE!*

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

**Basic information**

**WARNING!**
**Risk of injury due to improper operation!**
Improper operation may lead to serious damage to persons or property.

- Carry out all operating steps according to the instructions in this user manual.
- Prior to starting your work ensure that all covers and protection devices are installed and work as intended.
- Never deactivate protection devices during operation.
- Ensure order and cleanliness in the work are! Loose components and tools on top of another or lying about pose potential accident risks.
- Increased noise level may cause permanent hearing deficiencies. At close range of the machine 78 dB(A) can be exceeded due to operational conditions. Close range is a distance of less than 5 metres to the machine.

# 25 Preparation

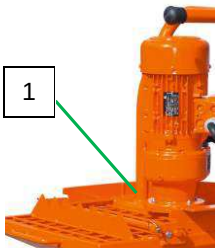



*Fig. 23: Grille cover*

*Fig. 24: Ensure stable stand*

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

**DANGER!**
**Rotating mixing shaft!**
Risk of injury when reaching into the material container.

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

1. Put up the machine on a stable, even surface and secure against unwanted movements:
   - Neither tilt nor roll off the machine.
   - Put up the machine in such a way that it cannot be hit by falling objects.
   - The operating elements have to be freely accessible.

## 25.1 Connection of power supply

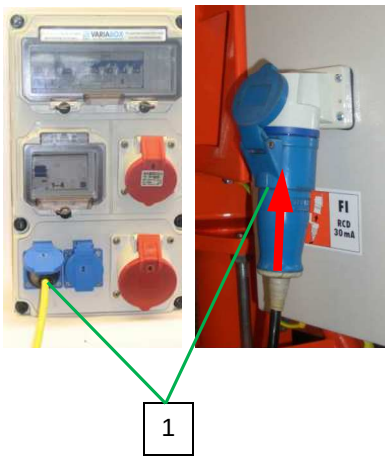
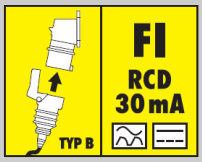



Fig. 25*: Connect power*

1. Connect the machine only to a 230V AC power supply line.




**DANGER!**
**Danger to life from electric current!**

The connecting cable must be secured correctly:

Connect the machine only to a power source with permissible FI circuit breaker (30mA) RCD (Residual Current operated Device) Type B, sensitive to all current types, for the operation of frequency converters.

## 25.2 Motor connecting cable for pump motor

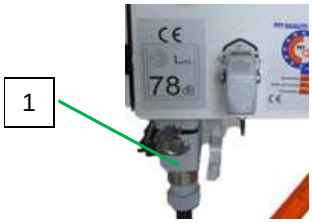



*Fig. 26: Motor connection cable*

**WARNING!**
**Danger of death due to rotating parts!**

Improper operation can lead to serious injuries or equipment damage.

- The respective drives (motors) may only be operated via the corresponding control box of the machine.

1. Connect motor connecting cable (1) to control cabinet.

# 26 Fill water into the material container

Fig. 27*: Fill in water*

1. Pour about 2 litres of water into the material container.

*NOTE!*

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

## 26.1 Trial run

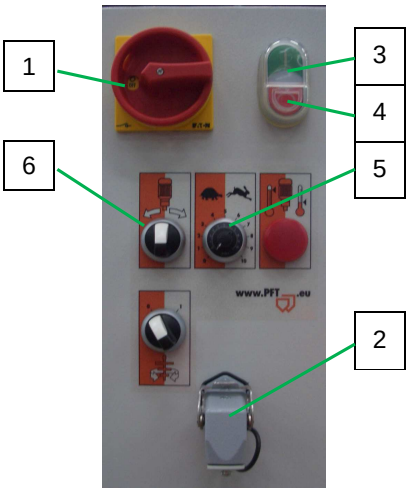



*Fig. 28: Trial run*

1. Turn main switch (1) to position "I".
2. Put on dummy connector (2).
3. Press green operating button (3) control voltage "ON".
4. White control lamp (4) lights up.
5. Turn potentiometer (5) to level 4.
6. Turn selector switch (6) to the right.

