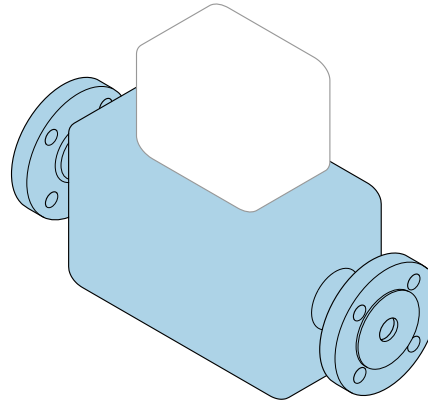
KA01264D/06/EN/02.21
71526978
2021-08-01



# Brief Operating Instructions
# **Proline Promag D**

Electromagnetic sensor

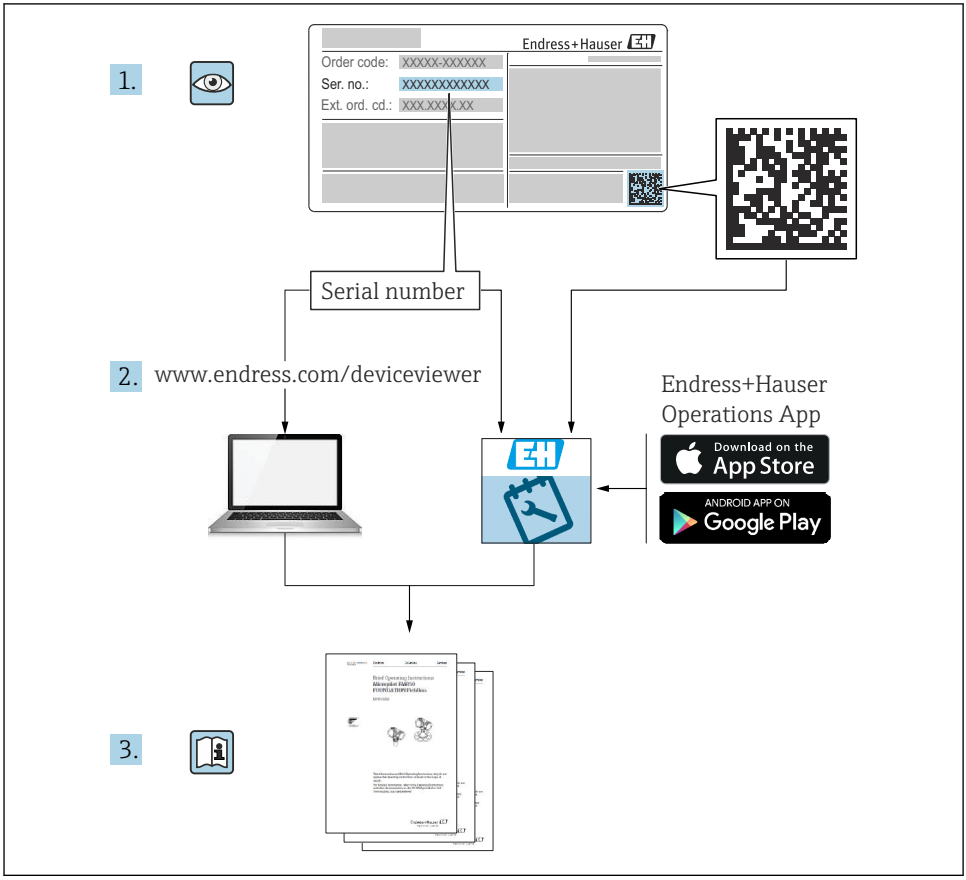


These instructions are Brief Operating Instructions; they are **not** a substitute for the Operating Instructions pertaining to the device.

**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


1.
Endress+Hauser
Order code: XXXXX-XXXXXX
Ser. no.: XXXXXXXXXXXX
Ext. ord. cd.: XXX.XXX-XXX
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 for flowmeter

The device consists of a transmitter and a sensor.

The process of commissioning these two components is described in two separate manuals that 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
- Installation

**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
- Installation
- 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 ... 5
1.1 Symbols used ... 5

2 Basic safety instructions ... 7
2.1 Requirements for the personnel ... 7
2.2 Designated use ... 7
2.3 Occupational safety ... 8
2.4 Operational safety ... 8
2.5 Product safety ... 8
2.6 IT security ... 9

3 Incoming acceptance and product identification ... 10
3.1 Incoming acceptance ... 10
3.2 Product identification ... 11

4 Storage and transport ... 12
4.1 Storage conditions ... 12
4.2 Transporting the product ... 12

5 Installation ... 14
5.1 Installation conditions ... 14
5.2 Mounting the measuring device ... 20
5.3 Post-installation check ... 27

