Operating Manual

Mobile speciality pump CHIEMSEE

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1 General Information

1.1 Versions

The following versions of CHIEMSEE pumps are available:

- CHIEMSEE: Pump including carrying frame, CEE motor protection plug with phase converter, 20 m power cable, B-Storz coupling on inlet and outlet side, intake nozzle made of PE with B-Storz coupling and flat intake nozzle made of PE with B-Storz coupling
- CHIEMSEE H: Like standard CHIEMSEE, additionally suitable for hot liquids up to a maximum temperature of 90°C, with high-temperature mechanical seals, high-temperature bearings, heat-resistant motor windings up to a maximum temperature of 170°C, B-Storz couplings suitable for liquids up to 90°C, intake and flat intake nozzle made of stainless steel
- CHIEMSEE EX: Like standard CHIEMSEE, additionally explosion-proof for use in EX-zones 1 and 2 and for fluids with an ignition temperature of more than 135°C (temperature class T4)

1.1.1 Marking of the pumps

Each CHIEMSEE pump is marked by a nameplate.

The nameplate of CHIEMSEE and CHIEMSEE H gives information about:

<table>
<tr><td colspan="6">Manufacturer CE</td></tr>
<tr><td colspan="4">Type designation</td><td colspan="2">Serial number</td></tr>
<tr><td>Voltage/ frequency</td><td>Electrical input</td><td>Protection class</td><td>Nominal rotation speed</td><td>Nominal current</td><td>Year of manufacturer</td></tr>
<tr><td>Weight</td><td>max. head</td><td colspan="2">max. capacity</td><td>max. immersion depth</td><td>Ambient temperature</td></tr>
</table>

The nameplate of CHIEMSEE EX gives information about:

<table>
<tr><td colspan="6">Manufacturer CE 0035</td></tr>
<tr><td colspan="2">Type designation</td><td colspan="2">Serial number</td><td colspan="2">Voltage/ frequency</td></tr>
<tr><td>Electrical input</td><td>Protection class</td><td>Nominal rotation speed</td><td>Nominal current</td><td>Year of manufacturer</td><td>Weight</td></tr>
<tr><td rowspan="2">Ex</td><td colspan="2">max. head</td><td colspan="2">max. capacity</td><td>max. immersion depth</td><td>Ambient temperature</td></tr>
<tr><td colspan="2">Certificate identification number</td><td colspan="2">Electrical Ex-marking</td><td colspan="2">Mechanical Ex-marking</td></tr>
</table>

1.1.2 Application

The submersible pump CHIEMSEE is designed for soiled waste water or sewage including solids or long fibres in case of flood control, flooding, pipe bursts or water level reduction. The pumps are designed for temporary mobile use. For permanent fixed installation, the use of sewage pumps made of cast iron is recommended. Only the explosion-proof version CHIEMSEE EX may be used in explosive zones (see section 4.11).

1.1.3 Pumped medium

The pumped medium may not exceed a maximum density of 1.1 kg/l. Dangerous pumped media (e.g. explosive, toxic, hot > 60°C) may only be pumped within the scope of the use conditions named in these operating instructions. The pump can pump solids up to a particle size of 80 mm (A-Storz version) or 70 mm (B-Storz version). The pH value of the pumped medium must lie within the range between 5 and 8. No guarantee can be given for safe operation of the pump if the pH value of the medium exceeds or is lower than the given value. In case of borderline pH values, the material resistance must be additionally tested before using the pump.

1.2 The operating instructions

These operating instructions contain information and instructions so that you can work safely, properly and economically with the pump. Only if the contents of the operating instructions are understood and followed can

- hazards be avoided and
- the reliability and life of the pump be increased.

With the issue of these operating instructions, regulations and standards not named in them are not rescinded.

1.2.1 Definition of terms

Several important terms are used in these operating instructions, which are defined as follows:

Owner/operator:	The owner/operator is any natural or legal person, who uses the pump or on whose behalf the pump is used.
Pump:	A pump is the complete submersible pump.

1.2.2 Marking of information and instructions

Safety instructions given in the operating manual, the non-observance of which could cause danger to life have been specifically highlighted with the general danger symbol.

The presence of dangerous voltage is identified with the safety symbol.

Other safety points in these instructions, the non-observance of which may endanger machinery or its operation, are marked as follows.

Symbols directly on the pump itself, e.g.

- Direction of rotation
- Type plate

must be carefully observed and must be maintained in legible condition.

1.2.3 Explanation of symbols

CE symbol:

With the CE marking the manufacturer, distributor or authorised EU representative declares in accordance with EU Regulation 765/2008, that “the product is in conformity with the applicable requirements set out in Community harmonisation legislation providing for its affixing”.

Symbol for hot surfaces:

Warning sign "Hot surface" according to safety sign ASR A1.3:2013 and EN ISO 7010.
Sign for risk of injury and burns caused by hot surfaces.

Symbol for hand injuries:

Warning sign "Hand injuries” according to BGV A8, ASR A1.3:2013 and DIN 4844. Sign for risks caused by a machine, these areas can lead to hand injuries

2 Safety instructions

(General safety instructions as per VDMA 24292)
This operation manual gives basic instructions that should be followed carefully during installation, operation and maintenance. It is essential that this manual is carefully read by the responsible personnel/operator before assembly and commissioning. It is always to be kept available at the installation/usage site of the pump.

2.1 Qualifications of personnel

An authorized (certified) electrician and mechanic shall carry out all work. Scope of responsibility and supervision of the personnel must be exactly defined by the operator. If the staff does not have the necessary knowledge, they must be trained and instructed, which may be performed by the manufacturer or supplier on behalf of the operator, moreover, the operator is to make sure that the contents of the operating manual are fully understood by the personnel.

Minimum requirements for the operating personnel:

- Legal age
- Firefighter training in accordance with the fire service regulation 2 and additional instruction of the trained machinist or "Technical Assistance" course in accordance with fire service regulation 2 or
- basic training Level I (German THW) as a rescue worker

Minimum requirements for the personnel for electric maintenance and inspection works:

- Legal age
- Qualified electrician

2.2 Hazards in the event of non-compliance with the safety instructions

Non-compliance with the safety instructions may produce a risk to the personnel as well as to the environment and the machine and results in a loss of any right to claim damages or compensation. For example, non-compliance may involve the following hazards:

- Failure of important functions of the pump
- Failure of specified procedures of maintenance and repair
- Exposure of people to electrical, mechanical and chemical hazards
- Endangering the environment owing to hazardous substances being released

2.3 Safety regulations for owner/operator

All safety instructions contained in this manual, all relevant national and local health and safety codes and any other service and safety instructions issued by the owner shall be complied with.

2.4 Safety instructions relevant for operation

Always follow these safety instructions before using the pump:

Danger from electric shock:

- Protect plug-and-socket connections against moisture and increasing water levels in flood areas.
- When using the pump in swimming pools or ponds and the surrounding area DIN/VDE 0100 must be complied with.
- Hazards resulting from electricity are to be prevented (see for example, the national-specifications or the regulations of your local electricity supply company)

General danger

- In dry-well installation (suction mode) the motor housing heats up after a lengthy operating period. You must therefore only use the hinged handles provided on the pump transport cage to transport the pump and avoid direct contact with the motor housing. Always wear protective gloves too.