*NOTE!*

*In anticlockwise mode of the agitator the material is mixed continuously. In clockwise mode the feed pump is connected and pumps the ready-mixed material to the point of use.*

7. Let the machine run shortly until the water has been pumped out of the machine container.
8. Switch off the machine at selector switch (6) (position "0").

**WARNING!**
**Danger of death due to rotating parts!**

Improper operation can lead to serious injuries or equipment damage.

- The respective drives (motors) may only be operated via the corresponding control box of the machine.

# 27 Mortar pressure gauge

*Fig. 29: Mortar pressure gauge*

**DANGER!**
**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.
- Use only mortar hoses with a permissible operating pressure of at least 40 bar.
- The burst pressure of the mortar hose must reach at least 2.5 times the value of the operating pressure.

# 28 Mortar hoses

## 28.1 Prepare mortar hoses

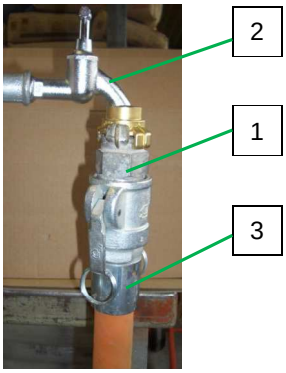



Fig. 30: *Prepare mortar hose*

1. Connect the cleaner coupling (1) at the water extraction valve (2).
2. Connect mortar hose (3) and water.
3. More mortar hose and cleaner coupling again and separate.
4. Remove all the water from the mortar hose.
5. Pre-lubricate the mortar hose with about one litre of wallpaper paste.
6. The wallpaper paste is mixed through the mortar hose with the first mixing.
7. Collect the wallpaper paste in suitable container and dispose of as per regulations.

**DANGER!**

Torn off hoses can beat about and injure bystanders!

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

## 28.2 Connect mortar hose

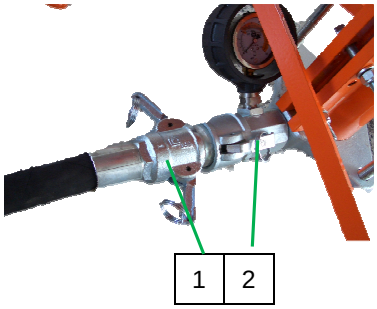



*Fig. 31: Connect mortar hose*

1. Connect mortar hose (1) at the mortar pressure gauge (2).

*NOTE!*

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

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

## 28.3 Connect Zargomat and gluing gun

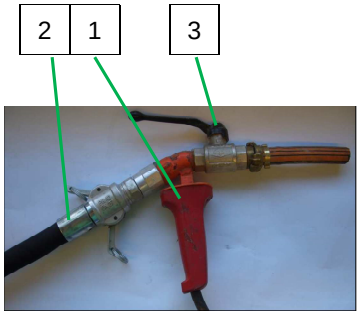



*Fig. 32: Gluing gun*

1. Connect Zargomat and gluing gun (1) to mortar hose (2).
2. Ensure that the ball valve (3) at the gluing gun is closed.

# 29 Putting the machine into operation

## 29.1 Start off machine


*Fig. 33: Mixing*

**Attention!**

Never fill the material container with the mixer standing still.

1. Turn selector switch (1) to the left for mixing the bagged goods.


*Fig. 34: Fill in water*

2. Pour specified water quantity (mixing water) (2) for one material sack into the material container.

## 29.2 Fill machine with factory prepared dry material

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

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

– Wear safety gloves.

## 29.3 Hazardous dusts

**Warning!**
**Health hazard caused by dust!**
In the long term, inhaled dust can lead to lung damage or have other adverse health effects.

*NOTE!*

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

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

*Fig. 35: Fill in bagged material*

1. Empty the bagged material into the material container.

*NOTE!*

*For initial filling with bagged material slowly pour half of the first bag into the material container!*

2. Mix material well.
3. Turn selector switch operating mode "mixing OFF pumps" to position "0".

## 29.4 Connect remote control

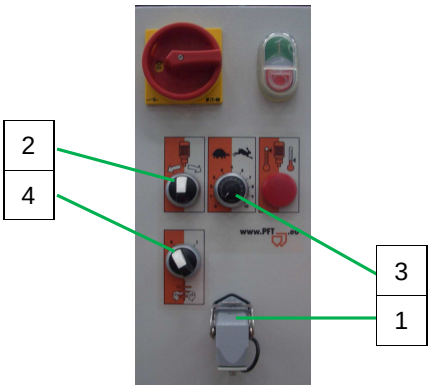



*Fig. 36: Remote control*

1. Remove dummy plug (1) from control cabinet.
2. Connect the remote control cable of the Zargomat and gluing gun at the control cabinet.