6 Disposal ... 28
6.1 Removing the measuring device ... 28
6.2 Disposing of the measuring device ... 28

7 Appendix ... 29
7.1 Screw tightening torques ... 29

# 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**<br>Procedures, processes or actions that are permitted. |  | **Preferred**<br>Procedures, processes or actions that are preferred. |
|  | **Forbidden**<br>Procedures, processes or actions that are forbidden. |  | **Tip**<br>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**<br>A grounded terminal which, as far as the operator is concerned, is grounded via a grounding system. |

| Symbol | Meaning |
|---|---|
|  | **Protective Earth (PE)**<br>A terminal which must be connected to ground prior to establishing any other connections.<br>The ground terminals are situated inside and outside the device:<br>▪ Inner ground terminal: Connects the protectiv earth to the mains supply.<br>▪ Outer ground terminal: Connects the device to the plant grounding system. |

### 1.1.4 Tool symbols

| Symbol | Meaning | Symbol | Meaning |
|---|---|---|---|
|  | Torx screwdriver |  | Flat blade screwdriver |
|  | Cross-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 |
|  | Hazardous area |  | 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 Designated use

**Application and media**
The measuring device is intended only for the flow measurement of liquids with a minimum conductivity of 5 µS/cm.

Depending on the version ordered, the measuring device can also measure potentially explosive, flammable, poisonous and oxidizing media.

Measuring devices for use in hazardous areas, in hygienic applications or where there is an increased risk due to process pressure, are labeled accordingly on the nameplate.

To ensure that the measuring device remains in proper condition for the operation time:
- Keep within the specified pressure and temperature range.
- Only use the measuring device in full compliance with the data on the nameplate and the general conditions listed in the Operating Instructions and supplementary documentation.
- Based on the nameplate, check whether the ordered device is permitted for the intended use in the hazardous area (e.g. explosion protection, pressure vessel safety).
- Use the measuring device only for media to which the process-wetted materials are sufficiently resistant.
- If the ambient temperature of the measuring device is outside the atmospheric temperature, it is absolutely essential to comply with the relevant basic conditions as specified in the device documentation.
- Protect the measuring device 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**

⚠ WARNING

**If the temperature of the media or electronics unit is high or low, this may cause the surfaces of the device to become hot or cold. This poses a risk of burns or frostbite!**

- In the case of hot or cold medium temperatures, install appropriate protection against contact.

## 2.3 Occupational safety

When working on and with the device:

- Wear the required personal protective equipment as per national regulations.

For welding work on the piping:

- Do not ground the welding unit via the measuring device.

If working on and with the device with wet hands:

- Due to the increased risk of electric shock, wear suitable gloves.

## 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. Endress+Hauser confirms this by affixing the CE mark to the device.

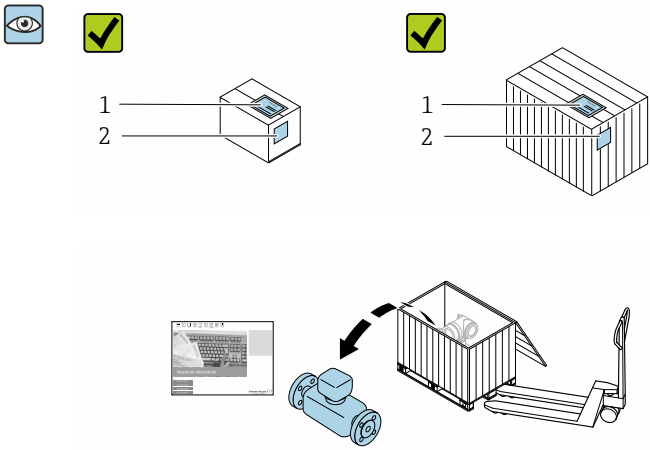
## 2.6 IT security

Our warranty is valid only if the device is installed and used as described in the Operating Instructions. The device is equipped with security mechanisms to protect it against any inadvertent changes to the settings.

IT security measures, which provide additional protection for the device and associated data transfer, must be implemented by the operators themselves in line with their security standards.

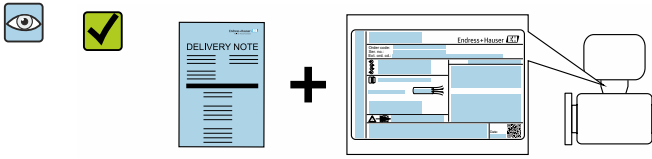
# 3 Incoming acceptance and product identification

## 3.1 Incoming acceptance

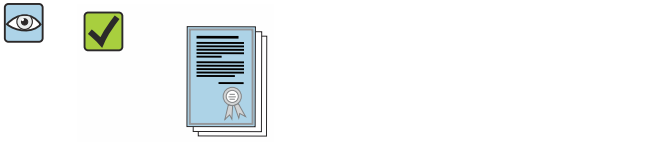



Are the order codes on the delivery note (1) and the product sticker (2) identical?

Are the goods undamaged?



Do the nameplate data match the ordering information on the delivery note?

