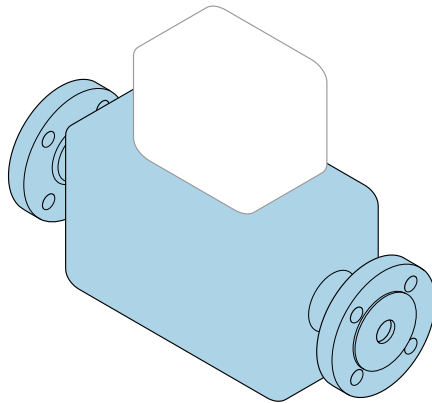# Brief Operating Instructions
Flowmeter
Proline Promass U

Coriolis sensor

These Brief Operating Instructions are **not** a substitute for the Operating Instructions pertaining to the device.

Brief Operating Instructions Part 1 of 2: Sensor
Contain information about the sensor.

Brief Operating Instructions Part 2 of 2: Transmitter
→ 🖺 3.

Endress+Hauser 🔲
People for Process Automation

Order code: XXXXX-XXXXXX
Ser. no.: XXXXXXXXXXXX
Ext. ord. cd.: XXX.XXXX.XX

Endress+Hauser

1.

Serial number

2. www.endress.com/deviceviewer

Endress+Hauser
Operations App

Download on the App Store

ANDROID APP ON
Google Play

3.

A0023555

Brief operating instructions Flowmeter

The device consists of a transmitter and a sensor.

The process of commissioning these two components is described in two separate manuals which together form the Brief Operating Instructions for the flowmeter:
- Brief Operating Instructions Part 1: Sensor
- Brief Operating Instructions Part 2: Transmitter

Please refer to both parts of the Brief Operating Instructions when commissioning the device, as the contents of the manuals complement one another:

Brief Operating Instructions Part 1: Sensor
The Sensor Brief Operating Instructions are aimed at specialists with responsibility for installing the measuring device.
- Incoming acceptance and product identification
- Storage and transport
- Mounting procedure

Brief Operating Instructions Part 2: Transmitter
The Transmitter Brief Operating Instructions are aimed at specialists with responsibility for commissioning, configuring and parameterizing the measuring device (until the first measured value).
- Product description
- Mounting procedure
- Electrical connection
- Operation options
- System integration
- Commissioning
- Diagnostic information

Additional device documentation

These Brief Operating Instructions are the **Brief Operating Instructionspart 1: Sensor**.

The "Brief Operating Instructions part 2: Transmitter" are available via:
- Internet: www.endress.com/deviceviewer
- Smart phone/tablet: *Endress+Hauser Operations App*

Detailed information about the device can be found in the Operating Instructions and the other documentation:
- Internet: www.endress.com/deviceviewer
- Smart phone/tablet: *Endress+Hauser Operations App*

Table of contents

1   About this document

1.1   Symbols used

1.1.1   Safety symbols

⚠ DANGER

This symbol alerts you to a dangerous situation. Failure to avoid this situation will result in serious or fatal injury.

⚠ WARNING

This symbol alerts you to a dangerous situation. Failure to avoid this situation can result in serious or fatal injury.

**⚠ CAUTION**

This symbol alerts you to a dangerous situation. Failure to avoid this situation can result in minor or medium injury.

NOTICE

This symbol contains information on procedures and other facts which do not result in personal injury.

1.1.2   Symbols for certain types of information

Symbol	Meaning	Symbol	Meaning
✓	**Permitted** Procedures, processes or actions that are permitted.	✓✓	**Preferred** Procedures, processes or actions that are preferred.
✗	**Forbidden** Procedures, processes or actions that are forbidden.	🛈	**Tip** Indicates additional information.
📖	Reference to documentation		Reference to page
	Reference to graphic	1. , 2. , 3. ...	Series of steps
↳	Result of a step	👁	Visual inspection

1.1.3   Electrical symbols

Symbol	Meaning	Symbol	Meaning
⎓	Direct current	∼	Alternating current
⎓∼	Direct current and alternating current	⏚	**Ground connection** A grounded terminal which, as far as the operator is concerned, is grounded via a grounding system.

Symbol	Meaning
⏚	**Potential equalization connection (PE: protective earth)** Ground terminals that must be connected to ground prior to establishing any other connections. The ground terminals are located on the interior and exterior of the device: • Interior ground terminal: potential equalization is connected to the supply network. • Exterior ground terminal: device is connected to the plant grounding system.

1.1.4   Tool symbols

Symbol	Meaning	Symbol	Meaning
✦	Torx screwdriver	◖	Flat-blade screwdriver
✚	Phillips head screwdriver	⬡	Allen key
⬤	Open-ended wrench		

1.1.5   Symbols in graphics

Symbol	Meaning	Symbol	Meaning
1, 2, 3,...	Item numbers	1., 2., 3....	Series of steps
A, B, C, ...	Views	A-A, B-B, C-C, ...	Sections
⚠EX	Hazardous area	⚠EX	Safe area (non-hazardous area)
≈➡	Flow direction		

2   Basic safety instructions

2.1   Requirements for the personnel

The personnel must fulfill the following requirements for its tasks:
▶ Trained, qualified specialists must have a relevant qualification for this specific function and task.
▶ Are authorized by the plant owner/operator.
▶ Are familiar with federal/national regulations.
▶ Before starting work, read and understand the instructions in the manual and supplementary documentation as well as the certificates (depending on the application).
▶ Follow instructions and comply with basic conditions.

2.2   Intended use

Application and media
The measuring instrument described in these Operating Instructions is intended only for the flow measurement of liquids and gases.

To ensure that the measuring instrument is in perfect condition during operation:
▶ Only use the measuring instrument in full compliance with the data on the nameplate and the general conditions listed in the Operating Instructions and supplementary documentation.
▶ Use the measuring instrument only for media to which the process-wetted materials are sufficiently resistant.
▶ Keep within the specified pressure and temperature range.
▶ Keep within the specified ambient temperature range.
▶ Protect the measuring instrument permanently against corrosion from environmental influences.

Incorrect use
Non-designated use can compromise safety. The manufacturer is not liable for damage caused by improper or non-designated use.

