The cost efficient flow indicator
Warnings and symbols used

**WARNING!**
Disregarding this safety warning, even if only in part, poses the risk of serious health problems. There is also the risk of damaging the device or parts of the operator’s plant.

**CAUTION!**
Disregarding these instructions can result in damage to the device or to parts of the operator’s plant.

**INFORMATION!**
These instructions contain important information for the handling of the device.

**HANDLING**
- This symbol designates all instructions for actions to be carried out by the operator in the specified sequence.
- **RESULT**
This symbol refers to all important consequences of the previous actions.

Safety instructions for the operator

**CAUTION!**
Installation, assembly, start-up and maintenance may only be performed by appropriately trained personnel. The regional occupational health and safety directives must always be observed.

**LEGAL NOTICE!**
The responsibility as to the suitability and intended use of this device rests solely with the user. The supplier assumes no responsibility in the event of improper use by the customer. Improper installation and operation may lead to loss of warranty. In addition, the “Terms and Conditions of Sale” apply which form the basis of the purchase contract.

**INFORMATION!**
- Further information can be found on the supplied CD-ROM in the manual, on the data sheet, in special manuals, certificates and on the manufacturer’s website.
- If you need to return the device to the manufacturer or supplier, please fill out the form contained on the CD-ROM and send it with the device. Unfortunately, the manufacturer cannot repair or inspect the device without the completed form.
2.1 General notes on installation

**INFORMATION!**
Inspect the cartons carefully for damages or signs of rough handling. Report damage to the carrier and to the local office of the manufacturer.

**INFORMATION!**
Do a check of the packing list to make sure that you have all the elements given in the order.

**INFORMATION!**
Look at the device nameplate to ensure that the device is delivered according to your order. Check for the correct supply voltage printed on the nameplate.

2.2 Scope of delivery

The OPTIPROBE is available in two models. You receive the ordered version.

1. Model A, for fixed mounting with welded-on flange.
2. Model B, for mounting with variable insertion lengths.
2.3 Nameplate

**INFORMATION!**

Look at the device nameplate to ensure that the device is delivered according to your order. Check for the correct supply voltage printed on the nameplate.

| ① Name and address of the manufacturer. |
| ② Type designation of the flowmeter and CE sign. |
| ③ Calibration data. |

OPTIPROBE, model A or B
Quick Start
Factory calibration certificate
2.4 Installation conditions

2.4.1 Inlet and outlet

Figure 2-1: Recommended inlet and outlet sections

1. ≥ 10 DN
2. ≥ 5 DN

2.4.2 Mounting position

Figure 2-2: Mounting position

1. Flow profile must be fully developed.
2. Welding instructions: the electrodes must point to the side of the pipeline!
3. Insert the OPTIPROBE perpendicular.
4. Insertion length ≥ 25mm.
5. DN ≥ 80mm.

CAUTION!
The OPTIPROBE is a sensor which measures flow speed at one point in the pipe. In case the flow speed has to be converted into a volume, please note that the measured value depends on the used diameter and the insertion length, because the OPTIPROBE decreases the inner surface of the pipe at the measuring section. The corrected GKI value for any other installation condition can be calculated as:

\[
GKI = GKI_{\text{cal}} \times \left(1 - \frac{30 \times L_{\text{insertion}}}{0.79 \times DN^2}\right)
\]

All measures in mm
GKI_{\text{cal}} is GKI on nameplate
2.4.3 T-section

Figure 2-3: Distance after T-sections

Figure 2-4: Avoid vibrations

2.4.4 Vibration

Figure 2-5: Avoid magnetic fields

2.4.5 Magnetic field

Figure 2-6: Installation after pump

2.4.6 Pump
2.4.7 Control valve

Figure 2-7: Installation before control valve

2.4.8 Bends

Figure 2-8: Installation in bending pipes

Figure 2-9: Installation in bending pipes
2.4.9 Open discharge

![Installation before an open discharge](image)

Figure 2-10: Installation before an open discharge

2.4.10 Temperatures

- Process temperature
- Ambient temperature

**CAUTION!**

*Protect the device from direct sunlight.*

<table>
<thead>
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<th>Temperature range</th>
<th>[°C]</th>
<th></th>
<th>[°F]</th>
<th></th>
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<td></td>
<td>min.</td>
<td>max.</td>
<td>min.</td>
<td>max.</td>
</tr>
<tr>
<td>Process temperature</td>
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<tr>
<td>Ambient temperature</td>
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<td>55</td>
<td>-22</td>
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</table>
2.5 Mounting and dismounting

The following instruction is to be used when it is necessary to mount or dismount the OPTIPROBE measuring sensor (model B only!).

Dismounting

1. Make sure that the safety chain is correctly installed to secure the OPTIPROBE.
2. Loosen the bolt ① in picture below, until the unit can be slid out of the gland. Be aware that if the pressure is sufficiently high the unit can slide out without pulling, or even force out when pressure in the installation is high.
3. Slide out the OPTIPROBE unit as far as possible (allowed by the chain).
4. Close the valve. Remind that the volume above the valve is still pressurized.
5. Loosen the bolts ② in picture below, to release pressure.
6. Dismount the chain and remove the OPTIPROBE.

Mounting the OPTIPROBE

1. Loosen the bolt ① in picture above, until the unit can be slid in the gland.
2. Loosen the bolts ② in picture above (if necessary, it can make it easier to slide the unit back in).
3. Mount the security chain and make sure it is correctly assembled.
4. Tighten the bolts ② in picture above. Be sure the safety chain is attached and the bolts are tightened!
5. Carefully open the valve.
6. Slide in the OPTIPROBE into the desired position. This might require force, depending on the pressure in the installation.
7. Tighten bolt ① in picture above.
### 3.1 Safety instructions

**DANGER!**  
All work on the electrical connections may only be carried out with the power disconnected. Take note of the voltage data on the nameplate!

**DANGER!**  
Observe the national regulations for electrical installations!

**WARNING!**  
Observe without fail the local occupational health and safety regulations. Any work done on the electrical components of the measuring device may only be carried out by properly trained specialists.

**INFORMATION!**  
Look at the device nameplate to ensure that the device is delivered according to your order. Check for the correct supply voltage printed on the nameplate.

### 3.2 Connection diagram

- The outer shield of the signal cable in the signal converter housing is connected via the strain relief terminal.
- Bending radius of signal and field current cable: ≥ 50 mm / 2”.
- The following illustration is schematic. The positions of the electrical connection terminals may vary depending on the type of converter.

![Connection Diagram](image)

**Figure 3-1: Connection diagram**

1. Electrical terminal compartment in housing of the signal converter for signal and field current cable.
2. Signal cable
3. Field current cable C
4. Connection box for measuring sensor
5. Functional ground FE
KROHNE product overview

- Electromagnetic flowmeters
- Variable area flowmeters
- Ultrasonic flowmeters
- Mass flowmeters
- Vortex flowmeters
- Flow controllers
- Level meters
- Temperature meters
- Pressure meters
- Analysis products
- Products and systems for the oil & gas industry
- Measuring systems for the marine industry

Head Office KROHNE Messtechnik GmbH
Ludwig-Krohne-Straße 5
47058 Duisburg (Germany)
Tel.:+49 203 301 0
Fax:+49 203 301 103 89
info@krohne.com

The current list of all KROHNE contacts and addresses can be found at:
www.krohne.com