*NOTE!!*

The machine can be switched on and off using the ON/OFF switch at the Zargomat and gluing gun.

3. Turn selector switch (2) to the right.
4. Using the potentiometer (3) the engine speed is changed, thus also the required material quantity.

*NOTE!*

*When the selector switch (4) to position "1" on the machine with conveyor breaks (off by remote control) automatically in the mixing process. The material is mixed continuously.*

# 30 Switching on

## 30.1 Apply material


*Fig. 37: Apply material*

1. Point the gluing gun in the direction of the object to be processed.
2. Ensure that nobody is in the discharge area of the gluing gun.
3. Open the ball valve (1).
4. Actuate the ON/OFF switch (2) at the gluing gun.
5. The conveying process of the material starts.

**DANGER!**
**Risk of injury from discharged mortar!**
Discharged mortar may lead to injuries to eyes and face.
- Never look into the spraying device.
- Always wear protective goggles.
- Always position yourself in such a way that you are not hit by the mortar being discharged.

*NOTE!*
*The possible conveying distance depends mainly on the flowability of the mortar. Heavy, sharp-edged mortar has poor flow characteristics. Runny materials have good flow characteristics.*
*If 20 bar operating pressure are exceeded thicker mortar hoses have to be used.*

*NOTE!*
*If the water quantity is too little even mixing and spraying is no longer guaranteed; blockages may form inside the hose and high wear of the pump parts will become an issue.*

## 30.2 Switching off the machine

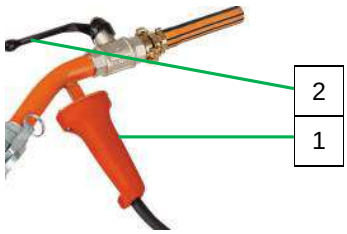



*Fig. 38: Switching off the machine*

1. Actuate the ON/OFF switch (1) (switching off).
2. The machine stops.
3. Close ball valve (2).

## 30.3 Switch machine on again

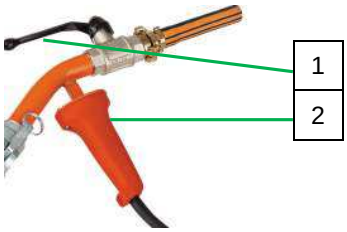



*Fig. 39: Switch on machine*

1. Open the ball valve (1).
2. Actuate ON switch (2) at the gluing gun (switching ON).
3. The machine starts again.

## 30.4 Re-tighten pump

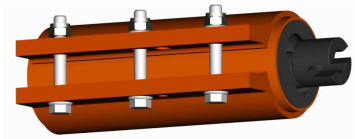


*Abb. 40: Tighten pump*

1. In the case of decreasing feed pressure the stator can be re-tightened.
2. Do not re-tighten the pump during operation.
3. Pump parts that do not deliver the required feed pressure when tightened have to be replaced.

When replacing the pump it has to be ensured that

- all screws of the retaining clamp are equally tightened.
- In case of rubber stators, the tension rod bolts are not tightened too much and that the sheath end lies flush and centrally in the flanges.

*NOTE!*

*Store the assembled pump (rotor in stator) only for a few days as rotor and stator can permanently connect to each other in case of prolonged storage.*

# 31 Interruption of work

*NOTE!*

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

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

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

# 32 Stopping in case of emergency

## 32.1 Emergency OFF switch

**Switching off in an emergency**

*Fig. 41: Switching off*

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

Proceed as follows in the event of an emergency:

1. Turn the main switch to position “**0**”.
2. Secure the main switch against being activated again using a padlock.
3. Inform supervisors at the site.
4. If necessary, call emergency services.
5. Remove persons from the danger zone and carry out first-aid measures.
6. Ensure emergency vehicles have unobstructed access.
7. If the seriousness of the emergency warrants this, inform the responsible authorities.
8. Assign specialist personnel to begin rectifying the fault.

