Operating Instructions

for the machine operator and maintenance personnel
always keep by the machine
Translation of the original instructions

Mixer pump MP 25

Machine no.

Digital spare parts lists

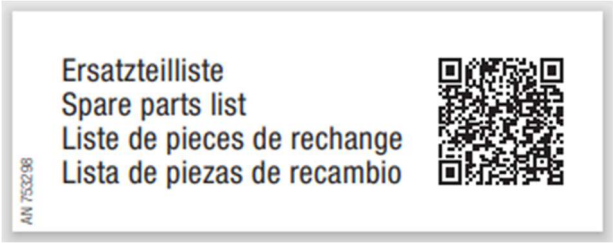
Dear customer,

You can find the appropriate spare parts list for your machine at:

https://www.putzmeister.com/group/service-center/technical-documentation2

If you do not yet have access to our website, you can sign up at:
https://www.putzmeister.com/

For quick access, a corresponding QR code can be found in the control box.



The QR code takes you to the directory in which the spare parts lists are stored.

The digital spare parts list therefore replaces the previous printed version.

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Putzmeister

Table of contents

1 Guide to the Operating Instructions

In this chapter you will find notes and information that will help you use these Operating Instructions. If you have any queries, please contact us in confidence at:

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Web: www.putzmeister.com

Service hotline: **+49 (0)7127 599-699**

or contact the branch responsible for you or your service dealer. You can find a selection of responsible contacts online at: www.putzmeister.com.

1.1 Foreword

These Operating Instructions aim to help you to familiarise yourself with the machine and make use of its possible applications as designated.

The Operating Instructions contain important information on how to operate the machine safely, properly and economically. Observing these instructions helps to avoid danger, to reduce repair costs and downtimes and to increase the reliability and service life of the machine.

The operator undertakes to supplement the Operating Instructions with the relevant national rules and regulations for accident prevention and environmental protection.

The Operating Instructions must always be available at the machine's site of use.

The Operating Instructions must be read and applied by anyone who will be carrying out the following work with/on the machine:

- Operation, including setting up, fault rectification in the course of work, removal of production waste, maintenance and disposal of functional fluids and auxiliary materials
- Maintenance (service, inspection, repair)
- Transport

The generally recognised rules of technology for safe and proper working must be observed in addition to the Operating Instructions and mandatory rules and regulations for accident prevention in the country and site of use of the machine.

Should you have any questions after studying the Operating Instructions, the relevant branch, your service dealer or the manufacturer will be happy to provide more information.

You will make it much easier for us to respond to any questions if you can give us the details of the machine model and the machine number.

For the purpose of continuous improvement, changes are made at certain times, meaning that these changes may in some circumstances not yet have been taken into account by the time these Operating Instructions are sent to print.

In the event of any amendment, the copy of the Operating Instructions intended for the machine will be replaced in full.

The pages are divided into chapters, where they are numbered consecutively.

Example: 3 – 2 (chapter 3 – page 2)

1.2 Icons and symbols

The following icons and symbols are used:

Icon/symbol/ designation	Meaning
▸	Individual instruction or alternative step.
1. 2. 3.	Instructions to be carried out as described in the specified sequence.
⇒	Result or intermediate result of previous steps.
➞	Result of an instruction or of several steps.
•	Marking for simple lists.
Cross reference *(Icons and symbols P. 1 — 3)*	Cross references refer to chapters, sections or figures, for example. A cross reference is depicted in brackets.
	Fault rectification – Instructions to be carried out in accordance with fault messages.
	View additional steps. For example, “Contact a qualified electrician”.
✓	Inspection or maintenance activity must be carried out.

Icon/symbol/ designation	Meaning
	Special tools are required. This icon is followed by a list of special tools that are required to carry out the task. (Normal tools, i.e. conventional tools or tools carried in the vehicle, are not listed specially.)
	This icon is followed by an indication of required maintenance work.
	This indicates a tip, helpful note or additional information regarding machine maintenance, environmental protection, etc.

1.2.1 Layout of warning notices

⚠ WARNING

Type and cause of risk

Consequences of not observing the risk.

- What to do in order to provide a remedy or avoid the risk.

Signal words

The signal word is selected in accordance with the ANSI Z535.6:2011 safety standard.

The following signal words are used:

⚠ DANGER

Indicates a dangerous situation in which an accident resulting in serious injuries and/or death may occur. Highest level of risk.

- After identifying the risk, instructions are set out which are intended to avoid or remedy the risk.

⚠ WARNING

Indicates a dangerous situation in which an accident resulting in serious or fatal injuries may occur.

- After identifying the risk, instructions are set out which are intended to avoid or remedy the risk.

⚠ CAUTION

There is a risk of injury to the entire body, however there is no risk of serious or fatal injuries.

- After identifying the risk, instructions are set out which are intended to avoid or remedy the risk.

NOTICE

Risk of damage to the machine. There is no risk of injury.

- After identifying the risk, instructions are set out which are intended to avoid or remedy the risk.

2 Safety regulations

This chapter summarises the most important safety regulations. This chapter must be read and understood by all persons who come into contact with the machine. The various regulations also appear again at the appropriate points in the Operating Instructions.

Special safety regulations may be necessary for some tasks. These special safety regulations will only be found in the description of the particular task.

The following safety instructions should be regarded as a supplement to existing applicable national legal norms and accident prevention regulations.

Existing legal norms and accident prevention regulations must be observed in all cases.

2.1 Definition of terms

The following sections explain the terms used in these Operating Instructions and describe the requirements for specific groups of personnel.

2.1.1 Mixing pump

The mixing pump is a machine designed for processing premixed dry mortar. It mixes, pumps and sprays continuously.

2.1.2 Manufacturer

Any natural or legal person who puts into circulation any complete or incomplete machine included in these operating instructions.

2.1.3 Operator

An authorised representative of the machine owner. The operator is responsible for the use of these machines.

2.1.4 Machine operator

Machine operators are personnel trained and assigned to perform the following activities:

- Operating the machine
- Simple inspection and maintenance work
- Testing
- Cleaning

2.1.5 Subject expert

For the purposes of the German Industrial Health and Safety Ordinance, a subject expert is a person who, through their professional training, their professional experience and their recent professional activity, has the required specialist knowledge to inspect the tools.

2.1.6 Qualified personnel

Personnel who have successfully completed a specialist training course that qualifies them to carry out specific activities.

2.1.7 Service technician

Personnel qualified or authorised by the manufacturer to perform maintenance tasks.

2.1.8 Maintenance

Maintenance includes all measures required to inspect and repair a machine.

2.1.9 Workplace

The workplace is the area in which people must remain in order to carry out the work.

The **workplace of the machine operator** during use is at the operating elements of the machine.

The workplace of the operator of connected accessories is where work is being carried out with these accessories. The machine operator and accessories operator must maintain visual contact.

2.1.10 Working area

The working area is the area in which work is carried out with and at the machine. Parts of the working area can become danger zones, depending on the job being performed.

The working area is also the area where work is carried out with and on delivery lines and attached accessories.

Secure the working area and affix signs clearly indicating the dangers. Suitable protective equipment is compulsory within the working area. The machine operator is responsible for safety in the working area when the machine is in use.

2.2 Basic principle

The machine must only be operated in technically perfect condition, as designated and observing the Operating Instructions while remaining conscious of safety and dangers. Faults, particularly those which may compromise safety, must be rectified immediately.

Observe the following basic principles:

- Safety equipment must not be removed, decommissioned or otherwise modified.
- Safety equipment removed for maintenance work must be fitted again as soon as work is complete.
- Following assembly, the safety equipment must be checked to ensure it is fully functional.

Check operational safety every time you start work. Any defects found or suspected must be eliminated immediately. If necessary, inform the project supervisor.

If defects or faults are found or suspected during operation, operation must cease immediately. Rectify the defects or faults before restarting the machine.

2.2.1 Onwards sale

Observe the following for an onwards sale of the machine:

Pass on all accompanying documentation (operating and maintenance instructions, plans, inspection certificates, etc.) you received with your machine to the new operator. If necessary, you must re-order the papers from us, citing the machine number. The machine must not be sold on without the accompanying documentation under any circumstances.

Notifying the manufacturer of the onwards sale/purchase ensures that you will also receive support from the manufacturer as well as any information on safety-relevant changes.

2.3 Designated use

The machine is designed in accordance with current engineering standards and recognised safety rules. However, its use may still present a risk of machine operators or third parties suffering death or injury, or the machine and other property becoming damaged.

The machine may only be used as designated in the Operating Instructions and the accompanying documentation. All notes and safety regulations in the Operating Instructions must be observed.

The machine is exclusively designed for mixing, conveying and spraying premixed dry mortar. Never use it for any other materials or media.

The maximum delivery pressure must not exceed that specified on the rating plate or in the technical data.

The machine is filled via the hopper.

All protective covering elements of the machine must be fitted during operation. The machine must be operated only with the safety equipment fitted.

Specified inspection work must be carried out at regular intervals.

Any work on the electrical system of the machine must be carried out by trained and qualified electricians only.

Conversions, alterations or modifications to the machine must not be carried out without permission from the manufacturer.

The operational safety of the machine must be inspected by a subject expert at least once a year. The operator is responsible for commissioning the inspection.

2.4 Improper use

Use is defined as contrary to the designated use if it is not described in or goes beyond that described in the “Designated use” section. The manufacturer accepts no liability for damage resulting from such use. The risk lies solely with the machine operator.

2.4.1 Operation with defects

The machine must not be operated with defects. A few examples are listed below:

- Loose or damaged bolts
- Leaks
- Impermissible fill levels
- Wrong functional fluids
- Worn, damaged or defective components
- Worn, damaged or illegible plates
- Worn, damaged or defective safety equipment
- Deactivated or modified safety equipment
- Impermissible or modified connections or fuses

2.4.2 Removal or modification of safety equipment

Depending on the model, the machine is fitted with different safety equipment for protection against serious personal injury.

Removing, modifying or decommissioning safety equipment is prohibited.

If safety equipment has been modified, damaged, removed or is not fully functional, the machine must be shut down and secured immediately. Defects must be rectified immediately.

All protective devices must be undamaged, completely fitted and fully functional. This must be checked through daily visual checks.

If moving protective devices are fitted, an additional function check must be carried out every time before using the machine.

2.4.3 Conveyed material

The machine is only designated for conveying media specified in the machine's technical data. Its performance is limited to operation on construction sites or in workshops. The maximum delivery pressure must not exceed that specified on the rating plate or in the technical data.

2.4.4 Extending the delivery line

Extension of the delivery line beyond the length specified in the technical data is forbidden.

A new delivery line is only suitable for pressures entered on the rating plate.

2.4.5 Pressurised systems

Opening pressurised systems (delivery line) is prohibited. Before opening, the pressure must be dumped or the entire system must be depressurised.

2.4.6 Site of use

The machine is not approved for operation in potentially explosive areas (unless stated otherwise).

2.4.7 Transport

The machine may only be transported as stated. During transport, lifting equipment, lifting tackle or other auxiliary devices that are unsuitable or not reliable and safe in operation must not be used. Loading the machine with unauthorised materials and accessories, as well as exceeding the maximum permissible gross weight of the machine, is prohibited.

2.4.8 General maintenance

Maintenance measures must not be carried out while the machine is switched on or unsecured. The machine must be set up sufficiently safely and must be secured against unauthorised or accidental switching on. Other necessary safety measures depend on the type of maintenance and are the responsibility of the relevant, authorised and qualified personnel.

Machine components not intended for this purpose must not be stepped on.

It is prohibited to use other components or spare parts than those approved by the manufacturer for maintenance work.

Tools that are unsuitable or not reliable and safe in operation must not be used.

If safety equipment needs to be removed to carry out maintenance work, it may only be removed for the duration of that work. Safety equipment must be fitted again and checked to ensure it is fully functional as soon as maintenance work is complete.

2.4.9 Safety equipment maintenance

The specified inspection and replacement intervals for safety equipment must be observed.

Safety equipment may only be repaired, adjusted or replaced by authorised qualified personnel.

Unauthorised changes to safety-related parts (SRP), adjustable devices, machine data or the removal of seals by the operating company or its authorised maintenance personnel are not permitted.

2.4.10 Changing the works settings

The works settings must not be changed. A few examples are listed below:

- Pressure and performance settings
- Software versions and software parameters

2.4.11 Structural changes

Structural changes must not be implemented without permission from the manufacturer. A few examples are listed below:

- Accessories and attachments not explicitly approved by the manufacturer must not be fitted.
- Alterations or modifications that could compromise safety must not be carried out.
- Welding work on load-bearing parts, pressure containers, fuel or oil systems is not permitted.
- Welding work is only permitted following consultation with the manufacturer and with express permission.
- Welding work may only be carried out by authorised qualified personnel.

2.4.12 Wrong bolts/nuts and tightening torques

Only nuts and bolts corresponding to the specifications in the spare parts sheets may be used.

Nuts and bolts may only be tightened with the specified tightening torques.

The following nuts and bolts must not be reused:

- Self-locking nuts
- Bolts with adhesive in the locking threads
- Bolts of property class 10.9 and higher

2.5 Liability

The operator is obliged to act in accordance with the Operating Instructions.

The safety and accident prevention regulations from the following institutions must be observed:

- The legal authority of the country of use
- The Industrial Employers' Liability Insurance Associations
- The responsible commercial liability insurance company

The legal authority places liability for accidents caused by not observing safety and accident prevention regulations or by lack of care with the operating personnel or (where they cannot be held responsible due to lack of training or basic knowledge) the supervisory personnel.

2.5.1 Exclusion of liability

We state here expressly that the manufacturer accepts no liability for damage arising from incorrect or negligent operation or maintenance or as a result of improper use. This statement is also valid for modifications to, additions to and customisation of the machine that are liable to compromise safety. The warranty will no longer be valid in such cases.

2.6 Personnel selection and qualifications

Only the following persons may be tasked with the independent operation, servicing or maintenance of the machine:

- Persons above the legally permitted minimum age
- Persons who are physiologically capable (rested and not under the influence of alcohol, drugs or medication)
- Persons who are instructed in the operation and maintenance of the machine
- Persons who can be expected to reliably execute the tasks with which they are charged
- Persons who have been explicitly tasked with the stated activities by the employer

2.6.1 Training

The machine must only be operated, serviced or maintained by trained subject experts. The areas of responsibility for personnel must be clearly defined.

The following personnel must only work on the machine under the permanent supervision of an experienced person:

- Personnel participating in training courses
- Trainees
- Personnel being instructed
- Personnel receiving general training

2.6.2 Qualified personnel

Personnel who have successfully completed a specialist training course that qualifies them to carry out specific activities.

2.6.3 Subject expert

For the purposes of the German Industrial Health and Safety Ordinance, a subject expert is a person who, through their professional training, their professional experience and their recent professional activity, has the required specialist knowledge to inspect the tools.

2.7 Sources of danger

2.7.1 General sources of danger

Never reach into moving machine components, whether the machine is running or switched off. Always switch off the main switch first. Take note of the warning plate.

In case of malfunctions, shut the machine down immediately and secure it. Have faults rectified immediately.

Secure the machine at the set-up site against rolling away by means of chocks.

Make sure than no one can be endangered by the machine starting up before you switch on the machine.

Do not loosen or tighten pressurised threaded unions.

2.7.2 Danger from hot machine components

During and after work, there is a risk of burning from hot parts of the motor and the frame.

2.7.3 Danger from the delivery line and coupling system

The delivery line and coupling system is designed for a maximum operating pressure of 40 bar. The maximum operating pressure must not exceed 40 bar.

2.8 Safety equipment

Never remove or modify safety equipment on the machine.

If safety equipment needs to be removed for set-up, maintenance or repairs, the safety equipment must be refitted and checked immediately upon completion of the maintenance and repair work.

All equipment required for safety and accident prevention (warning signs and information plates, cover grilles, guards, etc.) must be in place. Such equipment must not be removed, modified or damaged.

All warning and information plates on the machine must be complete and fully legible at all times.

It is your responsibility as operator to ensure that any warning and information plates that have been damaged or rendered illegible are replaced without delay.

2.9 Personal protective equipment

To reduce the risk to life and limb, personal protective equipment must be used by the operating personnel whenever necessary or required by regulations. Safety helmet, protective gloves and safety footwear are specified for all persons working at or with the machine.

Personal protective equipment must at least comply with the specified standards.

Symbol	Meaning
	Safety helmet The safety helmet protects your head, e.g. against falling concrete or parts of the delivery line if the lines burst. (DIN EN 397:2022; Industrial safety helmets)
	Safety footwear Safety footwear protects your feet against falling objects and against penetration by projecting nails. (DIN EN ISO 20345:2022; Safety footwear for professional use; category S3)
	Hearing protectors Hearing protectors protect you against the noise generated in the vicinity of the machine when you are standing close to it. (DIN EN 352-1:2021; Hearing protectors - General requirements - Part 1: Earmuffs or DIN EN 352-3:2021; Hearing protectors - General requirements - Part 3: Earmuffs attached to an industrial safety helmet)
	Protective gloves Protective gloves protect your hands against aggressive or chemical substances and against mechanical effects (e.g. knocks) and cutting injuries. (DIN EN 388:2017; Protective gloves against mechanical risks; classification 1111)
	Protective goggles Protective goggles protect your eyes from injuries due to concrete spatter and other particles. (DIN EN 166:2002; Personal eye protection - Specifications)

Symbol	Meaning
	Safety harness When working at heights, use climbing aids and platforms that are intended for this purpose and comply with the safety regulations or wear a safety harness. Relevant national regulations must be observed. (DIN EN 361:2002; Personal protective equipment against falls from a height - Full body harnesses; category III)
	Respiratory protection and face mask Respiratory protection and face masks protect you from particles of building materials that may enter your body through the respiratory passages (e.g. concrete admixtures). (DIN EN 149:2009; Respiratory protection devices - Filtering half masks to protect against particles - Requirements, testing, marking; classification FFP1)

2.10 Risk of injury, residual risks

The machine is designed in accordance with current engineering standards and recognised safety rules. However, its use may still present a risk of machine operators or third parties suffering death or injury, or the machine and other property becoming damaged.

Some of the injuries that may be caused by improper use of the machine are listed below:

- Risk of crushing and impact when moving and setting up the machine.
- Electrical contact (possibly with fatal consequences) with the electrical equipment, if the connection has not been made properly or electrical assemblies are damaged.
- Injuries through unauthorised start up or use of the machine.
- Noise exposure, if persons without hearing protectors are permanently in the vicinity of the machine.

- Injuries to the skin and eyes caused by dust particles, concrete spatter, water glass or other chemical substances.
- Damage to health caused by breathing in dust particles or cleaning agents, solvents and preservatives.
- Injuries caused by opening pressurised delivery lines (e.g. following blockages).
- Injuries caused by tripping over cables, hoses or reinforcements.

2.11 Risk of crushing and impact

2.11.1 Operating modes

There is a risk of crushing and impact at the machine during the following operating modes:

- Transport
- Setting up
- Starting up
- Operation
- Cleaning, troubleshooting and maintenance
- Decommissioning

2.11.2 Transporting the machine

When loading the machine onto a transport vehicle with a crane, the machine may only be attached at the intended lifting eyes. This is the only way to ensure that the machine is suspended on the hook levelly and securely and cannot topple over.

Observe any further notes in the “Transport, setting up and connection” chapter.

⚠ WARNING

Risk of crushing due to lifting and loading the machine

- Lift the machine carefully with a forklift truck and move it with great care.
- When lifting with the crane, determine the centre of gravity of the machine by lifting it carefully. All cables or chains on the lifting gear must be tensioned evenly and the machine must be raised evenly at all support points.
- Load the machine on a suitable transport vehicle.
- Secure the machine to prevent it from rolling away, slipping and toppling over during transport.

⚠ WARNING

Risk of death or injury from falling loads

Hoisted loads may fall if they are not loaded properly or if the auxiliary loading equipment is damaged.

- Use only undamaged auxiliary loading equipment designed for the gross weight of the machine.
- Do **not** walk under suspended loads.

2.11.3 Assembly of the auger pump

There is a risk of crushing when mounting the auger pump.

⚠ WARNING

Risk of crushing due to turning of the auger pump

Depending on the mounting position of the stator or screw conveyor barrel, it can turn all the way to the stop when the machine is switched on.

- Secure the machine against unauthorised or accidental starting.
- Never reach into the auger pump while switching the machine on.
- For screw conveyor barrels with a stop, this must be secured at the stop of the mixing pipe.

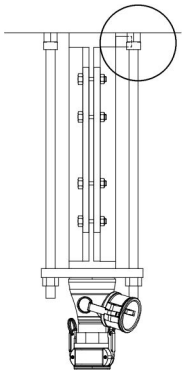


Figure 1: Risk of crushing in the end stop area of the auger pump

2.12 Electrical contact

There is a risk of death from electrical contact on the control cabinet, the electrical lines and the engine during the following operating modes:

- Starting up
- Operation
- Cleaning, troubleshooting and maintenance
- Decommissioning

As standard, all electrical assemblies are protected according to degree of protection IP 54 in line with IEC 60204 part 1 or DIN 40050 ICE 144 .

Use only original fuses with the specified voltage rating. Overriding fuses or fuses that are too strong may destroy the electrical system.

Work on the electrical systems and equipment of the machine must only be carried out by a qualified electrician or by instructed persons under the supervision and guidance of a qualified electrician and in accordance with electrical engineering rules and regulations.

2.13 Blockage

Blockages increase the risk of accidents. A well-cleaned and leak-tight delivery line prevents the formation of a blockage.