⚠ WARNING
Danger of breakage due to corrosive or abrasive fluids and ambient conditions!
▶ Verify the compatibility of the process fluid with the sensor material.
▶ Ensure the resistance of all fluid-wetted materials in the process.
▶ Keep within the specified pressure and temperature range.

NOTICE
Verification for borderline cases:
▶ For special fluids and fluids for cleaning, Endress+Hauser is glad to provide assistance in verifying the corrosion resistance of fluid-wetted materials, but does not accept any warranty or liability as minute changes in the temperature, concentration or level of contamination in the process can alter the corrosion resistance properties.

Residual risks

⚠ CAUTION
Risk of hot or cold burns! The use of media and electronics with high or low temperatures can produce hot or cold surfaces on the device.
▶ Mount suitable touch protection.

2.3   Workplace safety

When working on and with the device:
▶ Wear the required personal protective equipment as per national regulations.

2.4   Operational safety

Risk of injury!
▶ Operate the device in proper technical condition and fail-safe condition only.

▶ The operator is responsible for interference-free operation of the device.

Ambient requirements for transmitter housing made of plastic

If a plastic transmitter housing is permanently exposed to certain steam and air mixtures, this can damage the housing.
▶ If you are unsure, please contact your Endress+Hauser Sales Center for clarification.
▶ If used in an approval-related area, observe the information on the nameplate.

2.5   Product safety

This measuring device is designed in accordance with good engineering practice to meet state-of-the-art safety requirements, has been tested, and left the factory in a condition in which it is safe to operate.

It meets general safety standards and legal requirements. It also complies with the EU directives listed in the device-specific EU Declaration of Conformity. The manufacturer confirms this by affixing the CE mark to the device..

2.6   IT security

The manufacturer warranty is valid only if the product is installed and used as described in the Operating Instructions. The product is equipped with security mechanisms to protect it against any inadvertent changes to the settings.
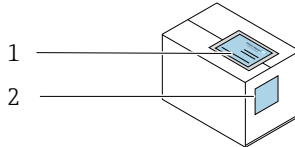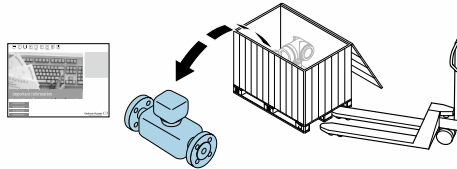
IT security measures, which provide additional protection for the product and associated data transfer, must be implemented by the operators themselves in line with their security standards.

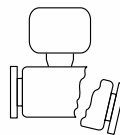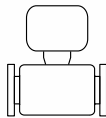# 3   Incoming acceptance and product identification
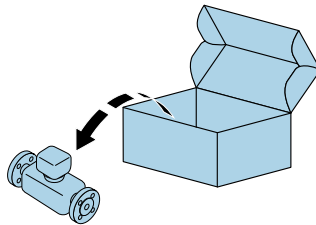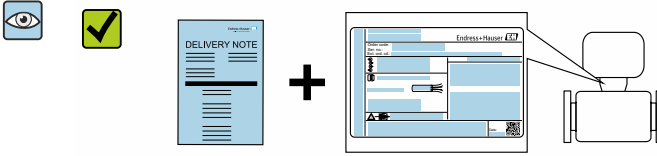
3.1   Incoming acceptance
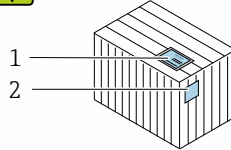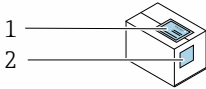
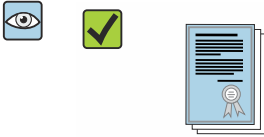Are the order codes on the delivery note (1) and the product sticker (2) identical?

Are the order codes on the delivery note (1) and the product sticker (2) identical?
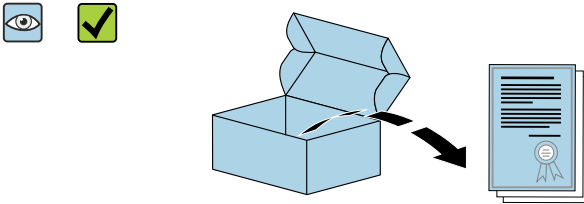
Are the goods undamaged?

Does the data on the nameplate match the order specifications on the delivery note?

Is the envelope present with accompanying documents?

Is the accompanying safety data sheet present?

The disposable is not part of the device delivery and must be ordered separately.

- If one of the conditions is not satisfied, contact your Endress+Hauser Sales Center.
- The Technical Documentation is available via the Internet or via the *Endress+Hauser Operations app*.

3.2 Product identification

The device can be identified in the following ways:
- Nameplate
- Order code with details of the device features on the delivery note
- Enter the serial numbers from the nameplates in the *Device Viewer* (www.endress.com/deviceviewer): all the information about the device is displayed.
- Enter the serial numbers from the nameplates into the *Endress+Hauser Operations app* or scan the DataMatrix code on the nameplate with the *Endress+Hauser Operations app*: all the information about the device is displayed.

