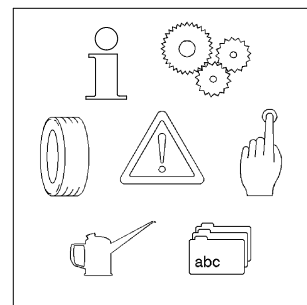


Operating Instructions

for machine operator and maintenance staff

always keep by the machine



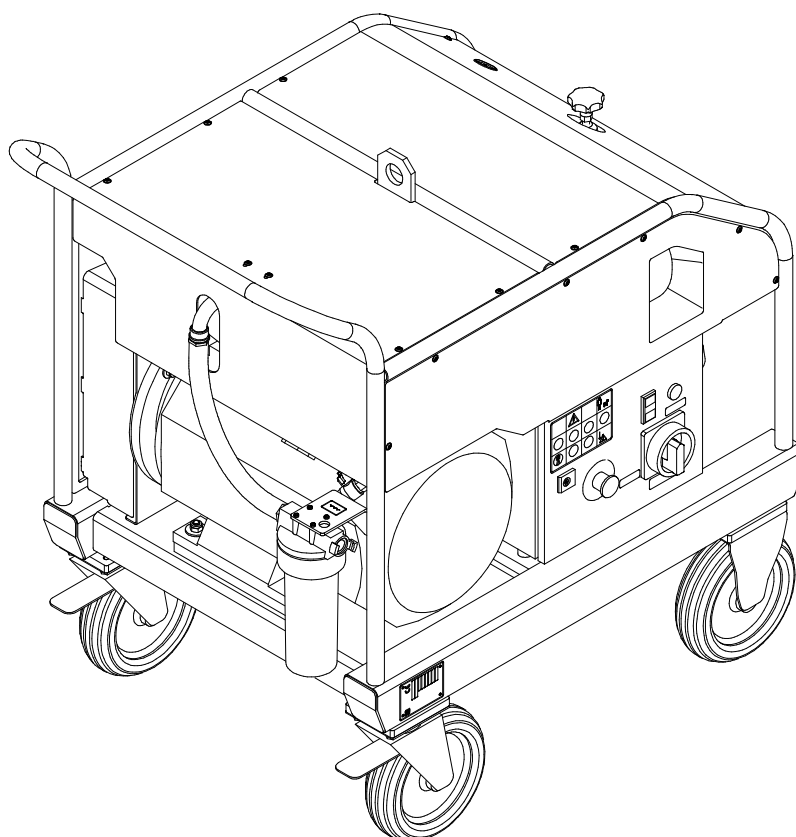
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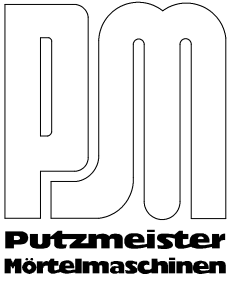
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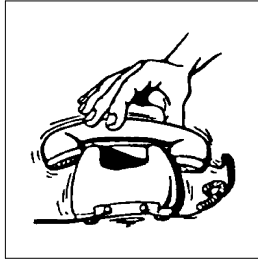




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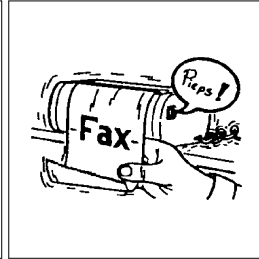


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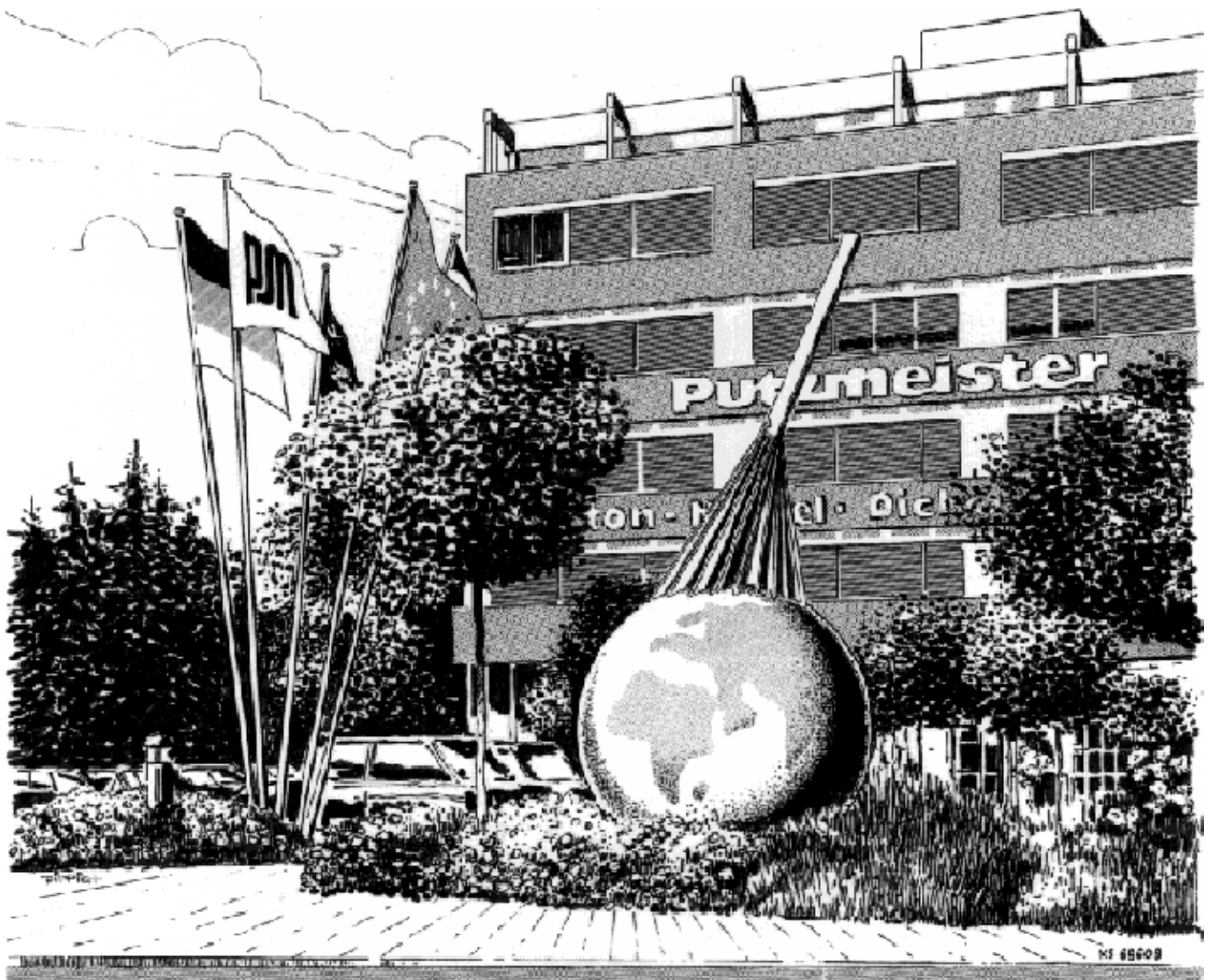


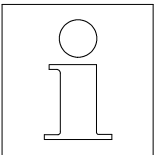
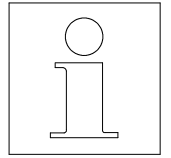
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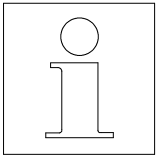
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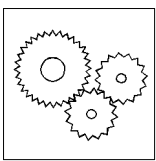


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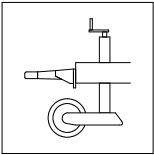
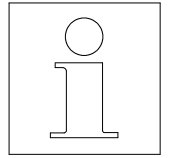


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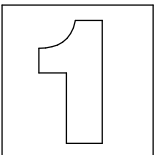
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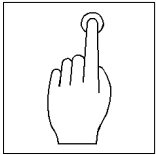
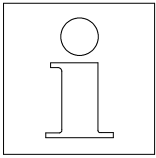
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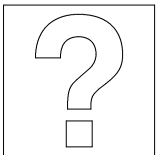
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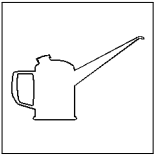
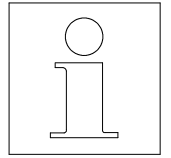
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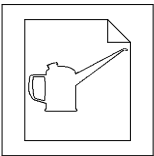
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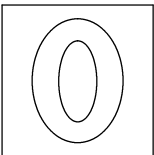
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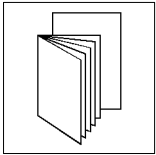
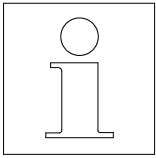
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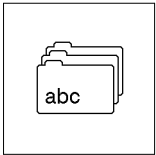
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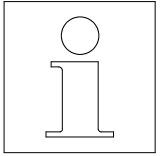


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1 About these Operating Instructions

In this chapter you will find notes and information that will help you use these Operating Instructions. Do not hesitate to contact us if you have any queries:

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E-mail: pmm@pmw.de

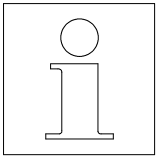
or the branch or services agent responsible for you.

Address: _____

Telephone: _____

Fax: _____

E-mail: _____



1.1 Foreword

These Operating Instructions are intended to familiarise the user with the machine and to assist him in using the machine properly in various possible applications.

The Operating Instructions contain important information on how to operate the machine safely, properly and economically. Taking these instructions into consideration will help

- to avoid dangers,
- to reduce repair costs and downtimes,
- to increase the reliability and service life of the machine.

The Operating Instructions must be supplemented by the relevant national rules and regulations for accident prevention and environmental protection.

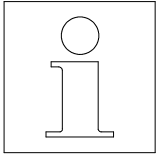
The Operating Instructions must always be available wherever the machine is in use.

The machine owner must make the location of these Operating Instructions known to all personnel charged with performing jobs on the machine and ensure they are accessible. These operating instructions must be read and applied by any person who carries out work with or on the machine, e.g.

- operation, including setting up, fault rectification in the course of work, removal of production waste, care and disposal of fuels and consumables,
- service (maintenance, inspection, repair), and/or
- 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 and environmental protection in the country and place of use of the machine.

Continuation next side



The Branch or Agent serving you, or the Aichtal Works, will be happy to give you more information, should you have any questions following your study of the Operating Instructions.

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

These operating instructions do not include a description of the drive motor; please refer to the operating instructions provided by the motor manufacturer.


Modifications are made from time to time in the interests of constant improvement and it could be possible that we were unable to take these into consideration when these Operating Instructions were printed.

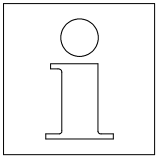
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The pages are divided into chapters where they are numbered consecutively.

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 Chapter 3
 Page 2

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1.2 Icons and symbols

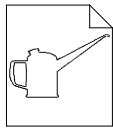
The following icons and symbols are used in the Operating Instructions:



Action symbol

Text following this symbol describes tasks which you are required to work through, generally in the sequence shown from top to bottom.

⇒ Text after this icon describes the result or the effect of an activity.



Refer also to the maintenance charts:

This symbol is used to refer to the maintenance charts required, possibly as a supplement to the maintenance charts you are currently reading.



The following special tool is required:

This icon identifies the special tools necessary to carry out the work. Normal tools, i. e. standard tools or tools carried in the vehicle are not listed additionally.



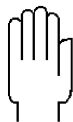
Environmental protection

This symbol is used to identify tasks during which particular attention is to be paid to environmental protection. The associated text is written in italics and is closed off with a line.



Notes

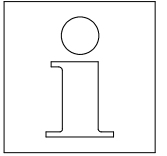
Particular specifications with regard to the economic use of the machine are introduced with the word "Note" and the pictogram illustrated. The associated text is written in italics and is closed off with a line.



Caution

Particular specifications or instructions and prohibitions with regard to the prevention of damage are introduced with the word "Caution" in bold and the pictogram illustrated. The associated text is written in italics and is closed off with a line.

Continuation next side



Danger

Particular specifications or instructions and prohibitions with regard to the prevention of personal injury or significant damage are introduced with the pictogram illustrated, the word "Danger" written in bold and a line. The associated text is written in italics and is closed off with a line.

The appropriate symbol will be used if it is possible to identify the source of the danger precisely.



Suspended Load

This symbol is used to identify tasks in which suspended loads may fall down.



Danger of crushing

This symbol is used to identify tasks during which there is the danger of being crushed.



Heavy current

This symbol is used to identify tasks in which there is the danger of electrocution, possibly with lethal consequences.



2 Safety Regulations

This chapter summarises the most important safety regulations. This Chapter must be read and understood by all persons who handle the machine. The various regulations are also repeated once more at the appropriate points in the Operating Instructions.



Notes

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 already existing valid national accident prevention regulations and laws.

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



2.1 Principle

Use only machines in a technically perfect condition, as designated and being conscious of safety and the dangers, taking account of the Operating Instructions. Any faults, especially those affecting the safety of the machine, must, therefore, be rectified immediately.

Make sure that

- no safety equipment is removed, rendered inoperable or modified,
- safety equipment removed for the purposes of maintenance work is refitted immediately after the work is completed.

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. Eliminate the defect or fault before re-starting.

Onwards sale

The following should be noted if you sell the machine on:

Pass on to the new operator all the accompanying documentation (Operating Instructions, Maintenance Instructions, diagrams, inspection certificates etc.) you received with your machine. If necessary, you may have to order the papers from us, quoting the machine number. The machine may not be sold on without the accompanying documentation under any circumstances.

Reporting an onwards sale or acquisition to Putzmeister ensures that you will be sent any information relating to modifications or innovations relevant to safety, and you will also be eligible for technical consultancy from our works.



2.2 Designated use

The machine has been built in accordance with the state of the art and recognised safety rules. Nevertheless, its use may constitute a risk to life and limb of the operator or of third parties, or cause damage to the machine and to other property.

The machine must only be used as specified in the Operating Instructions and the enclosed documentation. All information and safety regulations in the Operating Instructions must be observed.

The machine is only designed for cleaning with pressurised water.

The machine supplies pressurised water at the pressure specified in the technical data, depending on the model.

The machine must be supplied with clean, cold mains water via the low-pressure hose as described in the chapter "General technical description" - section: "Water quality requirements". Other materials should not be used.

The operator must provide personal protective equipment which should be used by the operating personnel.

Personal protective equipment includes:

- Protective helmet
- Ear defenders
- Protective goggles
- Face protection visor
- Protective suit
- Protective gloves
- Protective boots

All items of the machine's protective panelling must be fitted or connected up during operation.

Continuation next side



Safety Regulations



The machine must be operated only with the safety equipment fitted.

Specified maintenance work should 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.

Never make any modifications, additions or conversions to the machine without first obtaining the manufacturer's approval.

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



2.3 Use contrary to the designated use

Use of the machine other than described in the section "Designated use", or which goes beyond such use, is considered contrary to the designated use. Putzmeister Mörtelmaschinen GmbH accepts no liability for damage resulting from such use. The risk of such misuse lies entirely with the machine operator.