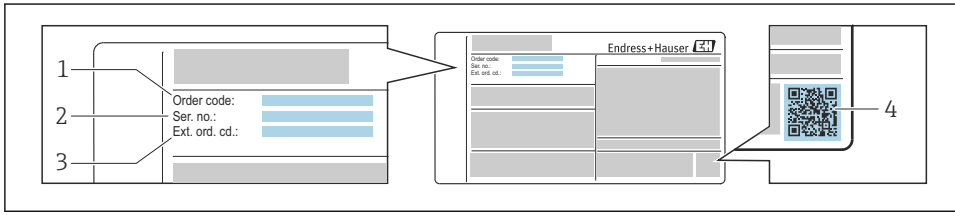



Is the envelope present with accompanying documents?

- 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 following options are available for identification of the device:
- Nameplate specifications
- Order code with breakdown of the device features on the delivery note
- Enter serial numbers from nameplates in the *W@M Device Viewer* (www.endress.com/deviceviewer): All information about the device is displayed.
- Enter the serial number from nameplates in the *Endress+Hauser Operations App* or scan the 2-D matrix code (QR code) on the nameplate using the *Endress+Hauser Operations App*: All information about the device is displayed.

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*1 Example of a nameplate*

*1 Order code*
*2 Serial number (Ser. no.)*
*3 Extended order code (Ext. ord. cd.)*
*4 2-D matrix code (QR code)*

For detailed information on the breakdown of the specifications on the nameplate, see the Operating Instructions for the device .

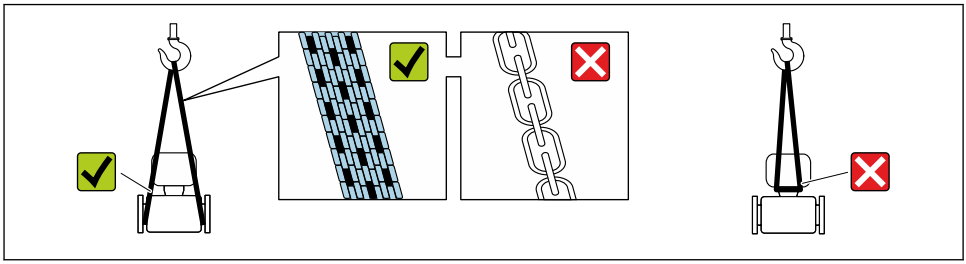
# 4 Storage and transport

## 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 to avoid unacceptably high surface temperatures.
- Select a storage location where moisture cannot collect in the measuring device as fungus and bacteria infestation can damage the liner.
- Store in a dry and dust-free place.
- Do not store outdoors.

## 4.2 Transporting the product

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



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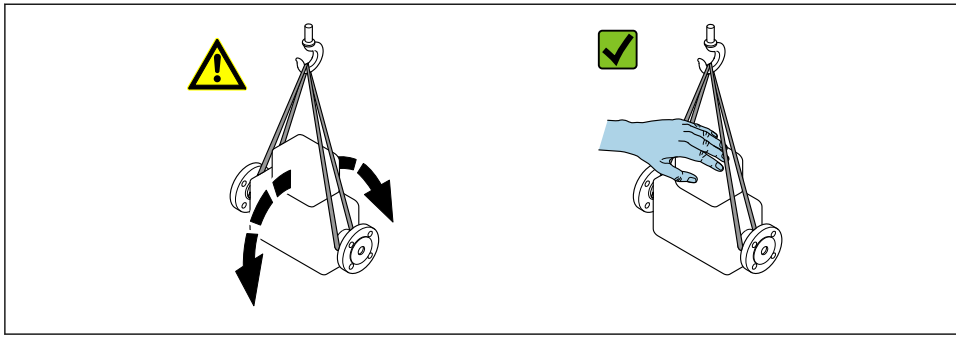
Do not remove protective covers or caps installed on process connections. They prevent mechanical damage to the sealing surfaces and contamination in the measuring tube.

### 4.2.1 Measuring devices without lifting lugs

**WARNING**

**Center of gravity of the measuring device is higher than the suspension points of the webbing slings.**

Risk of injury if the measuring device slips.
- Secure the measuring device against slipping or turning.
- Observe the weight specified on the packaging (stick-on label).



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### 4.2.2 Measuring devices with lifting lugs

**⚠ CAUTION**

**Special transportation instructions for devices with lifting lugs**

- ▶ Only use the lifting lugs fitted on the device or flanges to transport the device.
- ▶ The device must always be secured at two lifting lugs at least.

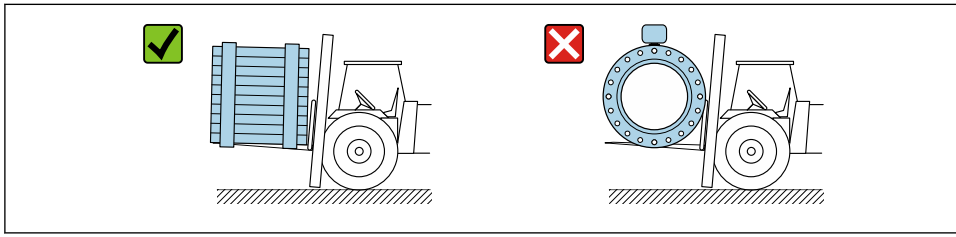
### 4.2.3 Transporting with a fork lift

If transporting in wood crates, the floor structure enables the crates to be lifted lengthwise or at both sides using a forklift.