3.2.1   Sensor nameplate
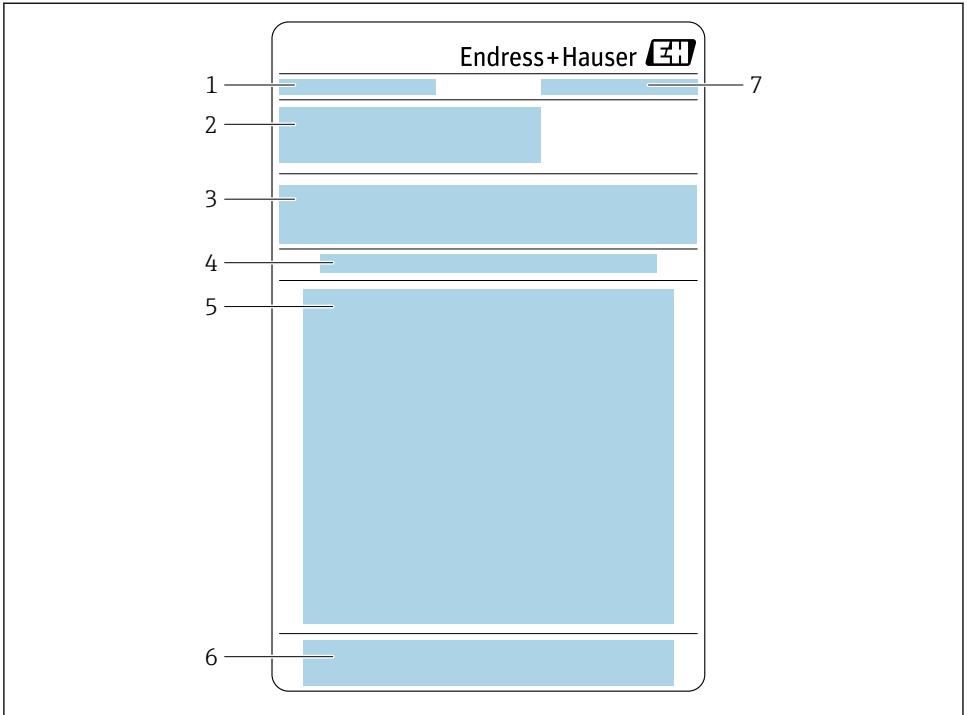
A0054698

1   Designation
2   Order code, serial number, extended order code (Ext. ord. cd.)
3   Material list, product information
4   Installing/removing the disposable measuring tube
5   Instructions: Installing/removing the disposable measuring tube
6   CE mark + approvals
7   Manufacturer address/certificate holder
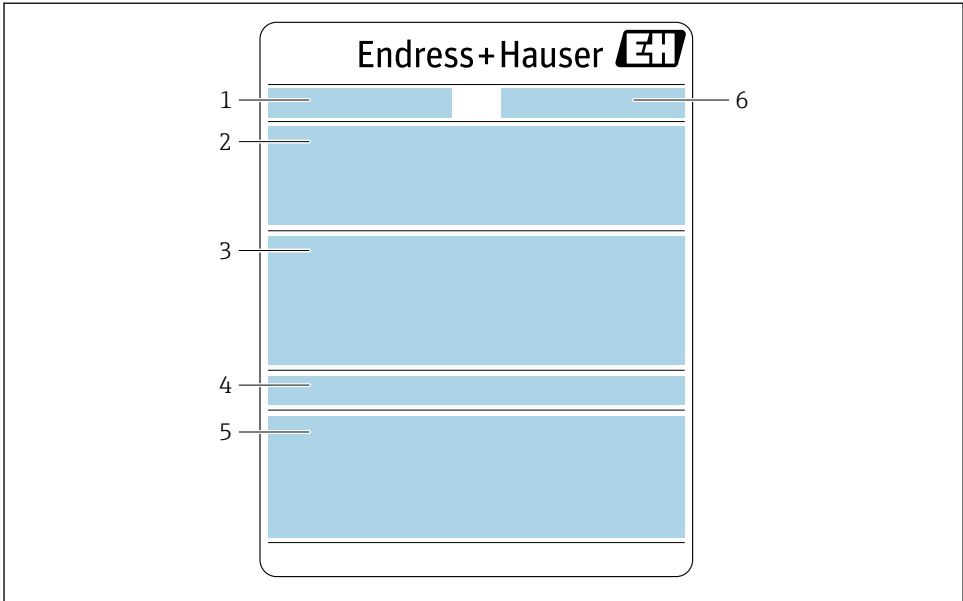
A0054699

1   *Designation*
2   *Order code, serial number, extended order code (Ext. ord. cd.)*
3   *Material list, product information*
4   *Degree of protection*
5   *CE mark + approvals*
6   *Manufacturer address/certificate holder*

Order code
The measuring device is reordered using the order code.

Extended order code
- The device type (product root) and basic specifications (mandatory features) are always listed.
- Of the optional specifications (optional features), only the safety and approval-related specifications are listed (e.g. LA). If other optional specifications are also ordered, these are indicated collectively using the # placeholder symbol (e.g. #LA#).
- If the ordered optional specifications do not include any safety and approval-related specifications, they are indicated by the + placeholder symbol (e.g. XXXXXX-ABCDE+).

3.2.2   Disposable measuring tube nameplate
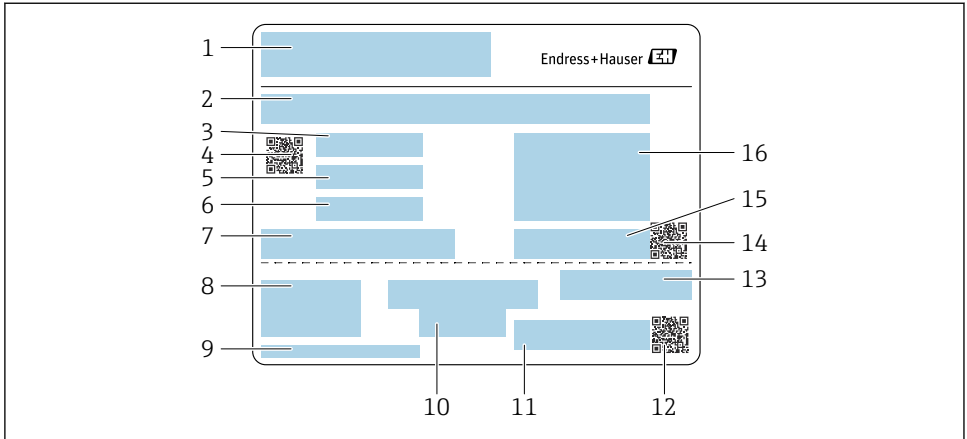
A0054484

1   Designation
2   Material list
3   LOT number
4   Matrix code with LOT/material number
5   Date 1
6   Date 2 + 2 years
7   Manufacture details
8   References to Operating Instructions
9   Manufacturer address/certificate holder
10   Storage information
11   Order code + material number
12   Matrix code with DK8014-xx/material number
13   CE mark + approvals
14   Matrix code with serial number
*15   Serial number*
16   Product image

4   Storage and transport

4.1   Storage conditions

Observe the following notes for storage:
▶ Store in the original packaging to ensure protection from shock.
▶ Do not remove protective covers or protective caps installed on process connections. They prevent mechanical damage to the sealing surfaces and contamination in the measuring tube.
▶ Protect from direct sunlight. Avoid unacceptably high surface temperatures.
▶ Store in a dry and dust-free place.