**WARNING!**
**Danger of death due to premature restarting!**
All persons in the danger zone are at extreme risk when the machine is switched back on.

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

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

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

## 33.1 Turning the main switch to position “0”

*Fig. 42: Switch at position “0”*

1. 1. Close the ball valve on the sprayer.
2. Turn the main switch to position “**0**”.
3. Disconnect the connector plug from the air compressor.
4. Have the power supply connection checked by an expert.

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

## 33.2 Discharging mortar pressure

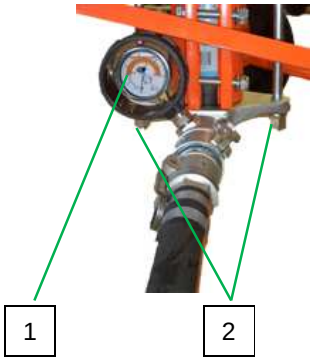



*Fig. 43: Checking the mortar pressure*

**DANGER!**
**Overpressure on the machine!**
When opening machine components, these can fly open in an uncontrolled manner and injure the operator.

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

**DANGER!**
**Danger of injury due to leaking mortar!**
Escaping mortar can lead to injuries to the eyes and face.

Therefore:

- Never look into the spray gun.
- Always wear protective goggles.
- Always position the machine so that you cannot be hit should mortar escape.
- Cover working area with foil.

1. Open the ball valve.
2. Check the mortar pressure gauge (1) to see if the pressure has fallen to “0 bar”. If necessary, discharge any mortar pressure by unscrewing the nuts (2) slightly.
3. Afterwards re-tighten the nuts (2).

## 33.3 Switching on the machine again after a power failure

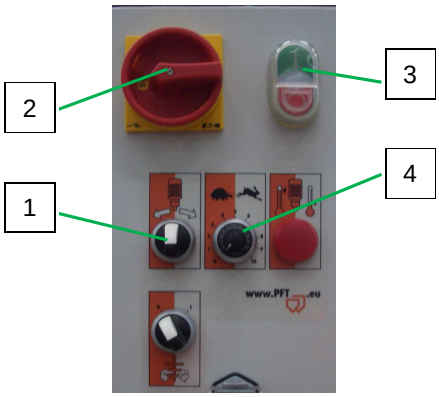



*Fig. 44: Undervoltage trigger*

*NOTE!*

*The BOLERO is equipped with an undervoltage trigger. In the event of a power failure, the system must be started as follows.*

1. Turn the selector switch (1) to the “Zero” position (middle position).
2. Close ball valve on gluing gun.
3. Turn the main switch (2) to the “**I**” position.
4. Press green operating button (3) control voltage "ON".
5. Using the potentiometer (4) the engine speed is changed, thus also the required material quantity.
6. Open the ball valve and press the switch on the gluing gun.
7. The machine starts again

*NOTE!*

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

# 34 Work on troubleshooting

## 34.1 Reaction in the event of faults

**Reaction in the event of faults**

Basically applies:

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

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

## 34.2 Fault displays

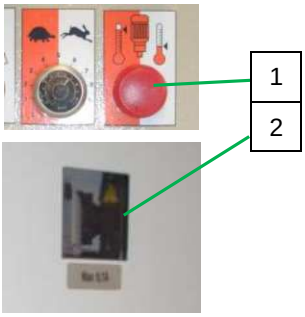



*Fig. 45: Fault displays*

The following installation indicates faults:

| Pos. | Light signal | Description |
|---|---|---|
| 1 | Red pilot lamp | Lights up in case of fault in the frequency converter. |
| 2 | Faults in the frequency converter are shown on the display.<br>Corrective measures are described in the attached quick start guide frequency converter V1000. | |

## 34.3 Faults

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

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

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

## 34.4 Safety

- The works for the 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.
- Works at the electrical system must be carried out by qualified electricians only.

