

## Mechanical installation

TP, TPE pumps can be installed in horizontal and vertical pipes.

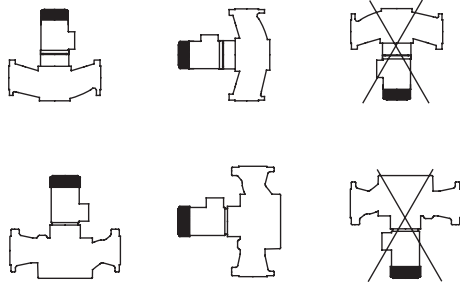


Fig. 12 Installation

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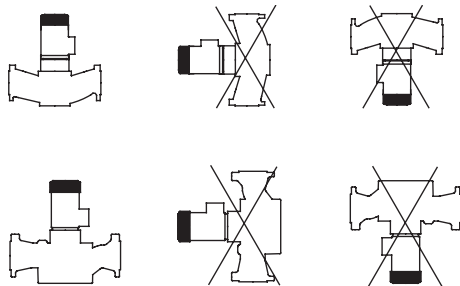


Fig. 13 Installation

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Install the pumps in such a way that strain from the pipework is not transferred to the pump housing.

To ensure sufficient cooling of motor and electronics, observe the following:

- Place the pump in such a way that sufficient cooling is ensured.
- Make sure that the temperature of the cooling air does not exceed +104°F.
- Keep the motor cooling fins, holes in fan cover and fan blades clean.
- Make sure the frequency for the motor is at least 6 Hz.

### Condensation cover for TPE pumps

When installing TPE pumps outdoors, provide the motor with a suitable cover to avoid condensation on the electronic components and to protect the pump and motor against the direct effects of the elements.

When mounting the condensation cover on top of the motor, make sure to leave enough space for the air to cool the motor.

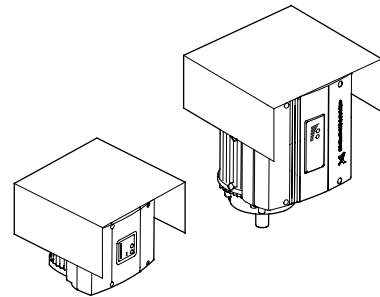


Fig. 14 MGE and MLE motors with condensation cover

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### Elimination of noise and vibrations

In order to achieve optimum operation and minimum noise and vibration, consider vibration damping of the pump.

Noise and vibration are generated by the revolutions of the motor and pump and by the flow in pipes and fittings. The effect on the environment is subjective and depends on correct installation and the state of the remaining system.

Elimination of noise and vibrations is best achieved by means of a concrete foundation, vibration dampers and expansion joints.

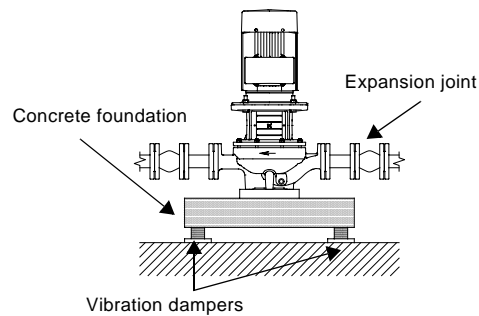


Fig. 15 Foundation of TP pump

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### Concrete foundation

Install the pump on a plane and rigid concrete foundation. This is the optimum solution for vibration dampening. As a rule of thumb, the weight of a concrete foundation should be 1.5 times the pump weight.

## Vibration dampers

To prevent the transmission of vibrations to buildings, we recommend you to isolate the pump foundation from building parts by means of vibration dampers.

The selection of the right vibration damper requires the following data:

- forces transmitted through the damper
- motor speed considering speed control, if any
- required dampening in % (suggested value is 70%).

Which is the right damper varies from installation to installation, and a wrong damper may increase the vibration level. Vibration dampers should therefore be sized by the supplier.

If you install the pump on a foundation with vibration dampers, always fit expansion joints on the pump flanges. This is important to prevent the pump from "hanging" in the flanges.

## Expansion joints

Install expansion joints to

- absorb expansions/contractions in the pipework caused by changing liquid temperature
- reduce mechanical strains in connection with pressure surges in the pipework
- isolate mechanical structure-borne noise in the pipework (only rubber bellows expansion joints).

**Note:** Do not install expansion joints to compensate for inaccuracies in the pipework such as centre displacement of flanges.

Fit expansion joints at a distance of minimum 1 to 1½ times the nominal flange diameter away from the pump on the suction as well as on the discharge side. This will prevent the development of turbulence in the expansion joints, resulting in better suction conditions and a minimum pressure loss on the pressure side. At high water velocities (> 16 ft/s) we recommend you to install larger expansion joints corresponding to the pipework.

The illustration below shows examples of rubber bellows expansion joints with or without limit rods.