▶ Store in a dry place.
▶ Do not store outdoors.
▶ Stack a maximum of 6 disposable measuring tubes in the cardboard packaging.
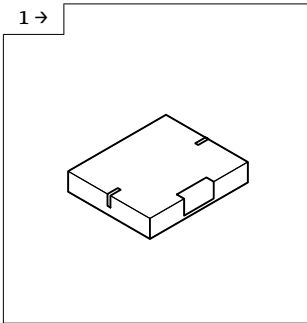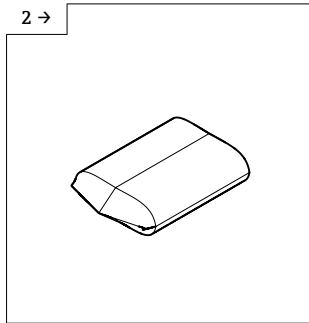▶ Do not store the disposable measuring tubes for more than 2 years.
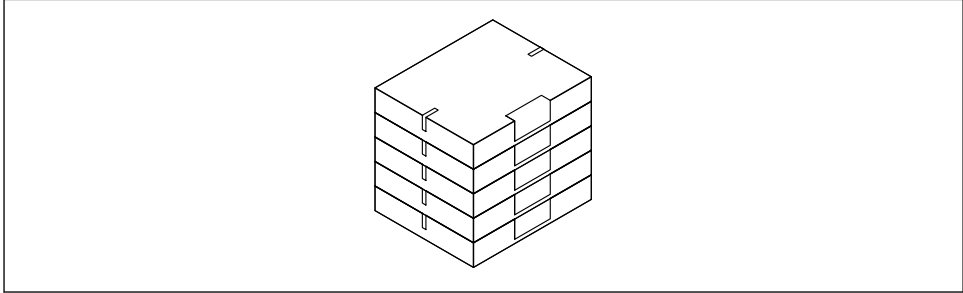
A0054168

4.2 Transporting the product

Transport the measuring device to the measuring point in the original packaging.

4.2.1 Transporting the disposable measuring tube
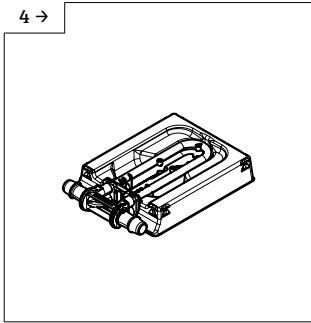
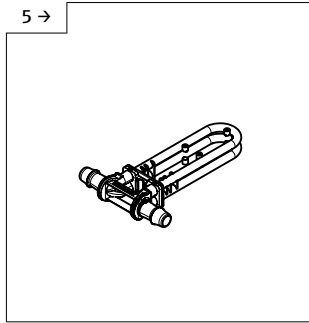

1 →	2 →	3 →
A0054212	A0054213	A0054214
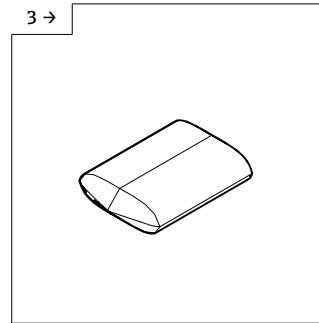
▶ Transport from the warehouse to the airlock in the box.

▶ Remove the box before the first airlock.

▶ Remove the first plastic packaging inside the airlock.

A0054215

A0054216
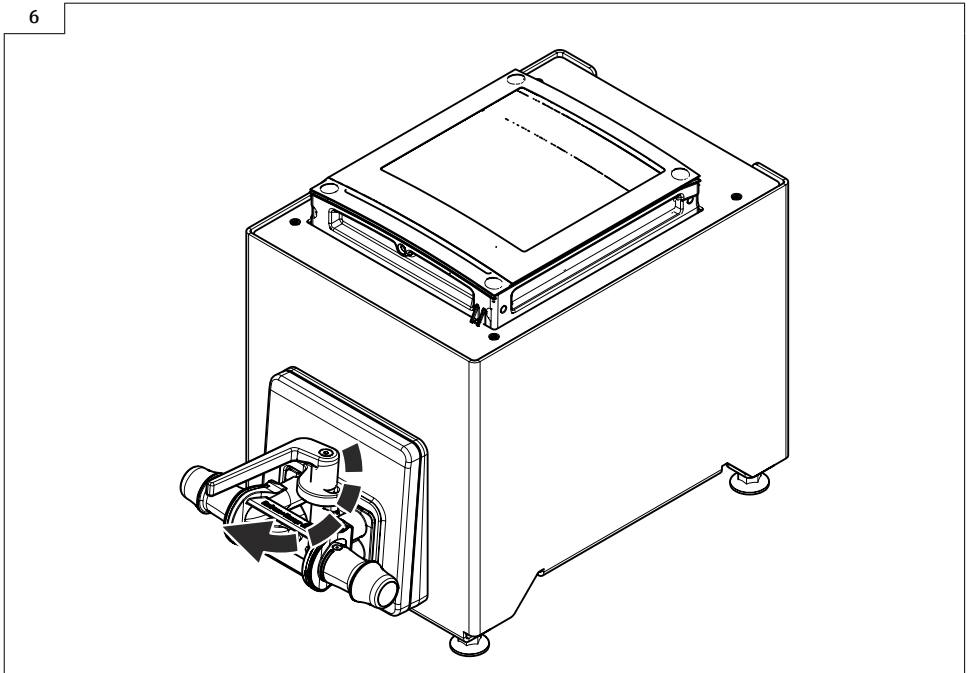
▶ Remove the last plastic packaging in the clean room.
▶ If the disposable measuring tube is integrated into an assembly prior to commissioning, the stability packaging must remain in place to protect the measuring tube.

▶ Remove the disposable measuring tube from the stability packaging and secure it in the sensor immediately.