**Personal protective equipment**

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

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

## 34.5 Table of faults

| Fault | Possible cause | Rectification of faults | Rectification by |
|---|---|---|---|
| Machine does not start **power** | Power supply not in order | Repair power supply | Service engineer |
| | Main switch not activated | Activate main switch | Operator |
| | RCCB was triggered | Reset RCCB | Service engineer |
| | Motor protection switch triggered | Turn motor protection switch in control cabinet to position 1 | Service engineer |
| | "Operation button ON" not pressed | Press "operation button ON" | Operator |
| | Contactor defective | Change contactor | Service engineer |
| | Fuse defective | Change fuse | Service engineer |
| Machine does not start **material** | Thickened material in material container | Remove thickened material or add water | Operator |
| | Excessively dry material in pump part | Remove pump and clean | Service engineer |
| Pump motor does not start | Pump motor defective | Exchange pump motor | Service engineer |
| | Connection cable defective | Change connection cable | Service engineer |
| | Plug or inbuilt socket defective | Change plug or inbuilt socket | Service engineer |
| | Motor protection switch defective or triggered | Change motor protection switch or reset | Service engineer |
| Mortar flow ceases (air bubbles) | Poor mixture | Add more water<br>Let mixture be mixed for a longer time | Operator |
| | Clumped material | Add more water or clean agitator or replace | Operator |
| | Agitator defective | Replace agitator | Operator |
| | Driving dog defective | Replace driving dog | Service engineer |

| | | | |
|---|---|---|---|
| Mortar flow "thick-thin" | Rotor worn or defective | Replace rotor | Service engineer |
| | Stator worn or clamping bracket tightened too little | Replace stator or re-tighten clamping bracket | Service engineer |
| | Clamping bracket defective (oval) | Replace clamping bracket | Service engineer |
| | Inner wall of mortar hose defective | Replace mortar hose | Operator |
| | Rotor too deep in pressure flange | Replace pressure flange | Service engineer |
| | No original PFT spare parts | Use original PFT spare parts | Service engineer |
| Control lamp red, fault lights up | Overload due to the pump getting blocked with dry material | Remove pump and clean | Service engineer |
| | Overload due to low water volume | Add more water when starting off | Operator |
| | Motor protection switch pump motor triggered | Reactivate protection switch | Service engineer |

# 35 Conveying stationary / clogging

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

## 35.1 Signs for clogging

Implementation by operator:

- Blockages can occur in the pressure flange or in the mortar hoses.
- Indications are:
- rapidly increasing pressure head,
- blocking of pump,
- running difficulties or blockage of the pump motor,
- expansion and turning of the mortar hose,
- no material discharge at the hose end.

## Conveying stationary / clogging

### 35.2 Causes for blockages:

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

### 35.3 Earlier damage to the mortar hose

*NOTE!*

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

### 35.4 Removal of clogging in hoses

*Fig. 46: Switching off*

**DANGER!**
**Danger from discharged material!**

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

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

## 35.5 Risk of injury to due overpressure

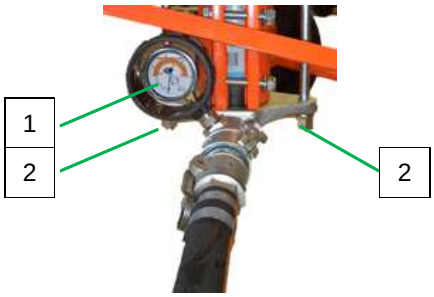



Fig. 47: Checking the grout pressure

**DANGER!**
**Overpressure on the machine!**
When opening machine components, these can fly open in an uncontrolled manner and injure the operator.

➢ Only open the mortar hoses if the mortar pressure gauge (1) indicates the pressure has fallen to “0 bar”.

**DANGER!**
**Danger of injury due to leaking mortar!**
Escaping mortar can lead to injuries to the eyes and face.

Therefore:

- Always wear protective goggles.
- Protective clothing, protective gloves, safety shoes, ear protection.
- Always position the machine so that you cannot be hit should mortar escape.

1. Undo both nuts (2) on the pressure flange slightly to ensure the residual pressure can escape.
2. As soon as the pressure has dropped to “0 bar”, tighten the nuts (2) again.