**⚠ CAUTION**

**Risk of damaging the magnetic coil**

- ▶ If transporting by forklift, do not lift the sensor by the metal casing.
- ▶ This would buckle the casing and damage the internal magnetic coils.



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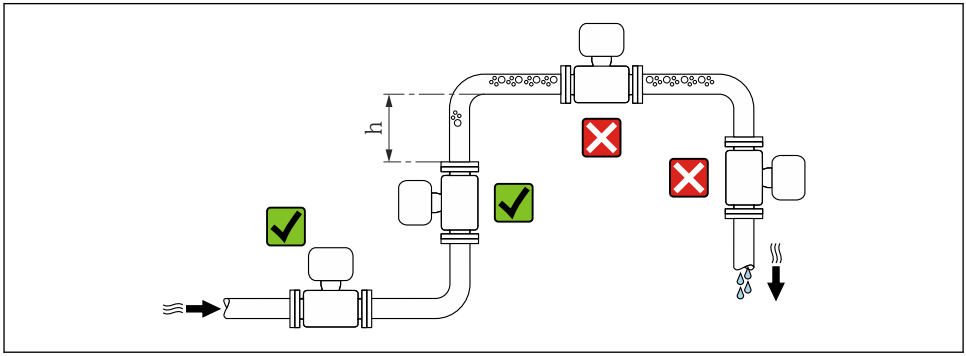
# 5 Installation

## 5.1 Installation conditions

### 5.1.1 Mounting position

#### Mounting location

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$h \geq 2 \times DN$

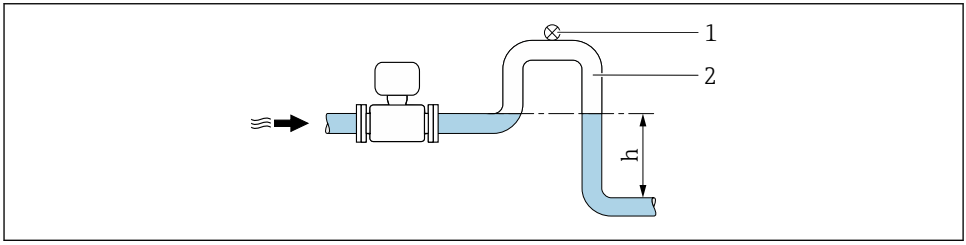
*Installation upstream from a down pipe*

NOTICE

**Negative pressure in the measuring pipe can damage the liner!**

- If installing upstream from down pipes with a length h ≥ 5 m (16.4 ft), install a siphon with a vent valve downstream from the device.

This arrangement prevents the stoppage of liquid flow and the formation of air pockets.

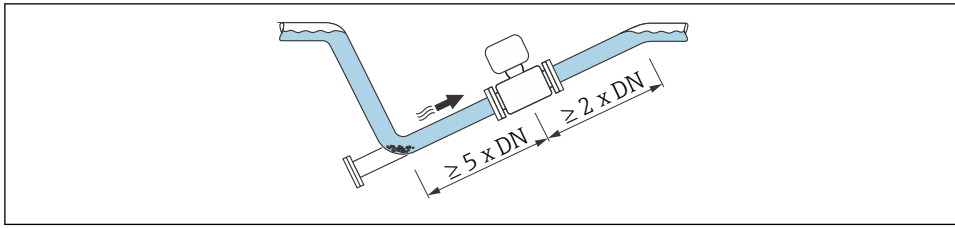



A0028981

1 *Vent valve*
2 *Pipe siphon*
h *Length of down pipe*

*Installation with partially filled pipes*

- Partially filled pipes with a gradient require a drain-type configuration.
- The installation of a cleaning valve is recommended.

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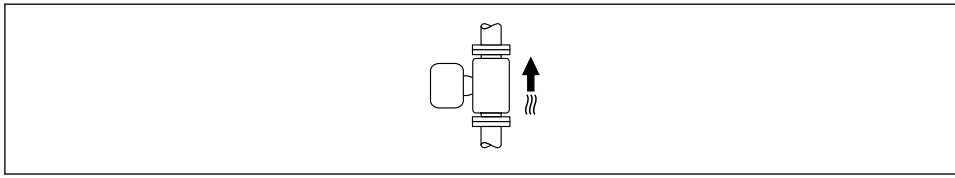
## Orientation

The direction of the arrow on the sensor nameplate helps you to install the sensor according to the flow direction.

An optimum orientation position helps avoid gas and air accumulations and deposits in the measuring tube.

*Vertical*

Optimum for self-emptying pipe systems.