Modifications

Never make any modifications, additions or conversions to the machine which might affect safety without first obtaining the manufacturer's approval. This also applies to the installation and adjustment of safety devices and valves as well as to welding work on load-bearing elements.

The values quoted on the rating plate and in the Technical Data are the maximum permissible values.

The control and safety settings made at Putzmeister Mörtelmaschinen GmbH must not be changed.

The machine must not be operated with deactivated, modified or defective safety devices.

Safety devices must only be repaired, adjusted or replaced by technically qualified experts.

All devices of relevance for safety must be in place and fully functional.



2.4 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:

- Industrial Employers' Liability Insurance Association,
- the responsible corporate liability insurance company.
- the legal authorities in your country.

The following persons are liable under the law for accidents which can be ascribed to the failure to comply with safety regulations and accident prevention regulations:

- the operating personnel or (unless not liable due to lack of training or basic knowledge)
- their supervisors.

under the law.

Please therefore ensure that the necessary caution prevails.

Exclusion of liability

We state here expressly that Putzmeister Mörtelmaschinen accepts no liability for damage arising from incorrect or negligent operation, servicing or maintenance or as a result of use contrary to the designated use. This statement is equally valid for modifications to, additions to and customization of the machine which may compromise safety. The guarantee will no longer be valid in such cases.



2.5 Personnel selection and qualifications

The machine may only be operated or serviced independently by persons who

- have reached the minimum legal age;
- are physically capable (rested and not under the influence of alcohol, drugs or medication);
- have been instructed in the operation and maintenance of the machine;
- can be expected reliably to execute the tasks they are charged with.

Training

The machine must only be operated, serviced or maintained by persons who are trained to carry out such tasks and have been commissioned to do so.

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 who have not yet completed training or instruction,
- untrained personnel,
- uninstructed personnel,
- personnel taking a general training course.

Qualified electrician

Work on the electrical system and equipment of the machine must 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.



2.6 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 the event of malfunctions, stop the machine immediately and secure it. Have any faults rectified immediately.

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

Make sure that nobody is placed at risk by the running machine before starting up the machine.

Never release or tighten threaded unions that are under pressure.

Hot machine components

During and after completion of work, there is a risk of burns from hot parts on the drive motor.



2.7 Safety equipment

Never remove or modify safety devices on the machine.

Any safety devices removed for set-up, maintenance or repair purposes must be refitted and checked immediately upon completion of the maintenance and repair work.

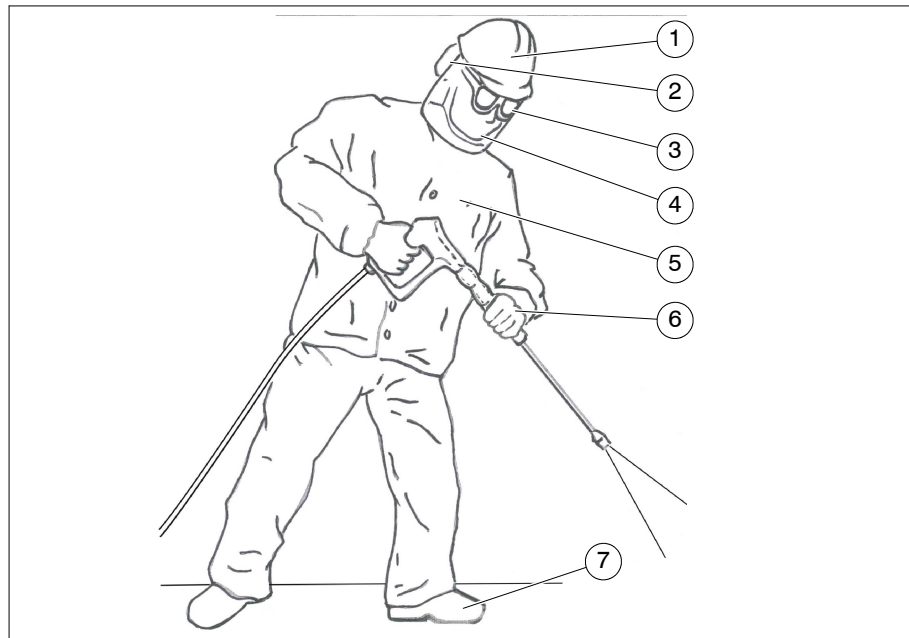
Safety devices must only be repaired, adjusted or replaced by technically qualified experts.

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.



2.8 Protective equipment

The following protective equipment is compulsory throughout the machine working area to limit the risk of injury to personnel.



Item	Designation
1	Protective helmet
2	Ear defenders
3	Protective goggles
4	Face protection visor
5	Protective suit
6	Protective gloves
7	Protective boots



Danger

The machine operator must be informed that waterproof protective clothing only provides protection from spray water and splash particles.

In the case of direct contact with the high-pressure water jet, protective equipment does not guarantee protection against injuries caused by the high-pressure water jet.

Never direct the high-pressure water jet to clean dirty protective equipment still being worn by personnel.



2.9 Risk of injury - residual risk

The machine has been built in accordance with the state of the art and recognised safety rules. Nevertheless, its use may constitute a risk to life and limb of the operator or of third parties, or cause damage to the machine and to other property.

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

- Risk of crushing and bumping when moving and setting up the machine.
- High-pressure injection at the high-pressure water pump, high-pressure hose and high-pressure gun.
- Electric contact (in some circumstances with fatal consequences) with the electrical equipment. If the connection has not been made correctly or electric subassemblies are damaged.
- Risk of burning on hot machine components. This includes e.g. drive motor and frame.
- Noise pollution is a danger for persons working continuously near the machine without hearing protection.
- Injuries through unauthorised starting or use of the machine.
- Injuries caused by tripping over cables, hoses or reinforcing steel.



2.10 Risk of crushing and bumping

During the following operating modes at the machine:

- Set-up
- Starting up
- Operation
- Cleaning, Troubleshooting, Maintenance
- Decommissioning

there is a risk of injury through crushing or bumping.

Transporting the machine

If you wish to load the machine onto a transport vehicle, attaching lugs must be fitted on the machine. If your machine is equipped with attaching lugs for lifting, they are located on the upper side of the machine and are coloured for identification purposes.



Danger of crushing

When lifting with the crane, determine the centre of gravity of the machine by lifting carefully. All cables or chains on the lifting gear must be tensioned evenly and the machine must be raised evenly at all support points.



Suspended Load

Ensure no persons are under a suspended load.



2.11 High-pressure injection

The high-pressure water pump, high-pressure hose and high-pressure gun pose a risk of high-pressure injection during the following:

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

Work with high-pressure water jets produces very high pressure that acts over a relatively small surface area. This concentration of energy can cause serious injuries.



Danger

If a high-pressure water jet makes contact with the skin, it can penetrate the surface of the skin and damage the tissue underneath. The water may inject foreign matter deep into the body and cause dangerous infections. With injuries caused by high-pressure water jets, it is not possible to assess the extent of damage to the tissue from the outside.

Treat any injuries caused by high-pressure water jets as an acute surgical emergency. Injuries of this kind require treatment from a qualified orthopaedic surgeon. Inform the acting doctor that the accident was caused by a high-pressure water jet.

Always inspect the machine for defects before starting work. Should you identify any defects during operation, shut down the machine immediately, depressurise and have the defect repaired by a qualified technician. Depressurise the machine before decommissioning.

Fortsetzung nächste Seite



High-pressure hoses

It is essential that correct high-pressure hoses be carefully selected and handled correctly to maintain the operational safety of the machine.

Observe the following rules when handling high-pressure hoses:

- Only use high-pressure hoses approved to withstand the maximum operating overpressure and maximum operating temperature.
- High-pressure hoses should only be connected by qualified personnel.
- High-pressure hoses must be laid and secured in such a way as to minimise any dangers.
- High-pressure hoses must consist of functioning hoses and connections that are compatible with one another.
- High-pressure hoses must not be painted.
- Depressurise the high-pressure hoses after operating the machine.
- Do not crush high-pressure hoses or guide them over sharp edges. Avoid tensile and bending stress.
- High-pressure hoses must be stored free of kinks and tension.

High-pressure hoses are wear parts with a limited service life. They should therefore be replaced at appropriate intervals according to the operating conditions, even if there are no obvious visible external defects.

High-pressure hoses must be replaced should the following defects occur:

- Chafe marks, cuts or cracks that pierce the outer layer.
- Embrittlement of the outer layer (crack formation) due to improper storage.
- Storage time and usable service life have expired. The guide value provided by DIN is 6 years including storage time. The storage time of 2 years should not be exceeded.
- Leaks in the hose and at the connection point.

Fortsetzung nächste Seite



Danger

Never search for leaks in high-pressure hoses with your bare hands. Water escaping under high pressure may not be visible but can cause serious injury.

High-pressure gun

Correct handling of the high-pressure gun is essential to ensure the operational reliability of high-pressure cleaners.

Observe the following rules when handling high-pressure guns:

- Only use high-pressure guns that are designed to withstand the permitted operating overpressure.
- Always use the high-pressure gun with a nozzle approved for the relevant pressure and temperature range.
- Never direct the water jet at people or animals.
- Pay attention to the confines of the danger area when performing work involving high-pressure water jets. No personnel should stand within a 10 m radius of the high-pressure gun, apart from the operator.
- When operating the high-pressure gun, always hold firmly with both hands.
- The high-pressure gun produces recoil and torque when actuated. Ensure equipment is secure and stable.
- Use suitable means to support the high-pressure gun, depending on the model.
- Depressurise the high-pressure gun after operating the machine.



Danger

Waterproof protective clothing only provides protection from spray water and splash particles. In the case of direct contact with the high-pressure water jet, protective clothing does not provide sufficient protection from injury.

Wear all the necessary personal protective equipment. This also applies to all personnel standing within the working area around the machine (for their own safety).



2.12 Electrical contact

The control cabinet, electrical wiring and drive motor pose a risk of fatal injury from electrical contact during the following:

- Setting up
- Operation
- Cleaning, Troubleshooting, Maintenance
- Decommissioning

All electrical assemblies are protected as standard, as per IEC 60204 Part1 or DIN 40050 IEC 144 in accordance with protection category IP 54.

Use only original fuses with the specified amperage! The electrical system can be destroyed by overrated fuses or overriding.



Heavy current

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



2.13 Risk of burns and scalding

The drive motor and the frame pose a risk of burns during the following:

- Setting up
- Operation
- Cleaning, Troubleshooting, Maintenance
- Decommissioning.



Danger

The control cabinet switches off the drive motor in the event of overheating. However, the drive motor and frame can still become very hot during operation.

*Allow the machine to cool before starting any maintenance work.
Work with protective gloves.*



2.14 Place of work

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

Machine operator

The place of work of the machine operator during operation is at the operating panel on the machine.

High-pressure gun operator

The place of work of the high-pressure gun operator is within the danger zone of the high-pressure gun. Proceed with extreme caution here. The high-pressure gun operator and the machine operator must have visual contact.



Danger

Removed material may spray back and cause serious injury. Never work alone.

If an operator falls unconscious or suffers serious injuries, you are advised to call for help as you will not be able to secure the machine alone.

2.15 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 areas, depending on the job being performed.

The working area is also the area in which work is carried out with and on the high-pressure gun.

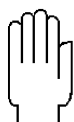
Any persons other than the operator of the high-pressure gun must keep a distance of at least 10 metres from operating area around the high-pressure gun while work is being performed.

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

2.16 Conduct in an emergency

Switch off the machine immediately in an emergency situation.

Refer also to chapter: "Operation" – section: "Emergency shutdown procedures" for further details



Caution

In the event of malfunctions, stop the machine immediately and secure it. Have any faults rectified immediately.



2.17 Sound emissions

Sound emissions are generated during the following operating modes at the machine:

- Starting up
- Operation
- Cleaning, Troubleshooting, Maintenance
- Decommissioning

Refer to the technical data for the sound pressure level value in the vicinity of the machine.

We recommend wearing ear defenders for noises louder than 85 dB (A); the employer should provide personnel with ear defenders although this is not compulsory.

Wearing ear defenders for noises louder than 90 dB (A) is compulsory.



Wear your personal ear defenders.

Operator

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

All soundproofing equipment must be present and in perfect condition. This equipment must be set to protective position during operation. High sound levels can cause permanent hearing damage.



2.18 Spare parts

Spare parts must comply with the technical requirements specified by the manufacturer. Spare parts from original equipment manufacturers guarantee this.

Use only original spare parts. Putzmeister Mörtelmaschinen GmbH accepts no liability for damage caused as a result of using non-original spare parts.

2.19 Accessories

Accessories must meet the requirements specified by Putzmeister Mörtelmaschinen GmbH and be compatible with one another. Using accessories from original equipment manufacturers guarantee this.



Notes

Accessories that are not included in the scope of supply delivered with the machine are supplied by Putzmeister and can be purchased through Parts Sales.

Please refer to the delivery note for a list of accessories supplied.

The operating company is responsible for ensuring that the correct accessories are used.

Putzmeister Mörtelmaschinen GmbH declines all responsibility and liability for damage caused as a result of using non-original accessories or using correct accessories inappropriately.

2.20 Storing the machine

The machine should be stored only in a dry, frost-free location.

If there is a danger of freezing at the storage location, take appropriate antifreeze protection measures.

For further details, refer also to the chapter: "Decommissioning".



2.21 Injuries through unauthorised starting or use of the machine

During the following operating modes at the machine:

- Starting up
- Operation
- Cleaning, Troubleshooting, Maintenance
- Decommissioning

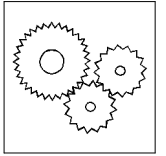
there is a risk due to unauthorised starting or use of the machine.

Always secure the machine against unauthorised starting before leaving the work area. This means:

- Switch the main switch to OFF.
- Use a padlock to secure the main switch against unauthorised starting.

The operator must always have a clear view of the machine. If necessary, the operator will have to appoint a person to monitor the machine.

If unauthorised persons approach the machine, the operator must stop work immediately.



3 General Technical Description

This chapter describes the components and assemblies on this machine and describes how they function. Please note that available options are also described.

3.1 Machine versions

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

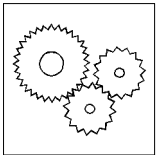
The following data can be found on the rating plate:

- Machine model
- Machine number



Notes

The machine number is allocated by Putzmeister Mörtelmaschinen GmbH. Each machine number is only allocated once. This means that the machine number identifies each individual machine.



3.2 Machine designation

Your machine is a Dynajet from Putzmeister Mörtemaschinen GmbH.