- When pumping hot fluids, the pump always becomes as hot as the pumped fluid. In this case, you must only touch the pump if you are wearing suitable protective gloves.
- In pumping mode, strong suction is produced at the intake area of the pump. It is therefore necessary to ensure that while the pump is running you never allow your hands, feet, loose clothing (e.g. ties) or jewellery (e.g. chains) to get into the area of the pump intake (suction side) or pump discharge (pressure side). There is risk of shearing injuries or getting tangled.
- The protection against contact (intake ports) for moving parts (impeller) may not be removed if the machines are in operation. The pump itself may not be operated without the appropriate protection against contact.
- Any leakage of hazardous (e.g. explosive, toxic, hot) fluids (e.g. from the shaft seal) must be drained away so as to prevent any risk to persons or the environment. Statutory regulations are to be complied with.

Damage of the pump due to inappropriate use:

- Store the pump in dry rooms only. If kept dry and clean the pump can be stored down to a minimum temperature of –20°C. Highly super cooled pumps must be allowed to thaw to above 0 °C before being used, to prevent the formation of ice on immersion in the fluid to be pumped.
- Ensure that the place in which the pump is used is protected against frost.
- Always use the carry handles provided or the trolley available as an accessory to transport the pump.
- Only use the lug provided at the pump's centre of gravity to lower the pump using ropes. Never lower the pump by its power cable or a hose connected to the pump.

2.5 Safety instructions relevant for maintenance, inspection and assembly work

It shall be the user’s responsibility to ensure that all maintenance, inspection and assembly work is performed by authorized and qualified personnel who have adequately familiarized themselves with the subject matter by studying this manual in detail. Any work on the machine shall only be performed when it is at stand-still, it is being imperative that the procedure for shutting down the machine described in this manual be followed. Pumps and pump units which convey hazardous media must be decontaminated. All waste emissions such as used oil must be appropriately disposed of, oil spills must be cleaned up and emissions to the environment must be reported.

On completion of work all safety and protective facilities must be reinstalled and made operative again. Before restarting the points listed in section 4 Operating the Pump, must be noted and followed.

Any modification may be made to the pump only after consultation with the manufacturer. Using spare parts and accessories authorised by the manufacturer is in interest of safety. Use of other parts may exempt the manufacturer from any warranty or compensation claims.

2.6 Unauthorised modes of operation

The reliability of the pump delivered will be only guaranteed if it is used in the manner intended, in accordance with this manual. The limit values specified in the data sheet must under no circumstances be exceeded. These installation and operation instructions do not supersede or exclude generally valid regulation and standards.

3 Technical data

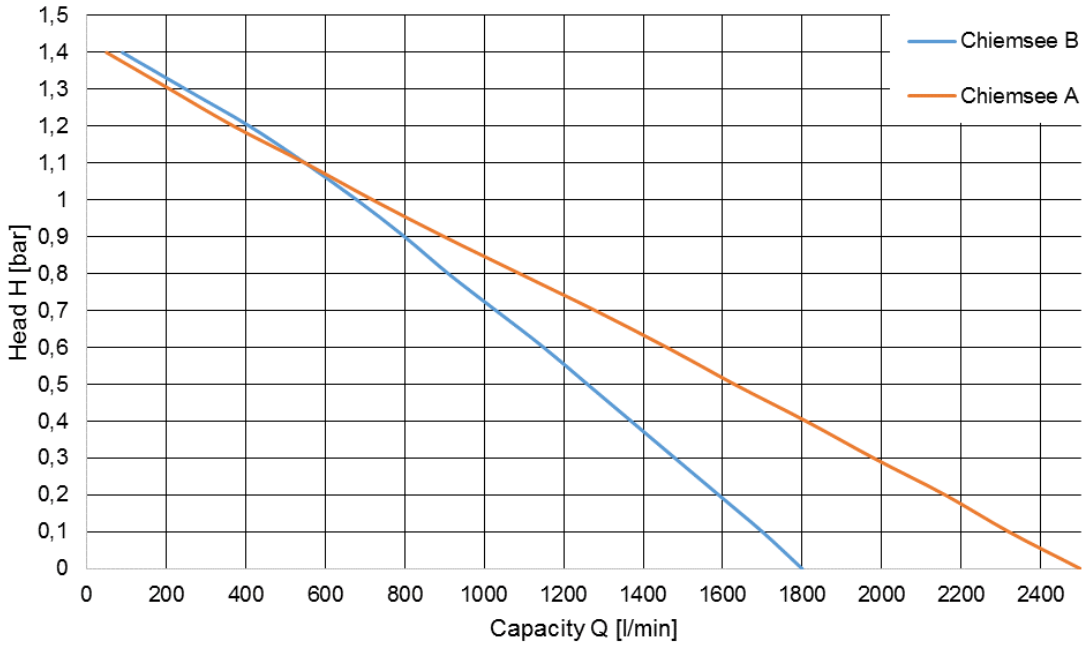
3.1 Electrical and technical data

Type	CHIEMSEE A	CHIEMSEE B	
Inlet	A-Storz/4”	B-Storz/3”	
Outlet	A-Storz/4”	B-Storz/3”	
Max. solid passage	Ø 80 mm	Ø 70 mm	
Medium temperature	0° - 60 °C submersed 0° - 40 °C in suction operation		CHIEMSEE H: 0° - 90 °C submersed 0° - 40 °C in suction operation
Weight including cable	53 kg	52 kg	CHIEMSEE EX: 60 kg / 59 kg
Cable length	20 m		
Cable type	H07RN8-F		EX: NSSHÖU-J, H: H07BQ-F
Sound emission in 1 m	< 70 dB(A)		
Operating voltage	400 V		
Frequency	50 Hz		
Protection class	IP 68		
Rated current:	7,3 A	6,9 A	
Electrical power input P1	3,2 kW		
pH-value	5 - 8		
Density pumping medium	≤ 1,1 kg/l		

3.2 Performance

	Head [bar]	0	0,2	0,4	0,6	0,8	1,0	1,2	1,4
CHIEMSEE A	**Capacity**	2500	2160	1810	1460	1090	720	370	50
CHIEMSEE B	**[l/min]**	1800	1590	1370	1150	910	680	410	90