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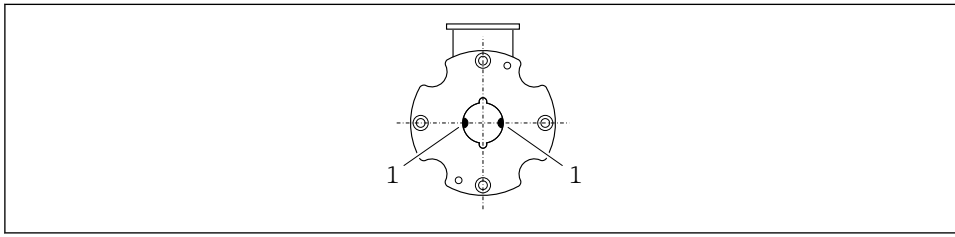
*Horizontal*

Ideally, the measuring electrode plane should be horizontal. This prevents brief insulation of the measuring electrodes by entrained air bubbles.

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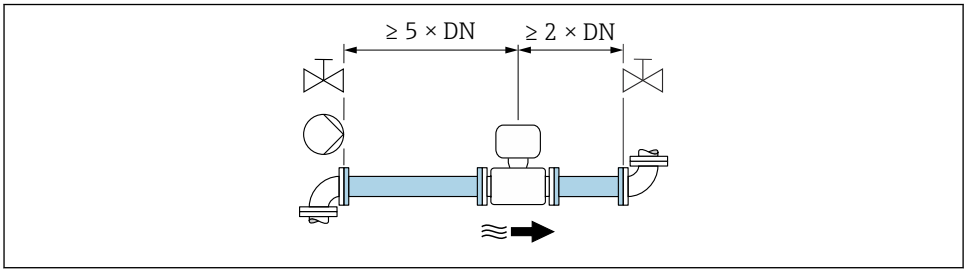
*1 Measuring electrodes for signal detection*

### Inlet and outlet runs

*Installation with inlet and outlet runs*

To avoid negative pressure and to comply with the specified accuracy, install the sensor upstream from assemblies that produce turbulence (e.g. valves, T-sections) and downstream from pumps, if possible.

Ensure straight, undisturbed inlet and outlet runs.

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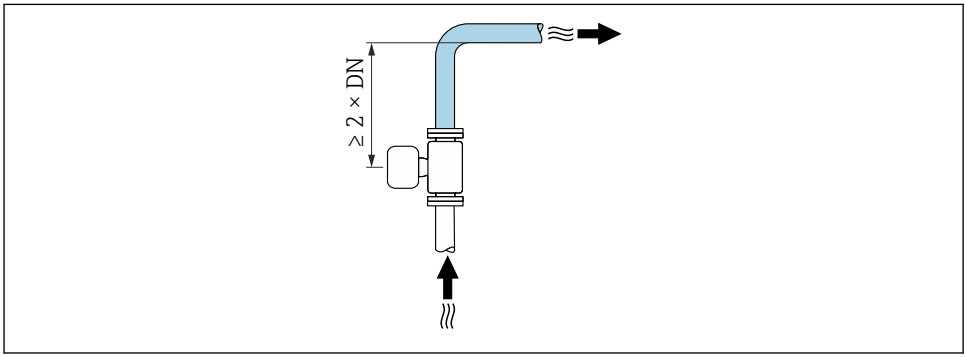


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## 5.1.2 Environment and process requirements

### Ambient temperature range

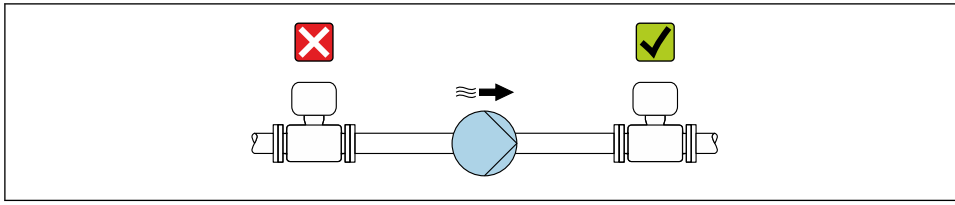
For detailed information on the ambient temperature range, see the Operating Instructions for the device.

If operating outdoors:
- Install the measuring device in a shady location.
- Avoid direct sunlight, particularly in warm climatic regions.
- Avoid direct exposure to weather conditions.

*Temperature tables*

For detailed information on the temperature tables, see the separate document entitled "Safety Instructions" (XA) for the device.

### System pressure



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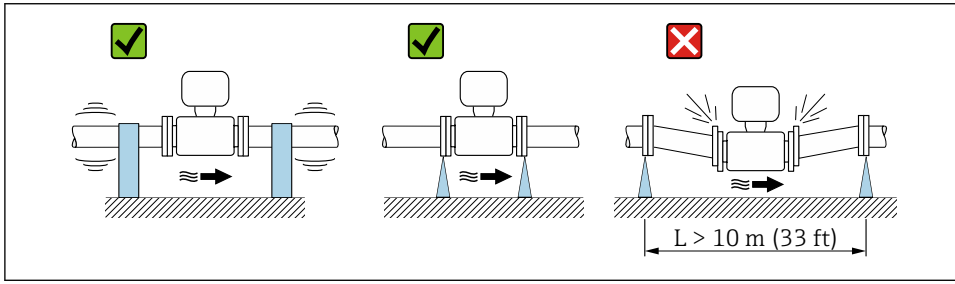
Furthermore, install pulse dampers if reciprocating, diaphragm or peristaltic pumps are used.