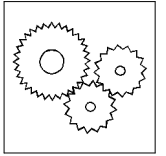
Dynajet XXX me



XXX bar maximum pressure

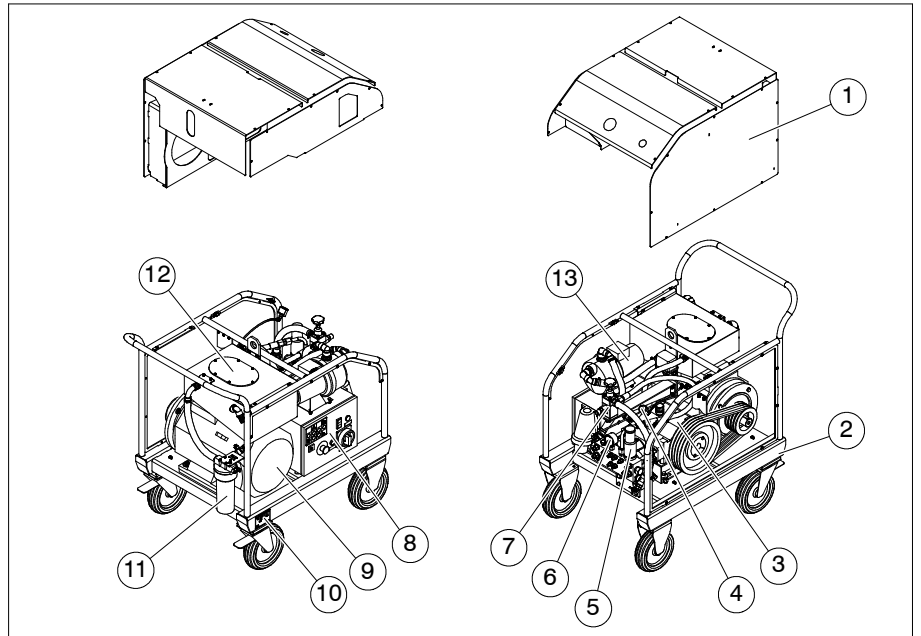
3.3 Machine number

The machine number can be found on the rating plate.



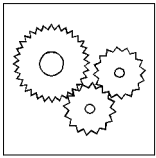
3.4 Summary

Below you will find a summary of the most important components; these will then be described on the following pages.



Different models available

Item	Designation
1	Hood
2	Frame
3	High-pressure water pump
4	Low-pressure circuit pressure gauge
5	Safety valve
6	Pressure gauge, working pressure
7	Unloader
8	Control cabinet
9	Drive motor
10	Rating plate
11	Water filter
12	Water tank
13	Water pump



General Technical Description

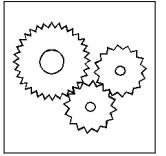


3.5 Technical data

The technical data and features listed below relate to the Dynajet me.

	Dynajet 800me 400 V, 50 Hz	Dynajet 800me 440 V, 60 Hz
Dimensions		
Length:	1209 mm	
Width:	800 mm	
Height:	1255 mm	
Weight		
Weight (empty):	approx. 500 kg	
Performance data		
Drive motor:	Electric motor 30 kW, 400/690 V, 50 Hz, 1465 U/min	Electric motor 33,6 kW, 400/690 V, 60 Hz, 1740 U/min
High-pressure water pump:	800 bar, 19.5 l/min at 730 U/min	800 bar, 22 l/min at 870 U/min
Water pump:	0.78 kW, 230/400 V, 50 Hz, 3.4 m ³ /h	
Working pressure:	up to 800 bar	
Delivery rate:	up to 19,5 l/min	up to 22 l/min
Water temperature:	max. 60 °C	
Sound pressure level:	85,2 dB (A)	
Inclination angle in longitudinal direction:	max. 10°	
Inclination angle in transverse direction:	max. 10°	
Control voltage:	230 V	

Fortsetzung nächste Seite



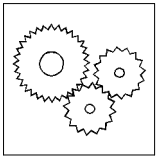
	Dynajet 800me 400 V, 50 Hz	Dynajet 800me 440 V, 60 Hz
Operating conditions		
Temperature range:	0 °C to +45 °C	
Installation height (without reduction in performance):	up to 1000 m above sea level	
Electrical connection		
Mains voltage:	3-phase 3 x 400 V, 50 Hz	3-phase 3 x 440 V, 60 Hz
External device plug:	CEE external device plug, 5 x 16 mm ² , 5-pole, 400 V, 63 A	CEE external device plug, 5 x 16 mm ² , 5-pole, 440 V, 63 A
Max. back-up fuse:	63 A	
Electrical power:	30 kW	33,6 kW
Connecting cable:	5 x 16 mm ²	
Water connection		
Low-pressure hose connection:	GEKA 3/4"	
Pipe diameter:	3/4"	
Water pressure:	min. 2 bar, max. 6 bar	



Notes

*The delivery rate data are only to be considered as guide values!
The maximum delivery rate and the maximum delivery pressure cannot be reached simultaneously.
The actual rates depend on the properties and consistency of the material being delivered.*

Fortsetzung nächste Seite



General Technical Description



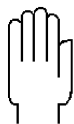
	Dynajet 800me 400 V, 50 Hz	Dynajet 800me 440 V, 60 Hz
High-pressure gun		
Operating pressure:	800 bar	
Fan jet nozzle		
Designation:	D shape	
Spray angle:	15°	
Nozzle size:	Ø 1.2 mm	Ø 1.3 mm
PM part no.:	431316	498402



Danger

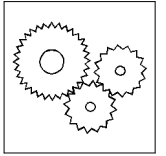
Other fan jet nozzles should only be used after consulting Putzmeister Mörtelmaschinen GmbH. Please note that the use of other fan jet nozzles could lead to increased recoil force.

	Dynajet 800me 400 V, 50 Hz	Dynajet 800me 440 V, 60 Hz
Fluid capacities		
High-pressure water pump:	Gearbox oil CLP 220 Capacity approx. 1.7 l	
Water tank:	Clean mains water, refer also to section: "Water quality requirements" Capacity approx. 20 l	



Caution

The capacities are only approximate values. These may vary depending on the model and the quantity of oil remaining. The upper oil dipstick mark is always decisive.



3.6 Water quality requirements

Observing the water quality requirements will extend the life of the high-pressure water pump and ensure it functions correctly.

Pressure-dependent parameters				
Parameter		Pressure range		
		max. 500 bar	> 500 bar to 1200 bar	> 1200 bar
Solids concentration	(mg/l)	max. 100	max. 50	max. 10
Particle size	(μm)	max. 80	max. 50	max. 10
Temperature	($^{\circ}\text{C}$)	max. 60	max. 50	max. 30
Overall hardness	(mmol/l)	0.5-5	0.5-5	0.5-3.5
($\text{Ca}^{2+} + \text{Mg}^{2+}$)	($^{\circ}\text{d}$), ($^{\circ}\text{dH}$)	3-25	3-20	3-15
($\text{Ca}^{2+} + \text{Mg}^{2+}$)	(mg/l)	20-200	20-200	20-145

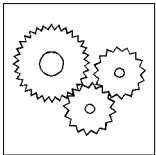
Pressure-independent parameters			
pH value			6,5-8,0
Conductivity		($\mu\text{S/cm}$)	max. 2000 at 20 $^{\circ}\text{C}$
Dissolved oxygen		(mg/l)	min. 5
Organic materials		(mg/l)	max. 12
Aluminium	Al	(mg/l)	max. 0,2
Ammonium	NH^{+}	(mg/l)	max. 0.5
Calcium	Ca^{2+}	(mg/l)	max. 100
Chlorine	Cl^{2}	(mg/l)	max. 0.5
Chloride	Cl	(mg/l)	max. 100
Iron	FE^{2+}	(mg/l)	max. 0.3
Silicon dioxide	SiO^{2}	(mg/l)	max. 20
Copper	Cu^{2+}	(mg/l)	max. 1
Magnesium	Mg^{2+}	(mg/l)	max. 50
Manganese	Mn^{2+}	(mg/l)	max. 0.1
Sulphate	SO^{2}	(mg/l)	max. 250
Nitrate	NO_3	(mg/l)	max. 50
Nitrite	NO^{2}	(mg/l)	max. 0.1



Notes

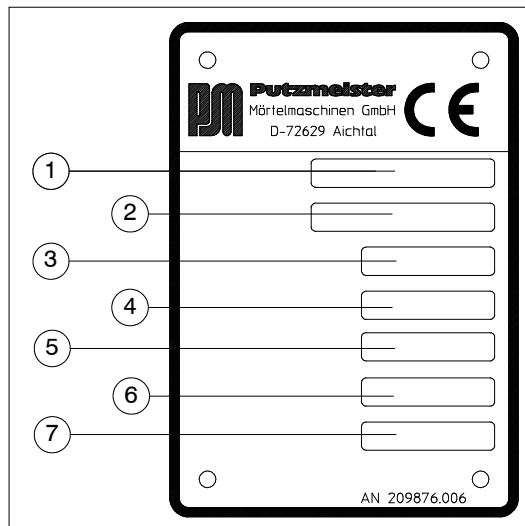
All other parameters must correspond to standard drinking water values and regulations.

Deviations from the values listed above are only permitted after consulting Putzmeister Mörtelmaschinen GmbH

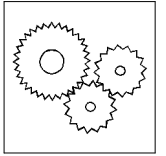


3.7 Rating plate

The most important machine data is shown on the rating plate.



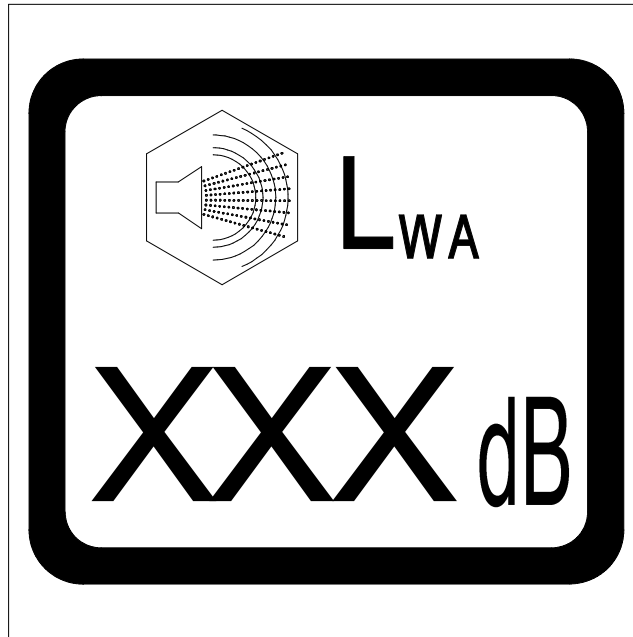
Item	Designation
1	Model (machine model)
2	Mach. no. (machine number)
3	Year of manufacture
4	Max. delivery pressure [bar]
5	Voltage [V]
6	Frequency [Hz]
7	Power [kW]



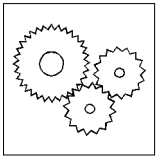
3.8 Sound power level

In accordance with Directive 2000/14/EC the sound power level emitted by the machine is given below.

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.



Item	Designation
L _{WA}	Sound power level
dB	Decibel value



3.9 Safety equipment

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



Danger

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

Personal protective equipment

Personal protective equipment is not included in the scope of supply delivered with the machine. However, it is supplied by Putzmeister Mörtemaschinen GmbH and can be purchased via the Parts Sales department.



Danger

Wear all the necessary personal protective equipment. This also applies to all personnel standing within the working area around the machine (for their own safety).

Replace any damaged components from your personal protective equipment immediately!



Notes

Personal protective equipment can be purchased through the Parts Sales department at Putzmeister Mörtemaschinen GmbH.

EMERGENCY STOP button

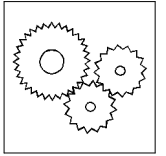
The control cabinet of the machine accommodates an EMERGENCY STOP button.



Danger

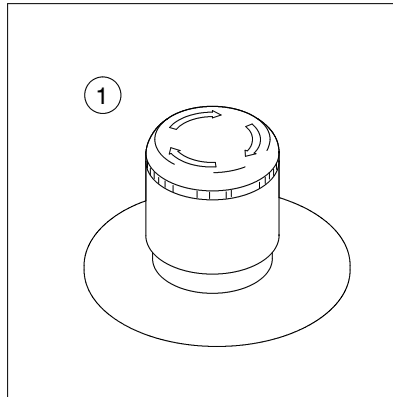
Should situations arise during operation which may endanger the operator, third parties or the machine, the machine must be stopped immediately by pressing the EMERGENCY STOP button. After an EMERGENCY STOP, eliminate the danger before restarting the machine.

Fortsetzung nächste Seite



Caution

Familiarise yourself with the position of the EMERGENCY STOP buttons on your machine.



Item	Designation
1	EMERGENCY STOP button

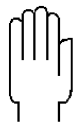
Pressing the EMERGENCY STOP button triggers the following activities:

- The drive motor is switched off.
- The high-pressure water pump is switched off.
- The water pump continues to run.



Danger

If the EMERGENCY STOP button is pressed while the high-pressure gun is closed, the high-pressure line remains pressurised.



Caution

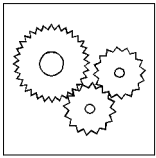
The water pump must be switched off using the master switch!



Notes

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

To reactivate the machine, you have to switch the master switch off once and then back on



Preventing excess pressure in the high-pressure circuit

The unloader limits the water pressure.
The additional relief valve protects the entire system.

The function of the unloader is to adjust the working pressure. If the working pressure exceeds the maximum working pressure, the unloader depressurises the water, which then flows back through the water inlet.

Refer to the chapter: "General Technical Description" - section: "Technical data" for information on maximum operating pressures for the high-pressure cleaner.

If a lower working pressure is required, this can be achieved by turning the rotary handwheel on the unloader.
The water in the bypass is returned to the intake port.



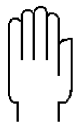
Notes

Discharging water via the bypass results in increased wear on the unloader.

Choose a nozzle which will ensure that no water escapes from the bypass!

Safety valve

The safety valve limits the maximum water pressure. If the preset pressure is exceeded, the water is depressurised and then discharged from the machine.



Caution

If the safety valve responds, switch off the machine immediately.

Check the operating parameters (e.g. nozzle).

Rectify any faults.

Pressure monitor in the low-pressure circuit

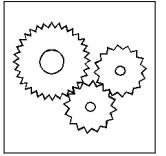
The low-pressure circuit is fitted with a pressure switch for monitoring the pressure.

If the pressure falls below the required low pressure, the drive motor is switched off.

Overflow protection in water tank

The water tank is equipped with a float valve to protect against overflow.

As soon as the maximum water level in the water tank has been reached, the float valve blocks the water inlet.



3.10 Control cabinet

The machine is controlled and operated via the control cabinet.

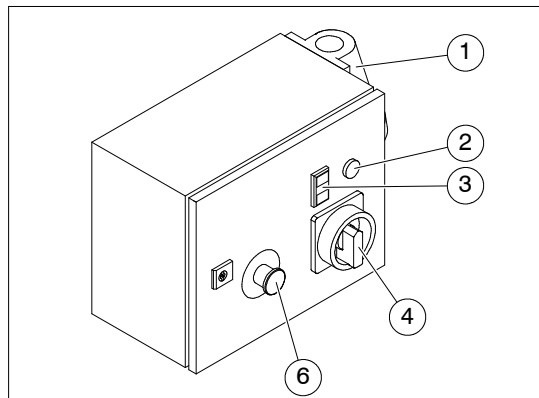


Heavy current

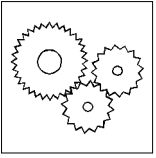
Work on the electrical system and equipment of the machine must be carried out by a qualified electrician or by instructed persons under the supervision and guidance of a qualified electrician and in accordance with the electrical engineering rules and regulations.

The control cabinet's wiring, earthing and connections comply with VDE codes of practice.