3.3 Capacity-head table

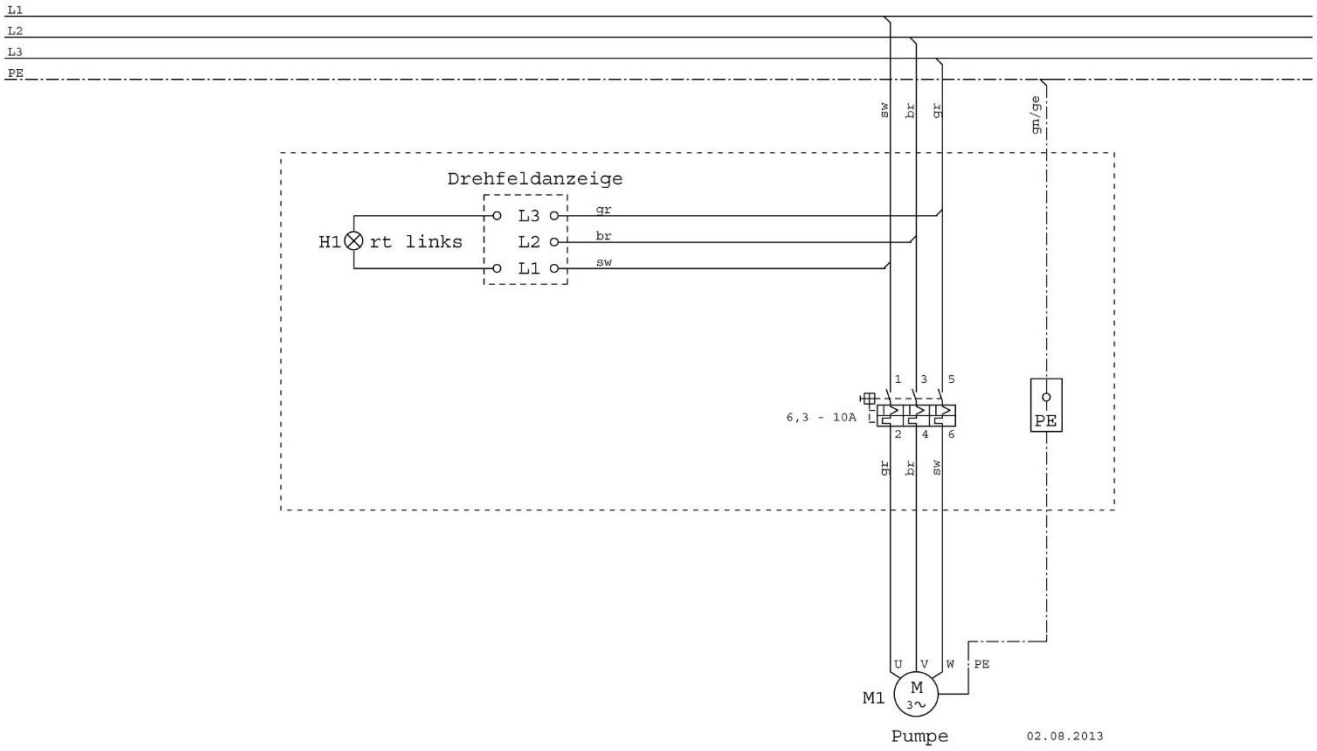


3.4 Construction and materials

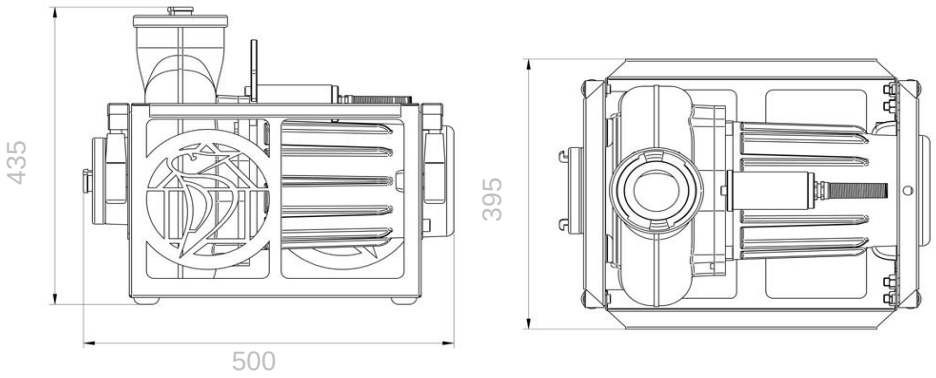
- All housing parts made of saltwater-proof aluminium alloy G-AlSi10Mg
- All screw connections made of stainless steel 1.4301
- Impeller made of corrosion-free, wear-resistant and self-cleaning aluminium bronze G-CuAl10Ni
- Sealing with dry-run and endurance-run suitable double mechanical seal made of SiC/SiC and SiC/coal

- Carrying frame made of stainless steel 1.4301
- Intake nozzle/flat intake nozzle CHIEMSEE: PE
  Intake nozzle/flat intake nozzle CHIEMSEE H and EX: stainless steel 1.4571

3.5 Wiring diagram



3.6 Dimensions



4 Operation of the pump

Caution:
The pump may only be operated in compliance with the instructions and information of this operating manual.

Note:
Before starting the pump, check that the supplied voltage and frequency matches the information on the nameplate.

Danger from electric shock:
Bring electrical plug connections to a flood-proof area to protect them from water. Watch out for rising water levels in flood areas!

Caution:
For outdoor use, the provisions of EN 60204-1 must be observed.

Danger from electric shock:
No-one should be present inside the pumping medium when the pump is in operation. The pump may only be operated over FI-secured (residual current circuit breaker) CEE sockets.

Important:
The operating personnel must ensure that no third parties (e.g. spectators during demonstrations, residents affected by floods, voluntary helpers, curious onlookers, etc.) can stand in the pumped fluid and can never get into the area of the pump intake (suction side) or pump outlet (pressure side)

Caution:
The intake ports and the hoses must always be connected with coupling keys. The pump may only be started up if the discharge hose and one intake port or one intake hose are connected.

Caution:
The suction on the intake side can cause long-fibre substances to be drawn in. Do not remove these during operation. Switch off the pump, secure it against accidental switching on and then remove the objects.

4.1 Explanation of the standard motor protection plug

With the exception of CHIEMSEE EX, all versions of the CHIEMSEE are fitted with the standard motor protection plug (see Image 1). The motor protection switch is set in the factory and may not be changed. Incorrect setting of the motor protection switch can lead to malfunctions or damage to the motor or pump.
Factory setting of the motor protection switch:
CHIEMSEE A: 9.5 A
CHIEMSEE B: 9.0 A
Section 4.11 of this operating manual is to be observed with CHIEMSEE EX.

Before the standard motor protection plug is inserted into an FI-secured safety socket for operation of the pump, it is to be ensured that the red push-button on the motor protection plug is pressed, in order to rule out accidental starting of the pump.

Red control lamp
If the red control lamp "Falsche Phasenlage" (wrong phase position) lights up when inserting the motor protection plug, the rotating field has to be changed. Remove the plug from the socket and turn the reversing contact on the motor protection switch using an appropriate screwdriver. Never modify the socket for this purpose! Insert the motor protection plug into the socket again. The red light "wrong phase position" should no longer be lit.

Green push-button
To start the pump, the green push-button on the motor protection switch is to be pressed.

Red push-button
To switch off the pump, the red push-button on the motor protection plug is to be pressed.

4.2 Operating the pump

For safe working on and with the pump, the wearing of safety shoes and safety gloves is recommended, in order to prevent injury from crushing or cutting.

Each time when using the pump, also ensure the following points:

1. Before using the pump, it must be checked for damage to the plug, cable and motor protection housing.

2. Transport the pump to the place of use.

   Caution:
   Always transport the pump with the handles provided for this purpose only.