Using the correct couplings and delivery line connections largely prevents the formation of a blockage. To prevent blockages in the delivery lines, you must moisten the inside of the delivery lines.

⚠ DANGER

Risk of death due to the incorrect removal of a blockage

When removing a blockage with compressed air, the delivery line may burst or the blockage may be ejected from the delivery line at a high pressure.

- **Never** remove a blockage using compressed air.

⚠ WARNING

Risk of death due to ejected blockage

- Align the delivery line so that no persons are hit by ejected blockages.
- Secure the danger zone to prevent unauthorised access.
- Always wear personal protective equipment.

2.14 Conduct in an emergency

In case of an emergency or malfunctions, shut the machine down immediately and secure it. Rectify faults immediately or, if needed, consult an authorised service technician.

For further details, see also the “Emergency shutdown procedure” section in the “Operation” chapter.

(Emergency shutdown procedure P. 6 — 2)

2.15 Environmental protection

Collect residual hydraulic fluid, grease, solvent or cleaning agent separately, safely and in an environmentally friendly manner in suitable collectors. Store and dispose of them in an environmentally friendly manner according to applicable local regulations.

Use only suitable and sufficiently large containers to drain functional fluids. Escaped functional fluids must be bound with binding agents immediately and contaminated soil must be disposed of in line with regulations.

Always close fuel, hydraulic fluid or grease containers carefully.

Make sure that you dispose of empty functional fluid containers, old filters, batteries, replacement parts, used cleaning rags, etc. in line with regulations and in an environmentally friendly manner.

Only work with waste disposal companies who are approved by the responsible authorities. Ensure that different oils are never mixed.

2.16 Noise emissions

Noise emissions are created at the machine during the following operating modes:

- Starting up
- Operation
- Cleaning, troubleshooting and maintenance
- Decommissioning

Above 85 dB (A), hearing protectors must be worn. You will find the value for the sound pressure level in the “Technical data” section.

⚠ WARNING

Hearing loss caused by noise

- ▶ Wear the mandatory personal hearing protectors.

2.16.1 Operator

The operator must provide their personnel with hearing protectors.

Instruct your personnel to always wear their personal hearing protectors. As the operator, you are responsible for ensuring that your personnel comply with this regulation.

All soundproofing equipment must be fitted and in perfect condition. It must be fitted during operation. A high sound level can cause permanent hearing damage.

2.17 Safety-related parts (SRPs)

⚠ WARNING

Risk of death

Incorrect assembly of safety-related parts can result in malfunctions.

- Safety-related parts (SRP) should only ever be repaired, maintained or replaced by qualified personnel with the necessary authorization.

Safetyrelated parts (SRP) are components that ensure the safety of the machine functions. They are specially marked on spare parts sheets. When a spare part that can be used as an SRP is ordered, it is delivered in separate, clearly labelled packaging.

Read the “EB00-5-xxxxx-xxxx” sheet to ensure that you are aware of the SRPs fitted on the machine.

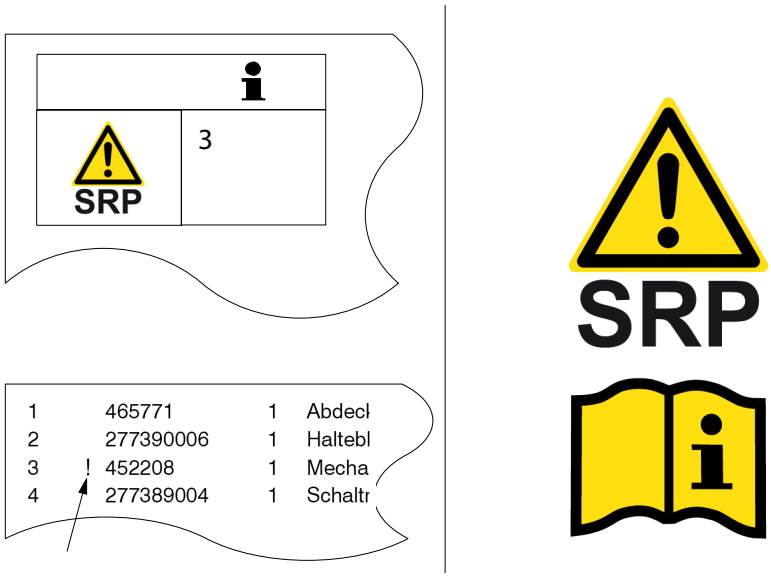


Figure 2: SRP marking

Item	Designation
Left	Spare parts sheet
Right	Spare part packaging

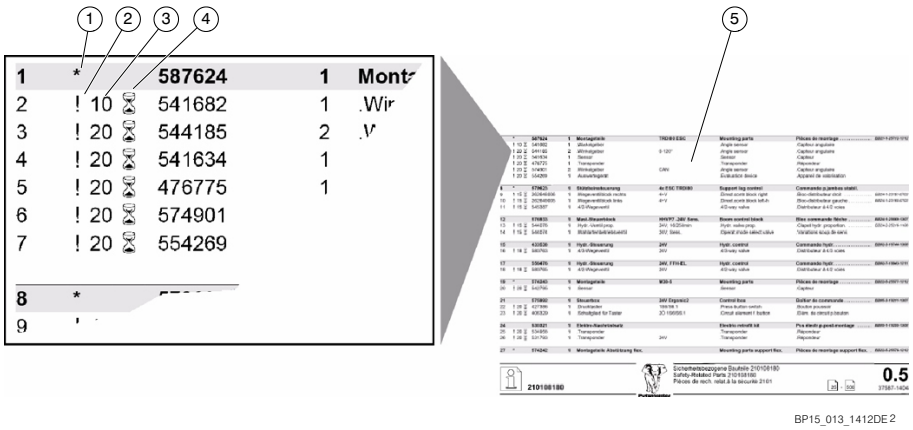


Figure 3: Extract from an example spare parts sheet

Item	Designation
1	Asterisk “*” – item cannot be ordered
2	Exclamation mark “!” - Safety-related part (SRP)
3	SRP service life in years 10 = 10 years
4	Hourglass – SRP service life
5	Example spare parts sheet “EB00-5-xxxxx-xxxx”

Putzmeister specifies a service life *(3)* for every safety-related part (SRP). The SRPs must be replaced once this service life has elapsed.

2.18 Spare parts

Spare parts must meet the technical requirements specified by the manufacturer. This is always guaranteed for original spare parts.

Use only original spare parts. The manufacturer accepts no liability for damage caused by the use of spare parts that are not original spare parts.

2.19 Accessories

Accessories must meet the technical requirements specified by the manufacturer and be compatible with one another. This is always guaranteed for original accessories.

Accessories not included in the products supplied with the machine are supplied by the manufacturer and can be purchased via the Parts Sales department. The supplied accessories are listed on the delivery note.

The operating company is responsible for ensuring that the correct accessories are used. The manufacturer accepts no responsibility or liability for damage caused by the use of third-party accessories or by incorrect use.

2.20 Storing the machine

The machine should be stored only in a dry, frostfree location.

If there is a risk of freezing at the storage location, corresponding frost protection measures must be implemented.

2.21 Unauthorised start-up or use of the machine

2.21.1 Operating modes

There is a danger posed by unauthorised start up or use of the machine during the following operating modes:

- Starting up
- Operation
- Cleaning, troubleshooting and maintenance
- Decommissioning

2.21.2 Securing the machine

The machine operator must always be able to see the machine. If necessary, the machine operator must appoint a person to monitor the machine. If unauthorised persons approach the machine, the machine operator must cease work immediately.

Always secure the machine against unauthorised start-up before you move away from the machine:

- Switch the machine off at the main switch.
- Secure the main switch.

3 General technical description

This chapter describes the components and assemblies on this machine and describes how they function. Please note that possible (optional) auxiliary equipment is also described.

3.1 Machine model

Your machine is an MP 25.

The following data can be found on the rating plate:

- Machine model
- Machine number

You will make it much easier for us to respond to any questions or orders if you give us the details of the machine model and the machine number.

3.2 Overview

You can find an overview of the most important components below.

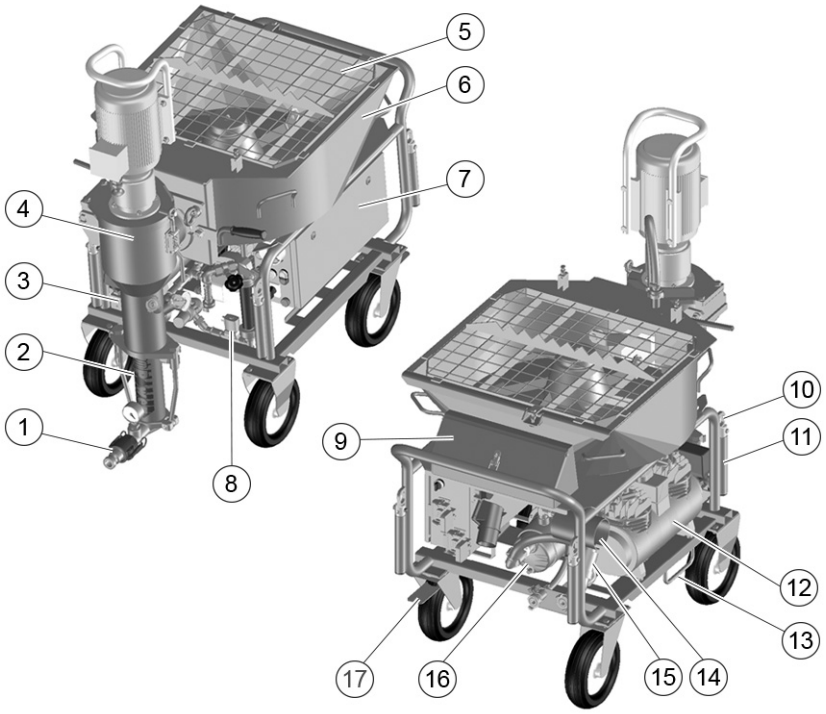


Figure 4: MP 25 machine overview

Item	Designation
1	Pressure flange
2	Auger pump
3	Air valve fitting (hidden)

Item	Designation
4	Mixing pipe
5	Protective grille
6	Reservoir
7	Control cabinet
8	Water valve fitting
9	Toolbox
10	Lifting eyes (4x)
11	Carrying handles (4x)
12	Compressor
13	Fork-lift truck pocket
14	Screw-in aid
15	Water filter
16	Water pump
17	Foot brake

3.3 Technical data

The following technical data and characteristics relate to the MP 25.

Dimensions	
Length	1344 mm
Width	728 mm
Height	1484 mm
Filling height	984 mm

Weight	MP 25 111417500, 111417510	MP 25 111417420
Weight	273 kg	290 kg

Perform-ance data	MP 25 111417500	MP 25 111417510	MP 25 111417530	MP 25 111417420
Drive motor	Electric motor: 5.5 kW/400 V/50 Hz/ 385 rpm		Electric motor: 5.5 kW/400 V/60 Hz/ 380 rpm	Electric motor: 5.5 kW/220 V/ 60 Hz/ 385 rpm
Compressor	0.9 kW, 250 l/min		0.55 kW, 200 l/min	0.55 kW, 200 l/min
Water pump	0.37 kW at 3.6 m³/h		0.75 kW at 4.2 m³/h	
Agitator	1.1 kW at 24 1 rpm			
Pump type	D 6-3	D 5 short	D 8-2	D 6 Power
Delivery rate	25 l/min	40 l/min	28 l/min	25 l/min
Max. delivery pressure	40 bar	20 bar	30 bar	40 bar
Max. delivery distance	40 m horizontally, up to 15 m vertically	30 m horizontally, up to 15 m vertically	40 m horizontally, up to 15 m vertically	40 m horizontally, up to 15 m vertically
Max. particle size of conveyed material	4 mm			
Sound power level	See plate on the machine			
Sound pressure level	< 85 dB(A)			
Inclination angle in longitudinal direction	Max. 10°			

Perform-ance data	MP 25 111417500	MP 25 111417510	MP 25 111417530	MP 25 111417420
Inclination angle in transverse direction	Max. 10°			
Control voltage	48 V			42 V
Power con-nection	CEE device connector, 5 x 4 mm² 32 ampere, 5-pole, 400 V, 25 ampere fuse			CEE de-vice con-nector, 5 x 6 mm² 32 ampere, 5-pole, 220 V, 32 ampere fuse

The output specifications are guide values.

The maximum delivery rate and the maximum delivery pressure cannot be achieved simultaneously.

The specifications depend on the following variables:

- Material to be pumped
- Material composition
- Consistence

3.4 Rating plate

The most important machine specifications are shown on the rating plate.

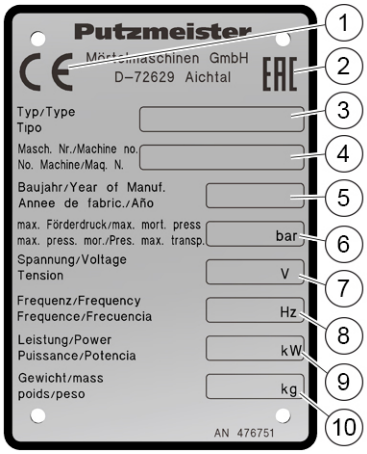


Figure 5: Rating plate

Item	Designation
1	CE marking (product complies with European regulations)
2	EAC marking (product complies with the technical regulations of the Eurasian Economic Union)
3	Model (machine model)
4	Machine no. (machine number)
5	Year of manufacture
6	Max. delivery pressure [bar]
7	Voltage [V]
8	Frequency [Hz]
9	Power [kW]
10	Weight [kg]

3.5 Sound power level

Next to the rating plate on the machine there is the plate shown in the picture below, which gives the machine's sound power level measurement.

Figure 6: Plate – sound power level

Item	Designation
L_{WA}	Sound power level
dB	Value in decibels

3.6 Safety equipment

The following is a list of safety equipment installed on the machine.

Safety equipment installed on the machine:

- Protective grille
- EMERGENCY STOP button (option)
- Tilt switch

⚠ WARNING

Risk of injury if not all safety equipment is fitted and fully functional

- ▶ Only operate the machine with all safety equipment fitted and fully functional.

3.6.1 Protective grille

A protective grille is fitted to the machine.

The mesh size of the protective grille is such that material can fall unobstructed into the container, yet it guarantees protection for the machine operator.

DANGER

Risk of death due to removed protective grille

Amputations resulting from the crushing, shearing, entanglement or drawing of limbs into the rotating mixing apparatus.

- Make sure that the protective grille is fitted in every operating mode.
- Fit the protective grille again every time maintenance work is completed.
- Only operate the machine when the protective grille is closed.
- Do not reach through the protective grille or insert objects through the grille.

WARNING

Danger due to defective protective grille

Sufficient protection cannot be guaranteed if protective grilles are subjected to wear as a result of operation.

- Replace the protective grille if the residual material thickness of the grille rods falls below 50%.

3.6.2 EMERGENCY STOP button (option)

Depending on the version and country of use, your machine may be fitted with an EMERGENCY STOP button.

The EMERGENCY STOP button is fitted to the control cabinet of the machine.

⚠ WARNING

Danger to persons from the machine

- If situations arise during operation which could endanger persons, the machine must be stopped immediately by pressing the EMERGENCY STOP button.
- After an EMERGENCY STOP, eliminate the danger before restarting the machine.

NOTICE

Machine damage caused by incorrect actuation of the EMERGENCY STOP button

- Only press the EMERGENCY STOP button in the event of danger.
- Do not use the EMERGENCY STOP button to normally switch off the machine.

Familiarise yourself with the position of the EMERGENCY STOP button(s) on your machine.

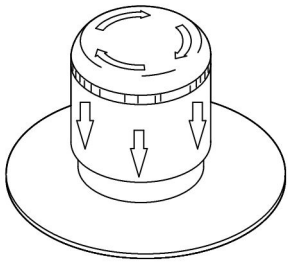


Figure 7: EMERGENCY STOP button

Pressing the EMERGENCY STOP button triggers the following actions:

- The pump stops.
- The motor is switched off.
- All control panels and switch boxes are electrically locked.

To cancel the EMERGENCY STOP status, unlock the depressed EMERGENCY STOP button by turning it.

If your machine is **not** equipped with an EMERGENCY STOP button, switch the machine off at the main switch when an impending danger arises. Switching the machine off at the main switch causes an EMERGENCY STOP.

3.6.3 Tilt switch

The machine is fitted with a tilt switch. A tilt switch is installed in the gear motor; if the mixing pipe begins to swivel away, this switches off the motor.

When the tilt switch reacts in this way, the machine is stopped normally. The electrical drive power supply is not interrupted.

3.7 Description of the functions

The following sections are intended to help you understand the operational sequences of the machine so that you can limit the field of application of the machine to suitable areas and avoid faults in operation.

The machine is easy to set up and operate. However, you must take certain precautions during operation in order to achieve the maximum possible service life of the wear parts.

The mixing pump is a machine designed for processing premixed dry mortar. It mixes, pumps and sprays continuously.

The machine is filled via the hopper. From here, the dry mortar is conveyed to the mixing pipe. The adjustable volume of water is added via a fitting with a flow meter. The dry mortar is mixed with water. Next, the mixed mortar is pumped by an auger pump.

A spray gun can be attached to the end of the delivery hose. Air is introduced from the compressor and the mortar applied in the desired layer thickness.

3.8 Control devices

This section provides a summary of the different control devices on the machine.

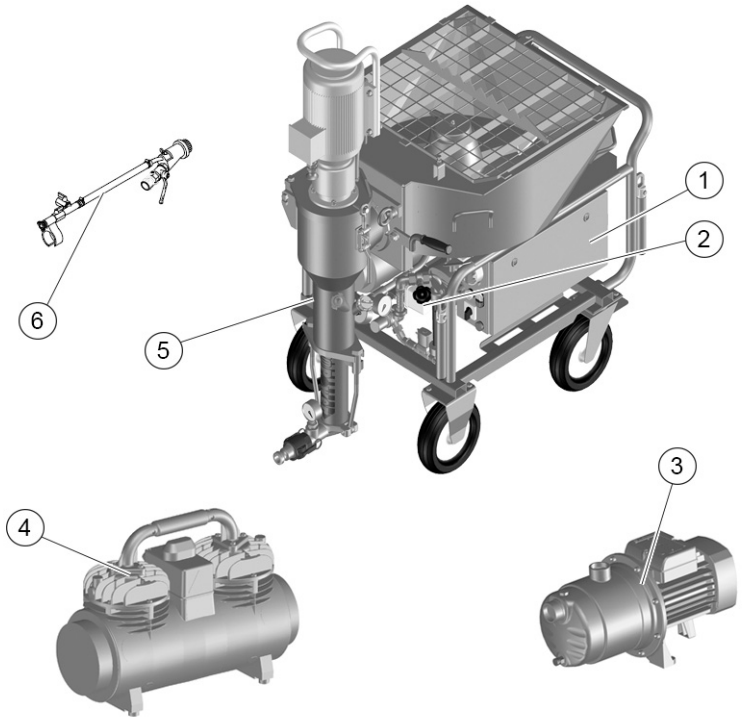


Figure 8: Control devices (different models available)

Item	Designation
1	Control cabinet
2	Water valve fitting
3	Water pump
4	Compressor
5	Air valve fitting (hidden)
6	Spray gun

The data refers to the series machines. These may vary for special equipment. You can also find the data on the machine card supplied with the machine.

3.9 Control cabinet

The machine is operated and controlled from the control cabinet.

3.9.1 General

DANGER

Risk of death due to fatal electric shock

- Work on the electrical system may only be carried out by certified, licensed and qualified electricians (proof of qualification in line with EN 60204, part 1, page 14, item 2.21).

NOTICE

Machine damage caused by incorrect fuses

Overriding fuses or fuses that are too strong may destroy the electrical system.

- Use only original fuses with the specified voltage rating.

The wiring, earthing and connections on the control cabinet comply with VDE codes of practice.