Use only original fuses with the specified amperage! The electrical system can be destroyed by over-rated fuses or bypassing.



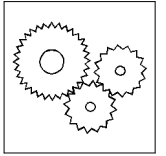
Item	Designation	Function / display
1	CEE external device plug	Power supply connection
2	Indicator lamp	Ready for service (current and water pressure present)
3	Double pushbutton	Drive motor ON / OFF
4	Master switch	Power supply ON / OFF
5	EMERGENCY STOP button	Switches off the machine in an emergency



3.11 Drive motor

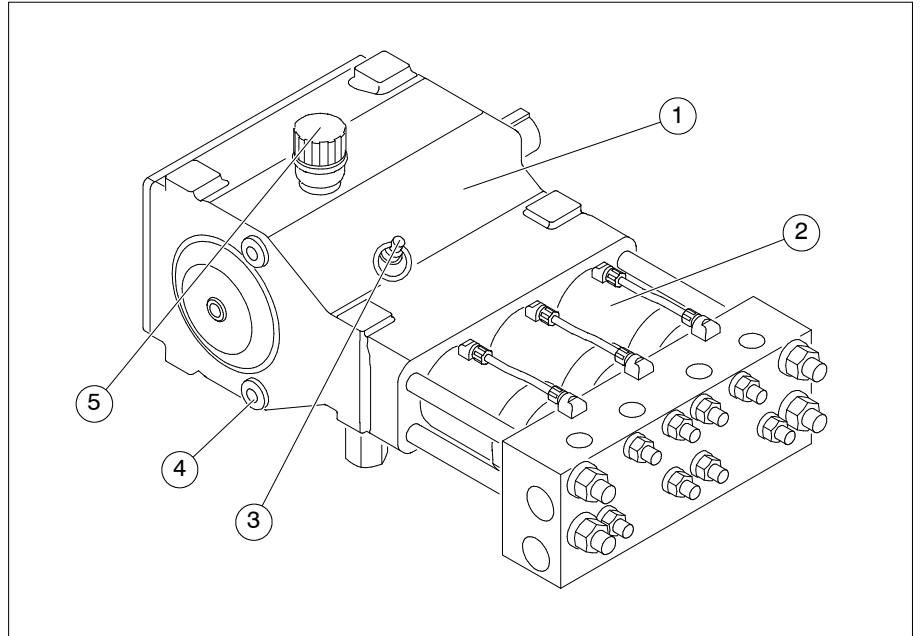
The machine is driven by an electric motor.

The drive motor has different connection values, depending on the model. Please refer to the rating plate or the chapter. "General technical description" - section: "Technical data" for information on the connected loads of your machine.



3.12 High-pressure water pump

The high-pressure water pump generates the pressurised water.



Item	Designation
1	High-pressure water pump
2	Packing box with plunger cylinder
3	Oil dipstick
4	Oil drain valve
5	Oil filler plug with vent valve

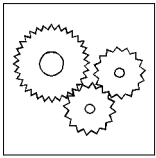
The performance values of the high-pressure water pump (1) are different, depending on the model.

Please refer to the rating plate, the machine card or the "General Technical Description" chapter in the "Technical data" section for the values for your machine.

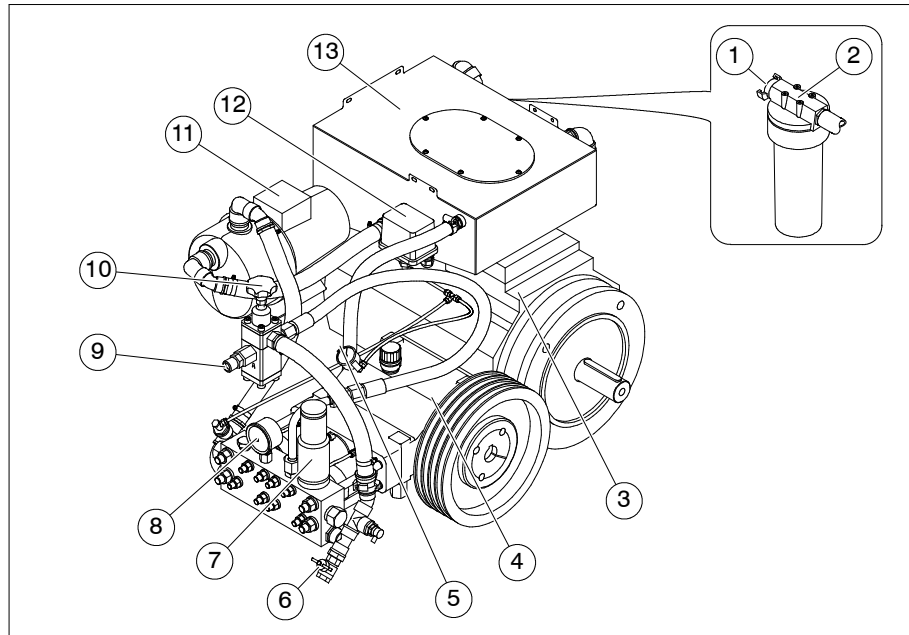


Notes

Refer also to the documentation provided by the high-pressure water pump manufacturer for further information on the high-pressure water pump.



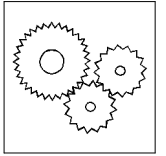
3.13 Water system



Different models available

Item	Designation
1	Connecting the low-pressure hose
2	Water filter
3	Drive motor
4	High-pressure water pump
5	Low-pressure circuit pressure gauge
6	Drain cock
7	Safety valve
8	Pressure gauge, working pressure
9	Connecting the high-pressure hose
10	Unloader
11	Water pump
12	Pressure switch
13	Water tank

Fortsetzung nächste Seite



The high-pressure cleaner is connected to a water supply (min. 2, max. 6 bar) via the low-pressure hose and the water filter to fill the water tank. A float valve prevents the water tank from overflowing.

The job of the water filter (2) is to filter impurities out of the water supplied to it.

The water pump (11) is used as a back pressure pump and generates the required back pressure for the high-pressure water pump. The current pressure in the low-pressure circuit can be read on the pressure gauge for the low-pressure circuit (5).

The low-pressure circuit is fitted with a pressure switch for monitoring the pressure.

If the pressure falls below the required low pressure, the drive motor (3) is switched off.

The high-pressure water pump (4) is driven by the drive motor (3) and generates the pressurized water.

Refer to the chapter: "General Technical Description" - section: "Technical data" for information on maximum operating pressures for the high-pressure cleaner.

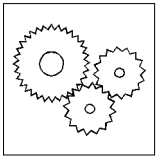
The pressurized water then flows through the unloader (10).

The safety valve (7) protects the entire high-pressure system against unauthorized excess pressure.

The unloader valve limits the system pressure to the maximum operating pressure.

The current water pressure can be adjusted by turning the handwheel on the unloader (10) and can be read on the pressure gauge (8).

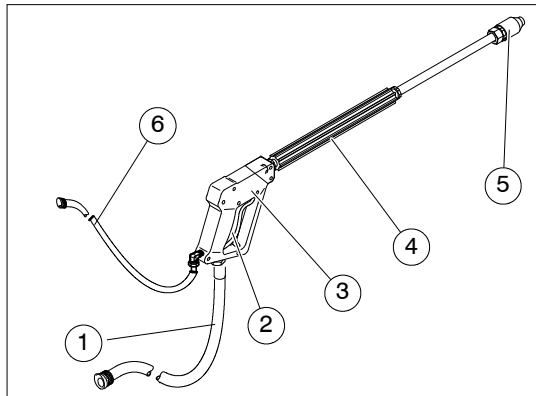
The pressurized water is fed through the high-pressure line and the high-pressure connection directly into the high-pressure hose and the high-pressure gun.



3.14 High-pressure gun with fan jet nozzle

The high-pressure gun controls the high-pressure water jet and is connected to the high-pressure hose.

Your high-pressure gun may be fitted with a control line, depending on the model.



Item	Designation
1	High-pressure hose
2	High-pressure gun trigger with safety lock
3	High-pressure gun
4	High-pressure pipe with insulation
5	Fan jet nozzle
6	Control line (depending on the model)

Refer to the chapter: "General Technical Description" - section: "Technical data" for information on maximum operating pressures for the high-pressure gun.

When operating the high-pressure gun, always hold firmly with both hands. Place one hand on the high-pressure gun trigger and the other hand on the insulated section of the high-pressure pipe.

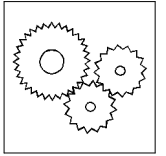
Always wear protective equipment when operating the machine, see chapter "Safety Regulations".



Danger

Waterproof protective equipment only provides protection from spray water and splash particles. In the case of direct contact with the high-pressure water jet, protective clothing does not provide sufficient protection from injury.

Fortsetzung nächste Seite



Trigger lock

There is a trigger safety device on the high-pressure gun trigger that prevents the high-pressure gun from triggering accidentally and prevent personnel from actuating the gun trigger by mistake.

The design of the trigger lock depends on the gun model.

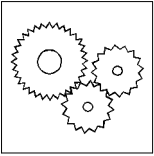
One version has a red securing lever that flips back and locks in place to and prevents personnel from actuating the high-pressure gun trigger by mistake.

Second version.

The safety device engages automatically when the high-pressure gun is closed and prevents personnel from actuating the high-pressure gun trigger by mistake. Press the securing lever upwards and then the trigger to actuate the high-pressure gun.

Control line

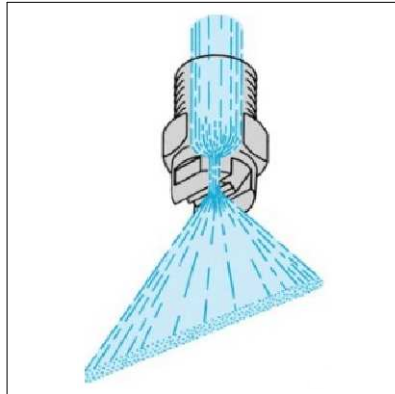
Before working with the high-pressure gun, connect this nozzle to the machine via the control line. Attach the control line to the connection sockets on the control cabinet and the high-pressure gun. If the control line is not connected correctly, pressure does not build in the machine. A fault message appears on the control cabinet display.



Fan jet nozzle

The high-pressure gun, high-pressure hose and fan jet nozzle must be assembled prior to operation.

Fan jet nozzles are characterised by a uniform liquid and pressure distribution. The flow geometry of the nozzles creates a compact, controlled jet. They can be used universally and are not sensitive to pressure fluctuations.



Refer to chapter: "General Technical Description" - paragraph: "Technical data" for data relating to the fan jet nozzle included in the scope of supply.



Notes

Bear in mind that the nozzles have an influence on the water pressure. If the water pressure is incorrect or too high, this will increase wear on the high-pressure cleaner.

If the nozzle used is too large, the high-pressure water pump may not be able to attain maximum pressure at the full output.

The working pressure decreases as the nozzle wears.

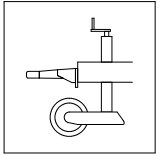
Always keep a sufficient number of replacement nozzles in stock.



Caution

If the nozzle used is too small, there is an increase in pressure.

This results in increased wear on the unloader valve.



4 Transport, Set-up and Connection

In this section you will find information concerning safe transport of the machine. Furthermore, work is described in this section, which is also necessary for the installation and connection of the machine. Starting up the machine will not be described until the chapter "Starting up".

4.1 Unpacking the machine

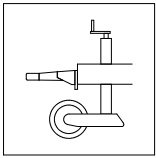
Before shipment, the machine is packaged for transportation. Unpack the machine and dispose of the packaging material.



Environmental protection

Recyclable materials are used for packaging the machine.

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



4.2 Transporting the machine

If you wish to load the machine onto a suitable transport vehicle, jack rings must be fitted on the machine.

Use the slinging points provided on the machine when loading it by crane. Only in this way can you be sure that the machine is suspended horizontally and securely in the hook and will not be able to tip over.



Danger of crushing

When lifting with the crane, determine the centre of gravity of the machine by lifting carefully. All cables or chains on the lifting gear must be tensioned evenly and the machine must be raised evenly at all support points.



Suspended Load

Make sure personnel do not walk under suspended loads. Only use an auxiliary loading device with a loadbearing capacity designed to support the gross weight of the machine!

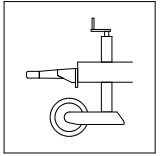


Danger

The machine may only be loaded by crane if it is attached by the lifting eyes designed for this purpose. Lifting equipment, lifting tackle, support trestles and other auxiliary equipment must be reliable and safe in operation. Make sure that the load-bearing capacity is sufficient.

Additional loads on the machine are not permitted. Observe the maximum gross weight on the rating plate.

The machine must be properly secured on the transport vehicle to prevent it rolling away, slipping or tipping over.



4.3 Selecting the set-up site

The set-up site of the machine is usually determined and appropriately prepared by the site management.



Notes

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

4.4 Set-up site requirements

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

- The loadbearing capacity of the supporting ground must be sufficient to withstand the weight of the machine.
- The supporting ground must be horizontal and even.



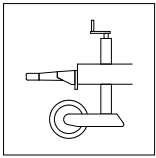
Danger

Keep a safe distance away from pits and slopes.

Never prop up the machine.

Continually check the stability of the machine during operation.

- ▶ Move the machine to its operating position (horizontal).



4.5 Setting up

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

- ▶ Secure the machine against rolling by applying the foot brake.
- ▶ Align the machine horizontally. Observe the permitted inclination angles.

Foot brake

Foot brakes are attached to the wheels to secure the machine against rolling.



Caution

Always apply the foot brake firmly to prevent it from releasing unexpectedly!

Raise the lever with your foot to release the foot brake.



Notes

Always remember to release the foot brake before moving the machine.

Inclination angles

Observe the maximum inclination angles during machine set-up and operation.

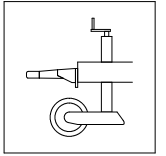
Refer also to chapter: "General Technical Description" - section "Technical data" for the maximum permitted inclination angles.



Danger

Lubrication is no longer guaranteed at excessive inclination angles. These conditions will lead to increased wear or machine damage.

Do not operate the machine at inclination angles greater than those specified!



Safety equipment for shutting down the machine

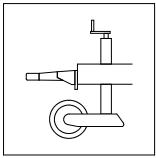
The machine must be set up in such a way that all safety equipment used to shut down the machine in the event of a an emergency, is freely accessible.