3. Mount the intake nozzle (handle protection) with the opening upwards on the coupling on the inlet side of the pump (see Image 2.1). This avoids the suction of stones or other hard objects from the ground. On the other hand, a sufficient water level remains in this way, in order to carry out low-level pumping after shutting off the pump without additional filling of the pump.

Image 2.1: CHIEMSEE with mounted intake nozzle

Caution:
Before operating the pump, check that the impeller can move freely only when the pump is switched off and the power supply disconnected.

Danger:
The PE intake nozzles (CHIEMSEE H/CHIEMSEE EX: stainless steel nozzle) on the inlet side are used to protect the impeller from contact. The pumps themselves may not be operated without the appropriate contact protection.

4. Mount a dimensionally stable spiral pressure hose with matching coupling to the outlet side of the pump. A suitable fire hose can now be connected to this spiral hose. Lay this at a suitable drain or collection tank. The end of the pressure hose must be adequately secured against impact. The fire hose should be laid without kinks where possible to achieve an optimum pumping power. It is strongly recommended that you use the optional dimensionally stable spiral pressure hose for the first 3-5 m.

Danger:
Ensure that the pressure hose end is adequately secured and fixed. Otherwise, there is the risk of the hose end being hit when switching on the pump.

5. If the pump is to be lowered into a shaft, attach a suitable length of rope to the eyelet provided for this purpose.

Caution:
To lower the pump only the designated abseiling eyelet is used. Under no circumstances should the pump be lowered to the mains cable or the connected hoses.

6. Lower the pump on this rope into the liquid.

Danger from suspended loads:
When lowering the pump, ensure that no-one is under the pump in the shaft.

7. Make sure that the pump is standing safely.

8. Ensure that the pump is switched off. To do this, the red push-button on the motor protection plug has to be pressed. Plug the motor protection plug into a socket that is fused via a residual current device (RCD) with a rated residual current of no more than 30 mA. Each plug-in connection (socket, generator, etc..) must be fused with an overcurrent protective device with 16 Ampere. The overcurrent protective device must at least have tripping characteristic B, characteristic C is recommended.

Danger from electric shock:
Ensure that the network socket at the network socket connection is dry. Never carry out changes on the plug! The plug must be FI-secured (residual current circuit breaker).

9. Now check the phase position. If the red light "phase control" on the motor protection plug is lit, the rotating field has to be changed. Remove the plug from the socket and turn the reversing contact on the motor protection switch using an appropriate screwdriver. Never modify the socket for this purpose! Insert the motor protection plug into the socket again. The red light "wrong phase position" should no longer be lit.

10. Switch the pump on by pressing the green power button on the motor protection plug. The pump should now pump with the defined pumping performance.

Caution:
The plug and the motor protection switch must be easy to access during operation of the pump. They must always be supervised, so that they cannot be plugged in or unplugged or acknowledged, erroneously or accidentally.

11. Switch the pump off again by pressing the red button, as soon as the water level has sunk so far that the pump is taking in air.

12. Clean the pump after each use, particularly after using it with muddy liquid. Secure the pump against restarting. Before cleaning remove the motor protection plug and secure the pump and the motor protection plug against accidental restarting and plugging. Use a high-pressure cleaner first, to clean the pump and in particular the impeller. To clean the impeller, turn the cleaning slot of the impeller to the “12 o’clock position” so that the cleaning slot is visible on the outlet side of the pump (see image 2.2). Use the high-pressure cleaner to spray directly into the cleaning slot, to clean the impeller thoroughly. Then let the pump run for around 10 minutes in a basin with clean water. Afterwards, the pump must be completely drained. Finally let the pump run without pumped medium. In case of vibrations, eccentric pump running or grinding noises a customer service must be carried out in the factory.

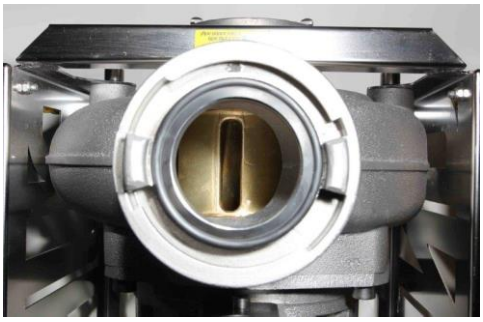


Image 2.2: Cleaning slot on „12 o’clock position“

4.3 Series connection of CHIEMSEE pumps

To achieve pumping heights of over 12 m, series connection of CHIEMSEE pumps is possible. With this, the pressure side of the first CHIEMSEE is connected to the next CHIEMSEE over a dimensionally flexible hose.

4.4 Low-level pumping

In normal operation, the liquid is pumped to the top of the intake nozzle. The pump then intakes air and the pumping flow breaks off. To pump fluids up to a residual water level of a few millimetres, the flat intake nozzle has to be mounted to the suction-side fixed coupling (see Image 2a).

Caution CHIEMSEE H:
In case of high fluid temperatures of >80°C cavitation might arise during low-level pumping. In this case the fluid has to be cooled with cold water.

If low-level pumping is to be carried out, the following points are to be observed:

1. Pump the medium according to section 4.2 of this user manual without flat intake nozzle (with the intake nozzle facing upwards) until the pump intakes air.

2. Now switch the pump off and remove the motor protection plug. Secure the pump and the motor protection plug against accidental restarting and plugging.

Danger from electric shock:
Only carry out work on the pump when the pump is disconnected from the network by removing the motor protection plug from the power supply. Prevent accidental restart and plugging of the pump and the motor protection plug by taking appropriate measures.

3. Now mount the flat intake nozzle to the suction-side fixed coupling. Use a coupling spanner for this. Turn the curve clockwise until it is vertical and facing downwards (i.e. up to the limit stop). Ensure that no stones or other hard objects, such as pond foils, can be taken in!

4. Now plug the motor protection plug into the socket again and switch the pump on again.

5. If the flat intake nozzle gets stuck on solids, first turn off the pump, then pull the motor protection plug and remove the solids from the intake nozzle.

6. Pump the liquid until the pump intakes air. Switch the pump off again.

As the intake nozzle reach until about 1 cm above the ground, it is possible that there are still floating solids in this gap. For this reason, only use the low-level pumping device of the pump for draining residual water.

Image 2.3: CHIEMSEE with flat intake nozzle

4.5 Low-level pumping at low water level

The following two methods can be used to start the pump even if the water level is low (< 20 cm):

4.5.1 Flat intake nozzle with integrated non-return flap

Mount the flat intake nozzle with integrated non-return flap (available as an accessory) as described under 4.4 on the intake side of the pump (see image 2.4). Fill the pump with water. The integrated non-return flap holds the water in the pump. On starting the pump the non-return flap opens automatically and the pump begins the low-level pumping operation.

Image 2.4: CHIEMSEE with flat intake nozzle with integrated non-return flap

4.5.2 Glove trick

To this end, pull a disposable glove (sterile glove, latex glove) over the flat intake nozzle of the pump and mount it as described under 4.4 on the intake side of the pump. Fill the pump with water. The disposable glove acts as a “non-return flap” and keeps the water in the pump. On starting the pump the disposable glove tears and the pump begins the low-level pumping operation.