3.9.2 Overview

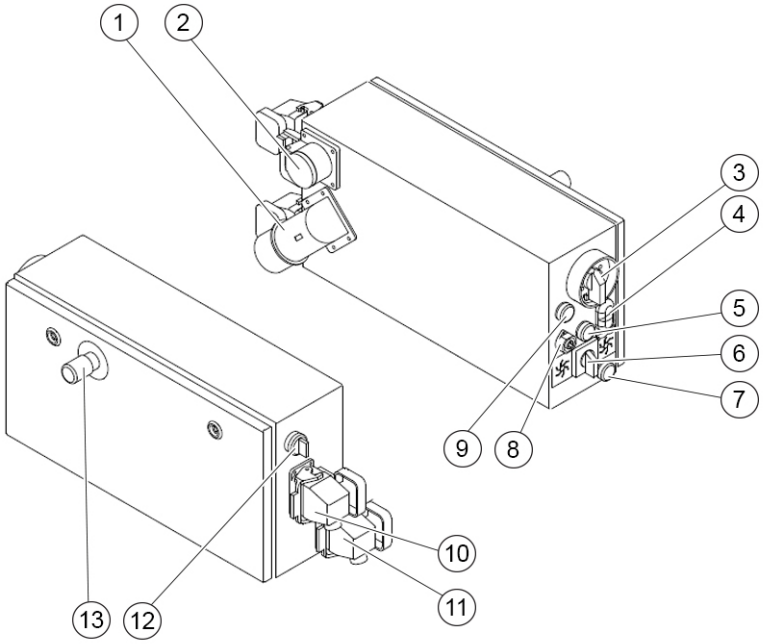


Figure 9: Control cabinet

Item	Designation
1	**CEE device socket** Power supply connection
2	**CEE device socket** Compressor connection
3	**Main switch** Power supply ON - OFF
4	**Double pushbutton** Pump ON – OFF
5	**Illuminated push-button** Yellow indicator lamp: Incorrect direction of rotation Push-button: Reverse pump
6	**Selector switch** Mix – OFF – Mixing and pumping
7	**Indicator light** Motor fault
8	**Round socket** Air valve fitting/remote control connection
9	**Push-button** (dependent on model) Water flow

Item	Designation
10	**Multiple socket outlet** Pump connection
11	**Multiple socket outlet** Agitator connection
12	**Selector switch** Water pump (different function depending on connection)
13	**EMERGENCY STOP button** (dependent on model) Switching off the machine in an emergency

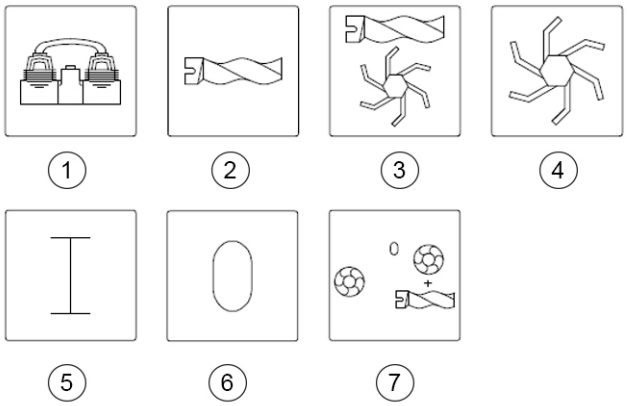


Figure 10: Symbols on the control cabinet

Item	Designation
1	Compressor connection
2	Pump connection
3	Parallel operation of pump/agitator
4	Continuous operation of agitator
5	Main switch ON
6	Main switch OFF
7	Water pump OFF – Automatic

3.9.2.1 “Mixing and pumping” selector switch

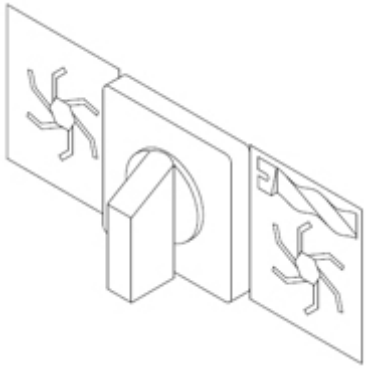


Figure 11: “"Mix – OFF – Mixing and pumping"” selector switch

The selector switch can be used to determine whether the pump and/or the agitator should stop during breaks in pumping, for instance.

Switch position	Result
Left: “Mixing”	Agitator runs continuously
Centre: “OFF”	Agitator off
Right: “Mixing and pumping”	Agitator starts and stops with the pump

3.9.2.2 “Water pump” selector switch

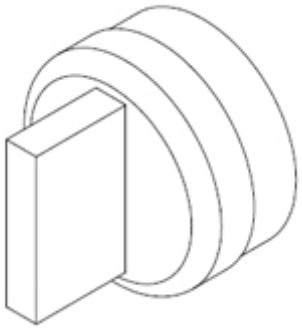


Figure 12: “Water pump” selector switch

Water pump OFF – Automatic selector switch	
Switch position	**Result**
Left: “OFF”	Water pump off
Right: “Automatic”	The water pump starts. The mixing pump starts after 2 seconds. They stop synchronously.

3.10 Compressor

A compressor can be integrated to generate the air required to spray the material, depending on the model.

The compressor may only be operated using the pressure switch.

The generated air is transported to the spray gun by means of the air valve fitting and an air hose. The spray air is also used to pneumatically control the machine.

Figure 13: Compressor

Item	Designation
1	Switch (ON/OFF)
2	Pressure switch
3	Device connector

⚠ WARNING

Risk of injury due to damage to the compressor

- Do not use the device if there is visible damage or if the compressor is producing unusual sounds or vibrations.
- Only qualified personnel may carry out work on the compressor.

3.11 Auger pump

The auger pump fitted in the machine is a so-called displacement pump. An screw conveyor (rotor) rotates inside a fixed screw conveyor barrel (stator). The screw conveyor is made from a highly wear-resistant and extremely hard metal alloy; the screw conveyor barrel from a steel sleeve with several slots and an elastic, vulcanised rubber core.

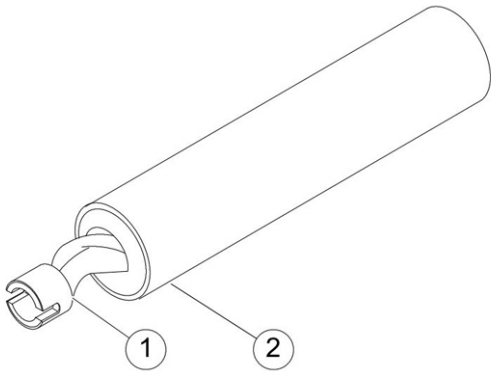


Figure 14: Auger pump overview

Item	Designation
1	Screw conveyor
2	Screw conveyor barrel

Depending on the model, the auger pump can be equipped with a clamping sheath for tightening.

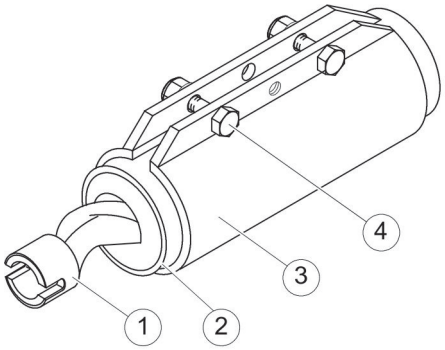
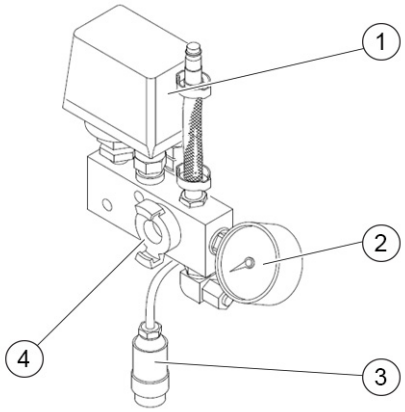


Figure 15: Auger pump with clamping sheath overview

Item	Designation
1	Screw conveyor
2	Screw conveyor barrel
3	Clamping sheath
4	Clamping bolts

The wear of the auger pump can be compensated by tightening. You can also adjust the delivery pressure by pre-tightening or relieving the tension on the screw conveyor barrel. The “Maintenance” chapter describes how to adjust the auger pump.

3.12 Air valve fitting



Item	Designation
1	Pressure switch
2	Pressure gauge
3	“Control cabinet connection” connector plug
4	Hose coupling for air tapping

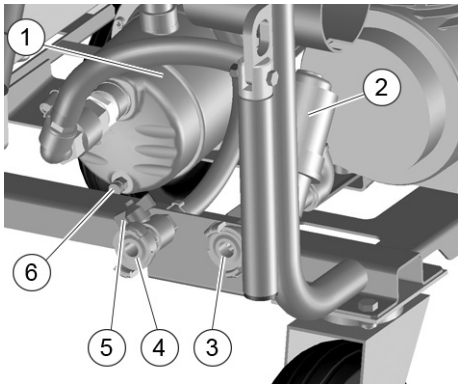
Air is channelled from the compressor into the air valve fitting for spray gun operation. The air valves and the air hose connection are located here. A spray gun is fitted to the end of the hose and a coat of mortar applied with the desired layer thickness.

The pump is switched on and off via the pressure switch. The connector plug is plugged in at the control cabinet in place of the cable remote control.

Adjusting the pressure switch is described in the “Maintenance work” section of the “Maintenance” chapter. *(Adjusting the air valve fitting pressure switch P. 8 — 24)*

3.13 Water pump

The machine is fitted with a water pump.



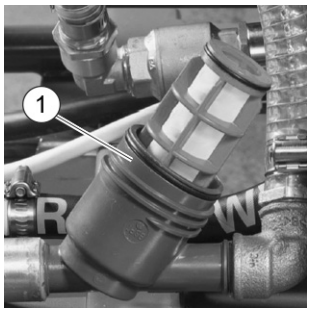
Item	Designation
1	Water pump
2	Water filter
3	Water pump water connection
4	Connection – water removal
5	Ball valve – water removal
6	Water pump outlet

The electrically driven water pump is used as a pressure booster pump in case the pressure in the water network is not sufficient.

The water pump is a suction pump that draws the water in itself.

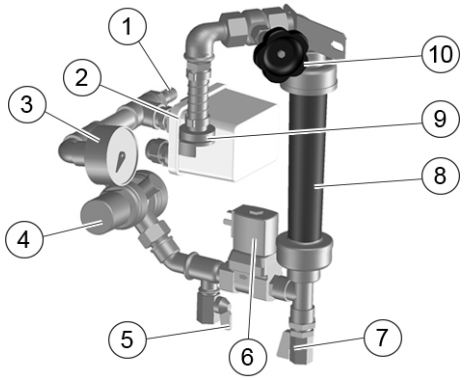
3.13.1 Water filter

The water filter guarantees an improved level of water purity. Check the water filter regularly and replace it as required.



Item	Designation
1	Open water filter

3.14 Water valve fitting



Item	Designation
1	Water connection
2	Pressure switch
3	Pressure gauge
4	Pressure reducer
5	Drain cock
6	Valve
7	Drain cock
8	Flow meter
9	Mixing pipe connection
10	Control valve for water volume

The water valve fitting conveys the water to the mixing pipe. The water volume is adjusted at the control valve. The flow meter doses the necessary water volume.

3.15 Spray gun

The spray gun is attached to the end of the delivery line.

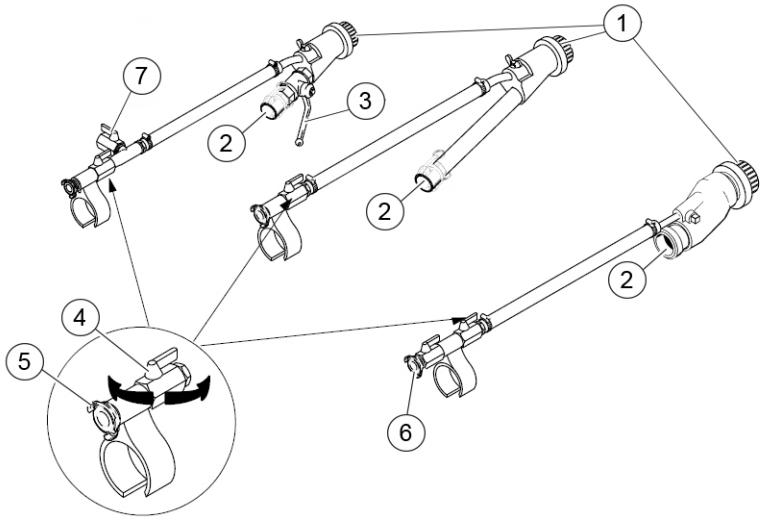


Figure 16: Spray gun overview

Item	Designation
1	Rubber fine plaster nozzle
2	Delivery line connection
3	Material lever (dependent on model)
4	Remote control valve
5	Air supply coupling
6	Stop cock (dependent on model)
7	Air-regulation cock (dependent on model)

3.16 Cable remote control

A cable remote control is available as an option. The socket for this is located on the control cabinet.

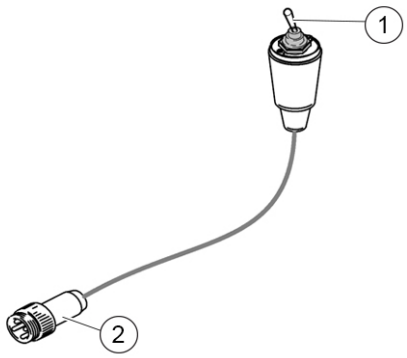


Figure 17: Cable remote control

Item	Designation
1	“ON – OFF” toggle switch
2	“Remote control” connector plug

3.17 Injection hood

The injection hood is not included in the products supplied with the machine. It can be ordered from your service dealer or manufacturer representative.

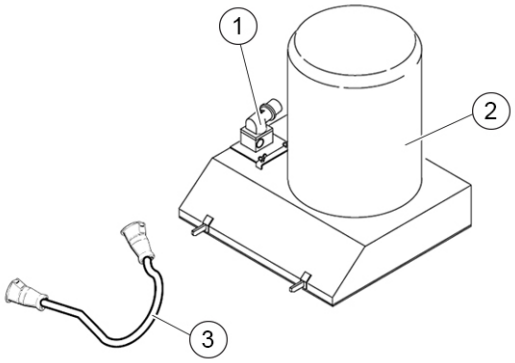


Figure 18: Injection hood (different models available)

Item	Designation
1	Fill-level sensor
2	Compact filter
3	Control cable

An injection hood equipped with a compact filter and a fill-level sensor is placed on the mortar machine. A delivery line connects the injection hood to the delivery container on the silo/container. A control cable runs from the fill-level sensor on the injection hood to the control cabinet on the conveying system. A description of how to mount the injection hood is provided in the “Transport, setting up and connection” *(Mounting the injection hood P. 4 — 16)* chapter.

3.17.1 Compact filter

The high-volume expansion chamber in the injection hood increases its intake capacity and thereby guarantees a sufficient material reserve. At the same time, the compact filter ensures that the conveying air is free from dust.

Clean the compact filter regularly and protect it against moisture.

3.17.2 Fill-level sensor

The fill-level sensor is responsible for determining the material level in the injection hood (mortar machine). To enable this, the fill-level sensor is connected to the conveying system control cabinet via a control cable.

⚠ WARNING

Risk to health due to breathing in dust particles

- Only remove the injection hood if the mortar machine is switched off.

Depending on the model, the fill-level sensor may be locked using a quick-release connector on the injection hood.

3.18 Options

Consult your dealer or local Putzmeister Mortar Machines GmbH representative as to how and whether you should upgrade your machine.

You can find further options and accessories in the Putzmeister Mortar Machines GmbH catalogue or online at: www.putzmeister.com

4 Transport, setting up and connection

In this chapter you will find information concerning safe transport of the machine. In this chapter, you will furthermore find information on the other tasks necessary for the assembly and connection of the machine. Starting up the machine is described in the “Starting up” chapter *(Starting up P. 5 — 1)*.

4.1 Unpacking the machine

The machine is packaged for transport at the works. The packaging is made from recyclable material.

Dispose of the packing material in compliance with the nationally valid environmental protection regulations.

4.2 Transporting the machine

⚠ WARNING

Risk of crushing due to lifting and loading the machine

- Lift the machine carefully with a forklift truck and move it with great care.
- When lifting with the crane, determine the centre of gravity of the machine by lifting it carefully. All cables or chains on the lifting gear must be tensioned evenly and the machine must be raised evenly at all support points.
- Load the machine on a suitable transport vehicle.
- Secure the machine to prevent it from rolling away, slipping and toppling over during transport.

⚠ WARNING

Risk of death or injury from falling loads

- Use only auxiliary loading equipment designed for the weight of the machine.
- Use all available lifting points.
- Do **not** walk under suspended loads.

4.2.1 Loading using a fork-lift truck

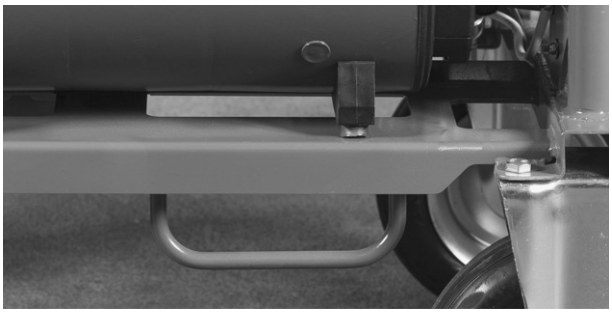


Figure 19: Fork-lift truck pocket

Use the fork-lift truck pocket on the cross strut at the bottom of the frame to load the machine with a suitable fork-lift truck. This is the only way to ensure that the machine cannot fall while being transported with a fork-lift truck.

4.2.2 Loading using a crane

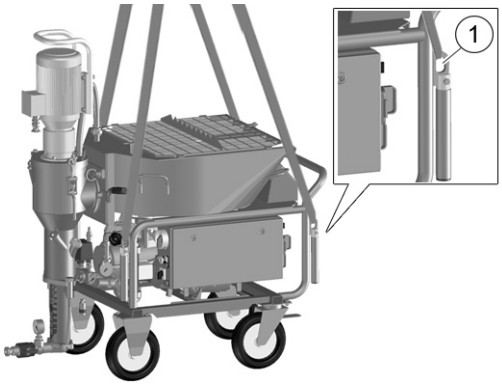
⚠ WARNING

Risk of death or injury from falling loads

The machine could tip or the container could become detached from the base frame and tip the machine if the complete machine is only attached at one of the individual components.

- Never attach the complete machine at only one of the individual components (such as the mixing pump, container or base frame) for crane transport.
- Place the machine on a pallet and secure it against sliding using a securing strap before you raise the load.

When loading the complete machine with a crane, the machine may only be attached at the intended lifting eyes. Use all four lifting eyes. This is the only way to ensure that the machine is suspended on the hook securely and cannot topple over.



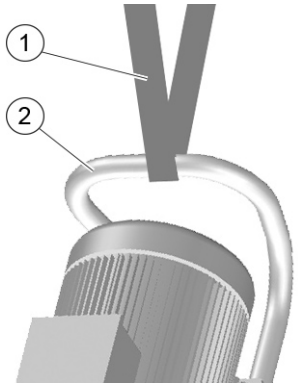
Item	Designation
1	Lifting eye

4.2.2.1 Loading the individual components

The machine can be dismantled into its individual components by two people *(Dismantling the machine into individual components P. 4 — 6)*. To transport the individual components with a suitable crane, proceed as follows:

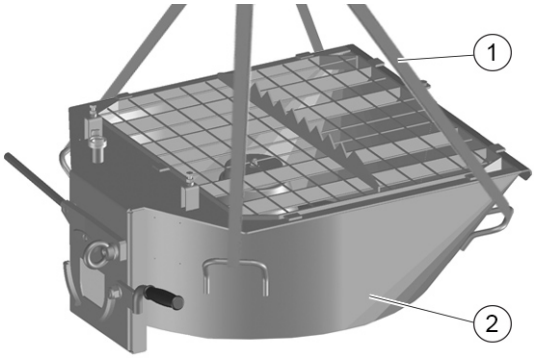
1. For crane transport, remove the compressor from the base frame.

2. Secure the lifting belts at all four lifting eyes.
3. Raise the load.



Item	Designation
1	Lifting belt
2	Pump support bracket

4. Hang the mixing pump from its support bracket using a lifting belt.
5. Raise the load.



Item	Designation
1	Lifting belts
2	Reservoir

6. Secure the lifting belts at the four carrying handles.
7. Raise the reservoir.

The individual machine components can also be transported by at least two people instead of using a crane. Use the fitted carrying handles to do so.

4.3 Dismantling the machine into individual components

For transport in small spaces, on small truck beds, in stairwells, etc., the mixing pump can be dismantled without using tools. The machine can be dismantled into its individual components and transported by two people.

The machine can be dismantled into the following components:

- Mixing pump
- Reservoir
- Injection hood (option)
- Base frame
- Compressor

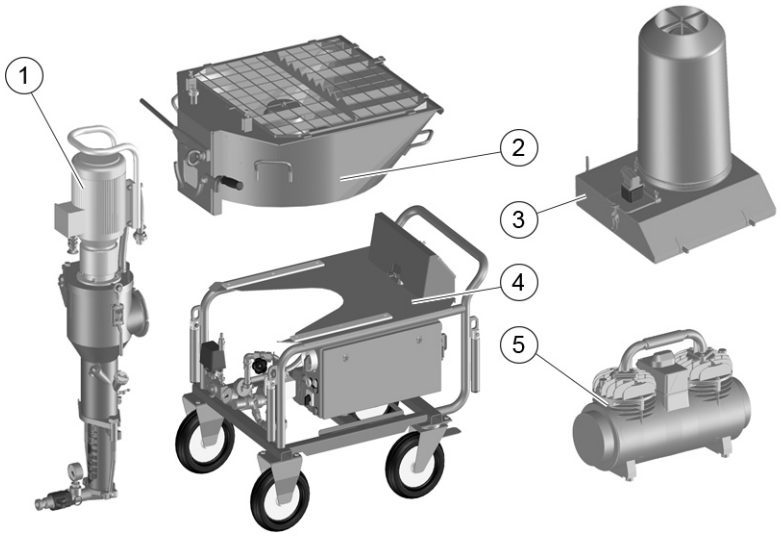


Figure 20: Individual components (different models available)

Item	Designation
1	Mixing pump
2	Reservoir
3	Injection hood (option)
4	Base frame
5	Compressor

To dismantle the machine into its component groups, proceed as follows:

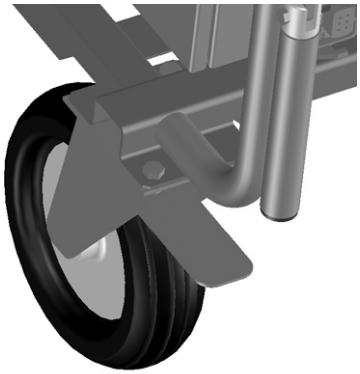


Figure 21: Foot brake

1. Press the foot brake

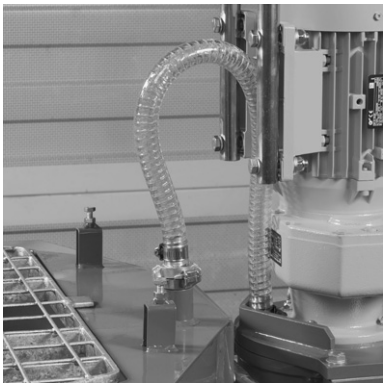
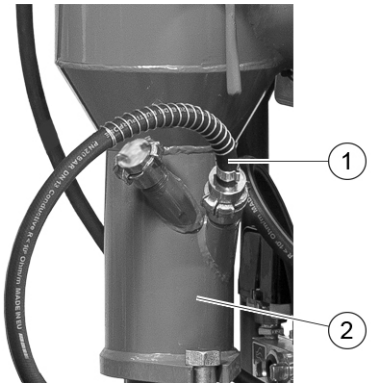


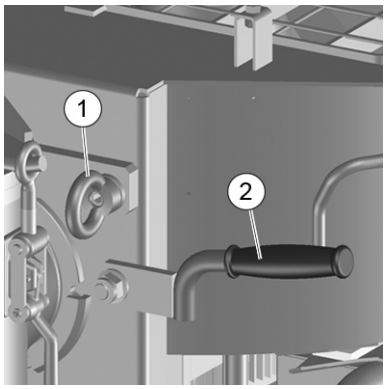
Figure 22: Venting hose

2. Disconnect the venting hose from the reservoir.
3. Disconnect the electric cable for the mixing pump motor from the control cabinet.



