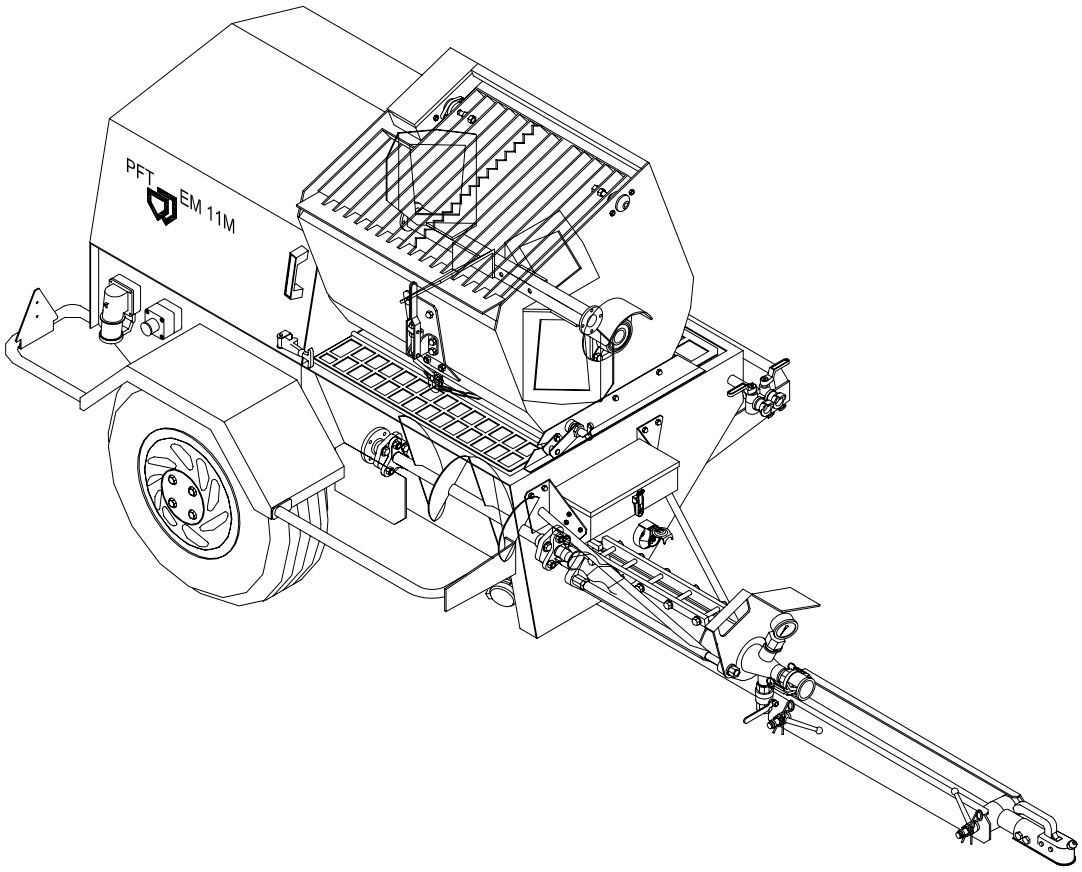
OPERATING INSTRUCTIONS
(Item number of the operating instructions: 00 08 26 61)

MIXING PUMP

PFT EM 11 M



WE KEEP THINGS MOVING

Dear Customer,

Congratulations on your purchase. You have made a wise choice, because you appreciate the quality of a brand from a company with a name that exemplifies quality.

The PFT EM 11 M mixer pump uses state-of-the-art technology. It was designed in a task-optimised way so that it can be a trustworthy aid for rough construction site conditions.

These operating instructions should always be stored and kept at hand at the machine's site of use. They contain information on the various functions of the system. Study the operating instructions thoroughly before starting the machine, as we claim no responsibility for accidents or damage to the machine caused by incorrect operation.
The PFT EM 11 M mixer pump will be a trustworthy aid, if it is operated correctly and handled with care.

Initial inspection after delivery

An important task of all technicians delivering the PFT EM 11M mixer pump is the inspection of the machine settings at the end of the first work phase. The factory settings can be changed during the first operation. If these changes are not corrected in time, immediately after initial start-up, then problems during operating can be expected.

After putting the PFT EM 11 M mixer pump into service and giving appropriate instructions, after about two hours, the technician must always carry out the following checks / settings:

- ✓ Pump pressure, backpressure
- ✓ Air pressure switch

Proper use of the machine

The PFT EM 11 M is a mixer pump for construction site mixtures with a grain size of up to 6 mm for outside plastering, foundation plaster, patent plaster, insulating plaster, masonry mortar, grout.
Follow all processing guidelines from the mortar manufacturer.

Functionality

The PFT EM 11 M has been designed for filling with construction site mixtures. The mixing shaft and the pump are driven by an electric motor. Water is added to the mixture in the mixing area where it is then mixed. The water must be added by hand.
After the mixing flap opens, the mortar flows into the pump container and is pumped away by a screw pump.
A spraying gun (accessory) can be mounted at the end of the conveying hose (accessory).

When operating the machine, the following aspects must be observed:

- ✓ Connection air manifold – air hose
- ✓ Connection air hose – spraying gun
- ✓ Connection pump – mortar pressure gauge
- ✓ Connection mortar pressure gauge – mortar hose
- ✓ Connection mortar hose – spraying gun

Basic safety instructions

The following terms and symbols are used in these operating instructions for particularly important information:

NOTE:
Special information for running the machine efficiently.

WARNING!
Special information, regulations and restrictions concerning the prevention of damage.

WARNING!

The machine should only be used if it is in technically perfect condition and in compliance with the regulations. Pay attention to safety and the operating instructions. It is especially important to immediately rectify all faults that could impair safety.