4.6 Deep-level pumping

In case of a depression (pump sump, gully, etc.) deep-level pumping can be carried out additionally. Please observe the following points:

1. Pump the medium according to section 4.2 of this user manual without flat intake nozzle (with the intake nozzle facing upwards) until the pump intakes air.

2. Now switch the pump off and remove the motor protection plug. Secure the pump and the motor protection plug against accidental restarting and plugging.

Danger from electric shock:
Only carry out work on the pump when the pump is disconnected from the network by removing the motor protection plug from the power supply. Prevent accidental restart and plugging of the pump and the motor protection plug by taking appropriate measures.

3. Mount the intake nozzle (handle protection) with the opening facing downwards on the coupling on the inlet side of the pump. Use a coupling spanner for this.

4. Fold out both folding handles on suction side of the pump and place the pump at the depression. (see image 2.5).

5. Now plug the motor protection plug into the socket again and switch the pump on again.

6. Pump the liquid until the pump intakes air. Switch the pump off again.

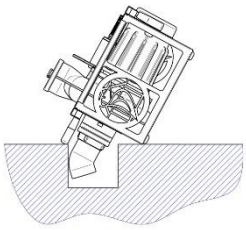


Image 2.5:
Deep-level pumping

4.7 CHIEMSEE in suction operation

By using the non-return flap, which is available as a Spechtenhauser accessory, with a transparent hose (length up to 5 m) suction operation of the pump is also possible. All couplings used on the suction side must be clean and leak-proof. As soon as air is able to enter the system on the suction side, pumping is no longer possible. Basically suction operation can only be carried out up to a maximum fluid temperature of 40°C.

Image 2.6: Non-return flap

If the pump is to be used in suction mode, the following points are to be observed:

1. Mount the non-return flap to the transparent suction hose.

   Caution:
   Only the non-return flap from Spechtenhauser is to be used. Suction operation with ball flap valves is not possible. Only use a transparent suction hose as a suction hose.

2. Connect the suction hose to the suction side of the pump.

3. Fasten a spiral hose to the outlet side of the pump.

4. Pour water into this pressure hose only until the suction hose, the pump and the pressure hose are filled with water. If necessary, the flap of the non-return flap will also have to be opened for ventilation.

   Important:
   The non-return flap must be loaded with at least 1.5 m water column so that it is completely watertight.

5. Lay the suction hose in the medium to be pumped. Ensure that the non-return flap is not on the ground but is about 20 cm above the ground. This prevents stones from being pumped.

6. Lay the pressure hose properly (see section 4.2).

7. Switch on the pump.

4.8 Use of the pump with pluggable float switch

Caution:
Pumps which are operated with float switches must not be used in potentially explosive areas. The float switch itself must not be placed in the potentially explosive areas.

When operating the pump with float switches, also note points listed under section 4.2. To operate the pump with pluggable float switch (see Image 3a), first insert the pluggable switch into an FI-secured socket and then connect the motor protection plug to the intermateable float switch. Mount the float switch on the cable lug in such a way that it cannot be sucked by the pump. The float switch must only hang in the medium to the extent that it switches off shortly before the pump sucks air at the latest.

Image 3a: Pluggable float switch

4.9 Operation with emergency power generator

All CHIEMSEE pumps can be operated with 5 kVA DIN emergency power generators. In the case of 5 kVA units wherever possible the pump should be connected to the unit directly (i.e. without an extension cable), as otherwise there is a risk of the unit stalling on switching on the pump.
Extension cables can be used for units with a larger output. The extension cables used must have a conductor cross-section of at least 2.5 mm² or larger, in order to keep the voltage drop in the cable as low as possible.

4.10 Operating the CHIEMSEE H hot water pump

Danger due to hot water:
With hot water pumps, there is always the risk of endangering involved persons due to hot, spraying water. CHIEMSEE H is therefore fitted with a lockable Storz coupling on the pressure side to prevent accidental opening of the coupling during pumping. Always ensure, therefore, that the pressure hose is properly locked.

Danger due to hot pump components:
When pumping hot media, the pump also becomes very hot. In this case, only touch the pump with suitable protective gloves. Never cool a hot pump with cold water. This causes high tension in the material and can also damage the pump.

Risk of burns:
Please ensure that all parts which come into contact with hot water are able to show the corresponding temperature. This also applies to the hoses which are used. Lay the hoses so that no persons or objects are endangered from hot, spraying water. Heat-resistant hoses must also be used.
Moreover, when decoupling the hoses after the pump procedure, ensure that there is no more hot water in the hoses, as there is also an increased risk of burning for the operating personnel.

Caution:
The discharge of hot liquids into the sewer system has to be clarified in advance with the relevant authorities.

4.11 Operating the CHIEMSEE EX explosion protected pump

4.11.1 Explosion protection

CHIEMSEE EX has the electric explosion designation Ⓔx II2G Ex db IIB T4 Gb and the non-electric explosion designation Ⓔx II2G Ex h IIB T4 Gb. Broken down, this designation means:

Ⓔx: Symbol for explosion protected equipment
II: Equipment group II means that the equipment may only be used above ground.
2: Equipment category: Equipment category 2 enables the use of the pump in explosion zones 1 and 2, but not in explosion zone 0.
G: Type of hazard, here G is for gas.
Ex: Designation for explosion protected equipment
d: Type of ignition protection, in this case for pressure-tight enclosure, i.e. if sparks or explosions arise inside the motor, the pressure-tight enclosure prevents these from penetrating to the outside.
b: Type of ignition protection with EPL
h: The designation h for the non-electric explosion protection includes constructional safety c and liquid immersion k.
IIB: Explosion group, here IIB, through this, the pump is suitable for applications which need the explosion group I, IIB and IIA. However, the equipment must not be used in applications which require the explosion group IIC.
T4: Temperature class: T4 means that the surface of the pump or pump parts never reach a temperature of 130 C. In this way, the pump can be used in all areas where the ignition temperature of ambient gas or liquid is above 130 C, i.e. in the temperature categories T1 to T4.
Gb: Device protection level, device with high protection level for use in hazardous areas, which in case of normal operation or foreseeable failures/malfunctions causes no ignition hazard

Also see the following table:

Explosion class	**Temperature classes**					
	T1	**T2**	**T3**	**T4**	**T5**	**T6**
I	Methane		-	-	-	-
IIA	Acetone Acetane Ethyl acetate Ethyl chloride Ammonia Benzene Acetic acid Kohlenoxid Methanol Naphtaline Phenol Propane Toluene	Ethyl alcohol i-Amyl acetate n-butane n-butyl alcohol Cyclohexanone 1, 2-Dichloro-ethane Acetic anhydride	Benzines Diesel fuels Fuel oil n-Hexane	Acetaldehyde		
IIB	Town gas	Ethyl alcohol Ethylene Ethylen oxide	Hydrogen sulfide	Ethyl ester	-	-
IIC	Hydrogen	Acetylene	-	-	-	Carbon disulfide

(This table describes the operating limits and / or explosion approval). The chemical resistance of the pump to the substances listed here is not always given.)