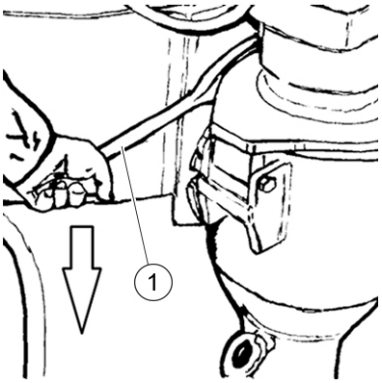
Item	Designation
1	Water hose
2	Mixing pipe

4. Disconnect the water hose from the mixing pipe.



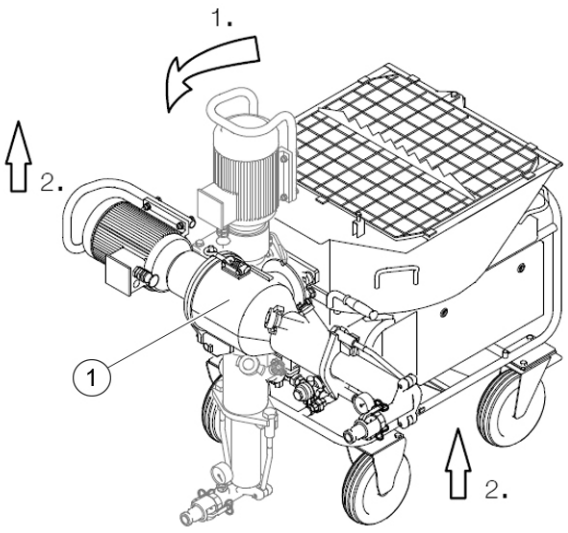
Item	Designation
1	Ring nut
2	Material gate valve

5. Close the material gate valve.
6. Loosen the ring nut.



Item	Designation
1	Release lever

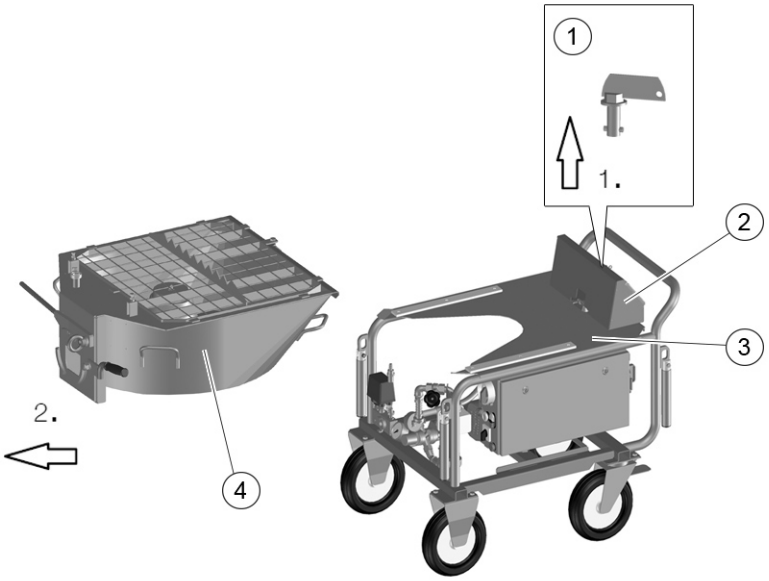
7. Hold the mixing pump securely using the handle on the drive motor.
8. Push the release lever downwards.
   ⇒ The mixing pump can now be swivelled in its bracket.



Item	Designation
1	Mixing pump

9. Swivel the mixing pump by approx. 90°.
10. Raise the mixing pump upwards out of the bracket.
11. Carefully set down the mixing pump and secure it against rolling.

12. Pull out the connector for the agitator motor on the control cabinet.



Item	Designation
1	Sealing pin
2	Toolbox
3	Base frame
4	Reservoir

13. Unlock the reservoir by pulling out the sealing pin (in the toolbox).
14. Pull the reservoir horizontally out of the base frame.
15. Carefully set down the reservoir so that it can neither roll away nor be damaged.

4.4 Assembling the disassembled machine

After transporting the individual components, proceed as follows to reassemble the machine.

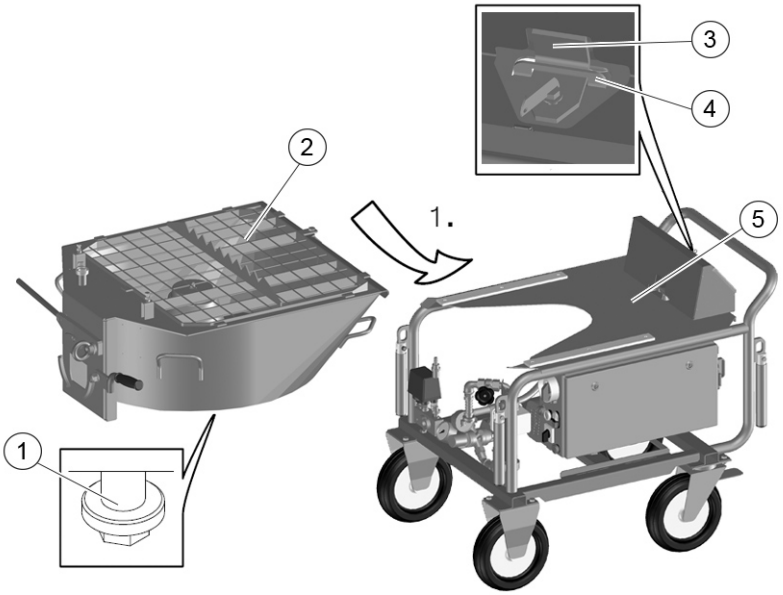
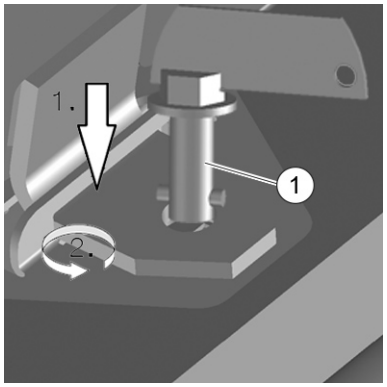


Figure 23: Individual components (different models available)

Item	Designation
1	Pin
2	Reservoir
3	Angle bracket
4	Angle retainer
5	Base frame

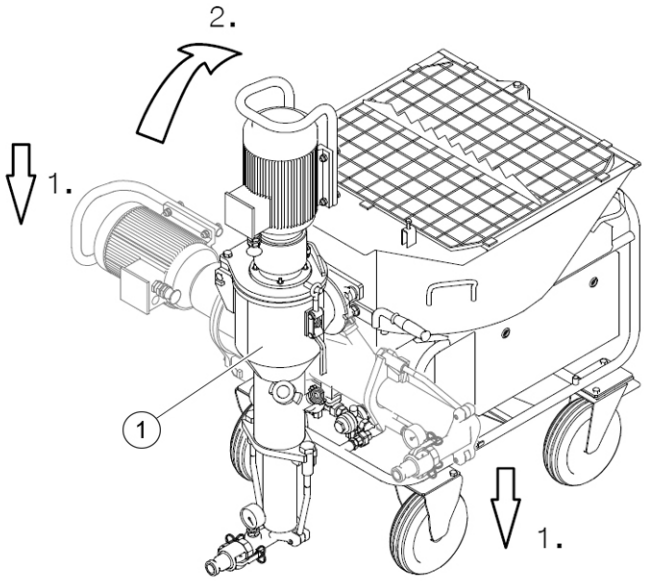
1. Place the reservoir on the base frame.
2. Slide the reservoir backwards onto the plastic rails.
   ⇒ The reservoir is positioned centrally in the base frame using the pins.

Ensure that the angle bracket is inserted in the angle retainer and that the washers for the pins engage under the plate.



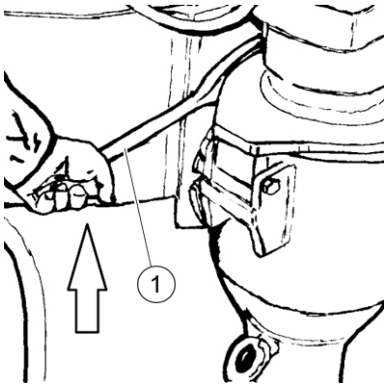
Item	Designation
1	Sealing pin

3. Secure the container using the sealing pin (in the toolbox).
4. Insert the connector for the agitator motor on the control cabinet.



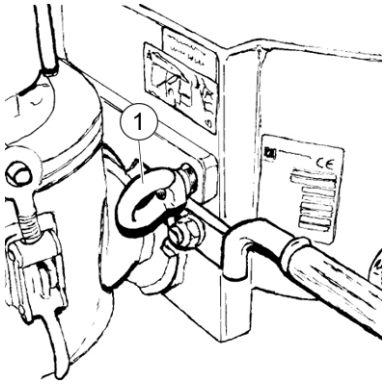
Item	Designation
1	Mixing pump

5. Raise the mixing pump into the mixing pump bracket from above.
6. Swivel the mixing pump by approx. 90°.



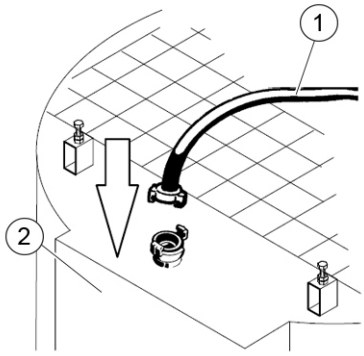
Item	Designation
1	Release lever

7. Pull the release lever upwards.



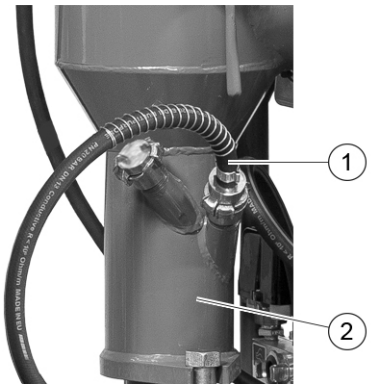
Item	Designation
1	Ring nut

8. Screw in the ring nut.
   ⇒ The mixing pump is now locked in its bracket.
9. Connect the electric cable for the mixing pump motor in the control cabinet.



Item	Designation
1	Venting hose
2	Reservoir

10. Connect the venting hose for the mixing pump to the reservoir.
11. Position the compressor in the base frame and connect the cable to the control cabinet.



Item	Designation
1	Water hose
2	Mixing pipe

12. Connect the water hose to the lower mixing pipe connection.

The water hose must be connected to the lower mixing pipe connection to ensure that the mixing pump functions properly. The upper connection is only intended for special functions.

4.5 Selecting a setup site

As a rule, the site management determines the set-up site for the machine and prepares the site accordingly.

The responsibility for setting up the machine safely falls on the machine operator.

The set-up site must fulfil the following criteria:

- The supporting ground must be level, even and firm.

  The supporting ground must be firm enough to absorb the forces passed on from the machine into the ground. There must be no hollow spaces or ground unevenness under the machine.
- It must be possible to open all flaps and hoods.
- A clearance of at least 1 m must be provided around the machine.
- The set-up site must be sufficiently illuminated.
- Make sure that there is sufficient ventilation at the set-up site.
- Sharp pipe or hose bends should not be required.
- Hoses should not be laid on top of one another (risk of chafing).
- The lines should be as short as possible.

⚠ WARNING

Risk of injury due to falling items

People may be seriously injured or killed by falling items.

- ▸ Set up the machine outside the danger zone of elevated workplaces.
- ▸ Protect workplaces at the machine with suitable protective roofs.

i Inspect the proposed site carefully and reject the set-up site if you have any doubts in respect of safety.

4.6 Setting up the machine

The machine must be set up so that it is absolutely stable and secured against slipping.

1. Secure the machine against rolling by locking the foot brake.

2. Press the foot brake down fully in order to prevent the machine rolling inadvertently.

NOTICE

Risk of machine damage due to inclination angle that is too large

The full functionality of the machine is no longer ensured for larger inclination angles. These conditions will lead to increased wear or machine damage.

- The maximum permitted inclination angle can be found in the “Technical data” section of the “General technical description” chapter.
- The machine must not be operated beyond the specified inclination angles.

3. Align the machine horizontally. Observe the permitted inclination angles.

Release the foot brake again before moving the machine.

4.7 Mounting the injection hood

To mount the injection hood, proceed as follows:

⚠ WARNING

Risk of injury due to the machine starting unexpectedly

- Secure the machine against unauthorised starting.
- The machine must not be started up without a fully functional protective device.

1. Remove the grille from the reservoir.

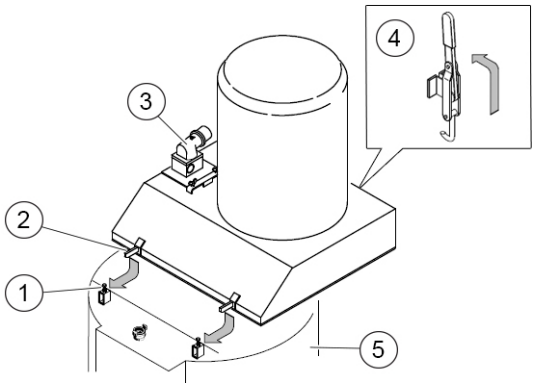


Figure 24: Injection hood

Item	Designation
1	Clamping bolt
2	Locking pin
3	Sensor
4	Locking tensioner
5	Reservoir

2. Insert the injection hood with the locking pin on the reservoir and secure it using the clamping bolts.
3. Attach the injection hood to the reservoir using the locking tensioner.
4. Connect the sensor to the conveying system using the control cable.

4.8 Water connection

The following section describes how to connect the machine to the water supply. The water supply network may only be connected as per DIN 1988 - 4 and DIN EN 1717, i.e. by means of installation type 1 backflow preventers or an independent outlet (intermediate tank with a pressure booster pump).

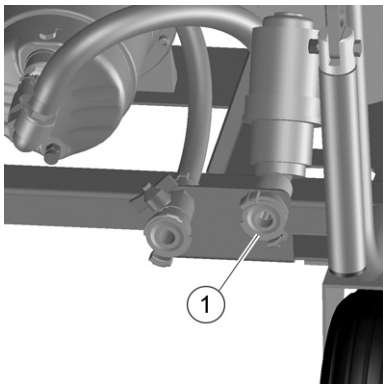
NOTICE

Machine damage caused by pipes freezing

- If there is a risk of freezing, the lines must be laid out so as to exclude the possibility of the water freezing.

Please ensure that you check the requirements for connection to the water supply before beginning connection work:

- The line must be at least 3/4" in diameter.
- The available water pressure must be at least 4 bar.



Item	Designation
1	Water connection

▶ Connect the water supply line from the water network to the water connection.

Water supply lines must be laid neatly, taking local conditions into consideration, and safeguarded against damage. They must not impede the operating personnel.

4.9 Electrical connection

The electrical connection must be made on the basis of the electrical circuit diagram supplied. The electrical circuit diagram can be found in the machine spare parts list.

You can find the electrical connected loads in the electrical circuit diagram and on the machine rating plate.

The following requirements for the mains connection must be fulfilled by the operating company:

- The local laws and regulations must be observed.
- Protection in the case of indirect contact must be ensured through the automatic cut-out of the supply in line with IEC 60364-4-41:2005.

DANGER

Risk of death due to fatal electric shock

- Work on the electrical system may only be carried out by certified, licensed and qualified electricians (proof of qualification in line with EN 60204, part 1, page 14, item 2.21).

DANGER

Risk of death due to incorrect electrical connection or damaged electrical lines

- Before establishing electrical connections, check that the electrical lines are not damaged.
- Make sure that the electrical connections have been established correctly.

4.9.1 Power sources

Electrical installation prerequisites should be checked by a qualified electrician before connection work begins.

The machine must be connected to a separate feed point on construction sites. The following power sources are permissible as a special feed point:

- Site power distribution point
- Small site power distribution point
- Protective distributor
- Movable protective device

The power source must fulfil the following criteria:

- The power source is equipped with a residual current device (RCD).
- The connected load of the existing electrical installation must be sufficient for the machine. Please refer to the technical data for the maximum pre-fuse.
- All three phases and the protective earth conductor must be present.

4.9.2 Electrical supply cables

Supply cables must be laid neatly, taking local conditions into consideration, and safeguarded against damage.

DANGER

Risk of death due to fatal electric shock from damaged cables

If cables are installed unprotected on the construction site, they may be damaged by environmental or mechanical factors.

- ▸ Install cables from the power source to the machine such that they are safe and protected.
- ▸ Make sure that the cables are installed such that they are protected from mechanical damage and environmental influences. If necessary, install the cables in cable ducts.

DANGER

Risk of death due to fatal electric shock from control cabinets and terminal boxes

It is possible to come into direct contact with live parts on control cabinets and terminal boxes.

Please note that the control cabinet can only be opened with a special key or tools.

- ▸ Only qualified personnel may open the control cabinet.

4.9.3 Connecting the machine

DANGER

Risk of death from switching on the main switch too soon

- The main switch must remain secured while the machine is set up.
- Only switch on the main switch once the machine has been completely and correctly set up.

- Plug the connector of the supply cable into the external device socket.

5 Starting up

This chapter contains information on starting up the machine. It describes the work steps required for the initial commissioning of the machine and how to prepare the machine before use after longer breaks. There is also a description on how to check the condition of your machine and how to carry out a test run with function checks.

The operating personnel should be instructed on the machine during the initial commissioning.

For every use of the machine, the operator of the machine accepts full responsibility for the safety of anyone located in the device's danger zone. The operator is therefore under an obligation to ensure the operational safety of the machine.

After receiving the machine, the operator must familiarise themself with the machine. This means:

- The operator must have read and understood the Operating Instructions (particularly the “Safety regulations” chapter).
- The operator must implement the correct measures in an emergency and switch off and secure the machine.

The entire machine must be monitored during the first operating hours to detect any malfunctions.

5.1 Setting up the machine for initial commissioning

To save space when transporting the machine, the auger pump is not mounted for delivery from the works. After unpacking the machine, you must mount the auger pump for initial commissioning.

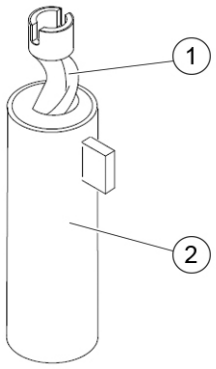
5.1.1 Mounting the auger pump

The screw conveyor must first be mounted in the screw conveyor barrel.

NOTICE

Damage to the screw conveyor if the rubber of the screw conveyor comes into contact with used oil.

- Use only silicone spray from the manufacturer for assembly.



Item	Designation
1	Screw conveyor
2	Screw conveyor barrel

1. Clamp the screw conveyor barrel in a vice.
2. Screw the screw conveyor into the clamped screw conveyor barrel by turning it clockwise. Adjust the end face of the screw conveyor and the screw conveyor barrel so that they are flush.

- Alternatively, use the screw-in aid.

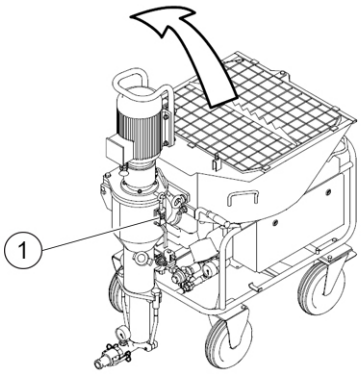
5.1.1.1 Screw-in aid

A screw-in aid for the screw conveyor parts is permanently welded to the frame. The screw-in aid retainer keeps the screw conveyor barrel securely in position so that the screw conveyor can be screwed into the screw conveyor barrel with both hands. A slit in the screw-in aid secures the screw conveyor barrel at its anti-rotation device so that it cannot turn when screwing in the screw conveyor.

Figure 25: Screw-in aid with screw conveyor barrel

5.1.2 Mounting the auger pump on the mixing pipe

Before mounting the auger pump on the mixing pipe, the mixer shaft must be removed from the mixing pipe.