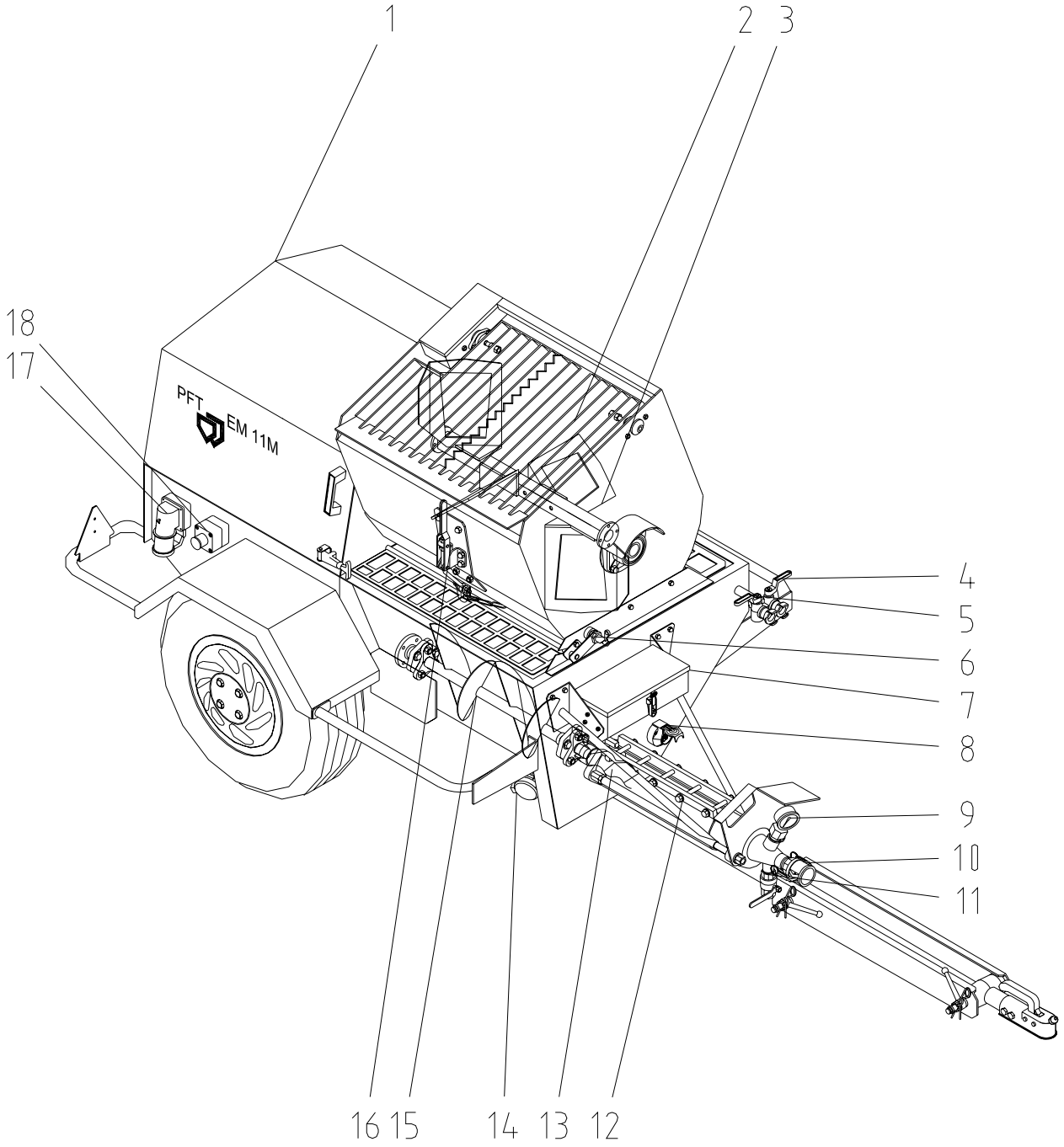
In order to make operating our machines as easy as possible for you, we would like to briefly inform you of the most important safety regulations. If you comply with these regulations, you will be able to use our machine in a safe and quality-assuring manner for a long time to come.

General safety instructions

1. Follow the safety instructions and danger warnings on the machine. Ensure that all instructions are legible.
2. Observe all instructions for turning the machine on and off, control indicators and signal lamps as stated in the operating instructions.
3. Set up the machine on stable and even ground and secure it against unintentional movements. It should neither tilt nor roll away. The machine must be set up in such a way that it cannot be hit by any falling objects. The controls must be freely accessible.
4. Inspect the machine for visible damage and defects at least once every shift! When doing so, pay special attention to electrical power supply cables, couplings, plugs, air, water and conveying lines. Any faults detected must be rectified immediately.
5. All spare parts must comply with the technical requirements of the manufacturer. This is guaranteed for all original PFT parts.
6. The machine may only be connected to a worksite switchgear assembly with a FI safety switch (30 mA). If the machine has a 3-phase frequency converter, then the 30 mA FI safety switch of the worksite switchgear assembly must be sensitive to all currents.
7. The machine may only be put into service by trained or authorised personnel. Clearly define all lines of responsibility for operation, equipping, service and maintenance.
8. Personnel undergoing training should only be allowed to operate the machine under the supervision of experienced personnel.
9. All electrical work should be carried out by a qualified electrician or by trained personnel under the supervision of a qualified electrician and should comply with electro-technical regulations.
10. The machine must be completely switched off for maintenance and repair work. It must be ensured that it cannot be switched back on accidentally (for example, lock the main switch and remove the key, or attach a warning sign to the main switch).
11. If work on live components is required, a second person should be present to disconnect the power in the case of an emergency.
12. Depressurize all conveying systems before opening conveying lines.
13. Before cleaning the machine with a water jet, seal all openings through which water could enter, thereby impairing the safety and proper functioning of the machine (e.g.: electric motors and control boxes). After cleaning, remove all covers.
14. Only use original fuses with the prescribed amp ratings!
15. Disconnect the machine from any external power supply before you relocate it, even if you are only moving it a short distance. Prior to putting the machine back into service, it should be connected to the mains correctly.
16. The machine may only be moved by crane if it is firmly strapped to a Euro pallet. All removable parts must be dismantled first. Ensure that nobody enters the crane's danger area. All precautions must be taken to prevent parts from falling off.
17. Safety devices such as e.g. inclination switches, protective grilles, etc. must not be manipulated. Before starting work, the safety devices should be inspected separately.
18. Longer work breaks will cause the mortar to set, which would result in problems during operation. This is why the machine should always be emptied and cleaned (incl. spraying gun and conveying hoses) during long breaks.
19. Objects should never be placed in the dry mortar hopper or pump container.
20. If the permanent noise level exceeds 85 dB(A), appropriate noise protection devices must be provided.