4.11.2 Motor protection plug of CHIEMSEE EX

Caution:
All CHIEMSEE EX pumps are fitted with a motor protection plug which is different to a standard motor protection plug (see image 4). However, the CHIEMSEE EX motor protection plug is not explosion protected. For this reason, the plug may only be operated on FI-secured CEE sockets outside the explosion zone.

Caution:
The float switch which can be mounted on the motor protection switch must not be used in potentially explosive areas. The float switch may only be used if the pump is operated outside the potentially explosive area. The rocker switch **2** must be set to “manual“ if the pump is used in the potentially explosive area. The float switch itself must not be placed in the potentially explosive area. As the float switch may not be used in the potentially explosive area, the pump must be continuously monitored by operating staff if this is run in the potentially explosive area, so that the pump does not run dry.

4.11.3 Description of the motor protection plug CHIEMSEE EX

Before the CHIEMSEE EX motor protection plug is inserted in an FI protective CEE socket for operating the pump, ensure that the rocker switch **1** on the motor protection plug is set to “OFF” in order to rule out the possibility of accidental starting of the pump. Should the pump be run with the optional float switch, the float switch is to first be fitted to the motor protection switch (see arrow). The switch **2** is to then be set to position “autom.”. Should the pump be run without the float switch, switch **2** must be pressed to position ”manual”.

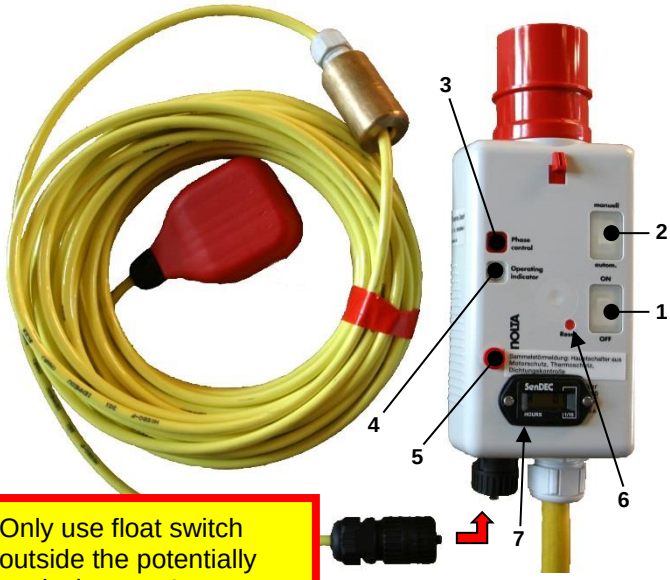


Image 4: Float switch motor protection plug

<u>**3** Pilot light “Phase control“</u>
If the pilot light **3** “Phase control“ lights up when the motor protection plug is inserted, the pump is rotating in the wrong direction. To set the correct rotational direction, the mains plug must be removed from the socket, and the **reversing contact on the mains plug** turned with a suitable screwdriver. **Never tamper with the socket for this purpose.** Now insert the network plug back into the socket. The pilot light **3** “Phase control“ should now no longer be lit.

<u>**4** Pilot light “Operating indicator“</u>
A lit pilot light **4** “Operating indicator” shows that the pump is running.

<u>**5** Pilot light “Error message“</u>
If the pilot light on the mains plug **5** “Error message“ light up, the motor protection has been triggered and the pump was automatically shut down. The motor protection can be initiated due to the following reasons:

- Excess current
- Excess motor temperature
- Leakage

<u>**6** Reset button</u>
To start the pump after the motor protection has been initiated, press the reset button **6** on the mains plug with a pen or similar object. If the pump does not start after pressing the

reset button **6**, the pump is either blocked (for this, see point 7 Problems/Faults in the operating manual) or the motor protection has initiated due to excess motor temperature or leakage. In this case, the motor is to first be cooled down. After cooling down, the electronics can be reset by pressing the on/off rocker switch, and the pump can be restarted. The pilot light **5** should go out and the pump should resume its operations. If the motor protection is initiated again following restart, please refer to section 7 Problems/Faults in the user manual and, if necessary, contact Spechtenhauser Customer Service.

7 Operating hours counter
The operating hours counter **7** displays the total operating time of the pump. To guarantee explosion protection, a factory service is to be carried out on Ex pumps following either 2,000 operating hours or no later than 5 years after date of purchase, in which all explosion-relevant components are checked. Should the permissible operating time of 2,000 hours be exceeded, the Ex approval of the pump becomes void. The pump can, however, still be used in non-potentially explosive areas.

4.11.4 Operation with the float switch

Caution:
The float switch which can be fitted to the motor protection switch may not be used in the potentially explosive area. The float switch may only be used if the pump is run outside the potentially explosive area.

If the pump on the rocker switch **2** of the motor protection plug is set to the position “autom.“, it can switched on by setting the rocker switch **1** to “ON”, and operated by using the float switch. When operating the pump with float switches, also note points listed under section 4.2. The following is also to be observed:

1. Mount the float switch on the cable lug in such a way that it cannot be sucked by the pump.
2. The float switch must only hang in the medium to the extent that it switches off shortly before the pump sucks air at the latest.

4.11.5 Using the CHIEMSEE EX

When using EX pumps in explosion areas, the provisions from BGR 132 are to be complied with.

Caution:
In the explosion area, the pump must only be operated with EX spiral hoses, which meet the requirements of the EC Directive 2014/34/EU (ATEX). According to this EC Directive, the hose lines can be used in the areas of equipment group II, category 2. The electrical conductivity meets the requirements of EN 12115, VG 95955 and TRbF 50 Appendix B (TRbF 131/2).

Caution:
The use of metal objects in explosion areas is critical as impact or friction sparks could arise. For this reason, pulling the pump along the ground in explosion areas, for example, is to be avoided.

Caution:
The CHIEMSEE EX is generally dry running. If the pump is used in explosion areas, however, the pump must be monitored by operating personnel to ensure that the pump never runs dry in the explosion area.

Caution:
Before operating the pump, check that the impeller can move freely, in order to avoid ignition sparks from forming when starting the pump. Only check this when the pump is switched off and the power supply disconnected. Also secure the pump against accidental restart.

Caution:
However, the CHIEMSEE EX motor protection plug is not explosion protected. For this reason, the plug may only be operated on FI-secured CEE sockets outside the explosion zone.

Caution:
In explosion areas, the pump must not be operated with a float switch.

Caution:
When pumping chemically aggressive substances, the chemical resistance of the pump to the pump media is to be checked prior to operation.

4.11.6 Maintenance and repair of the CHIEMSEE EX

Caution:
Repairs and maintenance which influence the explosion protection, and special maintenance and repairs on the motor and mains cable may only be carried out by Spechtenhauser Customer Service or at the factory. In case of infringement, the explosion permit becomes void, and all claims for warranty and damages are lost.

5 Accessories

The following accessories are available for the mobile sewage pump CHIEMSEE:

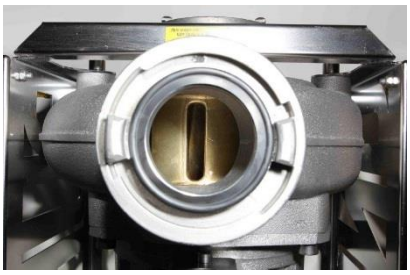
- Transport cart
- PVC-spiral hoses
- Non-return flap for suction operation with spiral hose
- Accessory pack with non-return flap and suction/pressure hoses
- Flat intake nozzle with integrated non-return flap
- PRCD safety switch
- Pluggable float switch

In case of further questions please contact your local retailer.