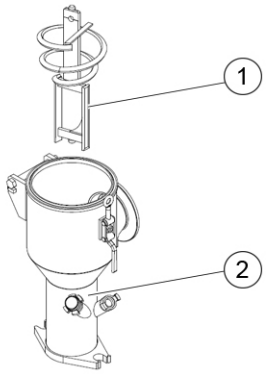
Item	Designation
1	Turnbuckle

⚠ WARNING

Risk of crushing

- When opening the mixer motor, do not reach into moving components.

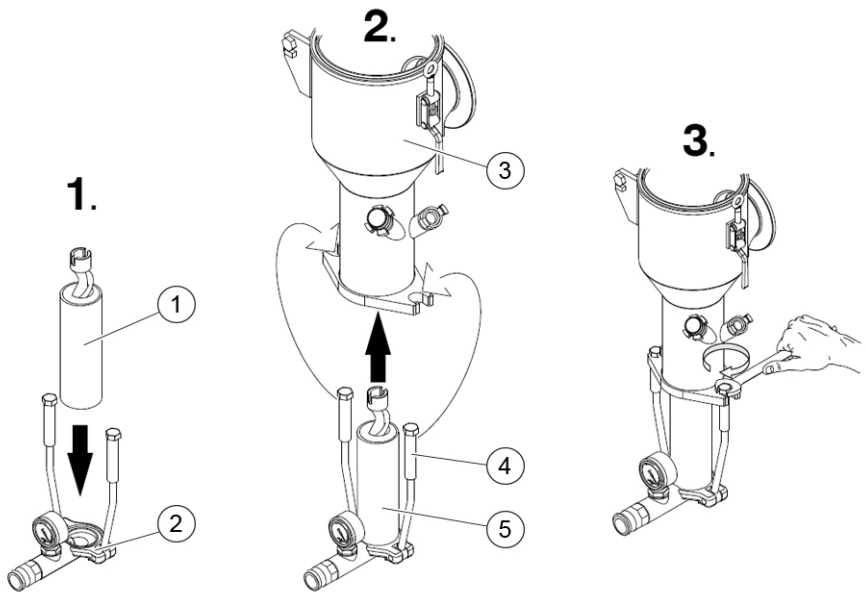
1. Open the turnbuckle to open the mixer motor.
2. Open the mixer motor sideways.



Item	Designation
1	Mixer shaft
2	Mixing pipe

3. Pull the mixer shaft out of the mixing pipe.
   ⇒ The auger pump can now be mounted.

5.1.3 Mounting the mixing pump



Item	Designation
1	Auger pump
2	Pressure flange
3	Mixing pipe
4	Threaded sleeve
5	Auger pump pressure connection unit

1. Insert the auger pump in the pressure flange.
2. Hang the auger pump pressure connection unit on the mixing pipe flange using the threaded sleeves.
3. Tighten the two threaded sleeves on the auger pump pressure connection unit securely and evenly on the mixing pipe using a suitable spanner.
4. When tightening the auger pump pressure connection unit, ensure that the sealing surfaces of the auger pump are positioned correctly on the pressure connection and the mixing pipe.

⚠ WARNING

Risk of crushing due to turning of the auger pump

Depending on the mounting position of the stator or screw conveyor barrel, it can turn all the way to the stop when the machine is switched on.

- Secure the machine against unauthorised or accidental starting.
- Never reach into the auger pump while switching the machine on.
- For screw conveyor barrels with a stop, this must be secured at the stop of the mixing pipe.

5. Insert the mixer shaft back into the mixing pipe and secure it in the screw conveyor opening.
6. Close the mixer motor again.

Align the mixer shaft retainer on the mixer motor and the mixer shaft.

⚠ CAUTION

Danger of crushing when the mixer motor is closed

- Close the mixer motor carefully. Do not let it fall.

7. Close the turnbuckle to secure the mixer motor.

5.2 Checks

Each time your machine is used, you should check the condition of the machine and carry out a test run including function checks. If you identify any defects during the checks, you must eliminate these (or have these eliminated) immediately.

5.2.1 Visual checks

Some visual checks should be carried out before starting up the machine.

1. Always check the machine thoroughly for defects before the start of work.
2. Check the delivery line for damage.
3. Check whether all safety equipment is fitted and fully functional.
4. Check that the components have been correctly assembled.
5. Observe the warning and information plates on the machine.

5.2.2 Electrical connection

Using faulty electrical components or connecting components incorrectly may result in serious (possibly fatal) injury or severe damage to the machine.

1. Always check all electrical components carefully for defects before the start of work.
2. Check whether the required power supply is available.

5.3 Test run

Carry out a test run before operating the machine. During the test run, different functions are checked.

NOTICE

Machine damage caused by defects not having been rectified

- Any defects found during these tests must be rectified immediately. A fresh inspection is necessary after every repair. The machine may only be put into operation once all the inspections described below have been concluded satisfactorily.

5.3.1 Switchon conditions

Before switching on the pump, the following switch-on conditions must be present:

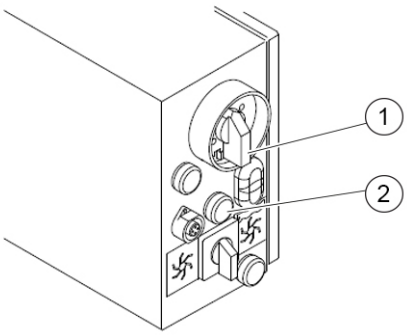
1. Check whether the machine is in a level position.

2. Check whether the machine is connected to a suitable water supply (at least 4 bar). *(Water connection P. 4 — 17)*
3. Check whether the required power supply is available. *(Electrical connection P. 4 — 18)*

For the test run, you must first switch on the main switch and then the pump.

5.3.2 Checking the direction of rotation of the motor

Check whether the electrical motor's direction of rotation is correct by proceeding as follows:



Item	Designation
1	“Power supply ON – OFF” main switch
2	“Reverse pump” illuminated push-button

▸ Switch the machine on at the main switch.

➔ The machine performs an automatic rotating field test.

A lamp test is carried out first after actuating the main switch. If the “Reverse pump” illuminated push-button lights up briefly, this indicates that the direction of rotation is correct.

If the direction of rotation is incorrect, the indicator lamp in the illuminated push-button will stay lit. The direction of rotation of the motor must be changed.

5.3.3 Changing the direction of rotation

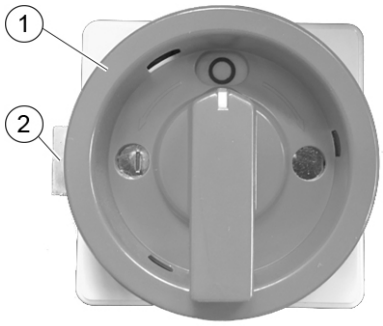


Figure 26: Changing the direction of rotation

Item	Designation
1	Main switch
2	Slide for changing the direction of rotation

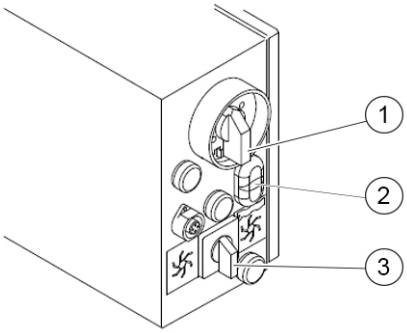
1. Switch off the main switch (position “0”).
2. Move the slide for changing the direction of rotation.
   ⇒ The “I” symbol automatically changes to the other direction of rotation.

Never change the direction of rotation while the main switch is in the “I” position. The rotating-field mechanism is locked – actuating by force will damage the switch mechanism.

3. Switch the machine on at the main switch.
4. Check whether the direction of rotation is correct again, as described above.

5.3.4 Starting the motor

The motor is switched on using the double push-button.



Item	Designation
1	“Power supply ON – OFF” main switch
2	“Pump ON – OFF” double push-button
3	“"Mix – OFF – Mixing and pumping"” selector switch

1. Switch the machine on at the main switch.
   ⇒ The power supply switches on.
2. Turn the selector switch clockwise to “Mixing and pumping”.
3. Switch on the pump using the “Pump ON – OFF” double push-button.
   ⇒ The agitator and the mixing pump start running.

5.4 Function checks

Before using the machine, the following functions must be checked with the machine running.

5.4.1 Checking the safety equipment

Check whether all safety equipment is fitted and fully functional.

⚠ WARNING

Risk of injury due to defective safety equipment

Defective safety equipment may appear safe even though it is not. This can lead to the machine continuing to run or not switching off quickly enough in the event of an impending danger.

- Always check the function of the safety equipment before the start of work
- If a safety device does not respond during the check, the machine must not be started up.
- Eliminate the fault.

Check:

1. The function of the EMERGENCY STOP button (option),
2. Whether the mixer drum grille is fitted and securely locked,
3. Whether the tilt switch in the gear motor switches off if the mixing pipe begins to swivel away.

5.4.2 Checking the EMERGENCY STOP button

Before using the machine, you must check the function of the EMERGENCY STOP button.

NOTICE

Machine damage caused by incorrect actuation of the EMERGENCY STOP button

- Only press the EMERGENCY STOP button in the event of danger.
- Do **not** use the EMERGENCY STOP button to switch off the machine.

⚠ WARNING

Risk of injury due to defective EMERGENCY STOP button

The machine is no longer safe to operate if the EMERGENCY STOP button is defective, as you will no longer be able to switch off the machine quickly enough in the event of danger.

- If the EMERGENCY STOP button does not respond during the check, the machine must not be started up.
- Eliminate the fault.

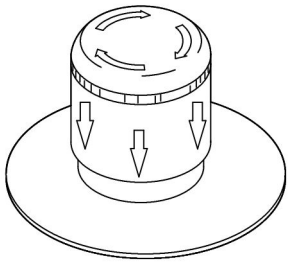


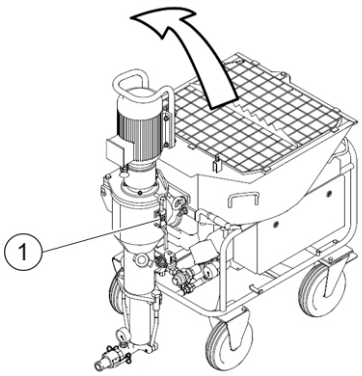
Figure 27: EMERGENCY STOP button

Item	Designation
a	**Press**: Lock EMERGENCY STOP button
b	**Turn**: Unlock EMERGENCY STOP button

1. Start the motor. *(Starting the motor P. 5 — 10)*
2. Press the EMERGENCY STOP button.
   ⇒ The pump stops.
   ⇒ The drive motor is switched off immediately.
   ⇒ All control panels and switch boxes are electrically locked.
3. Unlock the EMERGENCY STOP button by turning it.

5.4.3 Function check of the tilt switch

Your machine is fitted with a tilt switch. Check the function of the tilt switch by proceeding as follows.



Item	Designation
1	Turnbuckle

1. Start the drive motor. *(Starting the motor P. 5 — 10)*
2. Open the turnbuckle to open the mixer motor.
3. Open the mixer motor sideways.
   ⇒ The mixer motor must stop immediately.

When the tilt switch reacts in this way, the machine is stopped normally. The electrical drive power supply is not interrupted.

4. Switch the machine off at the main switch.
5. Close the mixer motor again.

Align the mixer shaft retainer on the mixer motor and the mixer shaft.

6. Close the turnbuckle to secure the mixer motor.

5.5 Shutting down the machine after starting up

After the function check, you can shut down the machine.

1. Switch off the pump using the “Pump ON – OFF” double push-button.

2. Switch the machine off at the main switch.
3. Secure the machine against unauthorised starting or use.

6 Operation

This chapter contains information on operating the machine. It explains the work steps required for setting, operation and cleaning.

6.1 Requirements

You must have completed the operations for setting up and starting up the machine before you begin operating the machine.

Before you fill the machine with material and start pumping it through the delivery line, you must make sure that:

- The machine functions correctly
- The delivery line is designed for the specified delivery pressure
- The delivery line has been installed properly

If a malfunction occurs during the pumping process, consult the “Faults, cause and remedy” chapter first. Contact the manufacturer's After Sales department for advice if you are unable to rectify the fault yourself.

6.2 Emergency shutdown procedure

Make sure you are completely familiar with the procedure for shutting down the machine in an emergency situation before you start operating the machine. Proceed immediately as described below if an emergency occurs while you are operating the machine.

1. Immediately switch the machine off at the main switch in the event of an emergency.
2. If necessary, take first-aid measures.
3. Note down the incident and report it in line with company guidelines.
4. Look for the cause of the fault and rectify it or have it rectified.
5. Start the machine up again. See the chapter “Starting up” for more information.

6.2.1 With EMERGENCY STOP button

Depending on the version and country of use, your machine may be fitted with an EMERGENCY STOP button.

The EMERGENCY STOP button is fitted to the control cabinet of the machine.

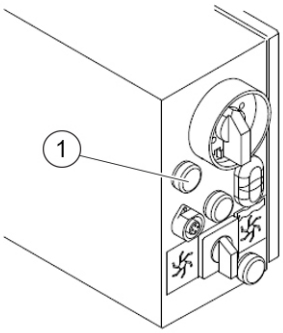
Familiarise yourself with the position of the EMERGENCY STOP button(s) on your machine.

1. In the event of impending danger, press the EMERGENCY STOP button
   ⇒ The pump stops.
   ⇒ The motor is switched off.
   ⇒ All control panels and switch boxes are electrically locked.
2. If necessary, take first-aid measures.
3. Note down the incident and report it in line with company guidelines.
4. Look for the cause of the fault and rectify it or have it rectified.
5. Unlock the EMERGENCY STOP button by turning it.
6. Start the machine up again. See the chapter “Starting up” for more information.

6.3 Starting to pump

The process from the start of forward pumping to the time at which a continuous flow of material exits from the delivery line is known as starting to pump. This can take place at the start of site use, but also after breaks in pumping.

Pumping initially takes place without the delivery line. Ensure that a small amount of water is present in the mixing pipe.



Item	Designation
1	“Water flow” push-button

- Press the “Water flow” push-button until the water level reaches 1.5 cm above the screw conveyor barrel.

The water should not reach any higher than 1.5 cm above the screw conveyor barrel. If the water level exceeds this height, pump the water out.

6.3.1 Adding dry mortar

You can now add the dry mortar to the hopper. Use the bag opener on the hopper to tear open the bag. Fill the hopper evenly and do not create any unnecessary dust.

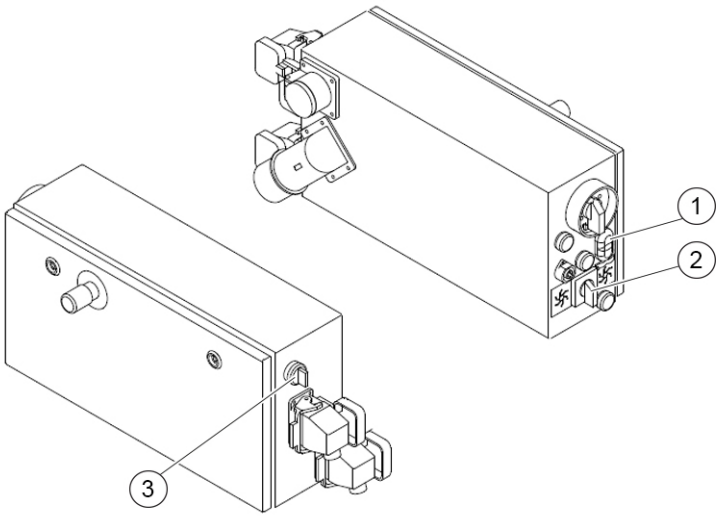
⚠ WARNING

Risk to health due to breathing in dust particles

- Wear respiratory protection and a face mask for all work in which particles of building materials can enter the body through the respiratory passages.
- Observe the building material manufacturer’s information.
- Keep first aid equipment to hand and observe immediate first aid measures. Report any injuries to a supervisor.

1. Switch the machine on at the main switch.
   ⇒ The power supply switches on.
2. Switch on the compressor (if present).

The compressor may only be operated using the pressure switch.

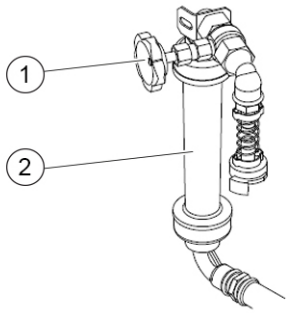


Item	Designation
1	“Pump ON – OFF” double push-button
2	“"Mix – OFF – Mixing and pumping"” selector switch
3	“Water pump” selector switch

3. Turn the “Mixing – OFF – Mixing and pumping” selector switch *(2)* clockwise to “Mixing and pumping”
   ⇒ Agitator starts and stops with the pump
4. Turn the “Water pump” selector switch *(3)* clockwise to “Automatic”
5. Switch on the pump using the double push-button *(1)*.
   ⇒ The agitator and the mixing pump start running.

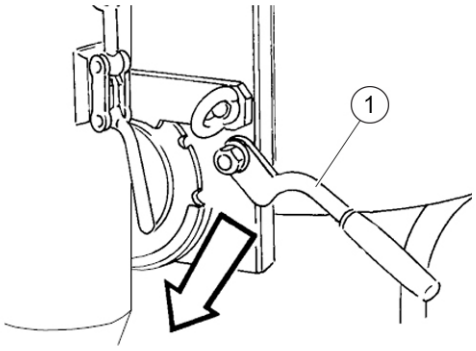
6.3.2 Start-up water value

The ideal start-up water value for plaster-based material is 800–900 dm³/h. For non-plaster-based material, this value is 500–600 dm³/h.



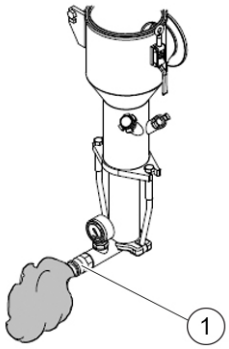
Item	Designation
1	Control valve for water volume
2	Flow meter

You can adjust the water volume by turning the volume control valve. This is done by gradually adjusting the water volume in small steps (20–40 l/h). This can be seen by looking at the float through the inspection glass. This reaches the new value on the scale.



Item	Designation
1	Material gate valve

1. Open the material gate valve slowly up to the stop.



Item	Designation
1	Pressure connection

2. Inspect the mortar consistency at the pressure connection.
3. Gradually decrease the water value using the volume control valve until you reach the required mortar consistency.
   ⇒ Pumping start-up is finished when the required mortar consistency exits at the pressure connection.
4. Switch off the pump using the “Pump ON – OFF” double push-button.

6.4 Connecting the delivery line

You must connect the delivery line for pumping operations.

NOTICE

Risk of formation of a blockage due to the use of delivery line couplings that have not been cleaned

Contaminated couplings are not properly sealed and allow water to leak out under pressure; this inevitably leads to blockages.

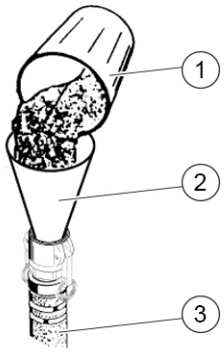
- Only couple delivery line couplings which have been cleaned and have fully functional gaskets.

- Check whether all gaskets are present on the delivery line couplings and ensure that the delivery lines are free from material residue internally.

6.4.1 Starting to pump with lime grout

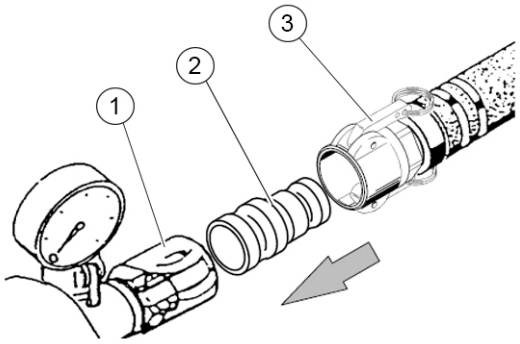
The entire delivery line must be wetted at the start of pumping operations.

The lime grout must generally be used when starting to pump. The grout lubricates the inside of the delivery line and prevents blockages.



Item	Designation
1	Bucket
2	Hopper
3	Delivery line

1. Fill the delivery line with approx. 10 l of lime grout.



Item	Designation
1	Pressure connection
2	Coupling
3	Delivery line

2. Connect the filled side of the delivery line to the pressure connection.
3. Pump the grout through the delivery line.
4. Collect the grout in a suitable container at the end of the delivery line and dispose of it according to regulations.
   ⇒ Pumping start-up with the grout is finished when the mortar exits at the end of the delivery line.

6.5 Using the spray gun

The following section describes how to use the spray gun. The connection and the use of a spray gun is only possible on machines with a compressed-air remote control and compressor. If your machine is not equipped with these components, talk to your dealer or the responsible representative of the manufacturer to discuss if and how you can upgrade your machine.

⚠ WARNING

Risk of injury due to material spraying out of the spray gun

- Close the remote control valve on the spray gun before switching on the machine.
- The spray gun operator must always wear protective goggles during the spraying process.