A0054164

▶ Replacing the disposable measuring tube → 🕮 21

4.3   Packaging disposal

All packaging materials are environmentally friendly and 100% recyclable:
• Outer packaging of device
  Stretch wrap made of polymer in accordance with EU Directive 2002/95/EC (RoHS)
• Packaging
  • Wood crate treated in accordance with ISPM 15 standard, confirmed by IPPC logo
  • Cardboard box in accordance with European packaging guideline 94/62/EC, recyclability
    confirmed by Resy symbol
• Transport material and fastening fixtures
  • Disposable plastic pallet
  • Plastic straps
  • Plastic adhesive strips
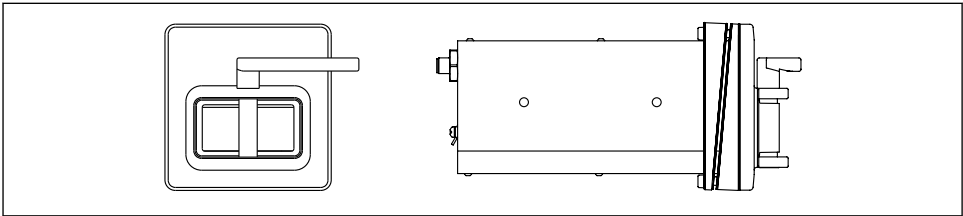• Filler material
  Paper pads

5   Installation

5.1   Mounting requirements

No special measures such as supports . are necessary. External forces are absorbed by the
construction of the device.
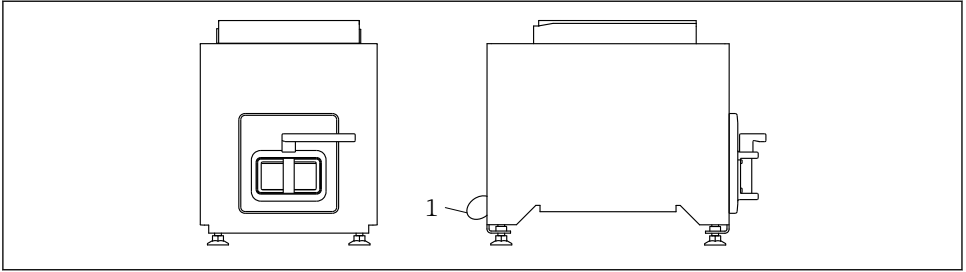
5.1.1   Installation point

Front panel mounting

🖾 *1   Order code for "Device version", option NA "Front panel mounting"*

Table version

A0053020

🖾 *2   Order code for "Device version", option NE "Table version"*

1   Secure the device to the table with the supplied cable through the hole on the back.

5.1.2   Orientation

Orientation	
Wedge pointing upwards ℹ️ Gas accumulation in the measuring tube possible. Self-draining.	 A0053028
Wedge pointing downwards Recommended orientation ℹ️ Solids accumulation in the measuring tube possible.	 A0053029

5.1.3   Environment and process requirements

Ambient temperature range

📖 For detailed information on the ambient temperature range, see the Operating Instructions for the device.

Static pressure

It is important that cavitation does not occur, or that gases entrained in the liquids do not outgas. This is prevented by means of a sufficiently high static pressure.

For this reason, the following mounting locations are recommended:
Downstream from pumps (no danger of vacuum)

Vibrations

The operational reliability of the measuring system is not affected by plant vibrations.

5.1.4   Special mounting instructions

Drainability

When installed with the wedge pointing upwards, the measuring tubes can be drained completely and protected against buildup.

5.2   Installing the device

5.2.1   Required tools

For flanges and other process connections, use an appropriate mounting tool

### 5.2.2   Preparing the measuring instrument

▸ Remove all remaining transport packaging.

5.2.3   Mounting the sensor

• Order code for "Device version", option NE "Table version"
  This version is completely mounted.
• Order code for "Device version", option NA "Front panel mounting"
  This version is mounted in a front panel.

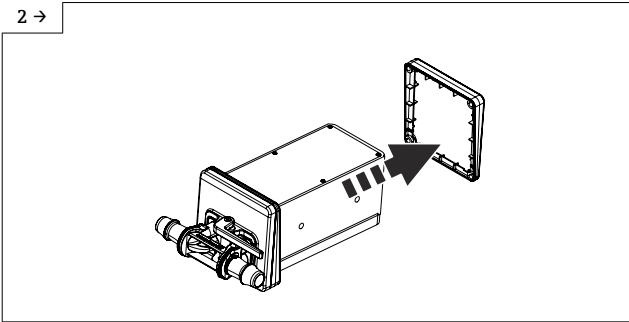ℹ The sensor is designed for the following sheet thicknesses:
  • 3mm
  • 5mm
  • 7mm

Mount the sensor in the front panel.
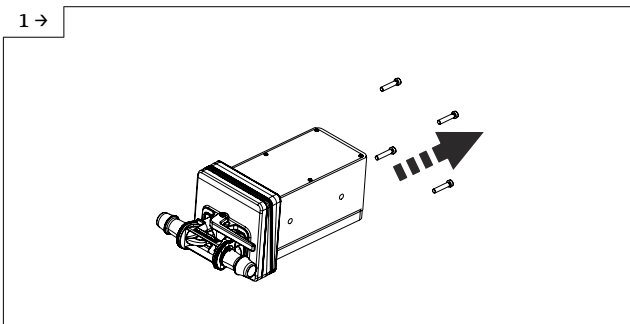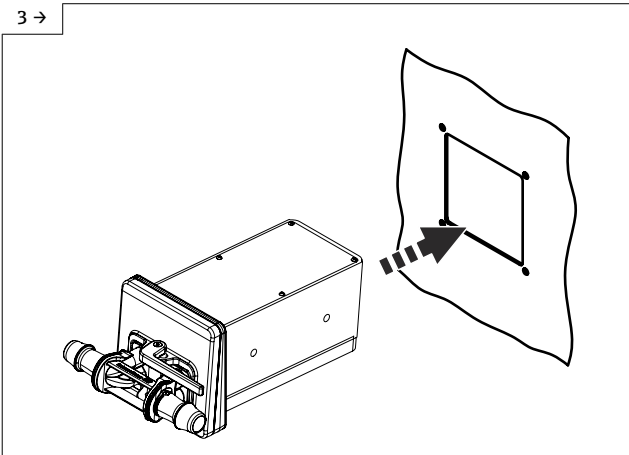

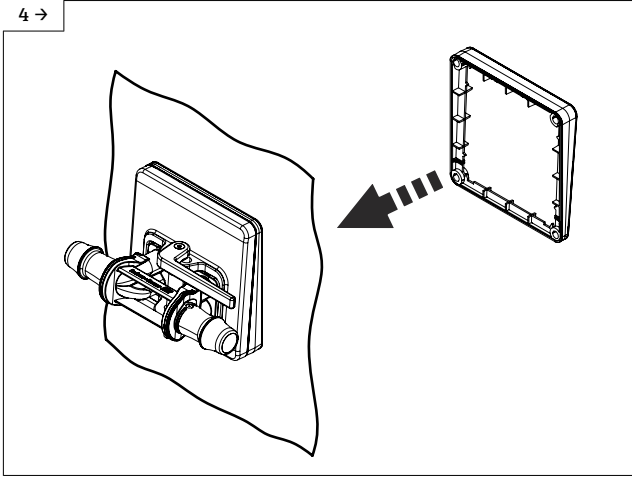A0054237

▸ Remove the screws.