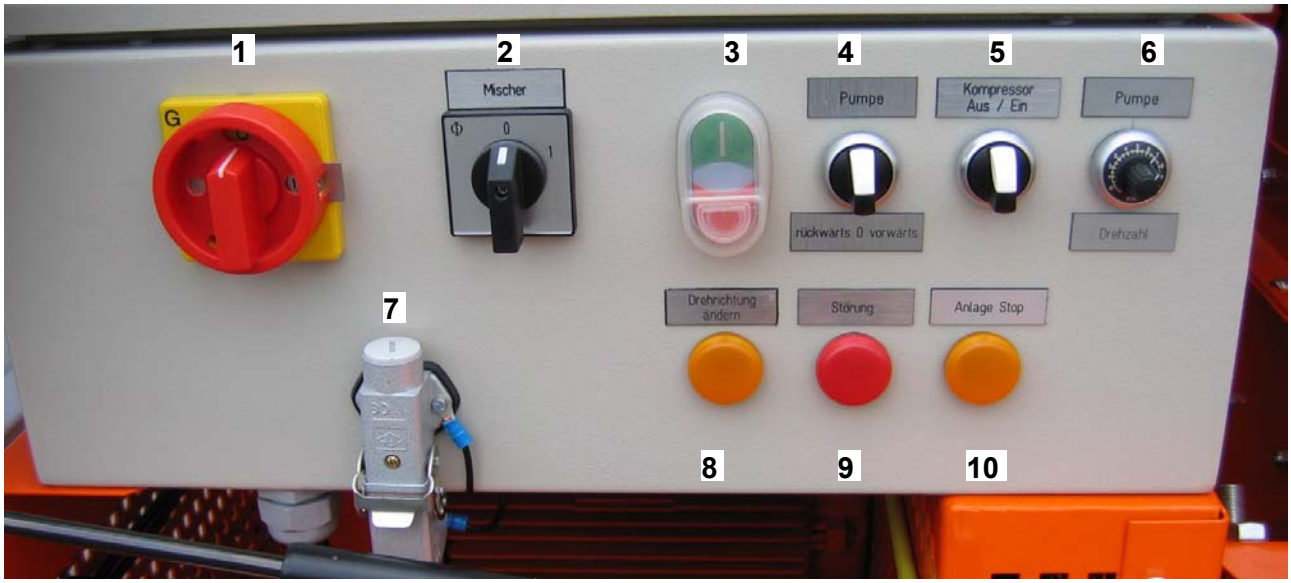
21. The machine must be inspected by a specialist once a year. This inspection must be documented and include the following: visual inspection for damage, functional check, inspection of safety devices, high-voltage check of control box.
22. In case of temperatures freezing, safety-relevant components could be damaged. If there is the danger of freezing temperatures, always drain water from the machine.
23. The machine's lubrication and maintenance schedule must be complied with, otherwise the warranty claim will no longer be valid.
24. Changes to the machine are not permitted and Knauf PFT GmbH & Co. KG will not accept any liability for claims if changes are made.
25. For pumps and mixing pumps, the following additional safety precautions must also be observed: Wear the following protective clothing while spraying: safety goggles, safety shoes, safety clothing, gloves, protective skin cream and respirator mask. When unblocking hoses, stand away from the machine to avoid injury through high-pressure discharges of mortar. Always wear safety goggles. No other persons should be near the machine. Only pumping hoses with an approved operating pressure of at least 40 bar may be used. The burst pressure of the conveying hose must be at least 2.5 fold operating pressure value. The machine may not be operated without a mortar pressure gauge.
    Depressurize all conveying systems before opening mortar pressure hoses. If the machine is remote-controlled using a spraying gun or remote control, the machine can be switched on and off at all times, without anyone needing to work directly at the machine.

PFT EM 11 M overview



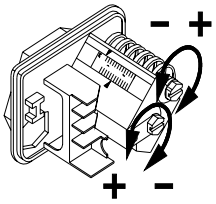
1. Motor cover	2. Protective grille
3. Mixing shaft	4. Compressed air connection
5. Compressed air connection	6. Protective grill opener
7. Tool box	8. Plug socket
9. Mortar pressure gauge	10. Supply hose connection
11. Outlet tap	12. Clamp
13. Rotor	14. Cleaning opening
15. Pump shaft	16. Mixer emptying drain
17. 32 A main electricity connection	18. Emergency off switch

Overview of control box

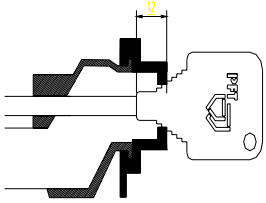


1. Main direction of rotation switch	2. Mixer on (1) – off (0)
3. Machine ready for operation	4. Pump forwards 0 (off) reverse
5. Compressor on/off	6. Pump speed control (material quantity)
7. Remote control connection	8. Change direction of rotation
9. Motor overload fault control lamp	10. System stop indicator lamp (emergency off button pressed)
11. Vibrator connection	

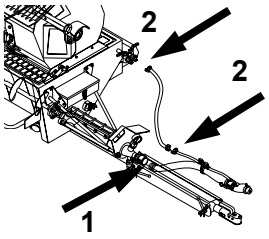
Inspection of the setting values (factory setting)



Compressed air safety switch:
Machine ON at 1.8 bar
Machine OFF at 1.2 bar

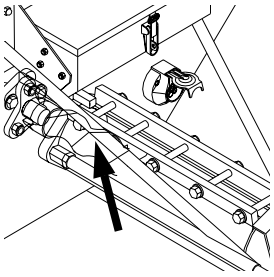


<u>Optional</u> spraying gun for finishing coat:
The gap between air nozzle tube and spray cap should always be equivalent to the diameter of the spray cap hole;
e.g.: 14 mm spray cap = 14 mm gap.