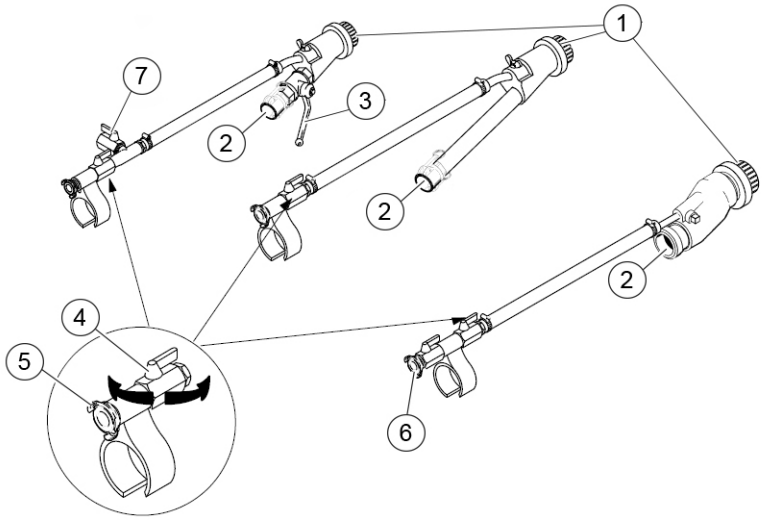


Figure 28: Overview of spray guns (different models available)

Item	Designation
1	Rubber fine plaster nozzle
2	Delivery line connection
3	Material lever (dependent on model)
4	Remote control valve
5	Air supply coupling
6	Stop cock (dependent on model)
7	Air-regulation cock (dependent on model)

6.5.1 Adjusting the air nozzle tube

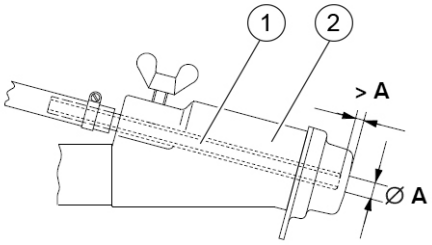


Figure 29: Different models available

Item	Designation
1	Air nozzle tube
2	Mortar nozzle

- Depending on the mortar consistency, use nozzle inserts measuring 10, 12 or 14 mm – these are referred to as fine plaster nozzles.

Larger nozzle inserts result in slower speeds and therefore less rebound. Smaller nozzle inserts result in better atomisation.

For viscous material, you can use the standard nozzles.

6.5.2 Connecting and using a spray gun

The following section describes how to connect and use the spray gun.

1. Connect the delivery line to the spray gun.

NOTICE

Risk of formation of a blockage due to the use of delivery line couplings that have not been cleaned

Contaminated couplings are not properly sealed and allow water to leak out under pressure; this inevitably leads to blockages.

- Only couple delivery line couplings which have been cleaned and have fully functional gaskets.

2. Connect the air hose to the air valve fitting and the spray gun.
3. Close the remote control valve on the spray gun.
4. Depending on the model, you may also need to close the stop cock or the air-regulation cock.

Opening or closing the remote control valve on the spray gun switches the pump on and off.

If the machine is switched off via the remote control valve, it is still ready for operation and can be started again at any time by re-opening the remote control valve.

5. Connect the compressor to the air valve fitting.
6. Connect the compressor to the control cabinet.
7. Connect the air valve fitting to the “Air” Geka connection.
8. Switch on the compressor.

Work with the spray gun is only possible when the compressor is switched on.

6.5.2.1 Spraying mortar

Proceed as follows to begin spraying mortar:

⚠ WARNING

Risk of injury due to material spraying out of the spray gun

- Close the remote control valve on the spray gun before switching on the machine.
- The spray gun operator must always wear protective goggles during the spraying process.

1. Switch on the machine and start pumping operations.
2. Pick up the spray gun.
3. Open the remote control valve on the spray gun.
   ⇒ The mixing pump starts.
   ⇒ You can now begin spraying mortar.

4. If necessary, turn the volume control valve for the water volume on the water valve fitting in order to achieve the required mortar consistency. This changes the volumetric flow rates. You can read off the volumetric flow rate on the flow meter.

The container must never be pumped completely empty as this will cause the pump to suck in air.

6.5.2.2 Using the spray gun correctly

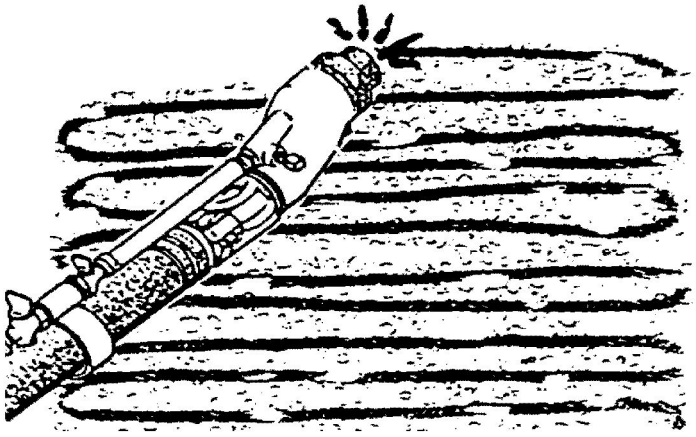


Figure 30: Guide the spray gun back and forth in smooth movements

1. Guide the spray gun back and forth in quick, horizontal movements at an even pace. Circular movements are ineffectual.
2. When plastering walls, point the jet slightly upwards.
3. For all other tasks, point the jet at a right angle to the surface to be plastered.
4. Maintain a distance of 20 cm to 30 cm between the nozzle and the wall.
   ⇒ The closer the nozzle is to the wall, the more sharply the jet is delimited.
5. Use less air for spraying close to the wall.

6.6 Working with the cable remote control

To use the cable remote control, proceed as follows:

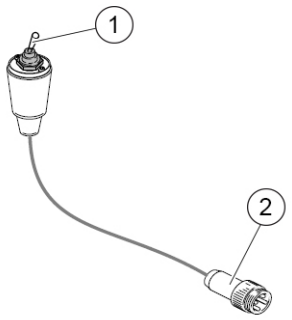


Figure 31: Cable remote control

Item	Designation
1	“ON – OFF” toggle switch
2	“Remote control” connector plug

1. Pull the bridge plug or the connector plug for the pressure switch out of the “Remote control connection” socket on the control cabinet.
2. Switch the “ON – OFF” toggle switch for the cable remote control to OFF.
3. Plug the remote control connector plug into the “Remote control connection” socket on the control cabinet
4. Switch the machine on at the main switch.
   ⇒ The power supply switches on.
5. Switch on the compressor (if present).
6. Switch on the pump using the “ON – OFF” toggle switch on the cable remote control.
   ⇒ The pump starts running.

6.7 Pumping operations

Carefully complete the operations for starting up and setting up the machine. Make sure that your machine is functioning correctly before you fill the hopper with material and start pumping it through the delivery line.

Make sure you are completely familiar with the procedure for shutting down the machine in an emergency situation before you start pumping.

If a malfunction occurs during the pumping process, consult the “Faults, cause and remedy” chapter first. Contact the manufacturer's After Sales department for advice if you are unable to rectify the fault yourself.

Inspect the monitoring instruments continuously during the pumping process:

1. Inspect the mortar pressure on the pressure gauge
2. Inspect the water volume on the flow meter

Repeat these checks regularly at short intervals during the entire operating time of the machine.

6.7.1 Breaks in pumping

Breaks in pumping should be avoided as much as possible, as the conveyed material can segregate or set in the delivery line. Observe the binding time of the material.

⚠ WARNING

Risk of the delivery line bursting in case of a blockage

- Never pump segregated material or material that has become lumpy because it is beginning to set into the delivery line. This causes very small blockages to appear.

If breaks in operation are unavoidable, observe the following points:

1. Every interruption to the spraying process can cause slight irregularities in the consistency; however, these will return to normal on their own. You should therefore not immediately adjust the water supply in the event of an irregularity.
2. Never leave the delivery line under pressure.

3. During short breaks in pumping, dump the delivery line pressure by brief reverse pumping.
4. Switch off and clean the machine in the event of longer breaks.

6.7.2 Terminating pumping operations

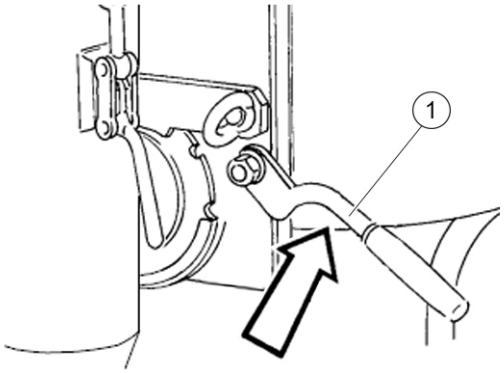
In the event of an interruption in work that lasts

- Longer than 10 minutes for gypsum plaster or
- Longer than 20 minutes for non-gypsum plaster,

Or in the event of longer pauses and at the end of the shift, pumping operations must be terminated.

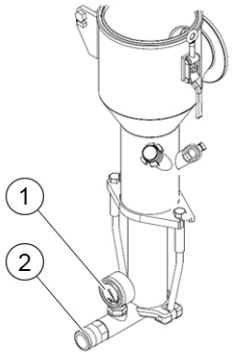
To do so, proceed as follows:

1. Stop the material feed.



Item	Designation
1	Material gate valve

2. Close the material gate valve.
3. Continue pumping using the pump until water exits the end of the delivery line.



Item	Designation
1	Pressure gauge
2	Pressure flange

⚠ WARNING

Risk of injury due to the conveyed material spraying out

- Secure the danger zone to prevent unauthorised access.
- Wear protective goggles.
- Always wear personal protective equipment.
- You should only uncouple the delivery line once you have checked the pressure gauge to see that the system is fully depressurised.
- Turn your face away when opening the line coupling.
- Open the coupling carefully.

4. Disconnect the delivery line.
5. Clean the machine . *(Cleaning P. 6 — 20)*

6.8 Blockages

Blockages can occur inside the pump itself as well as in the delivery line. A blockage can be recognised by no material exiting the end of the line and the pressure on the pressure gauge rising. If a blockage occurs inside the pump, the overload protection may switch off the motor.

Blockages increase the risk of accidents. A well-cleaned and leak-tight delivery line prevents the formation of a blockage.

Blockages have the following causes:

- Insufficient lubrication of the delivery line.
- Hard to pump or slightly segregating conveyed material.
- Leaks at the delivery line couplings.

6.8.1 Removing blockages

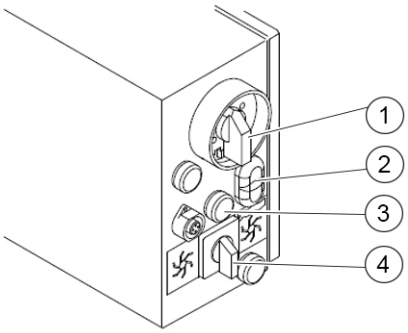
To remove a blockage, proceed as follows:

⚠ WARNING

Risk of death due to ejected blockage

- ▶ Align the delivery line so that no persons are hit by ejected blockages.
- ▶ Secure the danger zone to prevent unauthorised access.
- ▶ Always wear personal protective equipment.

1. Switch the pump off.
2. Close the material gate valve.
3. Switch off the agitator.



Item	Designation
1	“Power supply ON – OFF” main switch
2	“Pump ON – OFF” double push-button
3	“Reverse pump” illuminated push-button
4	“"Mix – OFF – Mixing and pumping"” selector switch

In order to remove a blockage, depressurizing must first be carried out by briefly pumping in reverse.

4. To do this, change the direction of rotation *(Changing the direction of rotation P. 5 — 9)*.
5. Switch the machine on at the main switch.
   ⇒ The power supply switches on.
   ⇒ The “Reverse pump” *(3)* illuminated push-button lights up continuously.
6. Turn the “Mix – OFF – Mixing and pumping” *(4)* selector switch to the zero position.
7. Switch on the pump using the “Pump ON – OFF” *(2)* double push-button.
8. Press the “Reverse pump” *(3)* illuminated push-button for maximum 3 seconds.
   ⇒ The pump motor runs in reverse without water.
   ⇒ Depressurizing.
9. Switch off the machine . *(Shutting down the machine after starting up P. 5 — 13)*

⚠ WARNING

Risk of injury due to the conveyed material spraying out

- Secure the danger zone to prevent unauthorised access.
- Wear protective goggles.
- Always wear personal protective equipment.
- You should only uncouple the delivery line once you have checked the pressure gauge to see that the system is fully depressurised.
- Turn your face away when opening the line coupling.
- Open the coupling carefully.

10. Uncouple the delivery line and clear the blockage in the delivery line by shaking and tapping it.
11. With stubborn blockages, rinse the delivery line with water.
12. When you start the machine up again, add cement grout to the delivery line.

6.9 Cleaning

6.9.1 General

At the end of work, the machine and delivery line must be cleaned. A clean machine and delivery line are indispensable to permit fault-free delivery when they are next used.

Material deposits and contamination inside the machine and delivery line can impair the function of the machine.

NOTICE

Environmental pollution caused by cleaning agents or fuel

Cleaning agents or fuel must not enter the sewage system.

- During all cleaning work, observe the waste disposal regulations that apply to your region.

NOTICE

Machine damage caused by water penetration

- Prior to cleaning the machine with water or a steam jet/high-pressure cleaner or other cleaning agents, cover or seal all openings which water, steam or cleaning agents must not penetrate for safety or operating reasons. Especially at risk are electric motors, control cabinets and electrical plug-in connections.
- The the machine may only by cleaned with a steam jet/high-pressure cleaner on the outside.

NOTICE

Machine damage caused by frost

- If there is a risk of freezing, drain the machine and all lines fully of residual water.

Water spraying on the machine from random directions has no damaging effect. The machine is splashproof but not watertight.

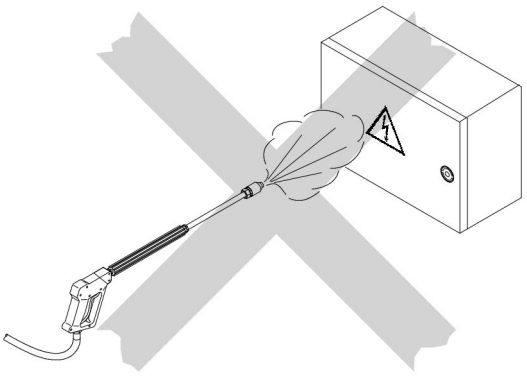


Figure 32: No water in the electrical system

- In the first six working weeks, clean all painted surfaces with cold water only at a maximum water pressure of 5 bar. Only after this time will the paint have hardened completely, allowing you to use steam jet equipment or similar auxiliary devices.
- Do not use any aggressive cleaning agents.

- Never use sea water or other water containing salt for cleaning purposes.
- Rinse the machine immediately with clean water if it comes into contact with sea water.
- Completely remove all covers/tape after cleaning.

6.9.2 Cleaning the machine

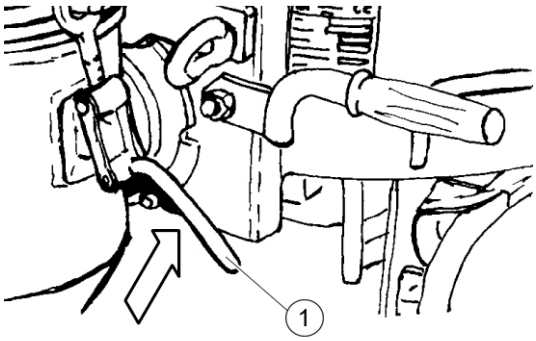
Clean the machine first, then the delivery line. The cleaning tool that is inserted into the machine in order to clean it is included with the machine on delivery.

⚠ WARNING

Risk of injury due to the conveyed material spraying out

- ▸ Secure the danger zone to prevent unauthorised access.
- ▸ Wear protective goggles.
- ▸ Always wear personal protective equipment.
- ▸ You should only uncouple the delivery line once you have checked the pressure gauge to see that the system is fully depressurised.
- ▸ Turn your face away when opening the line coupling.
- ▸ Open the coupling carefully.

1. Pump the hopper empty.
2. Switch the machine off at the main switch.
3. To clean the machine, open the motor.
4. To do this, open the turnbuckle to open the mixer motor.



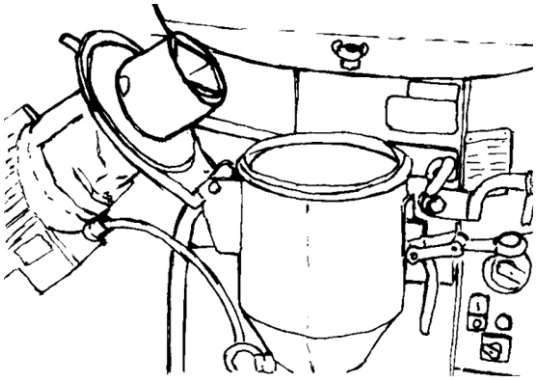
Item	Designation
1	Turnbuckle

5. Open the mixer motor sideways.

⚠ WARNING

Risk of injury due to moving components

- When opening the mixer motor, do not reach into moving components.



6. Pull the mixing spiral out of the machine.
7. Insert the cleaning tool into the machine.
8. Close the mixer motor again.
9. Close the turnbuckle to secure the mixer motor.
10. Switch the machine on at the main switch.
11. Run the motor multiple times for brief periods of time.
    ⇒ The cleaning tool will centre itself in the mixing pipe.

12. Repeat the process until clean water exits at the pressure connection.
    ⇒ The machine is now fully cleaned out.
13. Switch the machine off at the main switch.
14. Open the turnbuckle to open the mixer motor.
15. Open the mixer motor sideways.
16. Remove the cleaning tool.
17. Now clean the machine with water. To do this, rinse out the hopper until it is clean.
18. Clean the mixing spiral with water.
19. Insert the mixing spiral back into the machine.
20. Close the mixer motor again.
21. Close the turnbuckle to secure the mixer motor.
22. Reassemble all cleaned parts.
23. Secure the machine against unauthorised starting or use.
24. Now clean the delivery line as described below.

6.9.3 Cleaning the delivery line

Material deposits inside the delivery line can cause damage and continue to accumulate, thereby reducing the line cross section. To allow faultfree operation at the next use, it is vital that all delivery lines are clean.

DANGER

Risk of injury due to cleaning the delivery line with compressed air

- Please note that if you clean the delivery line with compressed air, you are doing so at your own risk. The manufacturer accepts no liability for damage caused by compressed air cleaning.

⚠ WARNING

Risk of injury due to the conveyed material spraying out

- Secure the danger zone to prevent unauthorised access.
- Wear protective goggles.
- Always wear personal protective equipment.
- You should only uncouple the delivery line once you have checked the pressure gauge to see that the system is fully depressurised.
- Turn your face away when opening the line coupling.
- Open the coupling carefully.

1. Release the delivery line at the pressure connection.
2. Soak a Putzmeister sponge ball in water.

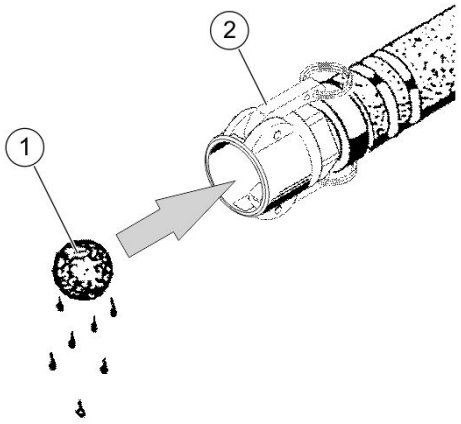


Figure 33: Cleaning the delivery line

Item	Designation
1	Sponge ball
2	Delivery line

3. Push the wellsoaked sponge ball into the delivery line.

Insert a sponge ball into the delivery line first before pumping water through the delivery line. Otherwise, sand residue remains in the delivery line, which may later result in blockages.

6.9.3.1 Cleaning the delivery line using water pressure

The delivery line is cleaned by water pressure. Use the water connection piece included in the accessory package for this purpose.

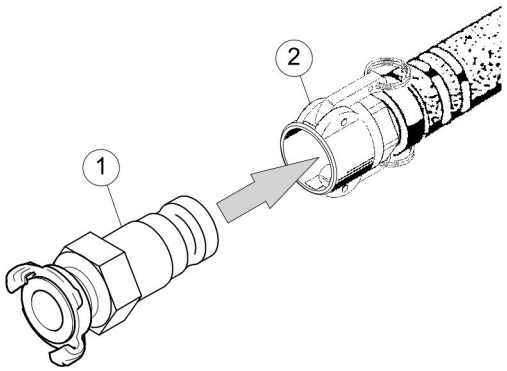
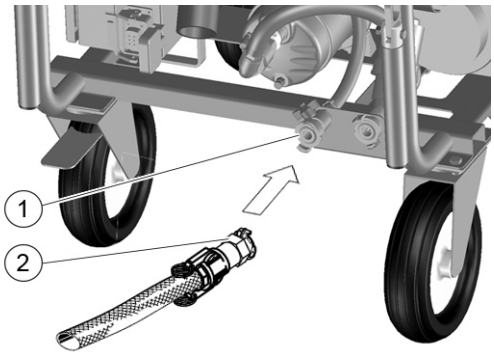


Figure 34: Water connection piece

Item	Designation
1	Water connection piece
2	Delivery line

1. Connect the water connecting piece to the delivery line.



Item	Designation
1	Water removal connection with ball valve
2	Water connecting piece

2. Attach the water connecting piece *(2)* to the water removal connection *(1)*.
3. Open the ball valve on the water removal connection.

If your machine has a water pump, switch on the water pump using the “Water pump” selector switch. The water pump must not run if deadheading has occurred (no water removal).

4. Use the water pressure to push the leavings and sponge ball out of the delivery line.
5. Collect the emerging mortar in a suitable container.