### Vibrations

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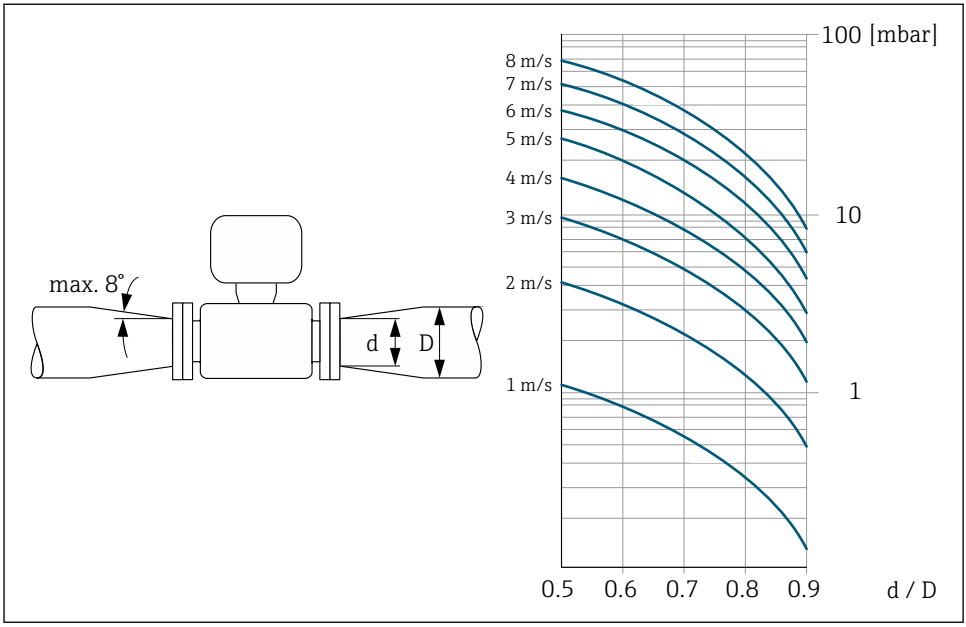
2 *Measures to prevent vibration of the device*

## Adapters




### 5.1.3 Special mounting instructions

**Display guard, weather protection cover**

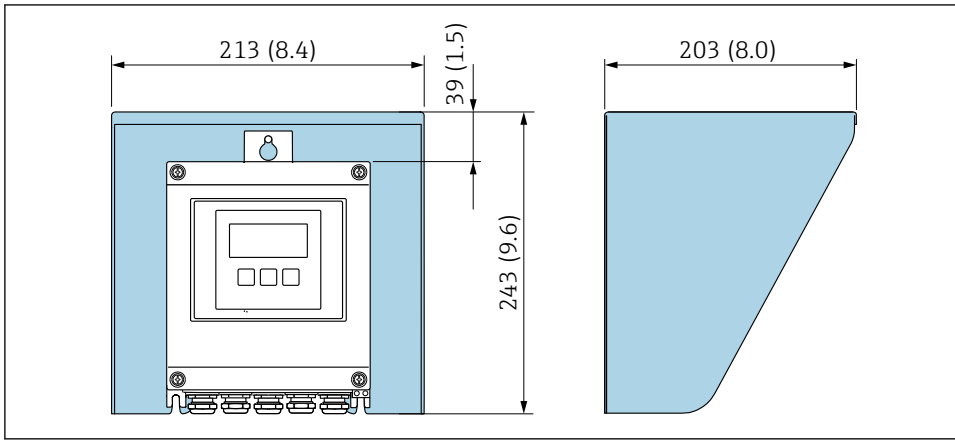
*Proline 200, 400*

*Display guard*

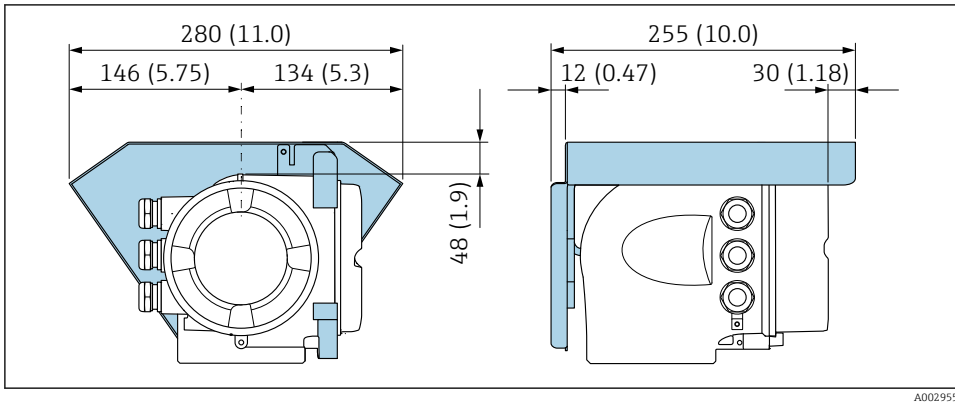
- To ensure that the optional display guard can be easily opened, maintain the following minimum head clearance: 350 mm (13.8 in)