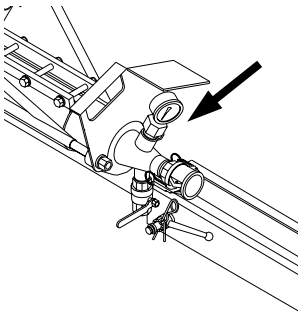
Connect the PFT material hose (1)
Connect the PFT spraying gun (2)

Assembly - rotor/stator/mortar pressure gauge



Rotor/stator
The PFT EM 11 M mixing pump is equipped with the 2L6 pump system as standard.
Rotor and stator are subject to wear and must be inspected on a regular basis.
New pump parts should be inspected before every spraying operation and brought to a pressure of approx. 20 bar (approx. 20 bar if the conveying medium is water, approx. 30 bar if it is mortar).

WARNING!
Mortar pressure gauges
are always to be used in compliance with the safety regulations of the trade association.



Mortar pressure gauge
PFT mortar pressure gauges monitor the mortar consistency efficiently and easily.
The mortar pressure gauge is part of the scope of delivery.
Some advantages of the mortar pressure gauge:

- Constant monitoring of correct conveying pressure.
- Early detection of clogging or overloading of pump motor.
- Produces zero pressure.
- Contributes significantly to the safety of operating personnel.
- Durability of pump components.

WARNING!
During installation/removal of the mortar pump, the following must be observed:
The EM 11 M must be switched off during assembly.
Main switch set to (0)

NOTE:

Furthermore observe that:
- A new rotor and a new stator need to be run in; real pressure values can only be determined after the first spraying.
- Pump components which do not attain the specified operating pressure (25 bar) are worn out and must be replaced.

Checking the conveying pressure and backpressure:
- Connect the conveying hose.
- Connect a pressure tester with outlet tap to the end of the hose.
- Open the pressure tester's ball valve.
- Switch on the machine and let run only with water (without dry material) until water emerges at the outlet tap (the hose has now been bled).
- Now connect ball valve to the outlet tap.
- Let pump run against closed outlet tap until there is no more increase in pressure.
- Switch off the machine.
- If the operating pressure is no longer attained, the maintenance-free pump must be replaced.

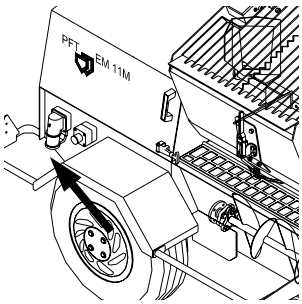
NOTE:

The test pressure with water should be 5 bar above the expected mortar conveying pressure. An adverse position of the screw pump in the liner will result in water flowing back to the mixing area accompanied by a distinct gurgling noise. Switch the machine on and off repeatedly until you find the position in which the rotor seals with the stator. If required, repeat this procedure several times.

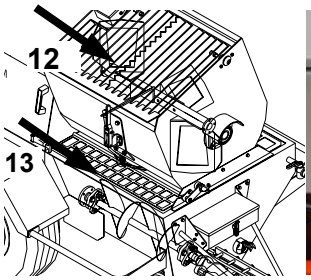
- An operating pressure of 25 bar should not be exceeded.
- The minimum conveying distance depends mainly on how the mortar flows. Heavy, coarse-grained mortar does not flow easily. Fluid mortars, filling compounds and floor screed flow easily.
- It is recommended to reduce the length of the hose if you exceed an operating pressure of 25 bar or to use a hose with a larger diameter e.g. 50 mm.
- To avoid machine breakdowns and excessive wear to pump motor, mixing shaft and pump, always use original PFT parts, such as e.g.
  PFT rotor
  PFT stator
  PFT mixing shaft
  PFT mortar pressure hose.

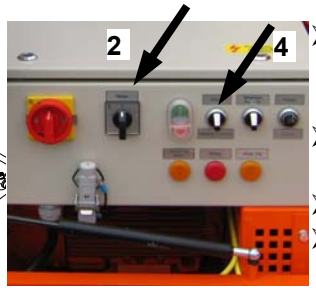
These wearing components are compatible with one another and form a single constructive unit together with the machine.

Mixer and pump operation

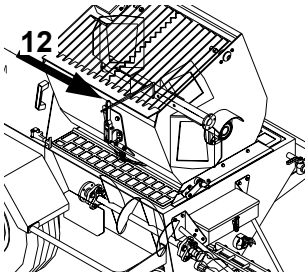


Before connecting the machine, set all switches to “0”.
Connect the EM 11 M to the 32 A main electricity distributor.





- Fill lubricating sludge into the pump container (13). (Pre-lubricating the pump and the mortar hoses)
- Fill the mixing container (12) with material. (Sequence: water, binding agent and then sand)
- Switch on the mixer (2).
- Mixing time depends on material, mixer (2) off.

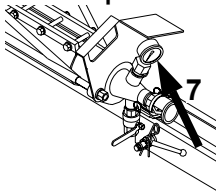


- Switch on the pump (4).
- Open the mixing container (12).
- The material flows into the pump container.
- Close the mixing container (12).

WARNING!

The protective grille must not be opened during operation or while preparing the machine. The protective grille is fitted with a safety switch to protect the operator. This switches the machine off when the grille is opened.

Interruption of work



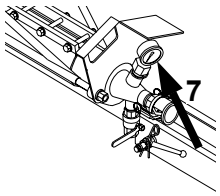
It is recommended to clean the mixer, pump, hose and spray gun prior to longer interruptions.
Mix the material for a slightly longer period for interruptions of up to 10 minutes.