6.9.3.2 Cleaning the delivery line with the pump

If the machine does not have a water pump and the water line pressure is not sufficient for cleaning the delivery line, you must clean the delivery line with the pump:

Using the auger pump for cleaning increases wear on the pump parts. If the water line pressure is repeatedly insufficient, use an auxiliary water pump.

1. Reconnect the delivery line to the pressure connection.
2. Half fill the mixer drum with water.
3. Start the pumping process and pump water through the delivery line until the sponge ball exits the end of the line.
4. Repeat the washing out process until only clean water exits at the end of the delivery line.

6.9.4 Cleaning seals

Contaminated couplings are not sealed and lead to blockages.

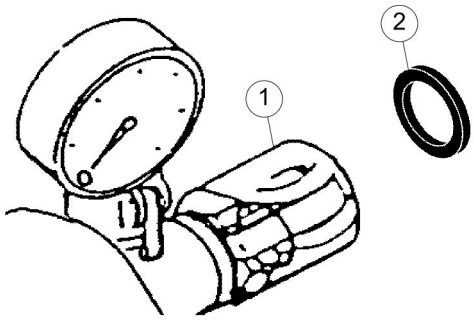
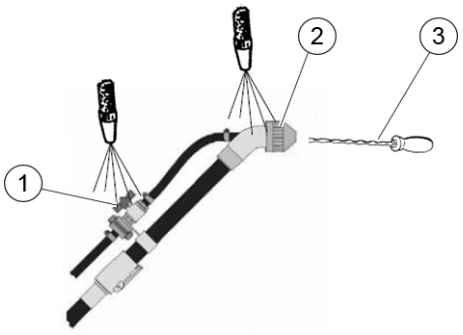


Figure 35: Cleaning seals

Item	Designation
1	Pressure connection
2	Rubber seal

1. Clean all seals and seal seats.
2. Grease the seals before replacing them.
3. If there is a risk of freezing, drain the machine and lines fully of residual water.

6.9.5 Cleaning the spray gun



Item	Designation
1	Air valve
2	Air nozzle tube
3	Nozzle cleaner

1. Clean the air cock and air nozzle tube on the spray gun.
2. Clean the air nozzle tube using the nozzle cleaner.

7 Faults, cause and remedy

This chapter gives you an overview of faults and their possible causes, and also ways in which you may rectify them. Observe the safety regulations when troubleshooting.

Inspection and maintenance personnel must have authorisation and the necessary technical qualification. They must have completed training relevant to working with the equipment on the machine and be conversant with the content of the operating instructions.

If you cannot rectify the fault yourself, contact the relevant Service department at the manufacturer or a dealer authorised by the manufacturer.

Use only original spare parts. The manufacturer accepts no liability for damage caused by the use of nonoriginal spare parts.

7.1 General machine

The following section provides a description of possible causes of faults and their remedies.

Fault	Cause	Correction
Machine does not start despite power and water connections.	Water pressure too low. Pressure gauge display reads less than 2 bar.	Remove and clean the dirt trap located at the machine's water connection. A pressure booster pump will have to be installed if this is not sufficiently effective.
Mortar emerges in thick and thin layers alternately.	Water setting too low. Screw conveyor barrel does not have sufficient back-pressure.	Increase the water rate briefly by approx. 100 l/h and then return slowly to the normal water pressure. Tighten the screw conveyor barrel or replace worn parts.
Water in the mixing pipe on the machine is forced upwards during operation.	Back-pressure in the mortar hose is higher than pumping pressure. Screw conveyor barrel or screw conveyor is worn. Pipe blocked as mortar is too thick.	Tighten the screw conveyor barrel or replace worn parts.
	Too little water.	Increase the water rate briefly by 100-200l/h.
If water supply stops.	No water supply from mains.	Use a pressure booster pump to supply the machine from a tank containing clean water. Connect the pressure line on the pressure booster pump to the water connection on the machine.
	No water supply from mains.	For machines with a water pump, you can use this as a suction pump by connecting a suction hose directly to the water connection. Please note that the water pump does not draw in water itself. The suction hose and the water pump must be filled with water.
Material flow interrupted.	The material exits irregularly at the end of the delivery line and is spraying with force.	Check whether the hopper is nearly empty thus allowing air to be sucked in. Always ensure that there is sufficient material in the hopper.
	The material flow is being constantly interrupted without spraying.	Check whether the delivery line forms a loop or is kinked.
Decreasing delivery pressure.	Worn auger components	Tighten the screw conveyor barrel or replace worn parts.
No mortar is exiting from the end of the delivery line.	No material feed.	Add pumpable material to the hopper.
	Drive direction of rotation incorrect.	Change the direction of rotation.

Fault	Cause	Correction
	Blockage in the delivery line and shut-down of the pump due to the overpressure device tripping.	The pump should be carefully started up initially before any material is actually pumped. *(Starting to pump P. 6 — 3)*This prevents blockages where possible. The “Operation” chapter describes how to remove blockages. *(Removing blockages P. 6 — 18)*

7.2 Spray gun

The following section provides a general description of possible causes of faults affecting work with the spray gun, and their remedies.

⚠ WARNING

Risk of injury due to the conveyed material spraying out

- ▸ Wear protective goggles when using a spray gun.

Fault	Cause	Correction
Machine does not start despite compressor being switched on.	Insufficient drop in pressure in the remote control due to blocked air nozzle tube in the spray gun.	Clean air nozzle tube and air line. *(Cleaning the spray gun P. 6 — 29)*
No air at the spray gun.	The pump is operating and material is arriving in the spray gun. However, there is only very limited air or no spray air at all.	Check whether the rubber seals are present on the delivery line couplings and ensure that the connections are tight. Check whether the delivery line is leaking or broken. Check whether the air hose from the compressor to the air battery is leaking.
The flow of mortar exiting the spray gun is interrupted (air bubbles).	The air in the mortar is not being fully removed in the mixing pipe.	Increase the water rate briefly by approx. 100 l/h and then return slowly to the normal water pressure.
Mortar flow interrupted.	The material flow is being constantly interrupted without spraying	Check whether the air valve on the spray gun is fully open. Check whether the air nozzle tube is clear. If it is blocked, clean it with the nozzle cleaner from the accessories.

7.3 Electrical system

The following section provides a general description of possible causes of faults affecting the electrical system, and their remedies.

DANGER

Risk of death due to fatal electric shock

- Work on the electrical systems and equipment of the machine must only be carried out by a qualified electrician or by instructed persons under the supervision and guidance of a qualified electrician and in accordance with electrical engineering rules and regulations.

If there is a site power failure, and the cause cannot be remedied immediately, you should clean the machine and the delivery lines at once as described earlier. *(Cleaning the machine P. 6 — 22)* Clean the machine and delivery lines from the water network.

Fault	Cause	Correction
The machine does not start.	No power present.	Check the electric lead.
	The motor does not run in three phases.	Check the electric lead.
	The fuse on the machine is too small.	Use the correct fuse.
The electrical fuse was tripped.	The fuse on the machine is too small.	Use the correct fuse.
	The fuse triggers too readily.	Use the correct fuse.
	The diameter of the electric supply lead is too narrow.	Use a supply lead with a larger diameter.
The motor protection switch was tripped.	The diameter of the electric supply lead is too narrow.	Use a supply lead with a larger diameter.
	The electric supply line is wound up, e.g. on a cable drum.	Unwind the supply line.
	The electrical connection is not compatible with the mains frequency.	Compare the mains frequency with the machine frequency specified on the rating plate. The two frequencies must correspond.
	Ventilation for the motor is insufficient.	Position the machine so that sufficient air circulates around the motor.

8 Maintenance

In this chapter you will find information on maintenance work which is necessary for the safe and efficient operation of the machine.

We would like to explicitly emphasise here that all prescribed checks, inspections and preventative maintenance work must be conscientiously carried out. Otherwise we will refuse any liability or warranty claim. Our After Sales department is available at any time should you have any questions.

8.1 Maintenance and inspection by the machine operator

Regular preventative inspections allow you to detect machine damage well in advance and implement the necessary repair measures. See the “Maintenance intervals” section for information on the type and frequency of necessary inspection work. It is recommended that the details and results of the inspections are documented in a suitable format.

For inspection and maintenance work carried out by the machine operator, the inspection and maintenance personnel must have authorisation and the necessary technical qualification. The persons tasked with inspection and maintenance work must receive particular technical training. They must have completed training relevant to working with the equipment on the machine and be conversant with the content of the Operating Instructions.

Use only original spare parts. The manufacturer accepts no liability for damage caused by the use of nonoriginal spare parts.

If maintenance work with the reference “Service” appears in the table, consult a service technician from the manufacturer or a dealer authorised by the manufacturer.

Have the first After Sales service carried out by a service technician of the manufacturer or a dealer authorised by the manufacturer.

8.2 Maintenance intervals

The following table shows the intervals for individual maintenance work.

Frequency/interval	Action	Comments
General		
daily	Visual and function check of all safety equipment.	visual
	Check all wear parts.	

Frequency/interval	Action	Comments
daily	Check warning notices and plates. Replace immediately if damaged or missing.	visual
	Visual inspection of electric cabling	
weekly	Water filter check	Replace water filter as required
every 2 weeks	Clean the dirt trap screen in the pressure reducer valve	See the Maintenance work chapter *(Cleaning the dirt trap screen in the pressure reducer valve P. 8 — 10)*
Auger pump		
daily	Wear check	visual
as required	Replace the screw conveyor	See the Maintenance work chapter *(Replacing the screw conveyor P. 8 — 11)*
	Adjusting the auger pump	See the Maintenance work chapter *(Adjusting the auger pump P. 8 — 20)*
	Mounting the auger pump on the mixing pipe	See the Maintenance work chapter *(Mounting the auger pump on the mixing pipe P. 8 — 15)*
Spray air compressor		
monthly	Checking the filter mats	Compressor *(Replacing the filter mats P. 8 — 8)*
as required	Replace filter mats	
Gear motor		
every 10,000 operating hours/ every 3 years	Change gearbox oil	*(Gear motor P. 8 — 6)*
Agitator gearbox		
every 20,000 operating hours/ every 5 years	Change gearbox oil	*(Gear motor P. 8 — 6)*

8.3 Residual risks during maintenance work

Maintenance work may present a risk of personnel or third parties suffering injury or death.

8.3.1 Personnel requirements

Only qualified personnel may carry out maintenance work. Qualified personnel must have successfully completed a specialist training course that qualifies them to carry out such activities.

If you do not have qualified personnel for carrying out maintenance work, you should commission the manufacturer's After Sales department with the maintenance of your machine.

Have the first After Sales service carried out by a service technician of the manufacturer or a dealer authorised by the manufacturer.

8.3.2 Personal protective equipment

See the ““Safety regulations”” chapter for personal protective equipment requirements.

⚠ WARNING

Risk of injury due to not wearing personal protective equipment

- Always wear your personal protective equipment during maintenance work.

8.3.3 Residual risks

There are specific risks of accidents associated with maintenance work, as protective devices must be removed to perform certain activities. There follows a list of residual risks, which may be present during maintenance, inspection and repair work.

⚠ DANGER

Risk of death due to fatal electric shock

- Work on the electrical system may only be carried out by certified, licensed and qualified electricians (proof of qualification in line with EN 60204, part 1, page 14, item 2.21).

⚠ WARNING

Risk of injury due to the machine starting unexpectedly

- Before performing any maintenance work, shut down the machine and secure it to prevent accidental startup (e.g. by locking control equipment). If this is not possible, enlist the help of a second person to prevent the machine from starting unexpectedly.

⚠ WARNING

Risk of injury due to the machine rolling away

- Apply the brake before starting any maintenance work.
- Use chocks to secure the machine against rolling away.

⚠ WARNING

Risk of injury due to skin contact with functional fluids

- Avoid contact with functional fluids.
- Always wear personal protective equipment.
- Observe the safety data sheets provided by the manufacturer of the functional fluids.

⚠ WARNING

Risk of burning from hot machine components

- Allow the assemblies to cool down before you start the work.

8.4 Functional fluids

This section lists all functional fluids used for your machine.

i

The manufacturer accepts no liability for damage caused by using unauthorised functional fluids. The documentation provided by the manufacturer always applies.

Consult the relevant Service department at the manufacturer should you have any questions.

NOTICE

Environmental pollution caused by incorrect disposal of functional fluids

- Collect all functional fluids, e.g. used oil, filters and auxiliary materials, separately.
- Dispose of these in line with the relevant national and regional regulations.
- Only work with waste disposal companies who are approved by the responsible authorities. Ensure that different oils are never mixed.

8.4.1 Gear motor

The gear motor is filled with 0.8 l of CLP ISO VG 220 lubricating fluid in the works. This must be replaced every 10,000 hours or every 3 years at the latest.

The agitator gearbox is lubricated for life and filled with 210 g of Shell Alvania R_A lubricating fluid in the works. This must be replaced every 20,000 hours or every 5 years at the latest.

8.4.1.1 Gearbox oil

NOTICE

Risk of machine damage due to incorrect gearbox oil

- Only use a gearbox oil in accordance with the requirements standard specified in the lubricant recommendation for topping up or performing a full oil change. Observe the manufacturer's information in doing so.
- Do not mix the specified oil with other oils.

If the machine is used at other ambient temperatures, the required oil grade must be requested separately. A full oil change should only be carried out when the machine is warm after operation.

8.4.2 Compressor

The motor bearings are lubricated for life in the works.

8.4.3 Manual lubrication

For lubrication, use a multipurpose grease with a lithium soap base designated as follows according to DIN 51 502: K2K, NLGI Class 2.

8.4.4 Screw conveyor

You must only use Putzmeister silicone oil for mounting the screw conveyor. Putzmeister silicone oil is available as a spray can (part number 210923.003).

8.5 General tightening torques for bolts

See the spare parts list for an overview of general tightening torques.

NOTICE

Risk of damage to components caused by incorrect bolts

- Always use bolts of the same size and grade when you need to replace the bolts.
- Bolts with adhesive in the locking threads and selflocking nuts must always be replaced after removal.

8.6 Maintenance work

In this section you will find all maintenance work for this machine.

DANGER

Risk of death due to incorrect electrical connection or damaged electrical lines

- Before establishing electrical connections, check that the electrical lines are not damaged.
- Make sure that the electrical connections have been established correctly.

8.6.1 Before beginning maintenance work

There are specific risks of accidents associated with maintenance, inspection and repair work. Therefore always read the “Safety regulations” chapter and the description “Residual risks during maintenance work” in this chapter.

Maintenance personnel must have authorisation and the necessary technical qualification. The persons tasked with inspection and maintenance work must receive particular technical training. They must have completed training relevant to working with the equipment on the machine and be conversant with the content of the Operating Instructions.

Before beginning maintenance work, perform the following tasks:

1. Place the machine horizontally on an even surface.

⚠ WARNING

Risk of injury due to the machine starting unexpectedly

- Before performing any maintenance work, shut down the machine and secure it to prevent accidental startup (e.g. by locking control equipment). If this is not possible, enlist the help of a second person to prevent the machine from starting unexpectedly.

2. Switch off the machine.
3. Secure the machine against unauthorised starting.
   ⇒ If the machine needs to be started up in order to perform maintenance work, this will be mentioned specifically.

8.6.2 Replacing the filter mats

The following section provides a description of how to replace the filter mats on the compressor. The filter mats on the compressor must be checked in line with the maintenance summary and replaced if necessary. Observe the specifications in the “Maintenance intervals” section. *(Maintenance intervals P. 8 — 2)*

Clean the exterior of the device from time to time using a cleaning rag; do not spray the device using steam jet equipment.

⚠ CAUTION

Risk of burning! The device may be very hot after long periods of use.

- Allow the compressor to cool.

The following activities must be completed prior to commencing the filter change:

1. Switch off the power supply.
2. Secure the compressor against unauthorised starting.

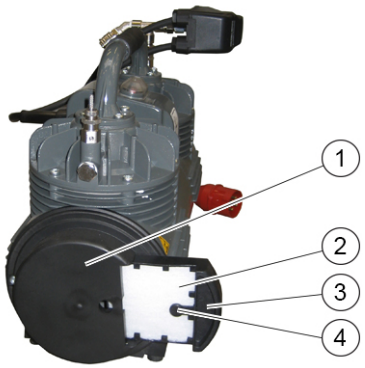


Figure 36: Compressor

Item	Designation
1	Cover
2	Filter mats
3	Holder for filter
4	Lock button

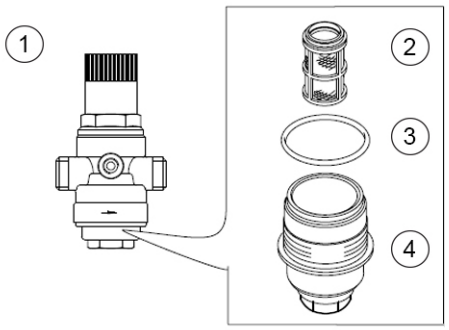
3. Press the lock button on the holders on the side covers of the compressor.
4. Pull the holders forwards to remove it.
5. Check the condition of the filter mats.
6. Replace used filter mats.

7. Push the holders back into the covers until you hear the lock button engage.
8. You can obtain replacement filter mats from your service dealer.

Dispose of used filter elements in line with the applicable environmental protection regulations.

8.6.3 Cleaning the dirt trap screen in the pressure reducer valve

This section describes how to clean the dirt trap screen in the pressure reducer valve. When in continuous operation, the dirt trap screen in the pressure reducer valve must be removed at least every 2 weeks and cleaned as follows. Observe the specifications in the “Maintenance intervals” section. *(Maintenance intervals P. 8 — 2)*



Item	Designation
1	Pressure reducer valve
2	Dirt trap screen
3	Oring
4	Screen housing

1. Unscrew the screen housing on the pressure reducer valve using a suitable tool.
2. Remove and clean the dirt trap screen. Replace it if it is extremely dirty.
3. Insert the dirt trap screen back into the screen housing.

4. Ensure that it is in the correct position and that the O-ring is positioned correctly in the screen housing. Replace the O-ring if it is damaged.
5. Screw the screen housing back into the pressure reducer valve and tighten it.
6. Start the machine up again and perform a test run.
7. Ensure that all threaded unions are leak-tight; tighten them if necessary.

8.6.4 Replacing the screw conveyor

This section describes how to replace the screw conveyor. Observe the specifications in the “Maintenance intervals” section. *(Maintenance intervals P. 8 — 2)*

See also the “Disassembling the pressure flange” section *(Disassembling the pressure flange P. 8 — 12)*

Use only original spare parts from the manufacturer.

1. Clamp the screw conveyor barrel and unscrew the screw conveyor by turning it anticlockwise.

NOTICE

Damage to the screw conveyor if the rubber of the screw conveyor comes into contact with used oil.

- Use only silicone spray from the manufacturer for assembly.

2. Spray the new screw conveyor with silicone spray.
3. Screw the new screw conveyor into the clamped screw conveyor barrel by turning it clockwise.
4. Adjust the end face of the screw conveyor and the screw conveyor barrel so that they are flush.

8.6.5 Disassembling the pressure flange

This section describes how to disassemble the pressure flange. Observe the specifications in the “Maintenance intervals” section. *(Maintenance intervals P. 8 — 2)*

See also the “Mounting the auger pump on the mixing pipe” *(Mounting the auger pump on the mixing pipe P. 8 — 15)* section

The following activities must be completed prior to disassembly:

1. Switch off the power supply.

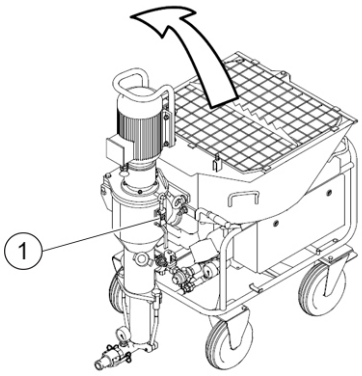
⚠ WARNING

Risk of injury due to unauthorised or accidental starting up of the machine

- Make sure that the machine is shut down.
- Make sure that the machine is secured against unauthorised or accidental starting up.

2. Secure the machine against unauthorised starting.

You must remove the mixer shaft from the mixing pipe before disassembling the pressure flange.



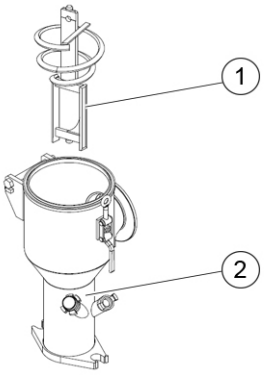
Item	Designation
1	Turnbuckle

⚠ WARNING

Risk of crushing

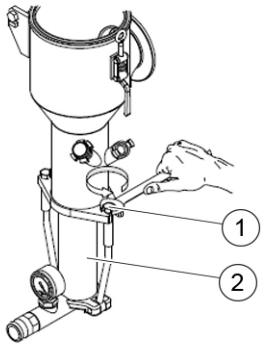
- When opening the mixer motor, do not reach into moving components.