*Proline 300, 500*

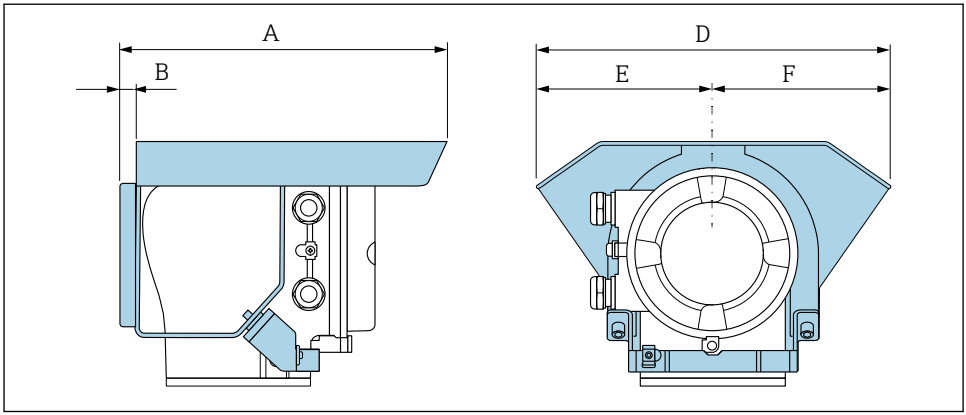
*Weather protection cover*




*3 Weather protection cover for Proline 500 – digital; engineering unit mm (in)*




*4 Weather protection cover for Proline 500; engineering unit mm (in)*

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| A [mm] | B [mm] | D [mm] | E [mm] | F [mm] |
|---|---|---|---|---|
| 257 | 12 | 280 | 140 | 140 |

| A [in] | B [in] | D [in] | E [in] | F [in] |
|---|---|---|---|---|
| 10.12 | 0.47 | 11.02 | 5.51 | 5.51 |

## 5.2 Mounting the measuring device

### 5.2.1 Required tools

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

### 5.2.2 Preparing the measuring device

1. Remove all remaining transport packaging.
2. Remove any protective covers or protective caps present from the sensor.
3. Remove stick-on label on the electronics compartment cover.

### 5.2.3 Mounting the sensor

**⚠ WARNING**

**An electrically conductive layer could form on the inside of the measuring tube!**
Risk of measuring signal short circuit.

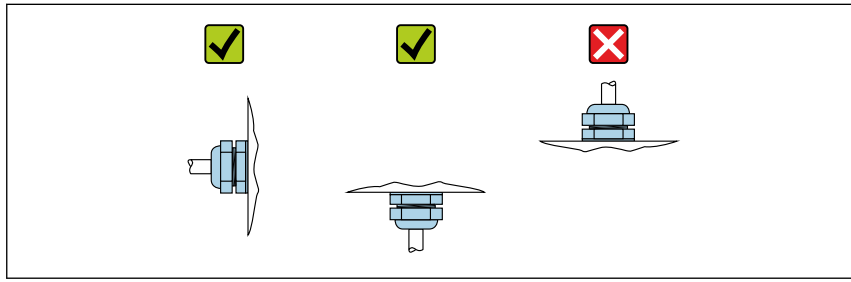
- ► Ensure that the inside diameters of the gaskets are greater than or equal to that of the process connections and piping.
- ► Ensure that the gaskets are clean and undamaged.
- ► Install the gaskets correctly.
- ► Do not use electrically conductive sealing compounds such as graphite.

**⚠ WARNING**

**Danger due to improper process sealing!**

- ▶ Ensure that the inside diameters of the gaskets are greater than or equal to that of the process connections and piping.
- ▶ Ensure that the seals are clean and undamaged.
- ▶ Secure the seals correctly.

1. Ensure that the direction of the arrow on the sensor matches the flow direction of the medium.
2. To ensure compliance with device specifications, install the measuring device between the pipe flanges in a way that it is centered in the measurement section.
3. Install the measuring device or turn the transmitter housing so that the cable entries do not point upwards.



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### Mounting the seals

**⚠ CAUTION**

**An electrically conductive layer could form on the inside of the measuring tube!**

Risk of measuring signal short circuit.

- ▶ Do not use electrically conductive sealing compounds such as graphite.

Comply with the following instructions when installing seals:

- Make sure that the seals do not protrude into the piping cross-section.
- When mounting the process connections, make sure that the seals concerned are clean and centered correctly.
- For DIN flanges: only use seals according to DIN EN 1514-1.
- Use seals with a hardness rating of 70° Shore.