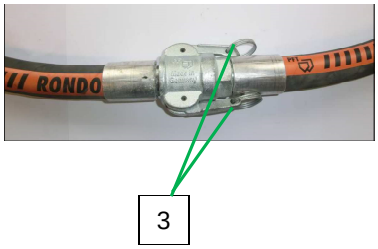



*Fig. 48: Detaching the coupling*

*NOTE!*
*Immediately clean the mortar hoses.*

3. Cover coupling connections with tear-resistant 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, introduce a flushing hose into the mortar hose and flush out the material (PFT flushing hose item no. 00113856).

## 35.6 Cleaning the pump

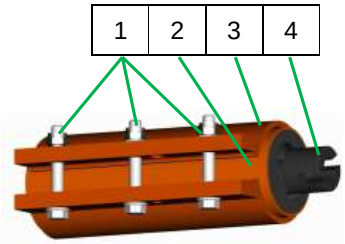



*Fig. 49: Cleaning the pump*

1. Remove pump unit
2. Loosen nuts from the clamping bracket (1).
3. Push the stator (2) out of the clamping bracket (3).
4. Push the rotor (4) out of the stator (2) and clean.
5. Clean pressure flange.
6. Clean material container and agitator.
7. Reassemble completely the pump unit.

# 36 End of shift / Cleaning

## 36.1 Switching off the energy supplies

**Securing against restarting**

**DANGER!**
**Danger of death due to unauthorised restarting!**
When working on the machine, there is a danger of unauthorised switching on of the electrical supply. This puts those in the danger area at extreme risk.

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

## 36.2 Cleaning BOLERO

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

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

*NOTE!*

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

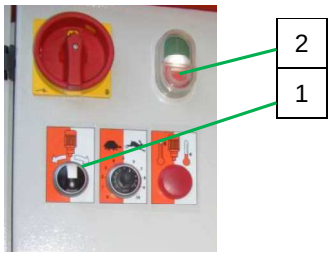



Fig. 50*: Switching off*

The machine has to be cleaned daily after work and in case of longer breaks.

Switching off the machine:

1. Turn selector switch (1) to middle position.
2. Press red operating button (2) control voltage "OFF".
3. Open ball valve at the glue gun so that the residual pressure in the hose can escape.

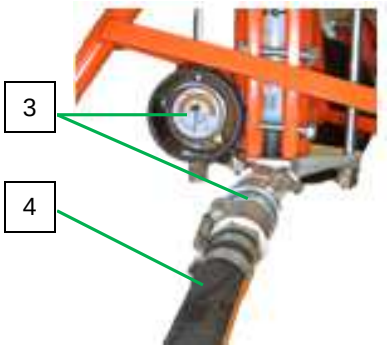



*Fig. 51: Mortar pressure to "0 bar"*

4. Check at the mortar pressure gauge (1) if the mortar pressure is at "0 bar".

**DANGER!**
**Overpressure on the machine!**
When opening machine parts they can open in an uncontrolled manner and injure the operator.
– Open machine only when the pressure is at "0 bar".

*NOTE!*
*Mortar hoses and spraying device have to be cleaned immediately after finishing work.*

5. Disconnect mortar hose (2) from mortar pressure gauge (1).

## 36.3 Clean mortar hose

*NOTE!*
Material remains that can deposit on the inside of the mortar hose, may cause damages, continue to build up and narrow the diameter. Clean mortar hoses therefore are indispensable to have trouble-free conveying next time the hoses are being used.

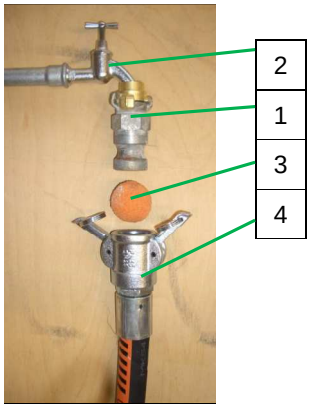



*Fig. 52: Clean mortar hoses*

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).

*NOTE!*
*Do not rinse the mortar hoses with water before. The material has to be pushed out of the hoses with the sponge ball.*

3. Connect the mortar hose (4) with the spraying device at the cleaner coupling (1).
4. Open the water extraction valve (2) until the sponge ball (3) exits the spraying device.
5. In case of strong soiling repeat this process.
6. In case of different hose diameters, the mortar hoses have to be cleaned separately with the matching sponge balls.