2 →

A0054238

▶ Remove the inner wedge. Depending on the orientation, turn the outside
  wedge. Orientation → 🕮 17

3 →

A0054239

▶ Push the sensor with the wedge (to the outside) into the prepared opening
  in the front panel.

4 →

A0054240

▸ Slide the wedge over the sensor from the inside.

5
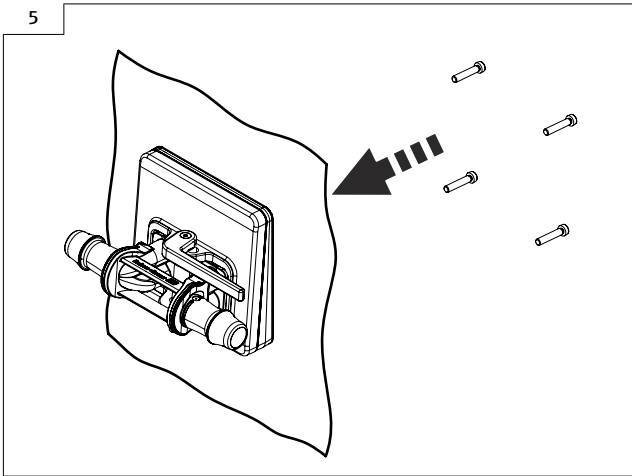
A0054241

▸ Screw the sensor to the wedges.

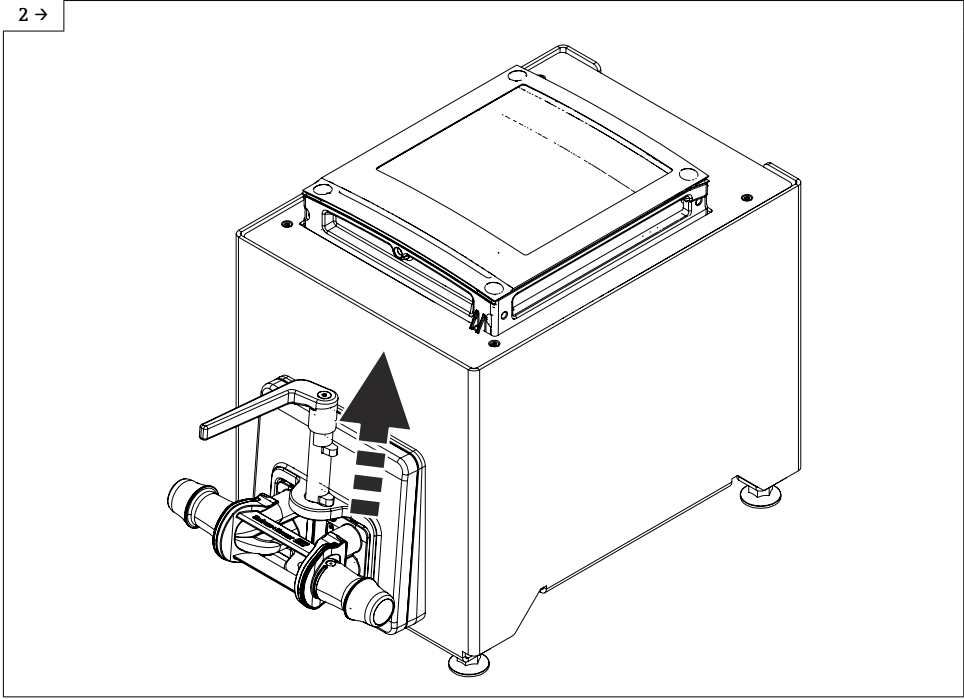### 5.2.4   Replacing the disposable measuring tube

ℹ️ The device version, option NE table version must be attached to the table with the stand.

