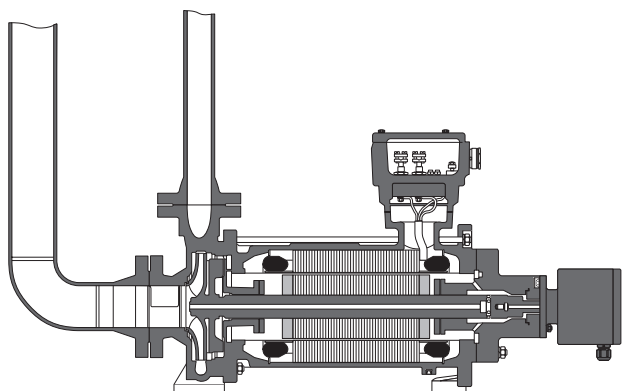


PRODUCT INFORMATION



Monitoring device ARM-2000

## Description

---

### *The objective of monitoring*

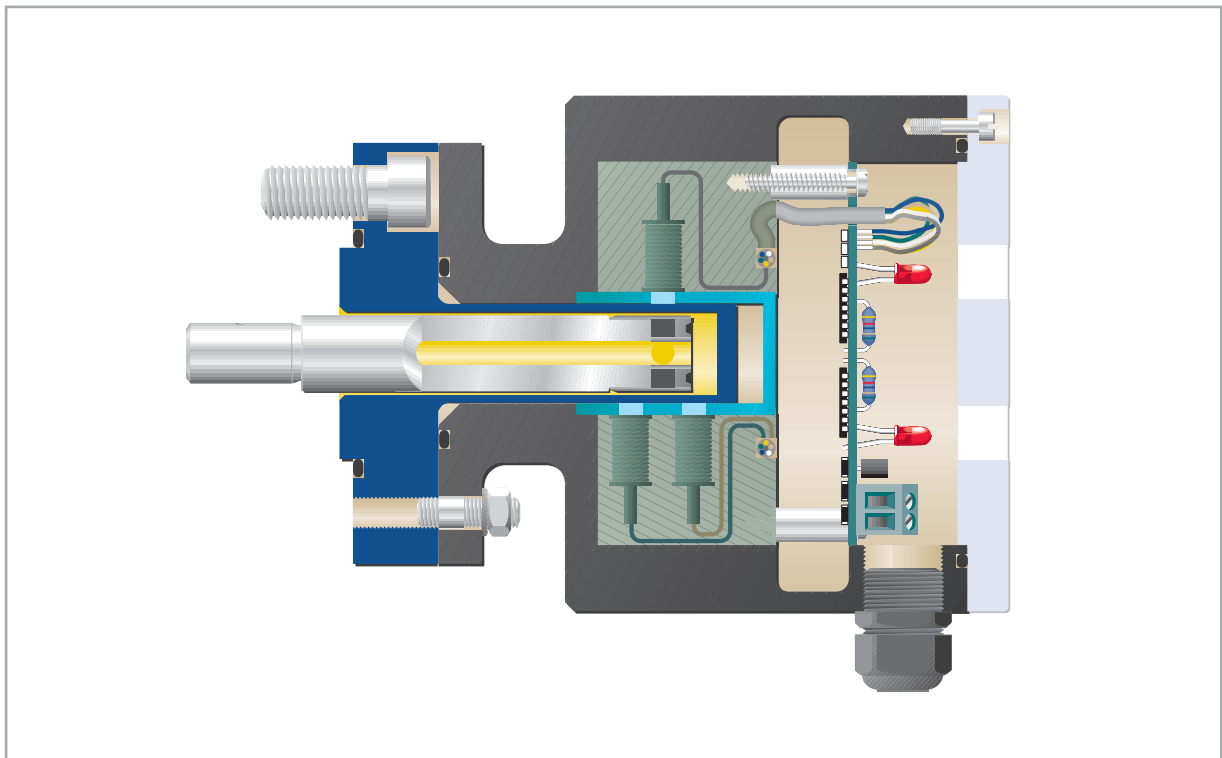
HERMETIC canned motor pumps are thoroughly inspected and tested before shipment. An integral part of the test is the setting of the axial thrust balancing as malfunctions in this area are one of the main sources for system failures. The service life of canned motor pumps mainly depends upon the correct setting and its functioning.