WARNING!
The machine must be switched off before being dismantled. Under all circumstances check that pump and hoses are depressurized (observe mortar pressure gauge display (7)).

Measure to take before work is interrupted

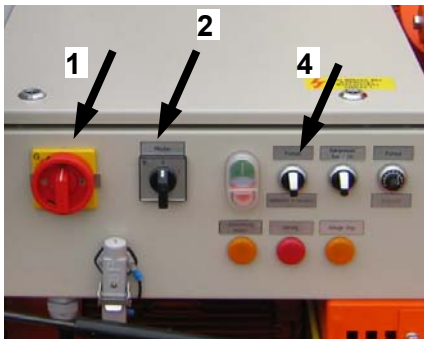
WARNING!

The protective grille must not be opened during operation or while preparing the machine. The protective grille is fitted with a safety switch to protect the operator. This switches the machine off when the grille is opened.



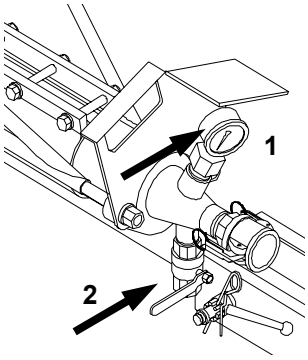
It is recommended to clean the mixer, pump, hose and spray gun prior to longer interruptions.
Mix the material for a slightly longer period for interruptions of up to 10 minutes.

WARNING!
The machine must be switched off before being dismantled. Under all circumstances check that pump and hoses are depressurized (observe mortar pressure gauge display (7)).

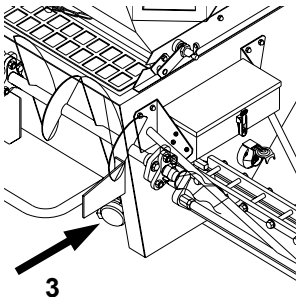


Run the material hopper and the pump until they are empty, then switch off the mixer and the pump (2) and (4).
Switch off the main switch (1).
Open the tap on the spraying gun.
WARNING!
Check if the mortar hose is depressurized. It can be disconnected if this is the case. Use the Geka coupling to connect the hoses to the water system and flush with a water-soaked sponge ball. Repeat this procedure at least twice. Use a water jet to clean the spraying gun and mortar pressure gauge.

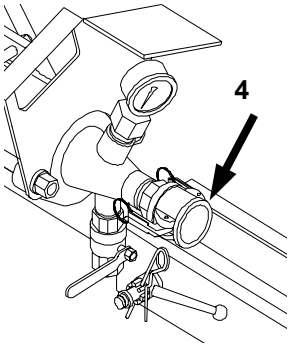
Cleaning the machine when work has finished



- Empty the mixing container.
- Pump out the mortar.
- Switch off the motor.
- When no pressure is present in the mortar hose, open the tap (2).
- Open the hose coupling.



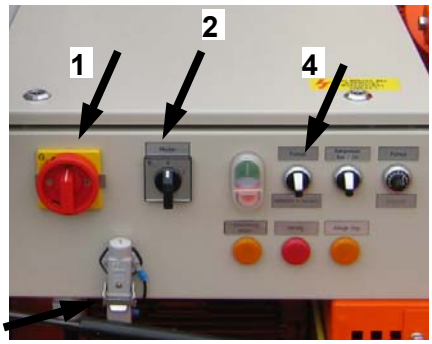
- Clean the mixer and pump with a water hose.
- Drain the water (3) and close the cover.
- Fill with clean water and switch on the machine and clean the pump unit.



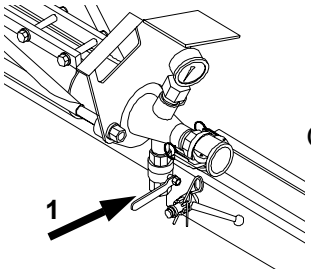
- Soak a sponge ball with water and insert it in the pressure flange (4).
- Connect the material hose.
- Clean the material hose with water, twice if necessary.
- Disconnect the spraying gun and clean with water.

Clearing hose blockages

WARNING!
In accordance with the safety regulations of the Builder's Guild, all personnel clearing hose blocks should wear safety goggles and should position themselves in such a way as to avoid injury through discharged mortar. No other persons should be present in the danger zone.



Switch off the mixer (2) and pump (4).
Let pump (4) run in reverse until pressure at mortar pressure gauge has fallen to 0 bar.
Switch off the main switch (1).
WARNING!
Check if the mortar hose is depressurized. It can be disconnected if this is the case. Use the Geka coupling to connect the hoses to the water system and flush with a water-soaked sponge ball. Repeat this procedure at least twice. Use a water jet to clean the spraying gun and mortar pressure gauge.

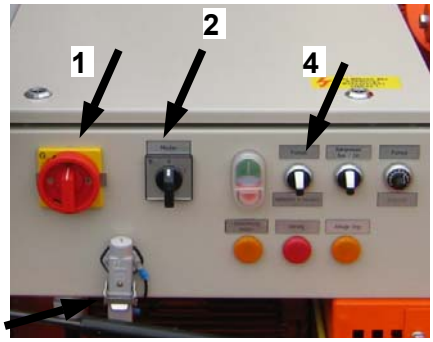


Open the tap.

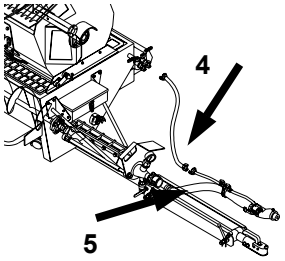
WARNING!
Check that all hoses are depressurized before opening the couplings (observe mortar pressure gauge display!).

WARNING!
In the event of over-pressure and blockages, the rotor and stator wear heavily. For this reason it is important to detect this as early as possible and to switch the pump off immediately.