## 36.4 Clean Zargomat and gluing gun

*Fig. 53: Clean Zargomat gun*

1. Remove the remote control cable of the Zargomat and gluing gun from the control cabinet.
2. Disconnect the Zargomat and gluing gun from the mortar hose.
3. Clean the Zargomat and gluing gun.

## 36.5 Clean he material container

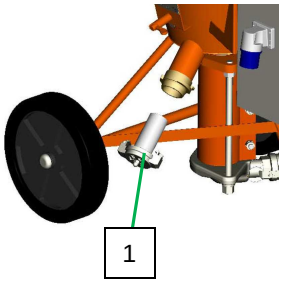



*Fig. 54: Cleaning*

Open the dummy cap (1).

Hose out the material container with a water jet.

*NOTE!*

*Do not direct the water jet on electrical parts, such as gear motor or control cabinet.*

## 36.6 Switching on the machine


Fig. 55*: Switching on*

1. Press green operating button (1) control voltage "ON".
2. Turn selector switch (2) to the right to pump.
3. Pump the water from the material container until clear water emerges from the mortar hose gauge.
4. Switch off machine at the red operating switch.
5. Turn main switch (3) to position "0".

## 36.7 Removing the connection cable

*Fig. 56: Removing the connection cable*

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

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

Therefore:

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

**Securing against restarting**

**DANGER!**
**Danger of death due to unauthorised restarting!**
When working on malfunctions, there is a danger of unauthorised switching on of the electrical supply. This puts those in the danger area at extreme risk.
Therefore:
- Before starting work, switch off all electrical power supplies and secure them against being switched back on again.

## 36.8 Open protective grille

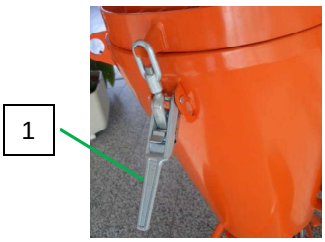



*Fig. 57: Open the protective grille*

1. Open the quick closure (1) and tip the motor with protective grille.

## 36.9 Clean material container

**DANGER!**
Never reach into rotating or moving parts when the machine is running!

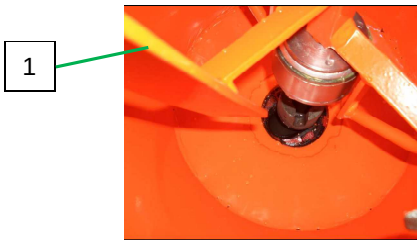



*Fig. 58: Agitator*

1. Remove the agitator (1) from the material container and completely clean from material remains.
2. Clean material container.

*NOTE!*
*Do not use aggressive detergents.*

3. Put back the agitator after cleaning.

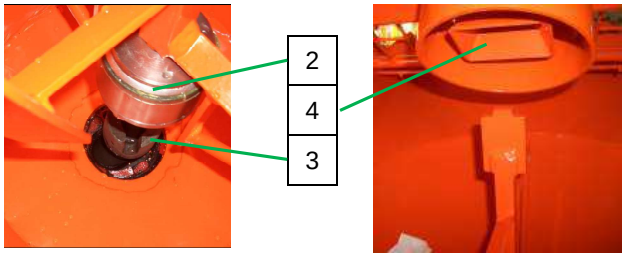



*Fig. 59: Put back agitator*

*NOTE!*
*When inserting the agitator (1) ensure that the freewheel of the agitator (2) in the head of the rotor (3) grips properly into the drive dog (4) when closing the protective grille.*

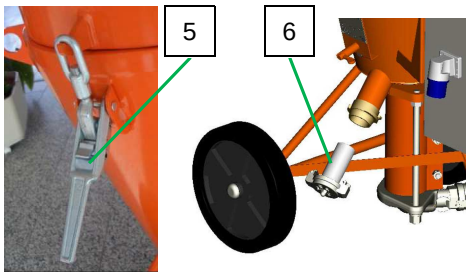



*Fig. 60: Close protective grille*

4. Close quick closure (5).
5. Close cleaning cover (6).

*NOTE!*

*Ensure that the quick closure is always closed.*

# 37 Risk of frost

**CAUTION!**
**Damage by frost!**

Water that expands inside the machine during frost can cause severe damage.