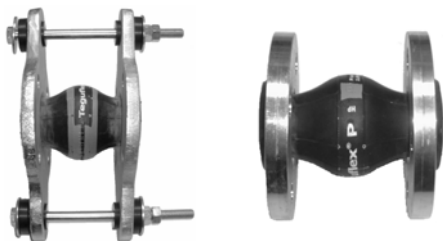


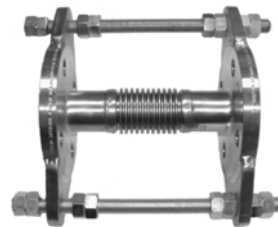
Fig. 16 Examples of rubber bellows expansion joints

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Expansion joints with limit rods can be used to reduce the effects of the expansion/contraction forces on the pipework.

Anchor the pipes in such a way that they do not stress the expansion joints and the pump. Follow the supplier's instructions and pass them on to advisers or pipe installers.

The illustration below shows an example of a metal bellows expansion joint with limit rods.



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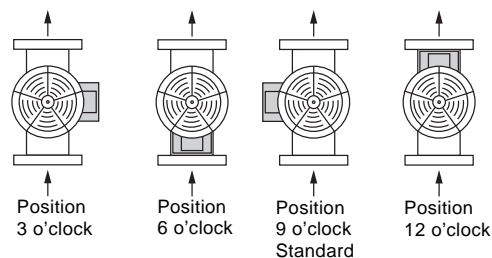
Fig. 17 Example of metal expansion joint

Due to the risk of rupture of the rubber bellows, metal bellows expansion joints may be preferred at temperatures above +212°F combined with high pressure.

## Control Panel positions

As standard, the control panels of TP and TPE pumps are mounted in position 9 o'clock.

The possible terminal box positions are shown below.



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Control panel face has an infrared receiver. There should be sufficient space between any obstruction and the control panel.

## Electrical installation

### Electrical connection

Carry out electrical connection and protection in accordance with local regulations.

- Electronically speed-controlled pumps must always be correctly grounded.
- Single-phase standard motors incorporate a thermal switch and require no additional thermal motor protection.

**Note:** Carry out the mains connection of the pump as shown in the diagram inside the terminal box cover.

Do not start the pump until it has been filled with liquid and vented.

### Protection

#### Protection against fault currents

If the pump is connected to an electric installation where an earth leakage circuit breaker (ELCB) is used as additional protection, the earth leakage circuit breaker must be marked with the following symbols.

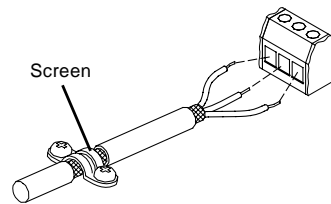


The earth leakage circuit breaker **must** trip out when earth fault currents with DC content (pulsating DC) and smooth DC earth fault currents occur.

### Communication cables for TPE

Use screened cables (min. 0.5 mm<sup>2</sup>) for external on/off switch, digital input, sensor and setpoint signals. The screens of the cables should be connected to frame at both ends.

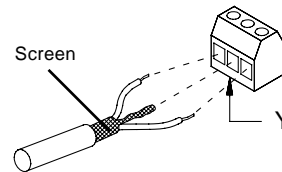
The screen of the cable must have good frame connection which must be as close as possible to the terminals.



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**Fig. 18** External start/stop cable connection of TPE

Use a screened 2-core cable for the bus connection. Connect the screen to terminal Y at both ends.



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**Fig. 19** Bus connection of TPE

## Other connections TPE

See the wiring diagrams for instructions how to connect external potential-free contacts for start/stop and digital function, external setpoint signal and fault signal.

Connect the wires to the following terminal groups:

**Group 1:** Inputs (external start/stop, digital function, setpoint and sensor signals, terminals 1-9 and bus connection, A, Y, B).

All inputs are separated from the mains conducting parts by reinforced insulation.

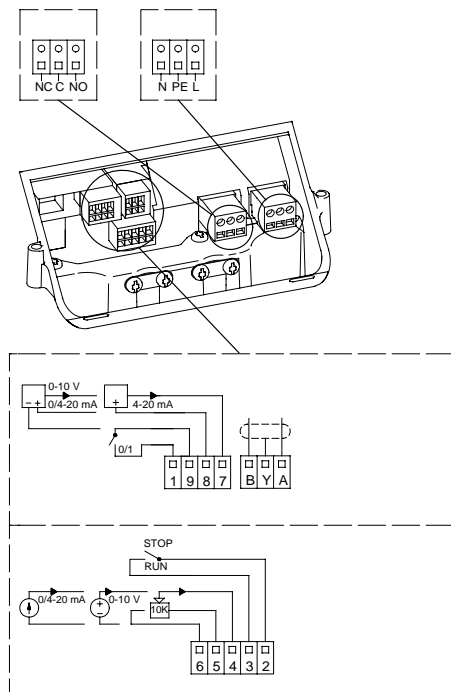
**Group 2:** Output (signal relay).

The output, terminals C, NO and NC, are galvanically separated from other circuits. Therefore, the supply voltage or protective extra-low voltage can be connected to the output as desired.

**Group 3:** Mains supply.

### Note:

- As a precaution, separate the wires from each other by reinforced insulation in their entire lengths.
- If no external on/off switch is connected, maintain the connection across terminals 2 and 3.



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