Danger

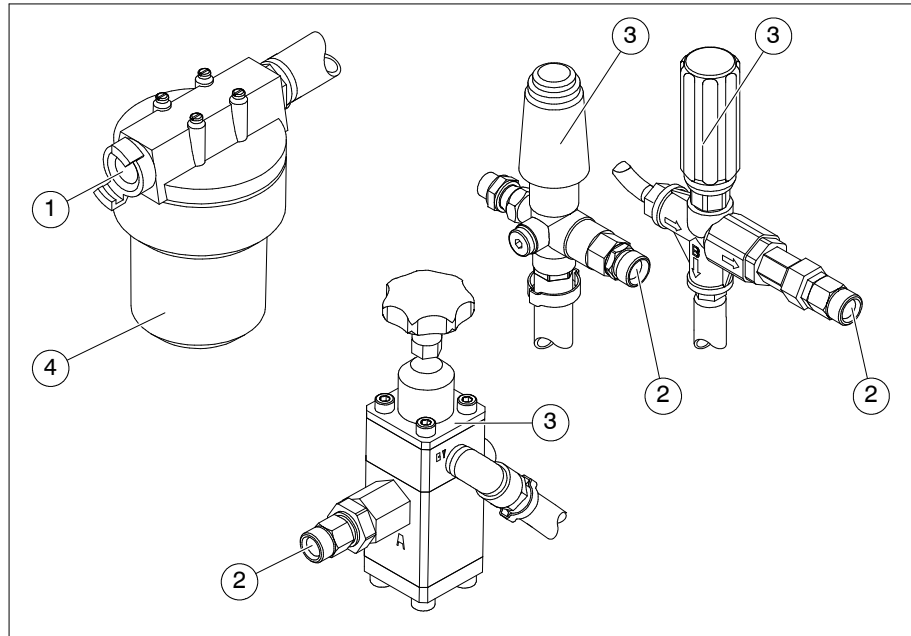
Safety equipment such as EMERGENCY STOP buttons, master switches, emergency trip wires etc., which are used to shut down the machine in the event of an emergency, must be easy and safe to access should a hazardous situation arise. Access must not be restricted or blocked!

There is a risk of injury!



4.6 Water connections

The following section describes how to connect the high-pressure cleaner to the water supply.



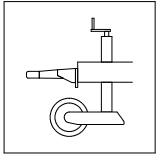
Different models available

Item	Designation
1	Connecting to the water supply
2	Connecting the high-pressure hose (depending on model)
3	Unloader (depending on model)
4	Water filter

Please ensure that you check preconditions for connection to the water supply before beginning connection work.

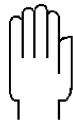
- The pipe must be at least 3/4" in diameter.
- The available water pressure must be min. 2 bar and max. 6 bar.

Fortsetzung nächste Seite



Water supply pipes must be laid visibly, taking local conditions into consideration, and protected against damage. They must not be allowed to obstruct operating personnel.

- ▶ Roll out the required length of water hose from the hose holder and attach it to the water connection (1).
- ▶ Roll out the high-pressure hose and connect it to the high-pressure connection (2).



Caution

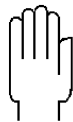
The water must comply with water quality regulations as described in chapter "General Technical Description" - section: "Water quality requirements".

The maximum water temperature is 60 °C.

Never use: salt water, sea water, completely desalted water or water with added chemicals.

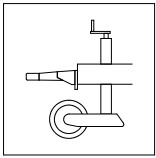
Only add chemicals or cleaning agents after consulting Putzmeister Mörtelmaschinen GmbH.

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



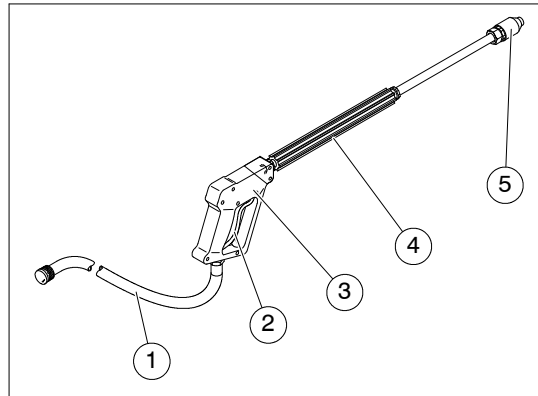
Caution

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



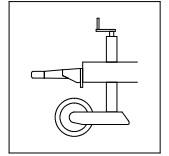
Assembling the high-pressure gun

When using the high-pressure gun for the first time or after maintenance work and cleaning, assemble as described below.



Item	Designation
1	High-pressure hose
2	High-pressure gun trigger with safety lock
3	High-pressure gun
4	High-pressure pipe with insulation
5	Fan jet nozzle

- ▶ Attach the high-pressure pipe with insulation(4) and fan jet nozzle(5) to the high-pressure gun(3).
- ▶ Connect the high-pressure gun(3) and the high-pressure hose(1) to the threaded coupling.



4.7 Electrical connection

Please also refer to the "General Technical Description" or the electrical circuit diagram for the electrical connection values.

Refer also to chapter: "General Technical Description" - section: "Technical data" and "rating plate" for more details.

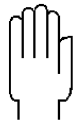


Heavy current

Work on the electrical system and equipment of the machine must 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.

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.



Caution

Do not turn the main switch on at this stage.

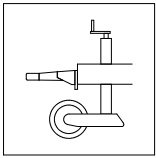
The main switch must remain locked until the entire system has been completely assembled.

Prerequisites

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

- The connected load of the existing electrical installation must be sufficient for the machine.
- Please refer to the technical data for the maximum back-up fuse values.
- The installation should always be connected to a special feed point.
- All 3 phases and the PE (Potential Earth) protective conductor must be present.

Continuation next side



Laying electrical supply cables

Supply cables must be laid visibly, taking local conditions into consideration, and secured against damage.



Danger

There is a danger of electric shock which may have lethal consequences by:

- *contact with electrical cables;*
- *contact with machines with electrical drives, if the electrical connection has not been properly made or the supply cable is damaged.*

Connection to the mains power supply

The machine must be connected to a separate feed point at the construction site.

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 machine is electrically ready for service once the mains plug is plugged into a power source.

5 Starting up

In this chapter you will find information on starting up the machine. The work steps for initial operation of the machine are described as well as how to prepare the machine for operation after a long break. 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.



Notes

The operating personnel should be trained on the machine during initial operation.

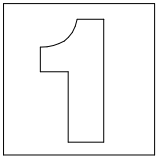
Every time the machine is in operation, the operator accepts full responsibility for the safety of anyone located in the machine's danger zone. He is therefore obliged to ensure absolute operating safety of the machine.

The operator must familiarise himself with the machine during machine handover.

This means:

- He must have read and understood the Operating Instructions (especially the chapter on Safety Regulations).
- He must be in a position to carry out the correct measures in case of emergency and switch off and secure the machine.

The entire system must be observed during the initial hours of operation to identify possible malfunctions.



5.1 Checks

Each time the machine is used, you should check the condition of your 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.

Visual checks

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

- ▶ Always check the machine thoroughly for apparent defects before starting work.
- ▶ Check that all safety equipment is in place and is fully operational.
- ▶ Check the high-pressure gun for damage.
- ▶ Check the high-pressure hose for damage.

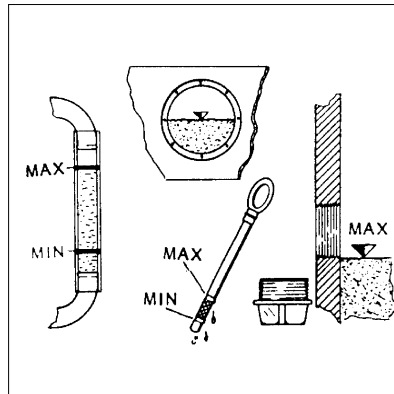


Danger

Replace any damaged components on the high-pressure hose or high-pressure gun immediately.

- ▶ Check that the high-pressure pipe, fan jet nozzle and high-pressure hose are fitted to the high-pressure gun correctly.
- ▶ Check whether the machine has been correctly erected. Refer also to chapter: "Transport, Set-up and Connection" - section: "Set-up".
- ▶ Check that the water supply is connected to the machine correctly. Refer also to chapter: "Transport, Set-up and Connection" - section: "Water connections".
- ▶ Check the fill levels of the operating materials. Refer also to section: "Operating materials".
- ▶ Check the water filter for contamination.
- ▶ Observe the warning and information signs on the machine.

Operating materials



Oil levels



Danger

Oils and other operating materials can pose a threat to health if they come into contact with the skin or the like.

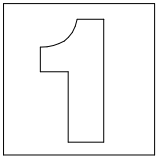
You must, therefore, always wear personal protective clothing and equipment when you are handling toxic, caustic or other operating materials that are injurious to health and always take note of the manufacturer's information.



Notes

The machine must be level when you check the operating materials. Inspect the operating materials only when the machine is cold. After checking and topping up (if necessary), all filler lids must again be sealed tightly.

- ▶ Check the oil levels and top them up if necessary.



Oil level in the high-pressure water pump

Check the oil level in the high-pressure water pump as follows:

- ▶ Withdraw the oil dipstick, wipe off with a lint-free cloth and insert again.
- ▶ Pull out the oil dipstick again to check. You can read off the oil level at the dipstick marking.
- ▶ Top up the oil if necessary.

Refer also to chapter: "General Technical Description" - section: "Technical data" for more information on fluid capacities and lubricants.



Notes

The oil level is correct when it reaches the upper oil dipstick marking.

- ▶ Insert the oil dipstick again.

Cleaning the water tank

Clean the water tank as follows:

- ▶ Briefly open the drain cock on the water tank, and allow some water to drain off.
⇒ Possible dirt deposits will drain off.
- ▶ Close the drain cock again.

Inspecting the water filter

A contaminated water filter may damage the high-pressure water pump. The filter system cleans the supplied water, thus safeguarding the high-pressure water pump.



Caution

The water must comply with water quality regulations as described in chapter "General Technical Description" - section: "Water quality requirements".

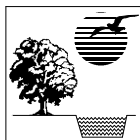
A blocked water filter may damage the high-pressure water pump.

The filter element may discolour when dirty. Always clean or replace a dirty filter element.

- ▶ Inspect the water filter.
- ▶ Insert a clean element in the water filter, if necessary.



Maintenance chart: *Cleaning the water filter*



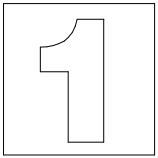
Environmental protection

Observe all applicable local waste disposal regulations when changing the filter.

Electrical connection

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

- ▶ Always check all electrical components carefully for apparent defects before starting work.
- ▶ Check whether the required power supply is available.



5.2 Test run

Carry out a test run before operating the machine.

Switch-on conditions

The following switch-on conditions must be met before the drive motor is started:

- The machine must be connected to a suitable water supply (min. 2 bar, max. 6 bar). Read the "Water connection" section in the chapter "Transport, Set-up and Connection".
- The machine must be connected to a suitable power supply. Refer also to chapter: "Transport, Set-up and Connection" - section: "Electrical connection".
- The water filter must be clean.
- The foot brakes must be applied to secure the machine against rolling.

Start the drive motor to perform a test run. Some functions must be checked while the machine is running.

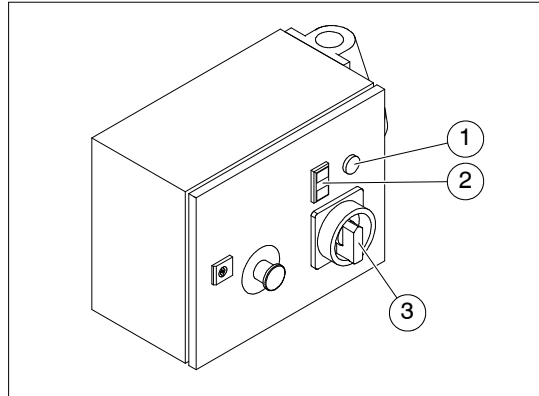


Notes

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.

Fortsetzung nächste Seite

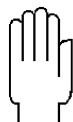
Starting the drive motor The drive motor is switched on by pressing the double pushbutton.



Different models available

Item	Designation
1	Indicator lamp "Ready for service"
2	Double pushbutton "Drive motor ON - OFF"
3	"Power supply ON - OFF" main switch

- ▶ Switch on the main switch (3).
⇒ The water pump is switched on.
⇒ The indicator lamp (1) lights up.
- ▶ Switch on the drive motor using the double pushbutton (2).



Caution

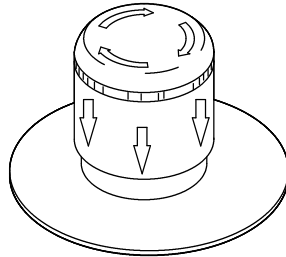
The delivery side must be fully open when the drive motor is switched on, i.e. press the high-pressure gun trigger. This fills the pump more quickly and avoids dry runs.

5.3 Functional checks

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

Function check of the EMERGENCY STOP button

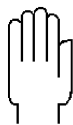
Check the operability of the EMERGENCY STOP button.



Press: Lock EMERGENCY STOP button

Turn: Unlock EMERGENCY STOP button

- ▶ Start the drive motor. Refer also to section "Starting the drive motor".
- ▶ Press the EMERGENCY STOP button.
 - ⇒ The drive motor is switched off.
 - ⇒ The high-pressure water pump is switched off.
 - ⇒ The water pump continues to run.
- ▶ Unlock the EMERGENCY STOP button by turning it.



Caution

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 if danger threatens.

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

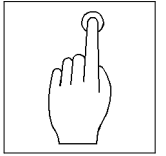
You must therefore check the function of the EMERGENCY STOP button each time you start work.

The water pump must be switched off using the master switch!

5.4 Shutting down machine after initial operation

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

- ▶ Switch the main switch to OFF.
- ▶ Press the high-pressure gun lever to relieve the pressure.
⇒ The residual pressure in the hose and high-pressure gun is relieved.
- ▶ Secure the machine against unauthorised starting or use.



6 Operation

In this section you will find information on machine operation. You will learn what operations are required for setting up the machine, operation and for cleaning.

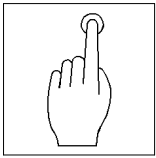
6.1 Requirements

Before starting work, you must carefully carry out the working steps for commissioning and installing the machine.



Notes

If a malfunction occurs during the working process, refer to the Section "Faults, causes and remedies" first. If you are unable to rectify the fault yourself, consult a dealer authorised by Putzmeister Mörtelmaschinen GmbH.



6.2 Emergency shutdown procedures

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

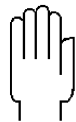


Danger

Proceed immediately as described below if an emergency occurs while you are operating the machine.

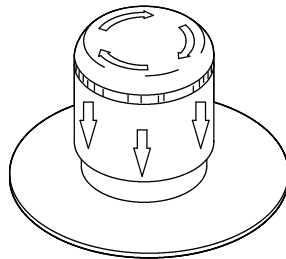
EMERGENCY STOP button

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



Caution

Familiarise yourself with the position of the EMERGENCY STOP buttons on your machine.



Press: Lock EMERGENCY STOP button
Rotate: Unlock EMERGENCY STOP button

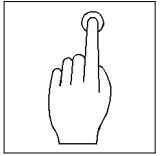


Danger

In the event of impending danger, press the EMERGENCY STOP button!

If your machine does not have an EMERGENCY STOP button, switch it off at the master switch when an impending danger arises.

Fortsetzung nächste Seite



- ▶ Press the EMERGENCY STOP button.
⇒ The motor control switches off. As a result, the drive motor and high-pressure water pump switch off.
- ▶ Take first aid measures, where necessary.
- ▶ Note the incident and report in accordance with company codes of practice.
- ▶ Look for the cause of the fault and rectify it completely.
- ▶ Start up the machine in accordance with the rules for starting up the machine.
- ▶ Unlock the EMERGENCY STOP button by turning it.



Danger

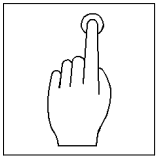
If the EMERGENCY STOP button is pressed while the high-pressure gun is closed, the high-pressure line remains pressurised.