The axial thrust balancing is mainly influenced by the operating method of the pump, plant conditions and by various physical data of the liquid to be conveyed. For early detection of the source of errors, it is recommended to install a rotor-position-monitoring device.

### *ARM-2000 Axial-Rotation-Monitor*

ARM-2000 offers the optimum solution for general monitoring purposes. The electronic protection device for HERMETIC pumps monitors the axial clearance of the rotor's shaft as well as the shaft's rotational direction during operation – in a hermetical and non-contacting way. The combination with temperature and level controls allows for an efficient and automatic early detection of malfunctions.

Up to now, the correct rotational direction of canned motor pumps, which is crucial for proper pump operation, could only be detected by indirect processes such as e.g. controlling the discharge pressure. With the ARM-2000, the rotational direction is now visually indicated by LEDs.



## A simple 2-component system

- The transmitter ARM-2000 is directly mounted to the pump. The transmitter contains non-wearing electromagnetic sensors and evaluation electronics.
- The transmitter power supply, e.g. STAHL type 9160/13-11-11s, is prepared for integration into the central control room. It supplies the transmitter with power and carries the output signal.

## Functional principle

The ARM-2000 is mounted to the bearing cover (motor end). Measurement data logging is based on the speedometer principle, where 2 coils establish the rotor's axial position. The electronic components generate a linear output signal of 4 – 20 mA. Rotational direction of the pump's rotor is detected by 2 offset tachometric coils and visualized with the help of light emitting diodes (LEDs) on the transmitter.

## Use

Monitoring the rotor's axial position of a HERMETIC pump allows detecting and determining a variety of possible malfunctions, such as:

- motor cooling amount
- transport stop of medium
- axial bearing wear
- pump's cavitation
- deposits and clogging
- direction of rotation
- slot deviations due to wear and tear or abrasion.

## Technical data

### Transmitter ARM-2000

Intrinsic input	EEx ib II C T4
Explosion protection certification	PTB 04 ATEX 2069
Supply voltage	24 VDC +/- 25%
Residual ripple	≤ 1 Vss
Maximum current	≤ 30 mA
permissible ambient temp.	-30 °C to +70 °C

### Signal output

Axial clearance	8 ... 12 ... 16 mA corresponding to -2 ... 0 ... +2 mm
Indication of rotational direction	2 LEDs (left resp. right rotation)

### Transmitter power supply devices

e.g.	STAHL type 9160/13-11-11s
Intrinsic input	EEx ia II C
Explosion protection certificate	DMT 03 ATEX E 010X
Auxiliary energy	24 ± 20%
■ Galvanic separation between input output, and auxiliary energies	
■ EMV tested	
■ Monitoring for wire breaking and short-circuit monitoring	

## Convincing service.

Important features are readiness, mobility, flexibility, availability and reliability. We are anxious to ensure a pump operation at best availability and efficiency to our customers.

### *Installation and commissioning*

- service effected on site by own service technicians

### *Spare part servicing*

- prompt and longstanding availability
- customized assistance in spare part stockkeeping

### *Repair and overhauling*

- professional repairs including test run executed by the parent factory
- or executed by one of our service stations worldwide

### *Maintenance and service agreement*

- concepts individually worked out to increase the availability of your production facilities

### *Training and workshops*

- extra qualification of your staff to ensure the course of your manufacture

### **Our products comply with:**

- Explosion protection acc. to ATEX / UL / CQST / CSA
- VOC directive 1999/13/EC
- TA-Luft
- IPPC directive
- CE
- RCCM, level 2
- Rosgortechnazdor

### **HERMETIC-Pumpen GmbH**

#### **is certified acc. to:**

- ISO 9001:2000
- GOST "R"
- ATEX 94/9/EC
- AD HP 0 / TRD 201
- DIN EN 729-2
- KTA 1401, QSP 4a