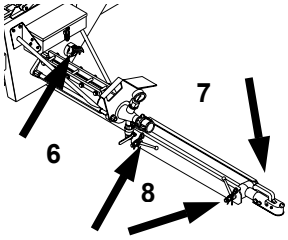
Transport



Run the mixing container and the pump until they are empty and then switch off the mixer and pump (2) and (4).
Switch off the main switch (1).
Open the tap on the spraying gun.
WARNING!
Check if the mortar hose is depressurized. It can be disconnected if this is the case. Use the Geka coupling to connect the hoses to the water system and flush with a water-soaked sponge ball. Repeat this procedure at least twice. Use a water jet to clean the spraying gun and mortar pressure gauge.

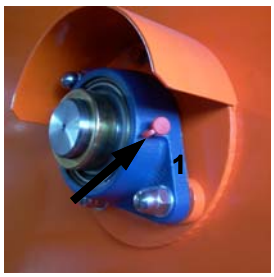


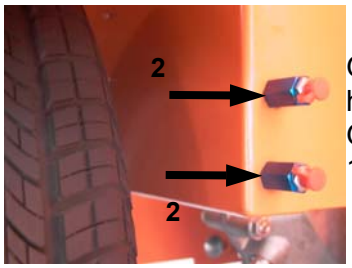
Remove spraying gun and air hose (4).
Disconnect mortar hoses (5).
WARNING!
Check that all hoses are depressurized before opening the couplings (observe mortar pressure gauge display).



Attach the machine to the vehicle (7).
Set the position of the drawbar (8).
Connect the lighting cable (6).

Maintenance





Grease the bearings (1) every 10 operating hours.
Grease the bearings of the pump shaft (2) every 10 operating hours.

Check list

Problem	Possible cause	Remedy
Blockages in the mortar hose	Inadequate lubrication of the mortar hoses, mortar is difficult to pump, leaking hose connections	Insert a water hose in the mortar hose, turn on the water and clean it by moving the hose backwards and forwards until the mortar hose is unblocked.
No mortar in the spraying gun even though the pump is running	Mortar hose blocked, inadequate lubrication	Switch off the pump. Reduce the pressure in the pump by opening the tap below the pressure gauge.
	Pump worn	Caution! Turn your face away and wear safety goggles. Change the pump.
No mortar in the mortar pump even though the pump is switched on.	Mortar is difficult to pump or badly mixed.	Switch off the pump. Disconnect mortar hose Caution! Turn your face away and wear safety goggles.

Parameter setting values for the Yaskawa type 606 V7 frequency converter

001	Password	0	When parameters are set, set to 4, then to 0
002	Selection of control type	0	
003	Selection of operational reference value	1	
004	Selection of frequency reference value 1	2	
011	Maximum output frequency	60	Hz
012	Maximum voltage	400	V
014	Mean output frequency	10	Hz
015	Mean output frequency voltage	100	V
016	Minimum output frequency	1.5	Hz
017	Minimum output frequency voltage	20	V
019	High run time 1	1.0	sec.
020	Low run time 1	3.0	sec.
034	Fixed reference value lower limit value	33	%
036	Motor nominal current	14.0	A (for 7.5 kW motor)
037	Electronic thermal protection	0	On
038	Thermal protection triggers after	1 min.	
039	Fan	1	Fan – permanent operation
093	Current limiting during high run	190	%
101	Braking time snap function	2.5	sec.
103	Cranking torque compensation	2.5	
106	Nominal slip of motor	3.3	Hz
107	Motor resistance per phase	0.550	W
175	Pulse frequency reduction	Activated	

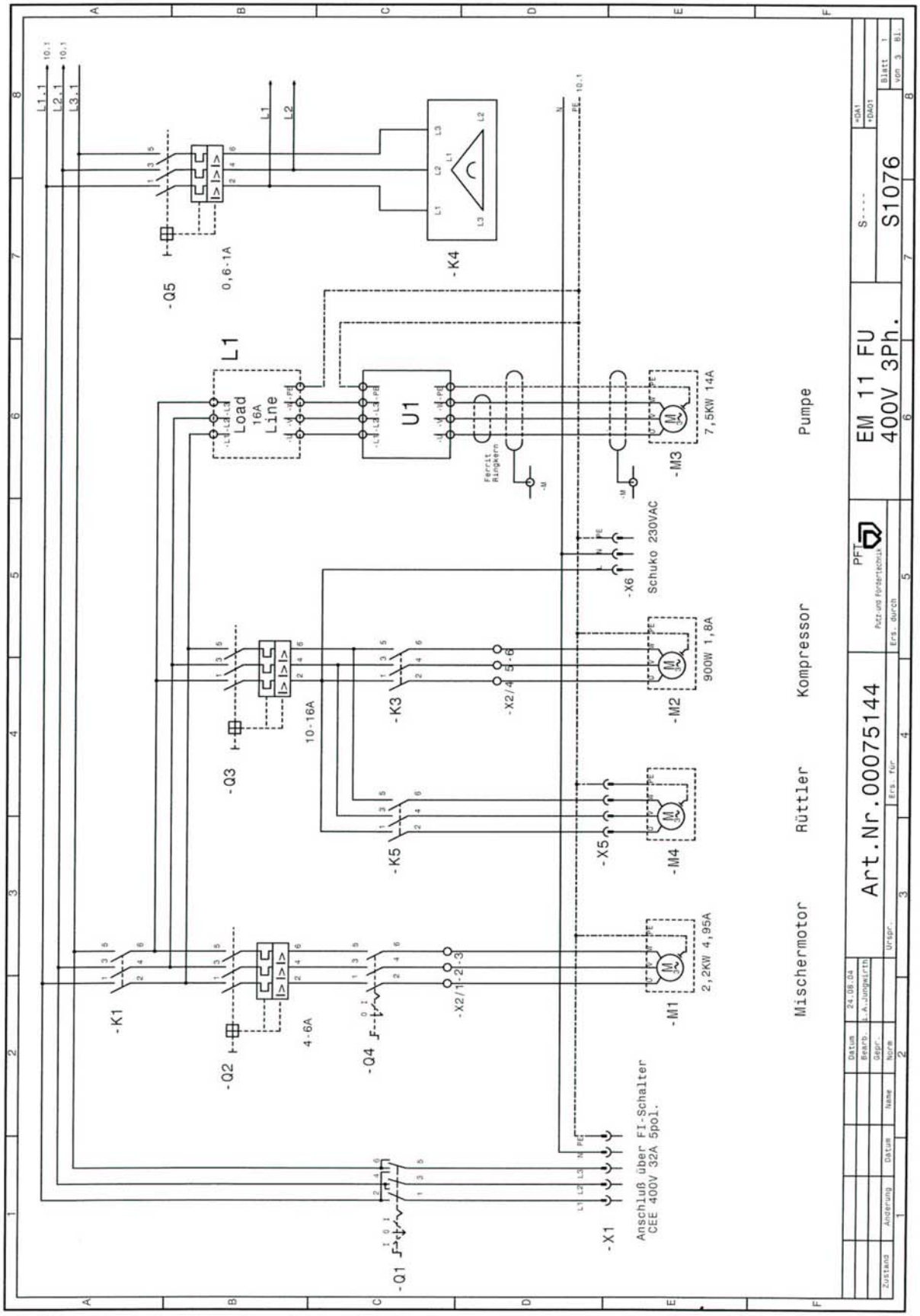
Check list for annual special inspection (master copy)