Notes

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

To reactivate the machine, you have to switch the master switch off once and then back on



6.3 Setting values

The setting values depend on the tasks being carried out.

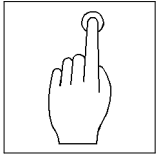


Notes

There are specific setting values for every type of cleaning task to help achieve the best cleaning results. Contact Putzmeister Mörtemaschinen GmbH for advice on the correct setting values for your specific cleaning needs.

Cleaning surfaces

Do not direct the cleaning jet vertically onto the surfaces to be cleaned. Try to "peel off" the dirt layer from the surfaces.



6.4 Setting the working pressure

You must set the working pressure before operating the high-pressure cleaner.



Danger

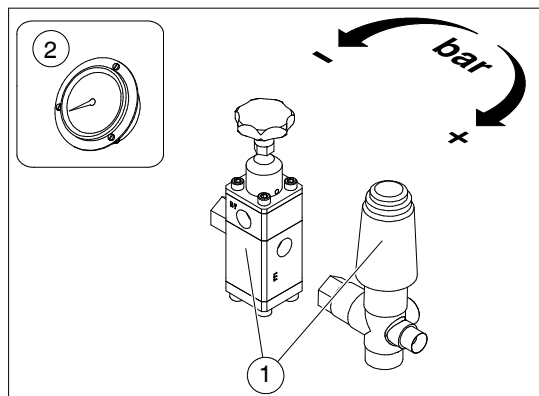
Observe the maximum operating pressure of the high-pressure gun used.

The maximum operating pressure must not be exceeded.

Refer to the chapter: "General Technical Description" - section: "Technical data" for information on maximum operating pressures for the high-pressure gun.

The working pressure is set by turning the handwheel on the unloader.

The current working pressure can be read on the pressure gauge.

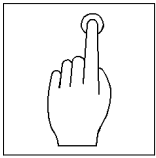


Different models available

Item	Designation
1	Unloader
2	Pressure gauge at high-pressure end

- ▶ Start the drive motor. Refer also to chapter: "Starting up" - section: "Starting the drive motor".
- ▶ Actuate the high-pressure gun trigger.

Fortsetzung nächste Seite



Operation



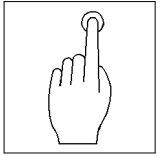
- ▶ Read the pressure on the pressure gauge (2).
- ▶ Turn the unloader (1) clockwise to increase the working pressure.
- ▶ Turn the unloader (1) anticlockwise to decrease the working pressure.



Notes

There is no engine speed adjustment feature on the drive motor.

*If lower pressures are used, this increases wear on the unloader.
Ideally a larger nozzle should be used for lower pressures!*



6.5 High-pressure cleaning



For cleaning with cold water, proceed as follows:

Danger

Wear all necessary protective equipment. This also applies for all personnel standing within the operating area of the machine (for their own safety).

Never direct the water jet at people or animals.

Pay attention to the confines of the danger area when performing work involving high-pressure water jets. No personnel apart from the machine operator should stand within a 10 m radius of the high-pressure gun.

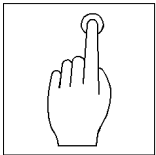
When operating the high-pressure gun, always hold firmly with both hands.

Place one hand on the high-pressure gun trigger and the other hand on the insulated section of the high-pressure pipe.

The high-pressure gun produces recoil and torque when activated. Ensure equipment is secure and stable.

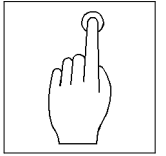
Do not crush high-pressure hoses or guide them over sharp edges. Avoid tensile and bending stress.

Continuation next side



Perform high-pressure cleaning as follows:

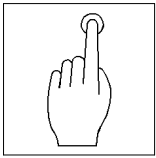
- ▶ Start the drive motor. Refer also to chapter: "Starting up" - section: "Starting the drive motor".
- ▶ Set the working pressure. Refer also to section: "Setting the working pressure".
- ▶ Direct the high-pressure gun towards the object that requires cleaning.
- ▶ Actuate the high-pressure gun trigger.
⇒ The pressurised water escapes from the nozzle at the preset working pressure.
- ▶ Clean the object.
- ▶ Check the working pressure at appropriate intervals. Correct the preset value if necessary.
- ▶ Then release the high-pressure gun trigger again.



6.6 Switching off the machine

After operation and prior to shutting down the machine, you will need to depressurise the system as follows:

- ▶ Switch the main switch to OFF.
- ▶ Press the high-pressure gun trigger to relieve the pressure.
⇒ The residual pressure in the hose and high-pressure gun is relieved.
- ▶ Secure the machine against unauthorised starting or use.



6.7 Cleaning the machine

After completing your work, clean the machine, the high-pressure gun and the high-pressure hose. This ensures that the machine will function correctly the next time it is used.

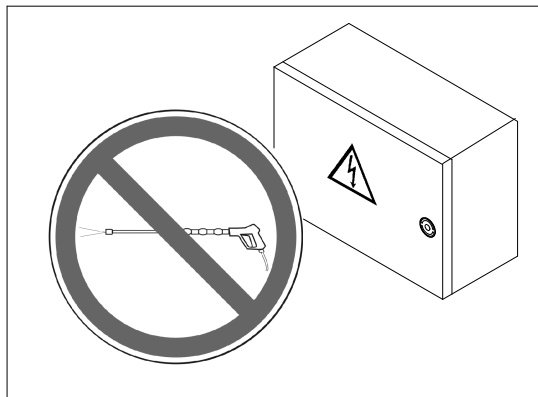
Information on cleaning

Prior to cleaning the machine, cover or seal all openings where moisture should not enter for safety or operating reasons. Especially at risk are electric motors, control cabinets and electrical plug connectors.

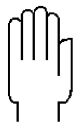


Notes

In the first four operating weeks clean all painted surfaces with cold water with a maximum water pressure of 5 bar only. Do not use any aggressive cleaning additives. Only after this time will the paint have hardened completely, allowing you to use steam jet equipment or similar tools.



Do not allow water to enter the electrical systems

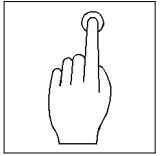


Caution

Do not clean the control cabinet or the engine with pressurised water.

Cover all openings prior to cleaning. For safety or operating reasons, moisture must not be allowed to enter these openings.

Fortsetzung nächste Seite



Environmental protection

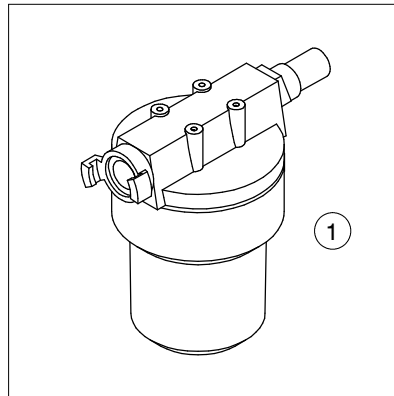
Observe all applicable local waste disposal regulations when performing cleaning work.

Do not allow cleaning additives to enter the sewerage system.

- ▶ Clean the high-pressure gun with a suitable cleaning cloth. The high-pressure gun trigger must be easy to operate.

Water filter

The amount of dirt on the water filter depends on the water quality. The filter element may discolour when dirty. Clean or replace the filter element if dirty or if the maintenance intervals have been reached. Read the "Maintenance intervals" section in the chapter "Maintenance".



Item	Designation
1	Water filter

- ▶ Completely drain the water from the hoses.
- ▶ Unscrew the union nut on the water filter (1) and remove the filter casing and filter element.
- ▶ Remove the filter element and clean the casing and the element. Replace the element if extremely dirty.
- ▶ Replace the cleaned or new water filter (1).



Notes

Ensure that the gasket is correctly seated.



7 Faults, Cause and Remedy

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



Heavy current

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



7.1 Machine, general

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



Caution

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.



Notes

Consult the relevant service department at Putzmeister Mörtelmaschinen GmbH if you cannot rectify the fault by yourself.

Use only original spare parts.

Putzmeister Mörtelmaschinen GmbH accepts no liability for damage caused as a result of using non-original spare parts.

Operating pressure fluctuates	
Cause	Remedy
Nozzle worn or blocked	Replace the nozzle
Unloader defective	Have unloader checked and repaired
V-belt worn	Retighten and replace if necessary

Fortsetzung nächste Seite



Operating pressure is too low	
Cause	Remedy
Nozzle too large	Use a smaller nozzle
Nozzle worn	Replace the nozzle Readjust pressure if necessary
Nozzle is incorrectly mounted	Check seal and mounting
Suction line is blocked	Clean
Suction line leaking	Have suction line checked and repaired
Safety valve leaking	Have replaced
High-pressure water pump V-belt slackening	Check and tighten if necessary
High-pressure water pump valves clogged or defective	Have repaired
High-pressure water pump valves are not working correctly	Have repaired
Valves on high-pressure water pump incorrectly mounted	Have checked and repaired
High-pressure water pump seal worn or defective	Inspect the leak quantity Have replaced
Other major leaks	Check machine and have repaired

Fortsetzung nächste Seite



Operating pressure is too high	
Cause	Remedy
Nozzle too small	Use a larger nozzle Check unloader
Nozzle dirty or blocked	Clean nozzle, replace if necessary

High degree of wear on high-pressure water pump	
Cause	Remedy
Lubricating fluid level too low	Add lubricating fluid
Lubricating fluid contaminated	Replace lubricating fluid
High-pressure water pump with incorrect lubricating fluid grade	Replace lubricating fluid
High-pressure water pump overloaded	Use the machine only at the working pressure and delivery rate specified
Crosshead gasket defective	Have checked and repaired Change the lubricating fluid immediately
Packing box high-pressure gasket worn	Have replaced
Insufficient cooling of packing boxes	Have checked and repaired

Fortsetzung nächste Seite



The valves on the high-pressure water pump are wearing unusually quickly	
Cause	Remedy
Water filter soiled	Clean water filter or replace
Water supply pipe does not supply water of drinking quality	Make sure that the water escaping from the hydrant is clean before connecting the machine. Connect a filtering station between the hydrant and the machine. Clean water tank.

The plunger cylinder gasket is wearing unusually quickly	
Cause	Remedy
Water filter soiled	Clean water filter or replace
Water supply pipe does not supply water of drinking quality	Make sure that the water escaping from the hydrant is clean before connecting the machine. Connect a filtering station between the hydrant and the machine.
Plunger cylinder gasket fitted incorrectly	Have checked and repaired
Plunger cylinder and guide bush worn	Have replaced

Fortsetzung nächste Seite



High-pressure water pump, high-pressure hose and/or suction line are vibrating or knocking more than usual	
Cause	Remedy
Mounting screws loose	Tighten mounting screws
Air in the high-pressure circuit	Leave the high-pressure water pump to operate in circulation mode for 5 minutes
Water pump defective	Have repaired and replaced if necessary.
High-pressure water pump valves clogged or defective	Have repaired
High-pressure water pump seal worn or defective	Inspect the leak quantity Have replaced
High-pressure water pump valves are not working correctly	Have repaired
Valves on high-pressure water pump incorrectly mounted	Have checked and repaired

Fortsetzung nächste Seite



Constant knocking sounds coming from the high-pressure water pump	
Cause	Remedy
Suction line blocked	Clean
High-pressure water pump valves are not working correctly	Have repaired
High-pressure water pump valves clogged or defective	Have repaired
Valves on high-pressure water pump incorrectly mounted	Have checked and repaired
High-pressure water pump seal worn or defective	Inspect the leak quantity Have replaced
Crosshead bearing defective	Have replaced Change the lubricating fluid immediately
Large end bearing worn	Have replaced
Plunger cylinder loose	Check seating and tighten
Packing box worn	Have replaced
Water pump defective	Have repaired and replaced if necessary



7.2 Electrical system

The following is a description of possible causes of faults, which affect the electrical system, and their remedies.



Heavy current

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

The drive motor does not start correctly	
Cause	Remedy
The drive motor does not run in three phases.	Check the electric lead.
The fuse on the machine is too small.	Use the correct fuse.

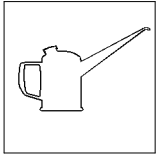
Master switch does not click into place and returns to zero position	
Cause	Remedy
The fuse on the machine has triggered.	Read the "The fuse has triggered" section in this chapter.
The motor protection switch has triggered.	Read the "The motor protection switch has triggered" section in this chapter.

Fortsetzung nächste Seite



The fuse has triggered	
Cause	Remedy
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 has triggered	
Cause	Remedy
The diameter of the electric supply lead is too narrow.	Use a supply lead with a larger diameter.
The electric supply lead is wound up, e.g. on a cable drum.	Unwind the supply lead.
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 drive motor is insufficient.	Position the machine so that sufficient air circulates around the drive motor.

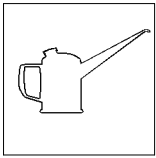


8 Maintenance

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

Following the general maintenance information, you will find the maintenance charts necessary for this machine. A summary of the maintenance charts listed by number is included in the table of contents.

We should like here to emphasise expressly 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 to you with advice and help at any time should you be in doubt.



8.1 Maintenance intervals

The following table shows the intervals for the various maintenance tasks.



Caution

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.



Notes

For the maintenance work intervals and performance, please also refer to the documentation provided by:

- the high-pressure water pump manufacturer*

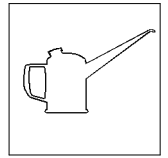
Use only original spare parts.

Putzmeister Mörtemaschinen GmbH accepts no liability for damage caused as a result of using non-original spare parts.

For maintenance work, consult a Putzmeister service engineer, or by a dealer authorised by Putzmeister as shown in the service reference in the table.

Have the initial after-sales service carried out by a Putzmeister Mörtemaschinen GmbH service engineer, or by a dealer authorised by Putzmeister Mörtemaschinen GmbH.