1 →
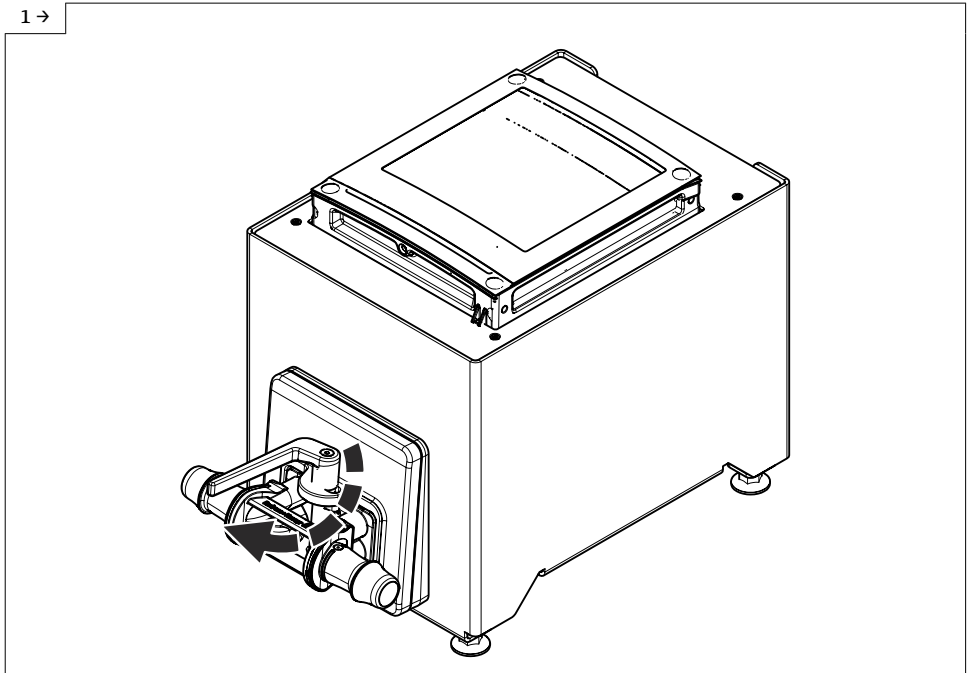
A0054164
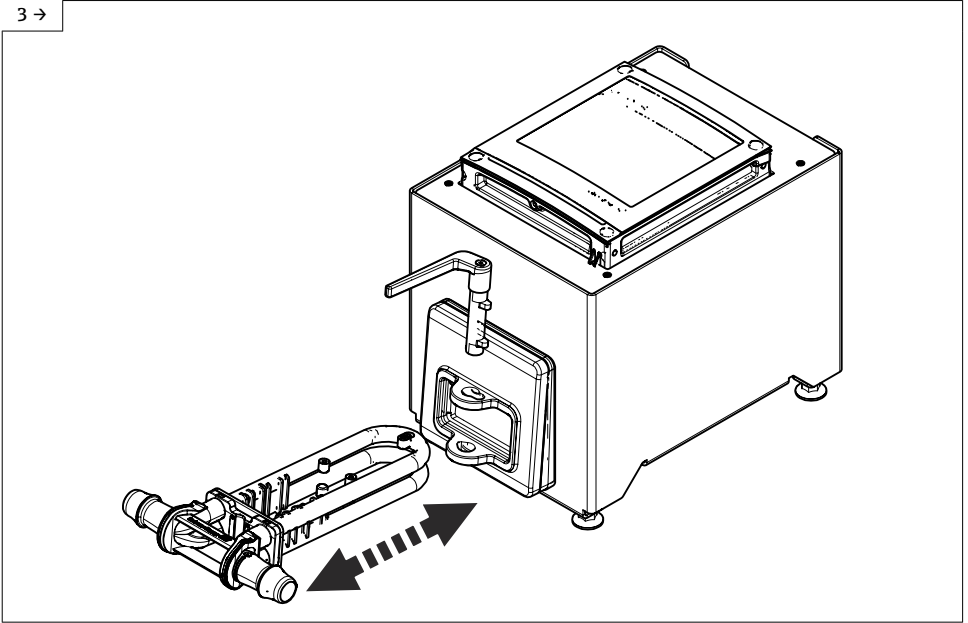
▶ Open the lever.

2 →

▶ Pull up the lever.

A0054166

▸ Remove the disposable measuring tube.
▸ Wait until this diagnostic message appears: Sensor unknown.
▸ Insert the disposable measuring tube.