6 Service and Maintenance

It shall be the user's responsibility to ensure that all maintenance, inspection and assembly work is performed by authorized and qualified personnel who have adequately familiarized themselves with the subject matter by studying this manual in detail.
Any work on the machine shall only be performed when it is at stand-still, it is being imperative that the procedure for shutting down the machine described in this manual is be followed.
Pumps and pump units which convey hazardous media must be decontaminated. All waste emissions such as used oil must be appropriately disposed of, oil spills must be cleaned up and emissions to the environment must be reported. On completion of work all safety and protective facilities must be reinstalled and made operative again.

6.1 Pump cleaning and maintenance



Clean the pump after each use, particularly after using it with muddy liquid. Secure the pump against restarting. Before cleaning remove the motor protection plug and secure the pump and the motor protection plug against accidental restarting and plugging. Use a high-pressure cleaner first, to clean the pump and in particular the impeller. To clean the impeller, turn the cleaning slot to the "12-o´clock-position" so that the cleaning slot is visible on the outlet side of the pump. Use the high-pressure cleaner to spray directly into the cleaning slot, to clean the impeller thoroughly. Then let the pump run for around 10 minutes in a basin with clean water. Afterwards, the pump must be completely drained. Finally let the pump run without pumped medium. In case of vibrations, eccentric pump running or grinding noises a customer service must be carried out in the factory.

6.2 Maintenance intervals

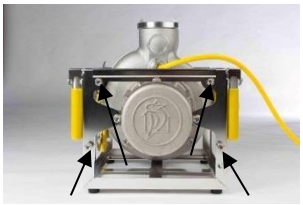
CHIEMSEE and CHIEMSEE H
Both pumps are completely maintenance-free. All components requiring lubrication are lifetime-lubricated. During the annual electrical test in accordance with DIN VDE 0701-0702 a trial run must also be performed to check the functional capability of the pump. In case of vibrations, eccentric pump running or grinding noises a customer service must be carried out in the factory. Also check the seals of the Storz couplings for wear. If the handle protection (intake ports) and the flat suction manifold can be undone without a coupling spanner, the seals on the handle protection/flat suction manifold and intake side of the pump must be replaced. If the handle protection and flat suction manifold can still be undone easily the fixed couplings concerned must be completely replaced.

CHIEMSEE EX
To be able to guarantee explosion protection, factory customer service is to be carried out on explosion protected pumps after every 2,000 hours of operation or no later than 5 years after the date of purchase, whereby all explosion relevant parts are checked. If the permitted operating time of 2,000 hours is exceeded, the pump's explosion permit becomes void. The pump can, however, still be used in non-explosion areas. Also check the seals of the Storz couplings for wear. If the handle protection (intake ports) and the flat suction manifold can be undone without a coupling spanner, the seals on the handle protection/flat suction manifold and intake side of the pump must be replaced. If the handle protection and flat suction manifold can still be undone easily the fixed couplings concerned must be completely replaced.

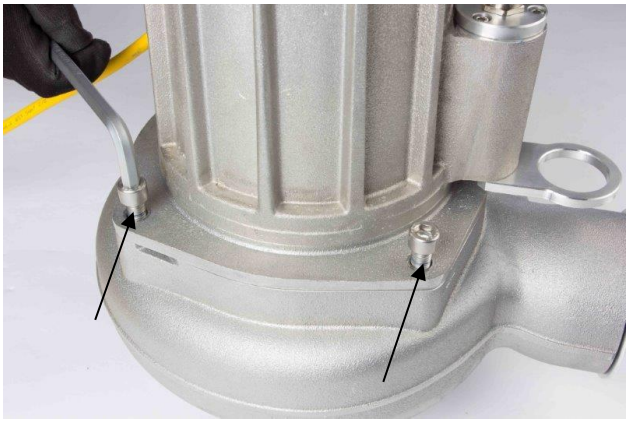
6.3 Dismantling the impeller

If stubborn blockages form in the spiral housing, the spiral housing and the impeller can be dismantled via the following steps:

1. Unscrew the six M12 cylindrical screws with hexagon socket (see adjacent picture), with which the pump is mounted in the basket. Now remove the pump from the basket.



2. Remove the four cylindrical screws with the hexagon socket (M12) on the motor flange from the spiral casing.



3. Remove the spiral casing. With stubborn blockages, it may be necessary to remove the spiral casing with the help of two screwdrivers. To do so, place the screwdriver on the two designated slots on the spiral casing and lift the spiral casing out.

4. Remove the countersunk screw with Torx (M8) from the impeller.

5. Remove the impeller from the shaft. In case of stiffness use the extraction tool, which is available as a special accessory. Clean the polygon connection and checked it for damage.

6.4 Assembling the impeller

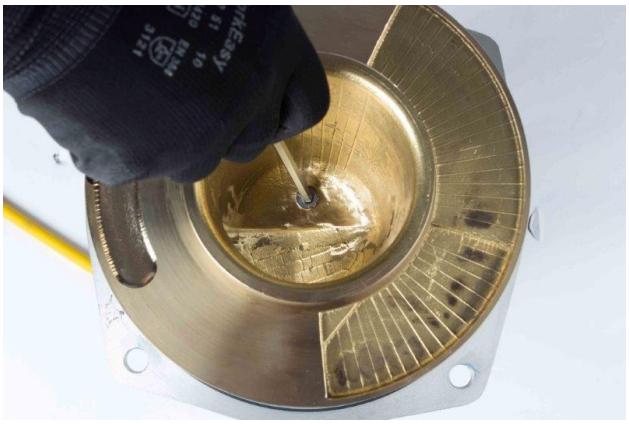
When assembling the impeller, the following steps are to be taken:

1. Ensure that the polygon connection (impeller and shaft) have been cleaned.

2. Evenly place the impeller on the motor shaft and push it down until it stops.

3. The impeller has to be pressed until it stops.

4. Screw the impeller with the motor shaft using the countersunk screw with torx (M8). To fasten the screws, medium-strength bolts are to be used. Please refer to Table 6.4.1 Screw Tightening Torque for the correct screw tightening torque.

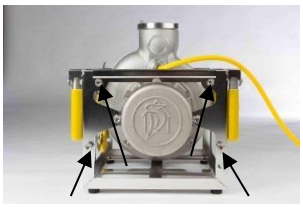


5. Attach the O-ring which is available as a spare part to the motor flange.

6. Place the spiral housing over the mounted impeller on the motor flange.

7. Screw the spiral housing to the motor using four cylindrical screws with hexagon socket (M12). To fasten the screws, medium-strength screw locking is to be used. Please refer to Table 6.4.1 Screw Tightening Torque for the correct screw tightening torque.

8. Position the basket above the pump and screw it to the pump using the six cylindrical screws with hexagon socket (M12) (see image). To fasten the screws, medium-strength screw locking is to be used.



