

5 Operation and control

NOTICE



The device must not be started or operated outside the specifications!

DANGER



Danger of explosions, danger of poisoning from poisonous corrosive gases

During maintenance work, depending on the medium used, explosive and/or poisonous corrosive gases could escape, and this could lead to a danger of explosion or could be hazardous to health.

- Inspect the leak tightness of your sampling system before putting the device into operation.
- Ensure that gases that are hazardous to health are discharged safely.
- Turn off the gas supply before beginning any maintenance or repair work and flush the gas lines with inert gas or air. Secure the gas supply so that it cannot be turned on unintentionally.
- Protect yourself during maintenance from poisonous / corrosive gases. Wear appropriate protective equipment.



DANGER



Adiabatic compression (explosion hazard)!

In case of adiabatic compression, high gas temperatures may occur. The operator is responsible to consider this situation.

Make sure to obey the allowed technical specifications and ambient conditions (see data sheet), take special attention to the media temperature with respect to temperature class T3 or T4. These vary in addition to gas composition and ambient conditions. Where necessary, the operator must install temperature sensors for monitoring and must automatically shut down the sample gas pump should the temperature exceed the limits.

DANGER



Dangerous electrostatic charge (explosion hazard)

Transporting materials such as very dry, particle-loaded gases can cause incendive electrostatic charges in the bellow / pump body.

Install particle filtration with the appropriate fineness upstream from the pump gas input. For the P2.x ATEX-O2 versions in particular, we recommend a filter fineness of <10 µm.

DANGER



Diffusing pumped media

Explosion hazard! Formation of explosive atmosphere due to escaping flammable gases.

When operating the sample gas pumps with media that tend to diffuse strongly, such as hydrogen (H₂) in high concentrations, it is essential to note that these are not permanently technically leak-proof due to their design. To ensure safe operation, the official regulations for installation and operation must be observed. In addition to regular leakage checks, suitable technical measures such as gas monitoring devices, technical ventilation, etc. must be provided depending on the installation situation.

CAUTION



Hot surface

Burning hazard

According to the product type and operation conditions, the temperature of the housing may exceed 50 °C during operation.

Depending on the conditions at the installation site it may be necessary to provide these areas with appropriate warning signs.

5.1 Switching on the sample gas pump

Before switching on the unit, check that:

- the hose and electrical connections are correctly installed and not damaged.
- no parts of the sample gas pump have been removed (e.g. the cover).
- the gas inlet and outlet of the sample gas pump are not closed.
- the pre-pressure is below 0.5 bar (g).
- a bypass is installed for continuous operation for throttling below 150 l/h (P2.x ATEX (-H₂/-O₂)) or 400 l/h (P2.7x ATEX (-H₂/-O₂)).
- the ambient parameters are met.
- rating plate information is observed.
- the voltage and frequency of the motor match the mains values.
- electrical connections are securely connected and monitoring devices are connected and set correctly!
- air inlets and cooling surfaces are clean.
- precautions have been taken; earthing!
- the pump is properly secured!
- the junction box cover is closed and the cable glands sealed properly.
- the elastomer ring gear on the coupling (only P2.4 ATEX/P2.74 ATEX (-H₂/-O₂)) is mounted correctly and free of damage.
- the necessary safety and monitoring devices (depending on the application) are installed and functional (e.g. protective motor switch, pressure gauge, flame arrester, temperature monitor, depending on pump type).
- the sample gas pump is sufficiently tight, as specified in your operator specifications. If necessary, tighten the 4 cap screws to 3 Nm.

When switching on the unit, check that:

- there is no unusual noise or vibration.
- the flow rate is not elevated or low. This can indicate a bellow defect.

5.2 Operating the sample gas pump

The sample gas pump is only intended to convey gaseous media. It is not permitted for liquids.

The sample gas pump should be operated without primary pressure. Primary pressures over 0.5 bar are prohibited. Never block the gas outlet. The flow rate must be at least 50 l/h for P2.x ATEX (-H₂/-O₂) and at least 200 l/h for P2.7x ATEX (-H₂/-O₂) pumps. With continuous operation throttled to below 150 l/h for P2.x ATEX (-H₂/-O₂) pumps and below 400 l/h for P2.7x ATEX (-H₂/-O₂) pumps the flow rate must be regulated via bypass. In this case you should choose a version with a bypass valve.

NOTICE



Extreme throttling reduces the life time of the bellow.

For pumps with an integrated bypass valve, the output power can be adjusted. Do not expend a great amount of power when turning the valve as otherwise the valve could be damaged! The turning range of the valve is around seven rotations.

NOTE: Read and observe the maintenance plan!