4 →
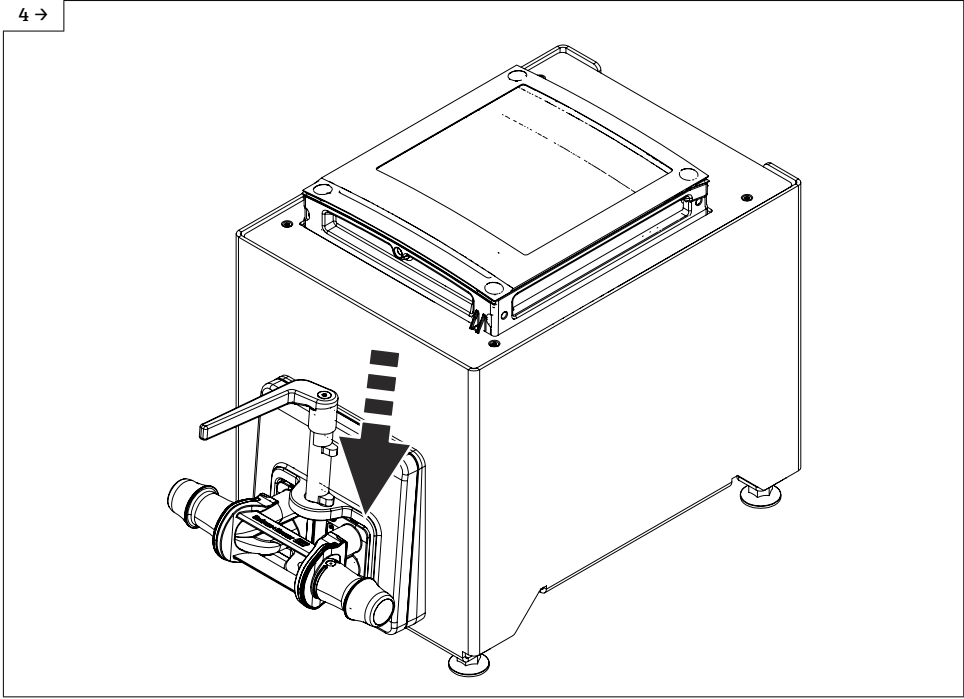
A0054685

▶ Lower the lever.
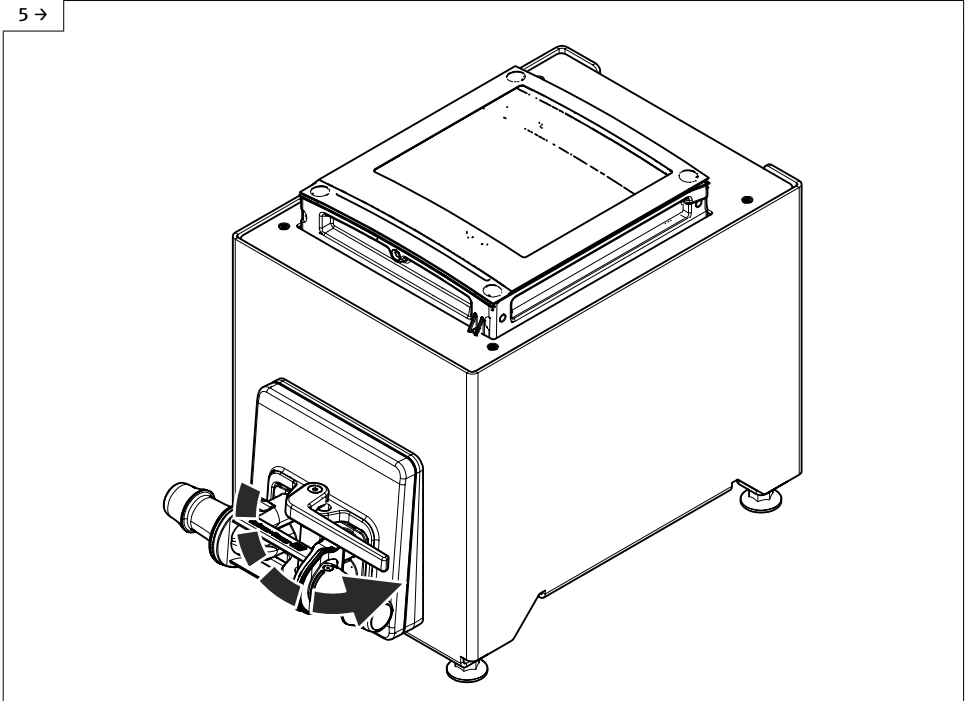
A0054163

▸ Turn the lever to the limit stop.
▸ After inserting the disposable measuring tube, this diagnostic message appears on the display after 30 seconds at the latest: Device initialization active.
▸ Heartbeat Verification and zero point adjustment are performed automatically. This diagnostic message is displayed during this time: Device initialization active.
▸ Heartbeat Verification and zero point adjustment have been performed: No diagnostic message is displayed.

6
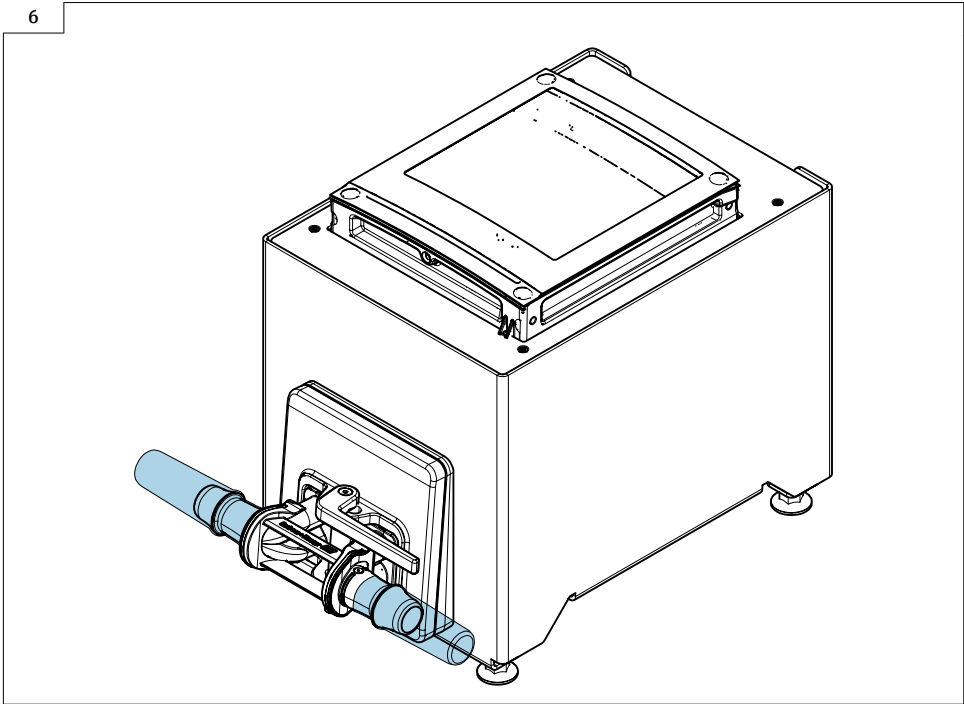
A0056826

▸ Fill the system with liquid (density: 800 to 1 500 kg/m³ (1 764 to 3 307 lb/cf)).
▸ Prevent any flow.
▸ Repeated flushing can help to eliminate gas pockets.
▸ Re-initialize the device: On the display Expert → Sensor → Disposable component → Commissioning, using Modbus Register 26321-1 or Profinet.
▸ Heartbeat Verification and zero point adjustment are performed. This diagnostic message is displayed during this time: Device initialization active.
▸ Heartbeat Verification and zero point adjustment have been performed: No diagnostic message is displayed.
▸ Download the Heartbeat Technology verification report: for detailed information on data management, see the Operating Instructions for the device
▸ The device is now operational.

5.3   Post-mounting check

Is the device undamaged (visual inspection)?	☐
Does the measuring device conform to the measuring point specifications? For example: • Process temperature • Process pressure (refer to the "Pressure-temperature ratings" section of the "Technical Information" document) • Ambient temperature • Measuring range	☐

Has the correct orientation for the sensor been selected ? • According to sensor type • According to medium temperature • According to medium properties (outgassing, with entrained solids)	❑
Does the arrow on the process connection match the direction of flow of the medium?	❑
Are the measuring point identification and labeling correct (visual inspection)?	❑
	❑
Is the securing screw firmly tightened?	❑

6 Disposal

⊠ If required by the Directive 2012/19/EU on waste electrical and electronic equipment (WEEE), the product is marked with the depicted symbol in order to minimize the disposal of WEEE as unsorted municipal waste. Do not dispose of products bearing this marking as unsorted municipal waste. Instead, return them to the manufacturer for disposal under the applicable conditions.

6.1 Removing the measuring device

1. Switch off the device.

⚠ WARNING

Risk of personal injury due to process conditions!

▶ Beware of hazardous process conditions such as pressure in the measuring device, high temperatures or aggressive media.

2. Carry out the mounting and connection steps from the "Mounting the measuring device" and "Connecting the measuring device" sections in reverse order.

3. Observe the safety instructions.

6.2 Disposing of the measuring device

⚠ WARNING

Danger to personnel and environment from fluids that are hazardous to health.

▶ Ensure that the measuring device and all cavities are free of fluid residues that are hazardous to health or the environment, e.g. substances that have permeated into crevices or diffused through plastic.

Follow these instructions when disposing of the device:
▶ Comply with national regulations.
▶ Ensure proper separation and reuse of the device components.

71683841

www.addresses.endress.com

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