

CONTENT

1.General description	7
2.Safety requirements	8
3.Preparation for work	8
3.1.Electric pumps can be installed directly.	8
3.2.Installation of electric pump	8
3.3.Electrical connection	9
4.Working procedure	9
5.Maintenance and storage rules	10
6.Possible faults and their troubleshooting	11
7.Warranty	11

Dear customers:

Thank you for your preference for our products Circulating electric pumps, like all products of the brand, made using advanced technologies and high-quality materials and components, which ensure high reliability of products.

ATTENTION! The installation and commissioning of the circulation pump must be carried out by qualified personnel.
In connection with the constant improvement of manufactured products, minor changes may be made to the design of individual parts and the electric pump as a whole, which are not reflected in this manual.

1. General description

- 1.1 Circulating electric pumps with a "wet" rotor of the series, hereinafter referred to as "electric pumps", are designed to ensure the circulation of the coolant in heating, cooling and air conditioning systems, solar heating and hot water supply systems for houses, cottages, household facilities and other consumers. Electric pumps can be installed in closed and open systems.
- 1.2 Manufacturer name and address
 Manufacturer name: Calpeda S.p.A.
 Address: Via Roggia di Mezzo, 39
 36050 Montorso Vicentino - Vicenza / Italia
www.calpeda.it
- 1.3 Pumped liquids:
 clean, non-viscous, non-aggressive liquids that do not contain solid particles or fibers;
 general hardness, not more than 10 mcg-eq/dm³;
 content of iron compounds, not more than 100 mcg/dm³;
 content of copper compounds $\mu\text{g/dm}^3$, not more than 10 $\mu\text{g/dm}^3$;
 the content of dissolved oxygen in water is not more than 20 $\mu\text{g/dm}^3$;
 content of oil products, not more than 0.5 mg/dm³;
 pH value pH 8.5-9.5;
 Maximum glycol content 50%;
 limiting lower and upper values of the temperature of the pumped liquid from -10°C to +110°C;
- 1.4 Maximum ambient temperature 40°C
- 1.5 The minimum pressure at the suction pipe at a temperature of +50°C -0.005 Mpa, at a temperature of +95°C -0.03 MPa, at a temperature of +110°C - 0.1 MPa (values are given for an altitude of less than 300 m above sea level, for high altitudes, add 0.001 MPa for every 100 m of height).
- 1.6 According to the degree of protection against electric shock, electric pumps belong to class 1.
- 1.7 The electric pump must be used indoors.

Strictly forbidden:

- Use electric pumps in conditions of freezing of the pumped liquid.
- Pumping of coolant containing liquid substances such as sand, rust and others, as this causes intensive wear of the working bodies, reduces the volumetric flow and pressure

2.Safety requirements

- 2.1.It is forbidden to install, maintain or dismantle the electric pump under voltag.
- 2.2.Electrical work, installation of sockets, fuses, their connection to the mains supply and grounding must be carried out by a qualified electrician in strict accordance with the Rules for the technical operation of electrical installations for consumers, the "Safety Rules for the Operation" "Electrical Installations for Consumers" and the instructions of this manual.
- 2.3.It is strictly forbidden to operate the electric pump without grounding.
- 2.4.It is recommended to install a residual current device (RCD) in the electrical circuit of the socket for connecting the electric pump, which operates on a leakage current of 30mA.
- 2.5.The electric pump must be installed in a place protected from flooding and moisture.
- 2.6. Attention, it is forbidden to install the electric pump on wooden supports or other flammable material.

3.Preparation for work

3.1.Electric pumps can be installed directly.

The installation diagram of the electric pump in the return line of the heating system is given in Appendix B.

3.2.Installation of electric pump

- Installation should be carried out after completion of all welding, soldering, plumbing work and flushing of pipelines. Contamination can disrupt the operation of the electric pump.
- The electric pump must be mounted in easily accessible places so that it can be easily checked or replaced in the future.
- The direction of flow is indicated by an arrow on the body of the electric pump.
- Isolation valves are installed at the inlet and outlet of the electric pump(Appendix B). This eliminates the need to drain and refill the system whenreplacing the electric pump. The fittings must be mounted so that in case of leakage water does not get on the motor and the terminal box.
- If the electric pump is installed in an open system, then the open expansion tank must be connected to the pipeline at the inlet of the electric pump.
- Install in such a way that mechanical stresses from the pipeline are not transferred to the electric pump. In installations with relatively long piping, the piping must be rigidly fixed to prevent vibrations.
- When installing the electric pump on the pipeline, the electric pump can be fixed with a wrench.
- Mounting position - horizontal shaft, as shown in Fig.2. If it is necessary to change the position of the terminal box relative to the housing, you should:
 - unscrew the screws that secure the housing - rotate the stator by 90°-fix the housing with screws (tightening torque -25kg.cm)
 - unscrew the screw plug (12)
 - check the rotation of the rotor