The inspection must be carried out once a year by a specialist in accordance with ZH1/575. As a verification of this inspection, the machine and the control box are given an inspection label. The inspection protocol is to be presented on demand.

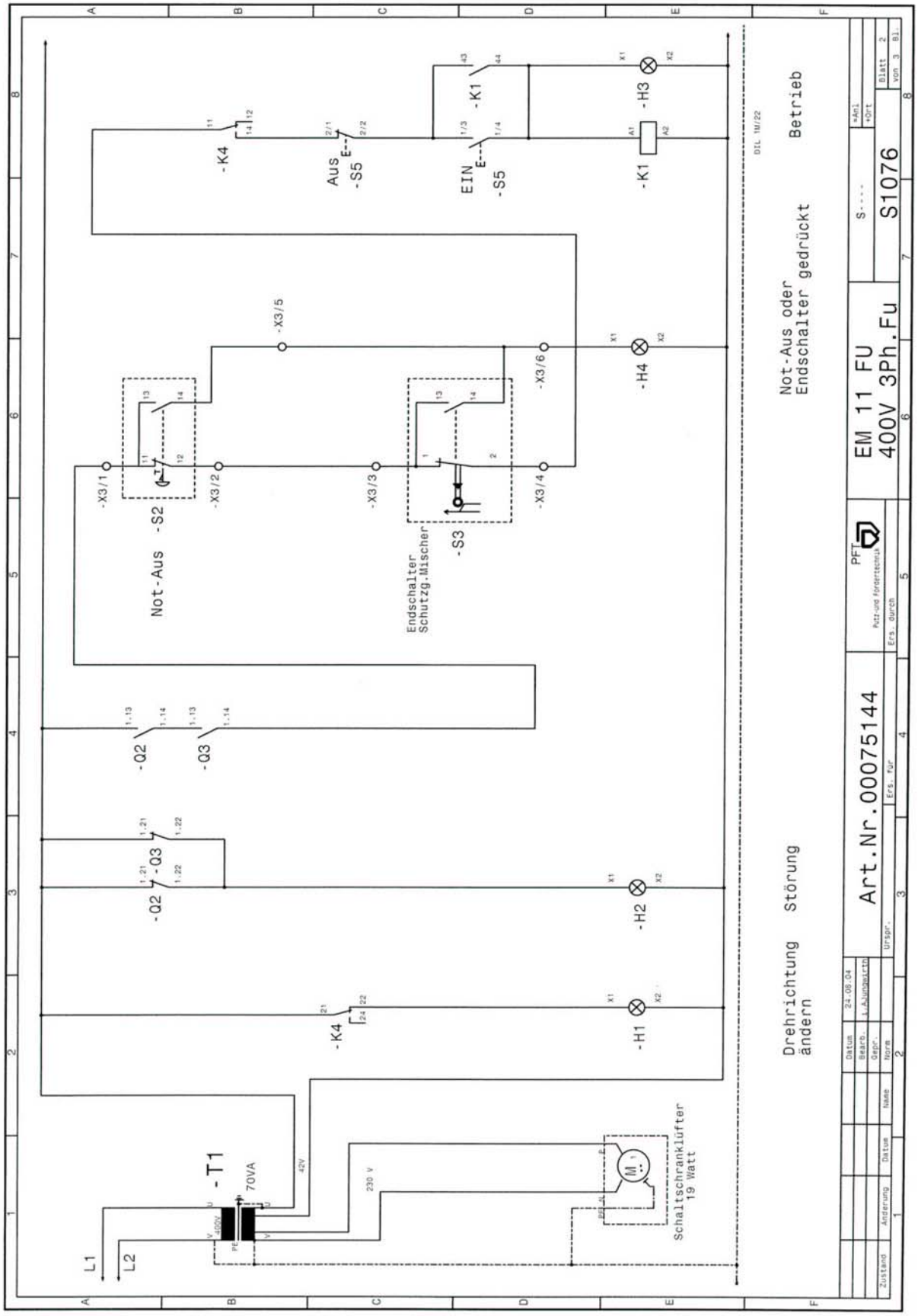
Date of inspection:	Inspector:	Signed:	Machine number:

Component	**Inspection feature**	**OK**	**Recondition /replace**
Material hopper	Check all welded seams		
Material hopper	Destruction due to corrosion or deformation?		
Mixing container	Check plate for wear Minimum wall thickness 1.0 mm		
Mixing shaft	Check mixing arm for wear		
Protective grille	Is protective grille still even?		
End switch protective grill	Check function of limit switch		
End switch protective grill	Check power supply to end switch for damage		
Frame	Check all welded seams		
Frame	Check firm seating of all screwed joints		
Frame	Check if distorted! Must be stable and not tip		
Control box	Visual inspection for defects		
Control box	Functional check		
Control box	Are all labels legible and in good condition?		
Control box	High voltage check with 1000 V		
Control box	Functional check of all safety switches		
Control box	Functional check of all control lamps		
Control box	Check firm fit of all cable connections		
Type sign	Exists and is legible		
Operating instructions	Available		
Mortar pressure gauge	Functional check!		