3. Open the turnbuckle to open the mixer motor.
4. Open the mixer motor sideways.



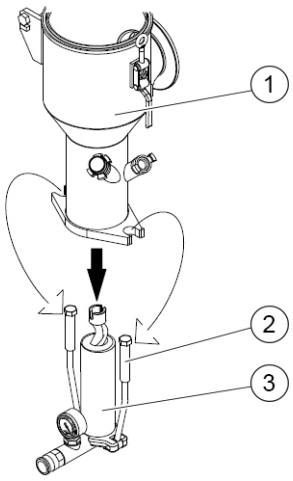
Item	Designation
1	Mixer shaft
2	Mixing pipe

5. Pull the mixer shaft out of the mixing pipe.
   ⇒ The pressure flange may now be disassembled.



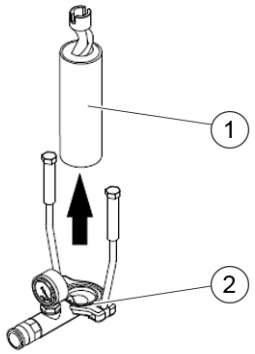
Item	Designation
1	Threaded sleeve
2	Auger pump pressure connection unit

6. Unscrew the two threaded sleeves *(1)* on the auger pump pressure connection unit *(2)* using a suitable spanner.



Item	Designation
1	Mixing pipe
2	Threaded sleeve
3	Auger pump pressure connection unit

7. Unhook the threaded sleeves from the mixing pipe flange.
   ⇒ The auger pump pressure connection unit will detach.
8. Remove the auger pump pressure connection unit.



Item	Designation
1	Auger pump
2	Pressure flange

9. Remove the auger pump from the pressure flange.

8.6.6 Mounting the auger pump on the mixing pipe

This section describes how to mount the auger pump on the mixing pipe. Observe the specifications in the “Maintenance intervals” section. *(Maintenance intervals P. 8 — 2)*

See also the “Disassembling the pressure flange” *(Disassembling the pressure flange P. 8 — 12)* section.

The following activities must be completed prior to assembly:

1. Switch off the power supply.

⚠ WARNING

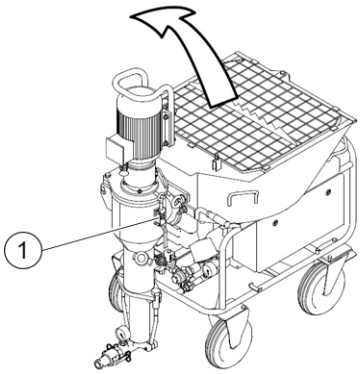
Risk of crushing due to turning of the auger pump

Depending on the mounting position of the stator or screw conveyor barrel, it can turn all the way to the stop when the machine is switched on.

- Secure the machine against unauthorised or accidental starting.
- Never reach into the auger pump while switching the machine on.
- For screw conveyor barrels with a stop, this must be secured at the stop of the mixing pipe.

2. Secure the machine against unauthorised starting.

Before mounting the auger pump on the mixing pipe, the mixer shaft must be removed from the mixing pipe.



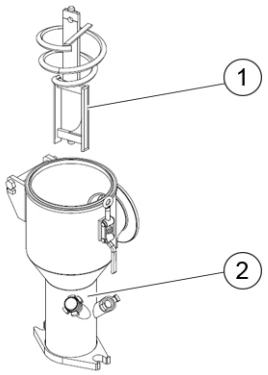
Item	Designation
1	Turnbuckle

⚠ WARNING

Risk of crushing

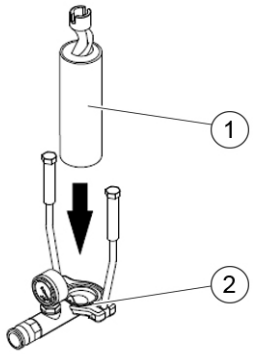
- When opening the mixer motor, do not reach into moving components.

3. Open the turnbuckle to open the mixer motor.
4. Open the mixer motor sideways.



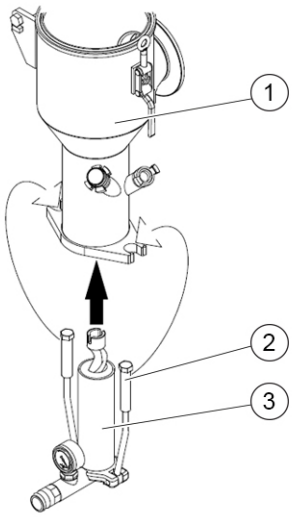
Item	Designation
1	Mixer shaft
2	Mixing pipe

5. Pull the mixer shaft out of the mixing pipe.
   ⇒ The auger pump can now be mounted.



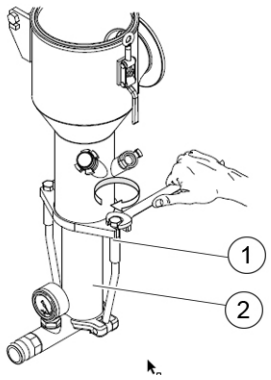
Item	Designation
1	Auger pump
2	Pressure flange

6. Insert the auger pump in the pressure flange.



Item	Designation
1	Mixing pipe
2	Threaded sleeve
3	Auger pump pressure connection unit

7. Hang the auger pump pressure connection unit on the mixing pipe flange using the threaded sleeves.



Item	Designation
1	Threaded sleeve
2	Auger pump pressure connection unit

8. Tighten the two threaded sleeves on the auger pump pressure connection unit securely and evenly on the mixing pipe using a suitable spanner.

When tightening the auger pump pressure connection unit, ensure that the sealing surfaces of the auger pump are positioned correctly on the pressure connection and the mixing pipe.

⚠ WARNING

Risk of crushing due to turning of the auger pump

Depending on the mounting position of the stator or screw conveyor barrel, it can turn all the way to the stop when the machine is switched on.

- Secure the machine against unauthorised or accidental starting.
- Never reach into the auger pump while switching the machine on.
- For screw conveyor barrels with a stop, this must be secured at the stop of the mixing pipe.

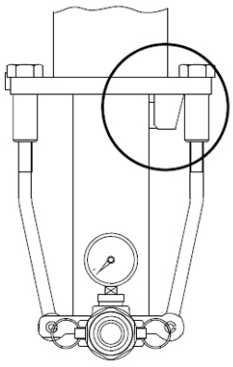


Figure 37: Risk of crushing in the end stop area of the auger pump

9. Insert the mixer shaft back into the mixing pipe and secure it in the screw conveyor opening.

⚠ CAUTION

Danger of crushing when the mixer motor is closed

- Close the mixer motor carefully. Do not let it fall.

10. Close the mixer motor again.

Align the mixer shaft retainer on the mixer motor and the mixer shaft.

11. Close the turnbuckle to secure the mixer motor.

8.6.7 Adjusting the auger pump

This section describes how to adjust the auger pump. Observe the specifications in the “Maintenance intervals” section. *(Maintenance intervals P. 8 — 2)*

The following special tools are required:

- Putzmeister test pressure gauge, part no. 208745.002

The performance of the auger pump is checked by means of water pressure with the machine running.

8.6.7.1 Inspecting the maintenance-free auger pump

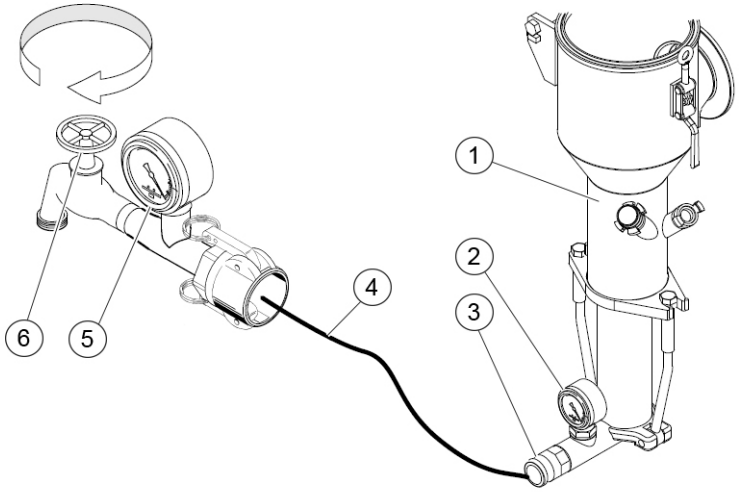


Figure 38: Different models available

Item	Designation
1	Mixing pipe
2	Pressure gauge
3	Pressure connection
4	Delivery line
5	Test pressure gauge
6	Shut-off valve

1. Connect a delivery line that is at least 5 m long to the pressure connection.
2. Connect the test pressure gauge to the end of the delivery line.
3. Switch the machine on.
4. Slowly close the shut-off valve on the test pressure gauge.
   ⇒ The pressure increases.
5. If the shut-off valve is closed and the pressure has reached its peak, read the pressure on the test pressure gauge and switch the machine off.
   ⇒ The pressure decreases.

The indicator on the test pressure gauge decreases to a lower value. This value indicates the back-pressure. Repeat the pressure decrease process at least six times. The highest value reached in this process is considered to be valid.

8.6.7.2 Inspecting the auger pump with clamping sheath

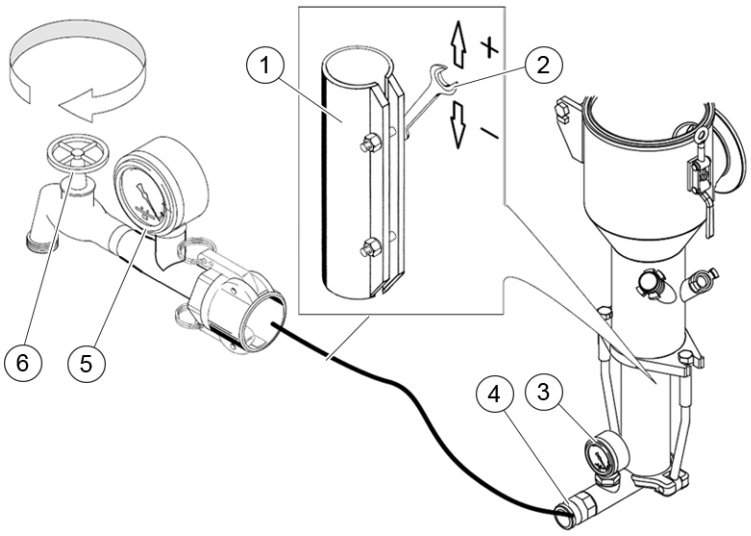


Figure 39: Different models available

Item	Designation
1	Clamping sheath
2	Hexagon spanner
3	Pressure gauge
4	Pressure connection
5	Test pressure gauge
6	Shut-off valve

1. Connect a delivery line that is at least 5 m long to the pressure connection.
2. Connect the test pressure gauge to the end of the delivery line.
3. Switch the machine on.
4. Slowly close the shut-off valve on the test pressure gauge.
   ⇒ The pressure increases.

5. If the shut-off valve is closed and the pressure has reached its peak, read the pressure on the test pressure gauge and switch the machine off.
   ⇒ The pressure decreases.

The indicator on the test pressure gauge decreases to a lower value. This value indicates the back-pressure. Repeat the pressure decrease process at least six times. The highest value reached in this process is considered to be valid.

6. If the required test pressure if not reached, increase the tension on the clamping sheath.

Retensioning the clamping sheath

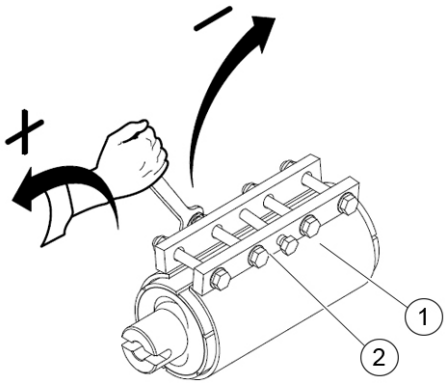


Figure 40: Different models available

Item	Designation
1	Clamping sheath
2	Clamping bolt

1. By tightening the clamping bolts evenly, you increase the pretensioning.
   ⇒ The pressure increases.

NOTICE

Increased wear on auger parts caused by tensioning the clamping sheath too much

- Only pretension the clamping sheath until the required pressure is reached.
  If the required pressure is not reached even after strong tensioning:
- Remove the auger pump and check it for wear.

2. To achieve an exact measured result, repeat the test procedure.

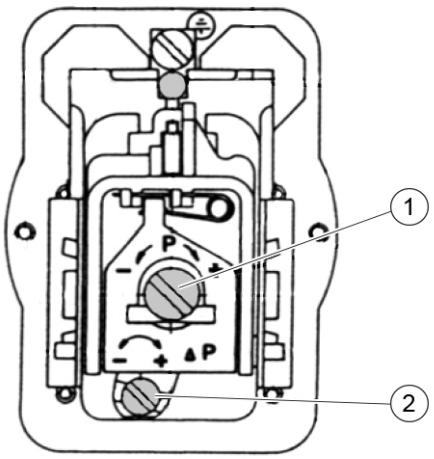
8.6.8 Adjusting the air valve fitting pressure switch

The switch-on and switch-off values for the pressure switch on the air valve fitting can be adjusted as follows.

The preset values for the pressure gauge are:

- Switch-on pressure: 1.2 bar
- Switch-off pressure: 2.2 bar

The pressure switch can only be adjusted when it is under pressure.



Item	Designation
1	Switch-off pressure adjusting screw
2	Pressure differential adjusting screw

1. Remove the housing lid on the pressure switch.
2. Using the “Switch-off pressure adjusting screw” *(1)*, adjust the switch-off pressure. (+ increasing pressure, - decreasing pressure)
3. Using the “Pressure differential adjusting screw” *(2)*, adjust the pressure differential and thereby the switch-on pressure. (Switch-on pressure = switch-off pressure – pressure differential)
4. Refit the housing lid on the housing.

The pressure switch requires a pressure differential of at least 1 bar.

8.6.9 Adjusting the water valve fitting pressure switch

The switch-on and switch-off values for the pressure switch on the water valve fitting can be adjusted as follows.

Pressure switch setting values:

- Switch-on value: 3.0 bar
- Switch-off value: 1.8 bar

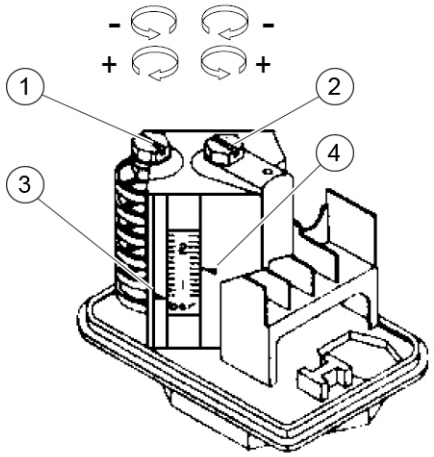


Figure 41: Water valve fitting pressure switch

Item	Designation
1	Lower switching value adjusting screw
2	Upper switching value adjusting screw
3	Lower switching value pressure indicator
4	Upper switching value pressure indicator

1. Remove the central screw on the housing lid with a screwdriver.
2. Pull the housing lid upwards to remove it.
3. Using the adjusting screw *(2)*, set the upper switching value to the required value.
   ⇒ The setting value is shown on the scale of the pressure indicator *(4)*.
4. Using the adjusting screw *(1)*, set the lower switching value to the required value.
   ⇒ The setting value is shown on the scale of the pressure indicator *(3)*.

You can obtain precise settings if you use the pressure gauge for comparison.

5. Refit the housing lid to the housing with the screw.

9 Decommissioning

This chapter contains information on decommissioning the machine.

9.1 Temporary decommissioning

If the machine is to be shut down temporarily, take the following measures.

⚠ WARNING

Risk of injury due to the conveyed material spraying out

- Secure the danger zone to prevent unauthorised access.
- Wear protective goggles.
- Always wear personal protective equipment.
- You should only uncouple the delivery line once you have checked the pressure gauge to see that the system is fully depressurised.
- Turn your face away when opening the line coupling.
- Open the coupling carefully.

⚠ WARNING

Risk of injury due to moving machine components

- Never reach into moving machine components, whether the machine is running or switched off.

1. Stop the material feed.
2. Run the hopper until it is empty.
3. Switch off the pump using the “Pump ON/OFF” double push-button.
4. Switch the machine off at the main switch.
5. Disconnect the machine from the mains.
6. Clean the machine as described in the “Operation” chapter.

9.2 Shutting down the machine

If the machine will be shut down or stored, it must be lubricated and, if needed, preserved.

Preserving and lubricating the machine protects it against corrosion and rapid ageing. This is required if the machine:

- Will be shut down for a longer period,
- Is exposed to corrosive atmospheres during storage or transport.

NOTICE

Damage to the machine caused by freezing water

- ▸ If there is a risk of freezing, you must drain the machine and the delivery line fully of residual water.

1. Perform all steps as described previously in the “Temporary decommissioning” section.
2. Shut down the machine only when de-energised.
3. Lubricate the machine.
4. Preserve the machine with a suitable corrosion protection agent.

9.3 Final decommissioning and disposal

The final decommissioning and disposal requires the complete disassembly of the machine into its individual components. When disposing of all machine components, ensure that there is no possibility of damage to health or the environment.

⚠ WARNING

Risk of injury due to skin contact with functional fluids

Hydraulic fluid and other functional fluids can be injurious to health in case of skin contact.

- ▸ Always wear your personal protective equipment when handling toxic, caustic or other functional fluids that can be injurious to health and observe the manufacturer’s information.

⚠ CAUTION

Risk of injury due to sharp, exposed components

- Always wear personal protective equipment.

NOTICE

Environmental pollution caused by functional fluids escaping

When decommissioning the machine permanently, escaping lubricants, solvents, preserving agents, etc. may pose a risk.

- Collect all functional fluids separately.
- Dispose of these in line with the relevant national and regional regulations.
- Only work with waste disposal companies who are approved by the responsible authorities.
- Ensure that different functional fluids are never mixed.

NOTICE

Environmental pollution caused by incorrect disposal of the machine

- When disposing of all machine components, ensure that there is no possibility of damage to health or the environment.
- Commission a qualified specialised company with the final disposal of the machine.

9.3.1 Materials used

The main materials used for machine construction were:

Material	Used in
Copper	Cables
Steel	Machine frame
	Mixing vessel parts
	Hopper parts
	Pump parts

Material	Used in
Steel	Compressor parts
	Air valve fitting parts
Plastic, rubber, PVC	Gaskets
	Hoses
	Cables
	Wheels
Tin	Printed circuit boards
Polyester	Printed circuit boards

9.3.2 Parts requiring separate disposal

The following parts and functional fluids must be disposed of separately:

Designation	Applies for
Electronic scrap	Electrical supply
	PCBs with electrical components
	Engine
Oil	Drive motor
	Compressor
Oil	Gearbox

10 Appendix

This chapter contains the following topics:

- Lubricant recommendation
- Sample of the EC Declaration of Conformity

Depending on the machine model, further documents may be included in the appendix.

10.1 Lubricant recommendation

We have listed all suitable lubricants for your machine in the tables below. Putzmeister accepts no liability for the quality of the lubricants listed or for changes in quality made by the lubricant manufacturers without changing the grade designation.

NOTICE

Risk of machine damage caused by mixing oils

- The manufacturer accepts no liability for damaged caused by mixing oils from different manufacturers.
- The manufacturer accepts no liability for the quality of the lubricants listed or for changes in quality made by the lubricant manufacturers without changing the grade designation.

NOTICE

Risk of machine damage caused by unauthorised functional fluids

The manufacturer accepts no liability for damage caused by using unauthorised functional fluids.

- Use only the lubricants specified in the lubricant recommendation.

The relevant Service department of the machine manufacturer can answer any questions you have about lubricants.

Mineral gearbox oil in accordance with DIN 51502	CLP ISO VG 220
Putzmeister	Part no. 212052008
ARAL	ARAL Degol BG 220
BP	BP Energol GRXP 220
ESSO	ESSO Spartan EP 220
MOBIL	Mobilgear 630
SHELL	SHELL Omala 220

10.2 Sample EC Declaration of Conformity

The original EC Declaration of Conformity is included in the machine's scope of supply. Keep it in a safe place.

Local Template

EG Konformitätserklärung

2006/42/EG, II 1.A.

Putzmeister

LT-170050-031

1 de **EG-Konformitätserklärung im Sinne der Richtlinie 2006/42/EG, Anhang II 1.A des Europäischen Parlaments und des Rates vom 17. Mai 2006 über Maschinen**
en **EC Declaration of Conformity as per directive 2006/42/EC, appendix II 1.A of the European Parliament and of the Council of 17 May 2006 on machinery**

2 de **Hiermit erklären wir, dass die Maschine - Bezeichnung / Typ / Maschinennummer** — Mörtelmaschine
en Herewith we declare that the machine –Designation / Model / Serial No. — MP 25

3 de **allen einschlägigen Bestimmungen der Richtlinie entspricht:** — 2006/42/EG
en **meets all relevant provisions of the directive:**

4 de Darüber hinaus entspricht die Maschine den einschlägigen Bestimmungen folgender weiterer Richtlinien: — 2014/35/EU, 2014/30/EU, 2000/14/EG
en Moreover, the machine meets the relevant provisions of the other directives below:

5 de **Angewendete harmonisierte Normen, insbesondere** — EN 12001
en complies with the following provisions applying to it

6 de Angewandte sonstige technische Normen und Spezifikationen, insbesondere
en Other, related technical standards and specifications, in particular:

7 de **Angaben zum Dokumentationsbevollmächtigten** — Putzmeister Mörtelmaschinen GmbH Max-Eyth-Straße 10 D-72631 Aichtal
en Party authorized to produce documentation

8 de **Angaben zum Unterzeichner / Datum / Unterschrift**
en Signer / Date / Signature

Putzmeister Mörtelmaschinen GmbH
Max-Eyth-Straße 10
D-72631 Aichtal

9 de **Geschäftsführer**
den
en Managing Director

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