– In case of danger of frost the machine and conduits have to be emptied completely from residue water.

# 38 Maintenance

## 38.1 Safety

- The maintenance works described here can be carried out by the operator, unless marked otherwise.
- Some maintenance 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.
- Works at the electrical system must be carried out by qualified electricians only.

**Basic information**

**WARNING!**
**Risk of injury due to incorrect implementation of maintenance works!**

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

Therefore:

– Prior to starting the works ensure that there is enough space to carry out the works.

– Ensure order and safety at the assembly site! Loose, stacked components or components lying about are accident sources.

– If components were removed, ensure proper assembly, put back all fastening elements and observe torque indications for screws.

**Electrical system**

**DANGER!**
**Danger to life from electric current!**

There is danger to life 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 works and secure against restarting.

**Environmental protection**

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

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

## 38.2 Cleaning

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

**CAUTION!**
**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).
– Remover covers completely after cleaning.

## 38.3 Maintenance plan

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

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

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

| Interval | Maintenance work | To be carried out by |
|---|---|---|
| daily | Grease the freewheel bearing after cleaning the machine. | Operator |
| | Visual and functional inspection of all safety installations. | |
| | Check all parts subject to wear. | |
| | Check conveying hoses and couplings. | |
| | Visual inspection of the electrical cables. | |
| Yearly | Check screw connections. | Service engineer |

## 38.4 Gear motor

*Fig. 61: Gear motor*

*NOTE!*

*The gear motor is filled as standard with 0.9 litres of lubricating oil ISO VG 220 that has to be changed all 1000 hours, however all 3 years at the latest.*

## 38.5 Remove agitator

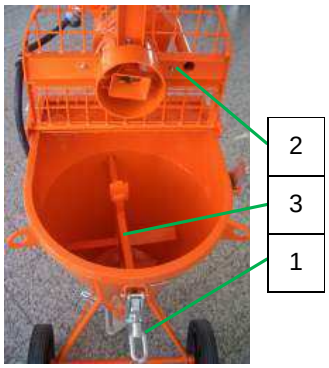



*Fig. 62: Remove agitator*

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

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

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

1. Open quick closure (1).
2. Flip open gear motor with protective grille (2).
3. Remove agitator (3).

## 38.6 Lubricate freewheel

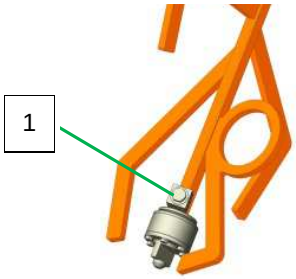



*Fig. 63: Lubricate freewheel*

1. Unscrew the locking screw (1) at the freewheel.
2. Place the grease gun at the greasing nipple and lubricate until clean grease can be seen at the freewheel (Lithium-based multi-purpose grease).
3. Screw in locking screw at freewheel.
4. Check the fit of the freewheel for contamination.
5. Insert agitator.
6. Align driver and agitator and close gear motor with protective grille.

## 38.7 Measures after effected maintenance

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

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

# 39 Disassembly

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

## 39.1 Safety

- The disassembly must be carried out only by specially trained skilled personnel.
- Works at the electrical system must be carried out by qualified electricians only.

**Basic information**

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

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

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! Loosely stacked components or components lying about and tools are accident sources.
– Dismantle components correctly. Pay attention to partly high dead weight of the components. If required use lifting equipment.
– Secure components that they do not fall down or fall over.
– In case of doubt consult the manufacturer.

**Electrical system**

**DANGER!**
**Danger to life from electric current!**

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

Therefore:

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

## 39.2 Disassembly

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

Prior to starting the disassembly:

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

## 39.3 Disposal

If not agreement for the recovery or the disposal was made, recycle the disassembled components:

- Scrap metals.
- Recycle plastic elements.
- Dispose of remaining components separately according to their material characteristics.

**CAUTION!**
**Environmental damage in case of incorrect disposal!**

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

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

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