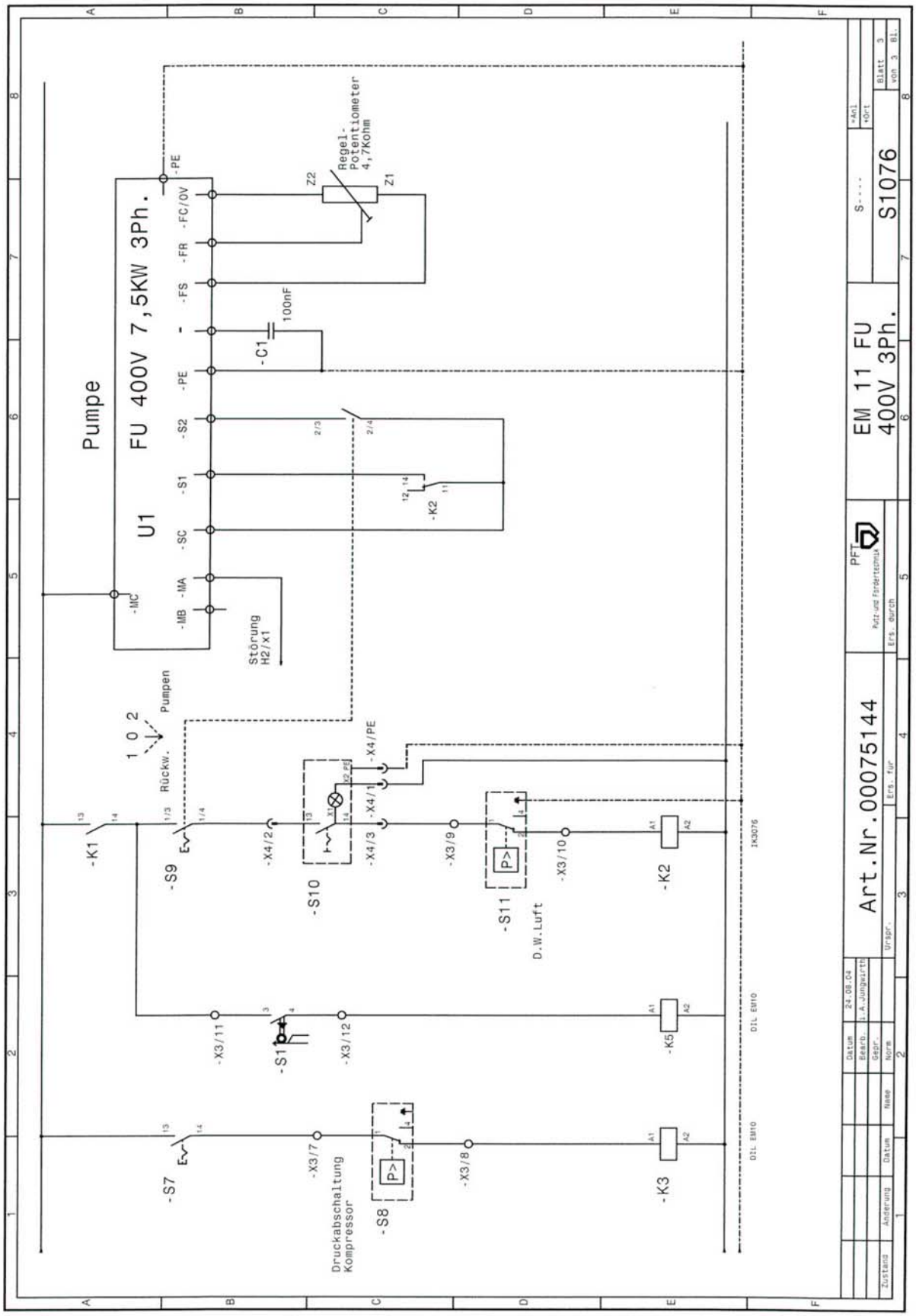
Circuit diagram



Circuit diagram



Circuit diagram



Technical data

Motor drive capacity	Approx. 7.5 KW 3-phase 400 V, 50 Hz
Motor	
Pumping capacity	Approx. 10 - 30 l/min (type 2L6)
	Approx.75 - 170 l/min (type 2L74)
Pumping distance	Horizontal approx. 60 m, vertical approx. 40 m
Working pressure	Approx. 25 bar
Compressor	2 cylinder 0.25 Nm³/min K2N
Screw pump	Type 2L6 as standard
Hopper capacity	Pump 120 l
	Mixer 250 l
Material hopper filling height	1400 mm
Overall length	3550 mm
Overall width	1360 mm
Overall height	1500 mm
Axle	With suspension max. 140 km/h**
Axle load	650 kg
Point load	60 kg
Overall weight	625 kg
Tyre pressure	2.7 bar
Permanent noise pressure level	75 - 110 dB(A)

- Approximate value depending on conveying height, mortar quality, composition and consistency, pump version and condition.
- ** Depending on national legislation

WE KEEP THINGS MOVING

Knauf PFT GmbH & Co. KG
PO Box 60 D-97343 Iphofen
Einersheimer Straße 53 D-97346 Iphofen

Telephone: +49 (0) 93 23/31-760
Fax: +49 (0) 93 23/31-770
E-Mail: info@pft-iphofen.de
Internet: www.pft.de