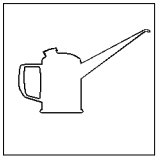
Fortsetzung nächste Seite



Criteria	Check ✓	Adjust ■	Replace ↔	Clean ◇
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Reference	Section	Service	MC
Description	Section contains a more detailed description	Maintenance work that should be performed by a service technician authorised by Putzmeister.	Maintenance chart

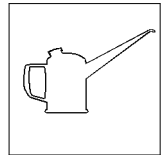
Action	daily	once after 50 h	every 50 h	every 100 h	every 150 h	every 300 h	every 400 h	every 500 h	every 1000 h	annually	every 2 years	other intervals	Reference
	General machine												
Visual inspection: defects and leaks, rectify defects, seal leaks	✓												
Check that the fastening bolts are seated correctly		✓								✓			Section: General tightening torques
Electrical cabling: visual inspection, have repaired if necessary	✓	✓								✓			
Have a qualified expert check for defects.										✓			Service
Operational safety check (German Accident Prevention Regulation).										✓			Service
Safety equipment													
EMERGENCY STOP button fully functional, have repaired if necessary	✓												Section: Function check of the EMERGENCY STOP button
Safety devices fitted and fully functional, replace if necessary	✓												Section: Safety equipment
Protective guards fitted, secured and fully functional, replace if necessary	✓												



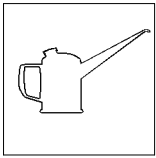
Maintenance



Action	daily	once after 50 h	every 50 h	every 100 h	every 150 h	every 300 h	every 400 h	every 500 h	every 1000 h	annually	every 2 years	other intervals	Reference
Water system													
Take antifreeze protection measures												✓ if there is a risk of freezing	MC 44-151
Check the water filter and clean if necessary	✓												MC 44-129
Replace water filter, filter cartridge												↔ as required	MC 44-129
Check high-pressure water pump oil level, top up if necessary	✓												MC 52-015
Check the condition of the oil in the high-pressure water pump and change if necessary	✓												MC 52-015
High-pressure water pump oil change		↔				↔				↔			MC 52-015
Check the V-belt tension on the high-pressure water pump, have tightened if necessary									↔			✓ 200 h	MC 44-152
High-pressure water pump valves						◇							Service
Check amount leaking from pump seal, have repaired if necessary	✓							✓					MC 44-130
Major overhaul of high-pressure water pump											✓		Service



Action	daily	once after 50 h	every 50 h	every 100 h	every 150 h	every 300 h	every 400 h	every 500 h	every 1000 h	annually	every 2 years	other intervals	Reference
Water system													
Check the float valves, have repaired if necessary												✓ 200 h	Service
Check the relief valve, have repaired if necessary												✓ 200 h	Service
High-pressure gun: check the condition, function and suitability, replace if necessary	✓												Section: High-pressure gun
Fan jet nozzle	✓											◇ 200 h	
High-pressure hose: visual inspection for ageing, leaks and damage, if necessary, mark as unusable and replace	✓											↔ 6 years	Section: High-pressure hoses
Visual inspection: check connection for damage and leaks, rectify defects, repair any leaks	✓	✓											



8.2 Notes on maintenance This measure is necessary for all machines connected to the mains.



Heavy current

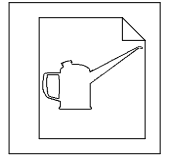
Work on the electrical system and equipment of the machine must be carried out by a qualified electrician or by instructed persons under the supervision and guidance of a qualified electrician and in accordance with the electrical engineering rules and regulations.



Danger

During initial maintenance, all cable connections pertaining to the control cabinet (clips, connectors etc.) must be checked and retightened in accordance with the electrical engineering rules and regulations.

Otherwise, correct electrical contact cannot be guaranteed, and there is a risk of short-circuit and fire!



General maintenance work

This maintenance chart describes general maintenance tasks and contains notes that apply to all maintenance work using maintenance charts.



Caution

Maintenance work must only be carried out by authorised personnel with special knowledge and experience.

Preparation

The following tasks must be carried out prior to maintenance work:

- ▶ Set the machine up horizontally on level ground.

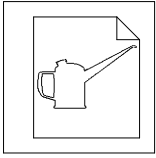


Danger

Shut down the machine before starting maintenance work and secure it against unauthorized or accidental starting.

If it is necessary to start up the machine in the course of its maintenance, this is specially indicated in the maintenance charts.

- ▶ Switch off the machine.
- ▶ Secure the machine against unauthorised starting.
- ▶ Secure your working area and fix notices to the locked controls and setting devices.



Maintenance Chart

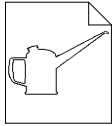
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Cleaning the water filter

This maintenance chart describes how to clean the cartridge in the water filter.



Refer also to the maintenance charts:
General maintenance work



Notes

The filter cartridge must be changed in line with the degree of contamination in the water supply.

Dirt is visible on the filter housing.



Caution

Rapid, heavy contamination of the filter element indicates poor water quality.

We recommend using an additional primary water filter to guarantee the required water quality.

Do not use a high-pressure cleaner to clean the filter cartridge.

For cleaning work, always use clean mains water with a maximum temperature of 60 °C and a maximum water pressure of 6 bar.

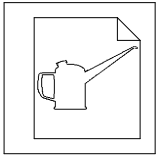
On no account should salt water be used.



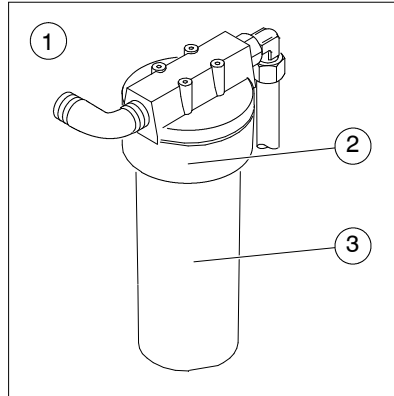
Environmental protection

When changing filters, observe the waste disposal regulations that apply to your region.

Continuation next side



To clean the filter cartridge, proceed as follows:



Item	Designation
1	Water filter
2	Union nut
3	Filter housing with filter cartridge

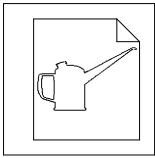
- ▶ Unscrew the union nut(2) on the water filter(1).
- ▶ Remove the filter housing with the filter cartridge(3).
- ▶ Remove the filter cartridge from the filter housing.
- ▶ Clean the filter cartridge thoroughly with water. Replace the filter cartridge if damaged or extremely dirty.
- ▶ Clean the filter housing thoroughly.



Notes

Make sure that the filter cartridge, filter housing and gaskets are seated correctly.

- ▶ Insert a clean filter cartridge in the water filter.
- ▶ Reassemble the filter housing.
- ▶ Tighten the union nut on the water filter again.



Maintenance Chart

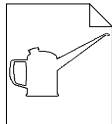
44-130

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Checking the pump seal

This maintenance chart describes how to check the pump seal on the high-pressure water pump. You will find the maintenance intervals in the maintenance summary at the start of this chapter.



Refer also to the maintenance charts:
General maintenance work



Notes

Check the pump seal when the high-pressure water pump is at operating temperature.

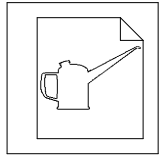


Danger

*Maintenance work performed with the engine running and the hood open should only be carried out by authorised personnel with special knowledge and experience.
Never reach into moving parts while the machine is running.
Risk of injury!*

- ▶ Start the engine. Refer also to chapter: "Starting up" - section: "Starting the engine".
- ▶ Detach the leak return hose between the pump housing and the water tank.
- ▶ Direct the high-pressure gun towards the object that requires cleaning or removing.
- ▶ Actuate the high-pressure gun trigger.

Fortsetzung nächste Seite

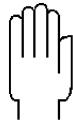


- ▶ Check the leak quantity.



Notes

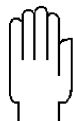
*Minimal amounts of leaked fluid are required to lubricate the seals.
If the fluid escapes in single drops, the pump seals are OK.*



Caution

*If the normal leak quantity increases sharply or escapes in pulses,
the pump seal is worn.*

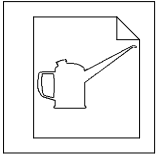
- ▶ Release the high-pressure gun trigger slowly.
- ▶ Attach the leak return hose again.
- ▶ Check all leak return hoses.
- ▶ Switch off the machine. Refer also to chapter "Starting up" - section "Shutting down the machine after starting up".



Caution

*Consult the relevant service department at Putzmeister
Mörtelmaschinen GmbH for information on maintenance work.*

- ▶ Have the worn pump seal replaced by authorised personnel with the relevant special knowledge and experience.



Maintenance Chart

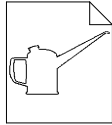
44-151

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Antifreeze protection measures

This maintenance chart describes the implementation of antifreeze protection measures for the machine. You will find the maintenance intervals in the maintenance summary at the start of this chapter.



Refer also to the maintenance charts:
General maintenance work

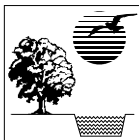


Caution

Always implement antifreeze protection measures because freezing temperatures may damage the water filter, the pressurised water pump and cause the hoses to burst.

When preparing antifreeze, observe the specifications regarding antifreeze protection. Always add antifreeze in the correct ratio.

Pouring antifreeze directly into the water tank bypasses the water filter. Please make absolutely sure that no impurities enter the water tank, otherwise the high-pressure water pump may be damaged.



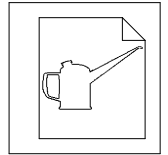
Environmental protection

Carefully collect escaping antifreeze and keep it separate from other waste.

Dispose of all fluids in accordance with current applicable regulations!

When using antifreeze, observe the waste disposal regulations that apply to your region.

Fortsetzung nächste Seite

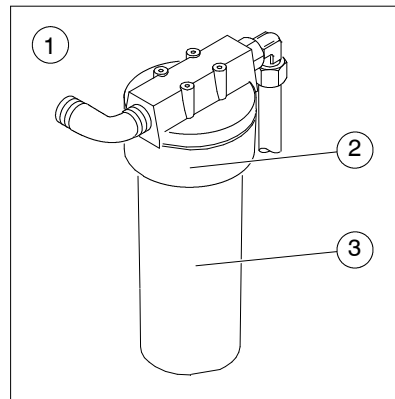


Draining the machine

Water should first be drained from the machine to protect against freezing.

- ▶ Disconnect the machine from the water mains.
- ▶ Place the machine in a horizontal position.

Drain the water filter as follows:



Different models available

Item	Designation
1	Water filter
2	Union nut
3	Filter housing with filter cartridge

- ▶ Unscrew the union nut on the water filter.
- ▶ Remove the filter casing and empty.
- ▶ Allow the remaining water to drain completely out of the water line.

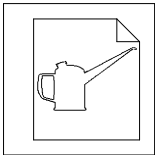


Notes

Make sure that the filter cartridge, filter housing and gaskets are seated correctly.

- ▶ Reassemble the filter housing.
- ▶ Tighten the union nut on the water filter again.

Fortsetzung nächste Seite



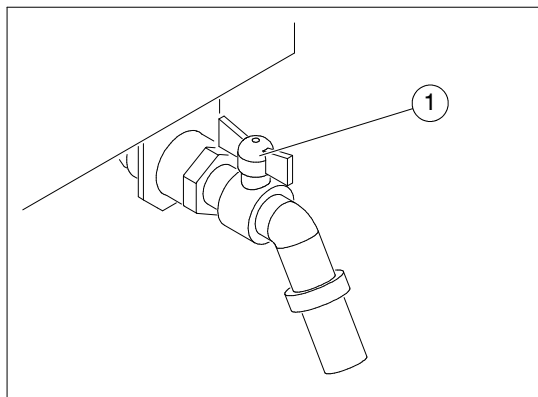
Maintenance Chart

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Drain the water tank as follows:

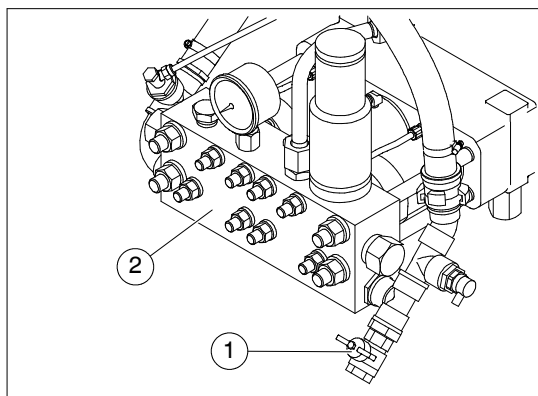


Different models available

Item	Designation
1	Drain cock on the water tank

- ▶ Open the drain cock (1) on the water tank and allow the water to drain.
- ▶ Close the drain cock again.

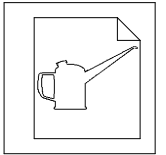
Drain the high-pressure circuit as follows:



Different models available

Item	Designation
1	Drain cock
2	High-pressure water pump

Fortsetzung nächste Seite

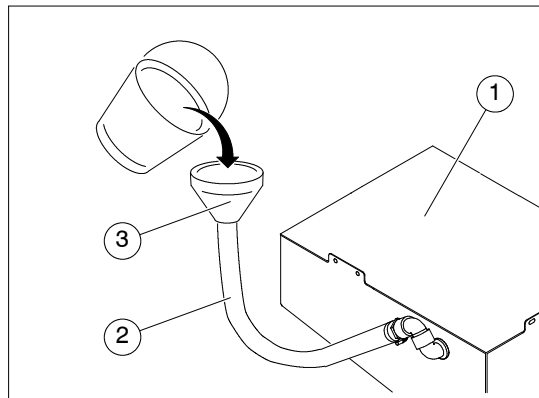


- ▶ Open the drain cock (1) on the high-pressure water pump, and allow the water to drain off.
- ▶ Close the drain cock again.

Protecting the machine against freezing

To protect the machine from freezing, proceed as follows:

- ▶ Close the drain cock on the water tank.
- ▶ Assemble the high-pressure gun without a fan jet nozzle and connect accordingly.

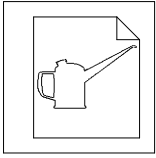


Different models available

Item	Designation
1	Water tank
2	Overflow hose
3	Hopper with strainer insert

- ▶ Lift the overflow hose on the water tank, and attach a hopper with strainer insert.
- ▶ Pour sufficient antifreeze (concentration as required) into the empty water tank.
- ▶ Start the drive motor. Refer also to chapter: "Starting up" - section: "Starting the drive motor".

Fortsetzung nächste Seite



Maintenance Chart

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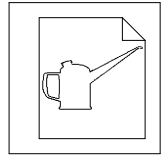
- ▶ Leave the machine to run in circulation mode for approx. 3 minutes.
⇒ The bypass is filled with antifreeze.
- ▶ Hold the high-pressure gun over a bucket and actuate the high-pressure gun trigger.
⇒ The antifreeze is distributed evenly throughout the water system.
- ▶ Actuate the high-pressure gun trigger until antifreeze escapes from the gun.
- ▶ Release the high-pressure gun trigger.



Notes

These measures ensure that antifreeze floods the entire high-pressure section.

- ▶ Switch off the machine. Refer also to chapter "Starting up" - section "Shutting down the machine after operation".
- ▶ Press the high-pressure gun trigger to relieve the pressure.
⇒ The residual pressure in the hose and high-pressure gun is relieved.
- ▶ Detach the high-pressure hose and hang up to drain.
- ▶ Detach the high-pressure gun. Allow the water to drain by holding the high-pressure gun upright while actuating the high-pressure gun trigger.
- ▶ Comply with regulations when disposing of any escaped antifreeze.



Recommissioning the frost-protected machine

To recommission the protected machine, proceed as follows:

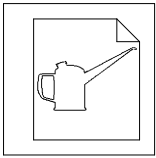
- ▶ Drain the machine. See also the section: "Draining the machine".
⇒ The antifreeze agent in the water system drains off.
- ▶ Assemble the high-pressure gun without a fan jet nozzle and connect accordingly.
- ▶ Open the drain cock on the water tank for 10 to 15 seconds.
- ▶ Connect the low-pressure hose.
- ▶ Start the drive motor. Refer also to chapter: "Starting up" - section: "Starting the drive motor".
- ▶ Hold the high-pressure gun over a bucket and actuate the high-pressure gun trigger.
⇒ The water valve fitting is rinsed.
- ▶ Actuate the high-pressure gun trigger until antifreeze no longer escapes from the gun
- ▶ Comply with regulations when disposing of any escaped antifreeze.