3.3. Electrical connection



Fig2 installation position of electric pump

- Connection to the mains supply and earthing must be carried out by a qualified electrician in accordance with the requirements of section 4.
- To connect to the power supply, use a three-core cable with a cross section of at least 0.75 mm^2 , with a temperature resistance of at least 110°C .
- Insert the cable through the cable gland inlet 13 (fig. 1) into the terminal box 9 and connect the wire cores to the terminal block 12 in accordance with the marking
- Tighten the cable with the cable entry nut to secure it and protect it from moisture and condensate ingress into the terminal box.
- Connect to the power supply network through a plug and socket with a grounding coat or provide for the installation in the power supply circuit of a two-pole switch with a distance between open contacts of at least 3 mm and a permitted current limit corresponding to the consumption of the electric motor.
- To protect the electric pump against overload, use melting points and a fuse or circuit breaker for protection against short-circuit currents for the corresponding tripping currents.
- When using devices with automatic control, it is necessary to observe the installation and operating instructions for the respective devices.

Attention! Do not allow the power cable to come into contact with the pipeline or pump, make sure that there is no moisture of any kind.

Attention! Any voltage fault in the network can cause motor damage.

4. Working procedure

4.1 Filling and venting

fill the fully assembled system with liquid and remove air from the top of the system. Partial removal of air from the pump cavity is carried out after turning it on beautifully. However, it is necessary to completely bleed the air from the electric pump in the following sequence

- turn off the pump
- close the shut-off valve at the outlet of the pump (on the pressure line)
- carefully unscrew the threaded plug 10 (fig. 1) designed for falling air
- carefully turn the pump shaft several times with a screwdriver
- protect electrical parts from water ingress
- turn on the pump
- after 15~30 seconds of operation, screw the screw plug into place
- open the shut-off valve on the pressure line

Attention! At high temperature and liquid pressure, when unscrewing the screw plug to remove air, hot coolant can be released in liquid or gaseous state, severe burns can occur!

Attention! Do not allow the electric pump to work without water

Attention! Depending on the pressure in the system, the electric pump can block if the vent holes are open

Attention! Depending on the temperature conditions, the pump and the pumped liquid can be very hot. There is a risk of burns when touching the pump.

4.2 The flow of the electric pump is regulated by changing the engine speed using switch 11 (fig. 1) on the terminal box:

- position 1: Minimum speed
- position 2: Middle speed
- position 3: Maximum speed

Attention! When first turned on, the speed switch must be set to maximum speed, then it can be switched to the desired position

4.3 Select the best speed

it is necessary to open all the taps in front of the radiators if after some time the radiator b will not be completely warm, it is necessary to set the switch to the maximum low speed in case the temperature of the return water from the radiators does not correspond to the design one, it is necessary to adjust the valves in front of the radiators until they are evenly warmed up, then regulate the flow of the pump.

Too much flow can cause noise in the system.

Attention! To save energy, it is recommended to run the pump at the lowest speed.

5. Maintenance and storage rules

5.1. If the installation is carried out in accordance with the above operating instructions, the electric pump runs silently and does not require any maintenance.

5.2. The electric pump must be stored at a temperature $-10^{\circ}\text{C} \dots +50^{\circ}\text{C}$.

5.3. In case of prolonged inactivity of the electric pump installed in the system, before starting it is necessary to:

- unscrew the screw plug(10)(fig.1)
- turn the electric pump shaft several times with a screwdriver
- screw the plug into place
- turn on the electric pump at maximum speed, then set the required speed

5.4. If the supply cord is damaged, it must be replaced by the manufacturer or its customer service or similarly qualified personnel in order to avoid a hazard.

6. Possible faults and their troubleshooting

No	Possible failure	Probable cause	Method of exercise
1.	Electric pump does not work	1. No power	1. Check whether the power supply voltage, plug and socket are normal and safe .
		2. Motor damage	2. Contact service center
2.	Pump runs but no water	1. Air entering the suction pipe	1. Share air from the electric pump
		2. Blockage of the filter in front of the inlet pipe	2. Clean or replace filter
		3. Shut-off valve closed	3. Check shut-off valves
3.	Protection device trips (fuses or circuit breaker)	1. Supply voltage does not correspond to that indicated on the plate (voltage high or low)	1. Turn off the power, eliminate the cause of overheating, run the pump to cool down and turn on the pump again
		2. The working wheel is blocked by a foreign object	2. Check the voltage and turn the shaft with a chain through the holes of the screw plug, if necessary, remove the housing and clean it. The impeller from contamination.
		3. The temperature or damage of the pumped liquid or the ambient temperature is higher than indicated in the technical data for the pump	3. Switch off the electric pump, eliminate the cause of the protection operation, or change to an electric pump of higher power.
		4. Engine damaged	4. Contact the service center
4.	Increased system noise	1. Flow rate too high	1. Change engine speed
		2. Air in the system	2. Bleed the air from the top peak of the system
5.	Increased noise in the electric pump	1. Air in the pump	1. Remove air from the electric pump
		2. Suction pressure too low	2. Increase suction pressure (recharge of expansion tank)

7. Warranty

See the sales general conditions.