6.4.1 Screw tightening torque

Screw	Screw connection	Tightening torque
M8	Impeller / shaft	20 Nm
M12	Motor / spiral housing	50 Nm
M12	Pump / basket	50 Nm

6.5 Mains cable and motor protection plug

Caution with CHIEMSEE EX:
If there is a defective mains cable, the repair may only be carried out by Spechtenhauser Customer Service or at the factory. Any opening of the cable inlet on the pump and of the motor protection plug is not permitted. In case of infringement, the explosion permit becomes void, and all claims for warranty and damages are lost.

With the CHIEMSEE and CHIEMSEE H, if a cable is defective, the damaged cable can be replaced by a new Spechtenhauser mains cable in just a few steps.

6.5.1 Dismantling the mains cable

Take the following steps for this:

1. Remove the three cylindrical screws with the hexagon sockets (M5) from the housing.

2. Unplug the cable screw and plugs and the coupling from the housing. Open the connection cable plug and unplug the cable from the coupling.

6.5.2 Assembling the network cable

Assembly of the network cable is carried out in the reverse order of disassembly.

6.6 Motor

With all pumps, opening of the motor is not permitted. Repairs and maintenance on the motor may only be carried out by Spechtenhauser Customer Service or at the plant. In case of infringement, all claims for warranty and damages are lost. With EX pumps, the explosion permit also becomes void.

7 Malfunctions; causes and remedy

Problem	Cause	Remedy
Motor does not run	No power supply	Check the fuses, replace if necessary.
		Check the power cable for damage.
	Blown fuses	Replace fuses and locate the reason for their failure
Pump runs but gives no water	Pump or pressure line blocked	Clean the pump or the pressure line
	Air in the pump	Vent the pump and the pressure line. Vent the suction hose and the non-return flap if a non-return flap is used. All couplings must be leak-proof.
Pump gives insufficient water	Incorrect direction of rotation (red phase control lamp lights up, pump vibrates strongly)	Reverse the direction of rotation (see section 4.1)
	Pressure loss in the system too high	Remove kinks in the pressure line or use a wider pressure line
	Pump head too high	Connect a second CHIEMSEE pump in series
	Pressure line blocked	Clean the pressure line
	Viscosity of the pumped medium too high	Dilute the pumped medium if possible or use a more powerful pump
Motor protection switch, temperature or leakage monitoring trips out	Wrongly adjusted motor protection switch	Check the adjustment of the motor protection switch in the power plug. Right values: CHIEMSEE A: 9,5 A CHIEMSEE B: 9,0 A
	Viscosity of the pumped medium too high	If possible, dilute the pumped medium or use a more powerful pump
	Power input too high	Check the pump for blockages and remove the blockages.
	Motor running on two phases	Replace defective fuse, or have motor repaired if coil defective
	Motor temperature too high	Cool down the motor. If the motor protection is still tripping out the motor has to be checked by the Spechtenhauser service.
	Leaky motor	The motor has to be checked by the Spechtenhauser service.

In all further questions, please contact our customer service department.

BUREAU VERITAS

(1) # EU - Type Examination Certificate

(2) Equipment and protective systems intended for use in potentially explosive atmospheres – **Directive 2014/34/EU**

(3) EU - Type Examination Certificate Number

EPS 11 ATEX 1 382 X **Revision 2**

(4) Equipment: Pump motor Chiemsee EX

(5) Manufacturer: Spechtenhauser Pumpen GmbH

(6) Address: Gewerbestraße 3
86875 Waal
Germany

(7) This equipment and any acceptable variation thereto are specified in the annex to this certificate and the documentation therein referred to.

(8) Bureau Veritas Consumer Products Services Germany GmbH, notified body No. 2004 in accordance with Article 21 given in the Directive 2014/34/EU of the European Parliament and of the Council of 26 February 2014, certifies that this equipment has been found to comply with the essential health and safety requirements relating to the design and construction of equipment and protective systems intended for use in potentially explosive atmospheres, given in Annex II of the Directive. The examination and test results are recorded in the confidential documentation under the reference number 11TH0490.

(9) Compliance with the essential health and safety requirements has been assured by compliance with:

EN IEC 60079-0:2018 **EN 60079-1:2014**

(10) If the sign "X" is placed after the certificate number, it indicates that the equipment is subject to special conditions for safe use specified in the annex to this certificate.

(11) This EU - Type Examination Certificate relates only to the design and examination of the specified equipment in accordance with Directive 2014/34/EU. Further requirements of this Directive apply to the manufacture of this equipment and its placing on the market. Those requirements are not covered by this certificate.

(12) The marking of the equipment shall include the following:

Ex II 2G Ex db IIB T4 Gb

Certification department of explosion protection Hamburg, 2019-12-19

H. Schaffer

ZERTIFIZIERUNGSSTELLE BUREAU VERITAS 1828 Bureau Veritas CPS Germany GmbH

Page 1 of 2

Certificates without signature and seal are void. This certificate is allowed to be distributed only if not modified. Extracts or modifications must be authorized by Bureau Veritas Consumer Products Services Germany GmbH. EPS 11 ATEX 1 382 X, Revision 2.

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BUREAU VERITAS

(13) **Annex**

(14) **EU - Type Examination Certificate EPS 11 ATEX 1 382 X** **Revision 2**

(15) Description of equipment:

The pump motor Chiemsee Ex is constructed by an aluminium enclosure in type of protection Ex-d for use in hazardous location zone 1.

Electrical data:

Type	CHIEMSEE A	CHIEMSEE B
Voltage:	400 V	400 V
Frequency:	50 Hz	50 Hz
IP protection:	IP 68	IP 68
Current rating:	7,3 A	6,9 A
Power rating P1:	3,2 kW	3,2 kW

(16) Reference number: 11TH0490

(17) Special conditions for safe use:

The repair of flameproof joints is only allowed according to the manufacturers specifications. A repair according to the values of table 2 and 3 of EN 60079-1 is not allowed.

(18) Essential health and safety requirements:

Met by compliance with standards.

Certification department of explosion protection Hamburg, 2019-12-19

H. Schaffer

Zertifizierungsstelle Bureau Veritas 1828 Bureau Veritas CPS Germany GmbH

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Certificate

Quality Assurance Notification

Standard **Directive 2014/34/EU**

Certificate Registr. No. **01 220 061761**

The Certification Body for Explosion Protection
of TÜV Rheinland Industrie Service GmbH
Reported under no. 0035
certifies:

Certificate Holder: **Spechtenhauser Pumpen GmbH**
Gewerbestraße 3
86875 Waal
Germany

Scope: Production, final equipment inspection and testing of explosion protected pumps

Types of protection: d

An audit was performed, Report No. 061761. Proof has been furnished that the requirements according to Directive 2014/34/EU Annex IV are fulfilled.

The due date for all future audits is 18th of December

Validity: The certificate is valid from 19.12.2021 until 18.12.2024 First certification July 2006

ATEX Notified body • TÜV Rheinland Industrie Service • 0035

Wuppertal, 06.12.2021

TÜV Rheinland Industrie Service GmbH
Am Grauen Stein, D-51105 Cologne
Dipl.-Ing. Ralf Biegalla

www.tuv.com

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