Notes

Minimal amounts of antifreeze in the lines may discolour the water or cause foam to form after a longer operating period. This has no influence on the service life or wear characteristics of the high-pressure water pump.

- ▶ Switch off the machine. Refer also to chapter "Starting up" - section "Shutting down the machine after operation".



Maintenance Chart

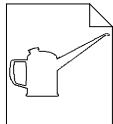
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Belt tension, high-pressure water pump

This maintenance chart describes how to check the belt that drives the high-pressure water pump. You will find the maintenance intervals in the maintenance summary at the start of this chapter.



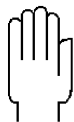
Refer also to the maintenance charts:
General maintenance work



The following special tool is required:
Frequency measuring device (Putzmeister ref. no. 466768)

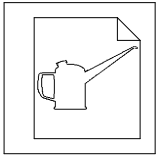


Danger —————
Always carry out maintenance work when the machine is cold.

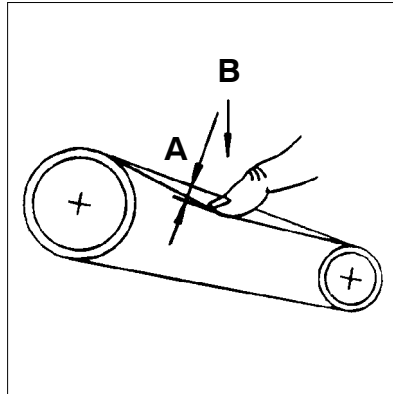


Caution —————
Maintenance work must only be carried out by authorised personnel with special knowledge and experience.

Fortsetzung nächste Seite



Check the belt tension



Belt tension	A	B
Retightening	9 mm	75 N
New belt	8 mm	75 N

- ▶ Check the belt tension by pressing with your thumb. The belt must be retightened if it can be pressed in more than the specified amount.
- ▶ Have the belt tightened, if necessary.

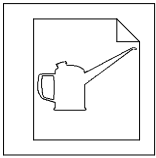


Notes

Consult the relevant service department at Putzmeister Mörtelmaschinen GmbH.

When using the frequency measuring device, the following values apply:

Belt tension	Frequency measuring device
Retightening	79.5 1/s
New belt	90.6 1/s



Maintenance Chart

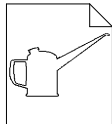
52-015

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High-pressure water pump

This maintenance chart describes how to check the oil level and change the oil in the high-pressure water pump. You will find the maintenance intervals in the maintenance summary at the start of this chapter.



Refer also to the maintenance charts:
General maintenance work



The following special tool is required:
Oil drain hose



Notes

Ensure that dirt or other impurities cannot enter the pump oil system.



Caution

Maintenance work must only be carried out by authorised personnel with special knowledge and experience.

Preparation

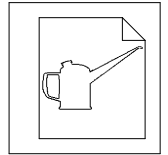
The following tasks must be carried out prior to maintenance work:

- ▶ Set the machine up horizontally on level ground.
- ▶ Switch off the machine.
- ▶ Secure the machine against unauthorised starting.
- ▶ Secure your working area and fix information plates to the locked controls and setting devices.



Danger

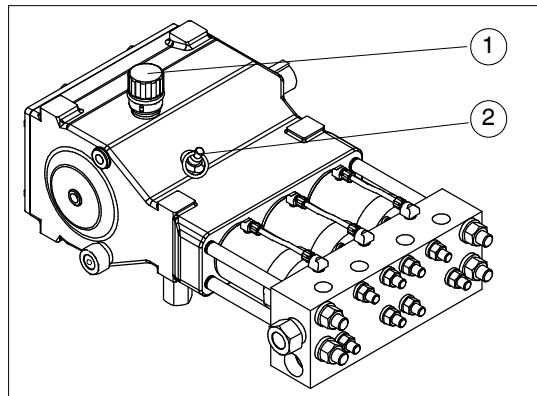
Shut down the machine before starting work and secure it against unauthorised or accidental starting.



Oil level check

The high-pressure water pump is located in the engine compartment to the right of the engine.

Check the oil level as follows:



Item	Designation
1	Oil filler plug with vent valve
2	Oil dipstick

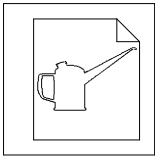
- ▶ Check the oil level for the high-pressure water pump on the oil dipstick (2) and top up oil if necessary.
- ▶ Unscrew the oil filler plug (1) and top up with fresh oil until the required oil level is reached.
- ▶ Screw in the oil filler plug (1) again.
- ▶ Take the opportunity here to check the quality of the oil. Dirty, foaming or milky white oil (oil has mixed with water) must be changed immediately.
The deterioration in quality may be caused by a defective crosshead cover or a leak in the packing box. Rectify the cause.



Notes

The oil level must settle between the markings on the oil dipstick.

The high-pressure water pump requires a lubricating fluid SAE 85W-90.



Maintenance Chart

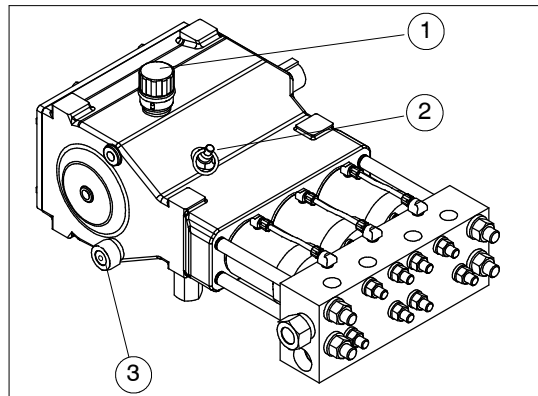
52-015

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Full oil change

The oil should only be changed at operating temperature. The oil drain plug is located on the left of the high-pressure water pump. Use the oil drain hose included in the scope of delivery. Carry out the oil change as follows:



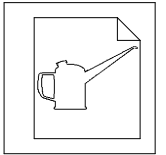
Item	Designation
1	Oil filler plug with vent valve
2	Oil dipstick
3	Oil drain valve with cap

- ▶ Place a sufficiently large oil catch pan under or next to the machine.
- ▶ Unscrew the oil filler plug (1).
- ▶ Unscrew the cap on the oil drain valve.
- ▶ Screw the oil drain hose onto the oil drain valve and hold the hose in the oil catch pan.
- ▶ Dispose of the old oil in accordance with regulations.
- ▶ Screw the cap (3) back on again.
- ▶ Now add fresh oil through the oil filler plug opening until the required oil level is reached.
- ▶ Screw in the oil filler plug (1) again.

Capacities: 1.7 l

Refer to chapter: "Maintenance" - section: "Operating materials".

Fortsetzung nächste Seite



Notes

The high-pressure water pump requires a lubricating fluid SAE 85W-90.



Environmental protection

Carefully collect the old oil and avoid oil spillage. Separate the collected oil from other waste.

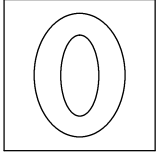
Dispose of all components in accordance with current applicable regulations!

Observe the national and regional regulations applicable to your area. Only work with waste disposal companies who are approved by the responsible authorities.

Checking for leaks

The following checks are necessary after changing the oil:

- ▶ Start the engine. Refer also to the chapter: "Starting up" - section: "Starting engine".
- ▶ Leave the engine to run for approx. 2 minutes.
- ▶ Switch off the engine and check the oil drain plug and oil filler plug for leaks.
- ▶ Seal up any leaks that occur.
- ▶ Check the oil level with the oil dipstick:
- ▶ Top up with oil if required.



9 Decommissioning

This chapter contains information on decommissioning the machine.

9.1 Temporary de-commissioning

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

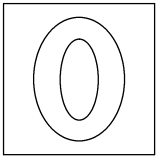
- ▶ Switch off the machine.
- ▶ Cut off the water supply.
- ▶ Actuate the high-pressure gun until water no longer escapes and the machine is depressurised.

Frost protection

Take antifreeze protection measures if there is a risk of freezing.



Maintenance chart: *Antifreeze protection measures*



9.2 Decommissioning

If the machine is to be taken out of service temporarily, the following measures must be carried out.

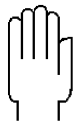
- ▶ Carry out the tasks for temporary decommissioning.
- ▶ Before storing the machine, top it up with all the service fluids and grease it at the lubrication points.



Notes

Preservation and greasing of the machine will protect it against corrosion and rapid ageing. It is necessary if the machine:

- *is not used for longer periods;*
- *is exposed to corrosive atmospheres during storage or transportation.*



Caution

If the machine is out of operation for more than 2 weeks, it must be preserved using appropriate agents.

Antifreeze protection measures have a preservative effect.

- ▶ Preserve the machine using a suitable agent.

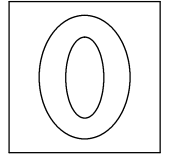


Maintenance chart: *Antifreeze protection measures*

Storing the machine

Observe the following when placing the high-pressure cleaner in storage:

- Shut down the machine only in current-free condition.
- Store the machine in a dry, frost-free location.
- Place the high-pressure cleaner in a horizontal position if you intend to store it for longer periods.



9.3 Final decommissioning, disposal

The final decommissioning and disposal requires 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.



Environmental protection

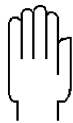
Final disposal of the machine is carried out by a qualified specialist company.



Danger

During final decommissioning of the machine, escaping lubricants, solvents, preserving agents etc. represent hazards. They can cause chemical burns in the event of direct skin contact. Risk of injury at sharp-edged machine components.

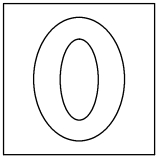
Electric machines



Caution

Deinstallation work on electric machines must only be carried out by qualified electricians.

Continuation next side



Material used

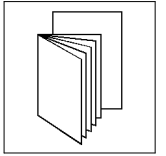
The main materials used for machine construction were:

Material	Use for / in
Copper	- Cables
Steel	- Machine frame
	- Pump units
Plastic, rubber, PVC	- Gaskets
	- Hoses
	- Cables
	- Wheels
Tin	- PCBs
Polyester	- PCBs

Parts requiring separate disposal

The following components and working materials must be separated prior to disposal:

Designation	Applies to
Electronic scrap	- Electrical supply
	- PCBs with electrical components
	- Drive motor (E-version)
Oil	- High-pressure water pump



10 Appendix

10.1 General tightening torques

Tightening torques depend on bolt grade, thread friction and bolt head bearing area. The values given in the following tables are for guidance. These values should only be used if no other values are specified in the relevant chapters of the Operating Instructions or in spare parts sheets.

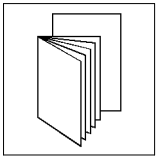


Caution

Bolts must always be replaced with bolts of the same size and grade.

Bolts with adhesive in the locking threads and self-locking nuts must always be replaced after removal.

Continuation next side

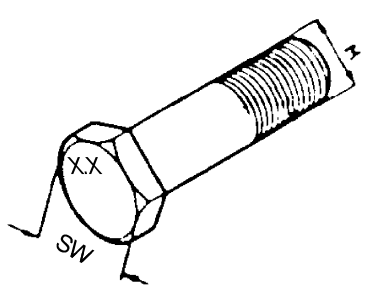


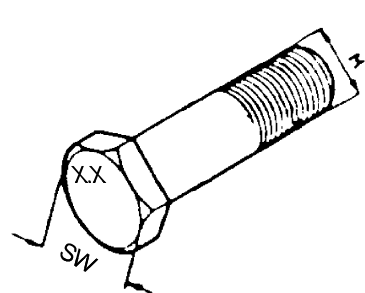
The tables below give the maximum tightening torques (maximum torque) in Nm for a friction factor of $m_{total} = 0.14$, with the thread lightly-oiled or lightly-greased.

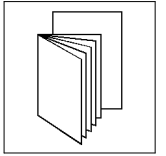


Notes

All tightening torques X 1.1 apply for bolts with cement in the thread.

Set screws - metric triangular thread, DIN 13, Part 13					
	Dimensions [mm]		Tightening torque Md [Nm]		
	M	SW	8.8	10.9	12.9
 <p>10000900</p> <p>SW = Width across flats (A/F) X.X = Grade 8.8, 10.9, 12.9</p>	M 4	7	3.0	4.4	5.1
	M 5	8	5.9	8.7	10
	M 6	10	10	15	18
	M 8	13	25	36	43
	M 10	17	49	72	84
	M 12	19	85	125	145
	M 14	22	135	200	235
	M 16	24	210	310	365
	M 18	27	300	430	500
	M 20	30	425	610	710
	M 22	32	580	820	960
	M 24	36	730	1050	1220
	M 27	41	1100	1550	1800
	M 30	46	1450	2100	2450

Set screws - metric precision thread, DIN 13, Part 13					
	Dimensions [mm]		Tightening torque Md [Nm]		
	M	SW	8.8	10.9	12.9
 <p>10000900</p> <p>SW = Width across flats (A/F) X.X = Grade 8.8, 10.9, 12.9</p>	M 8 × 1	13	27	39	46
	M 10 × 1.25	17	52	76	90
	M 12 × 1.25	19	93	135	160
	M 12 × 1.5	19	89	130	155
	M 14 × 1.5	22	145	215	255
	M 16 × 1.5	24	225	330	390
	M 18 × 1.5	27	340	485	570
	M 20 × 1.5	30	475	680	790
	M 22 × 1.5	32	630	900	1050
	M 24 × 2	36	800	1150	1350
	M 27 × 2	41	1150	1650	1950
	M 30 × 2	46	1650	2350	2750



10.2 Recommended lubricants

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



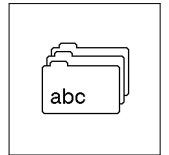
Caution

Putzmeister accepts no liability for damage resulting from the use of unauthorised operating materials. The documentation provided by the manufacturer is always decisive.

Putzmeister Mörtelmaschinen GmbH accepts no liability for damage caused by mixing fluids from different manufacturers.

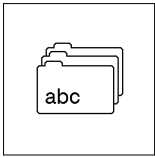
Consult the relevant service department at Putzmeister Mörtelmaschinen GmbH should you have any questions.

Marking in accordance with DIN 51502	Lubricant CLP ISO VG 220
Characteristics	mineral
	Part no. 212052008
	Aral Degol BG 220
	BP Energol GR-XP 220
	ESSO Spartan EP 220
	Mobilgear 630
	Shell Omala 220



Index of Key Words

This chapter contains the main key words with the number of the page on which they are to be found as a header in the left-hand margin. This Index of key words is listed alphabetically by the main concepts. These are subdivided into associated sub-concepts, marked with a dash.



Index of Key Words



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- Accessories, 2 — 20**
- Antifreeze protection, 8 — 12**

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- Checks, 5 — 2**
- Chemicals, 4 — 7**
- Cleaning agents, 4 — 7**
- Cleaning surfaces, 6 — 4**
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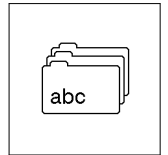
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- High-pressure hose, 3 — 18, 4 — 8**
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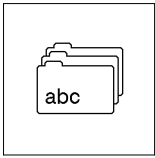
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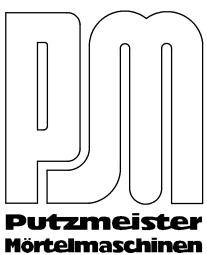
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