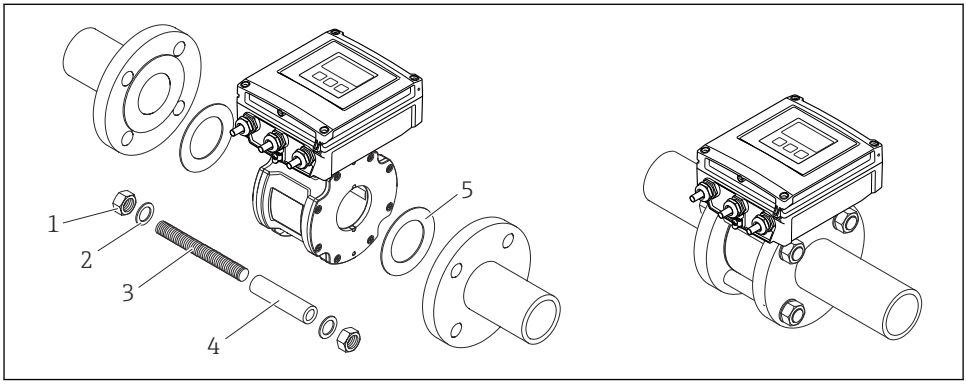
### Mounting the ground cable

For information on potential equalization and detailed mounting instructions for the use of ground cables, see the Transmitter Brief Operating Instructions.

## Mounting kit

The sensor is installed between the pipe flanges using a mounting kit. The device is centered using the recesses on the sensor. Centering sleeves are also provided depending on the flange standard or the diameter of the pitch circle.

A mounting kit – consisting of mounting bolts, seals, nuts and washers – can be ordered separately (see "Accessories" section ).

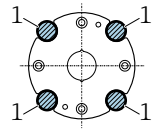
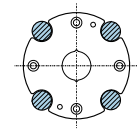
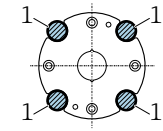
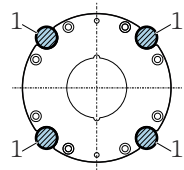
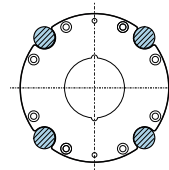
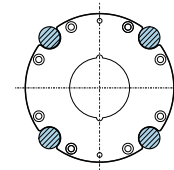
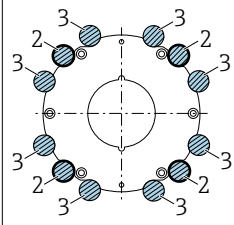
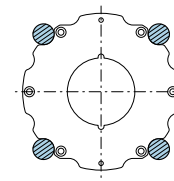
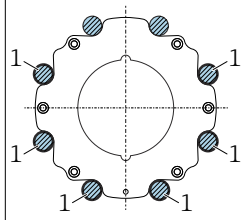
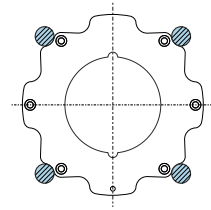
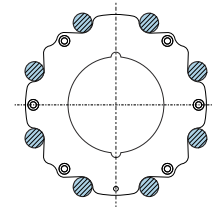


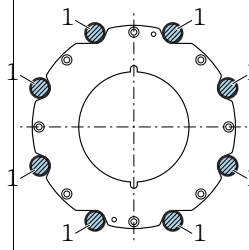
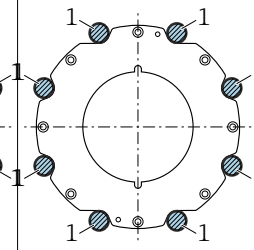
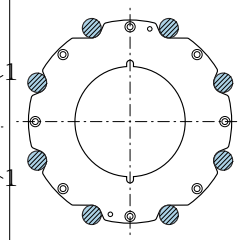

*5 Mounting the sensor*

*1 Nut*
*2 Washer*
*3 Mounting bolts*
*4 Centering sleeve*
*5 Seal*

### Arranging the mounting bolts and centering sleeves

The device is centered using recesses on the sensor. The arrangement of the mounting bolts and the use of the centering sleeves supplied depend on the nominal diameter, the flange standard and the diameter of the pitch circle.

| Nominal diameter | | Process connection | | |
|---|---|---|---|---|
| [mm] | [in]5 | EN 1092-1 (DIN 2501) | ASME B16.5 | JIS B2220 |
| 25...40 | 1...1 ½ |  A0029490 |  A0029491 |  A0029490 |
| 50 | 2 |  A0029492 |  A0029493 |  A0029493 |
| 65 | 2 ½ |  A0029494 | – |  A0029495 |
| 80 | 3 |  A0029496 |  A0029497 |  A0029498 |

| Nominal diameter | | Process connection | | |
|---|---|---|---|---|
| [mm] | [in]5 | EN 1092-1 (DIN 2501) | ASME B16.5 | JIS B2220 |
| 100 | 4 |  A0029499 |  A0029499 |  A0029500 |

1 = Mounting bolts with centering sleeves
2 = EN (DIN) flange: 4-hole → with centering sleeves
3 = EN (DIN) flange: 8-hole → without centering sleeves

### Screw tightening torques

→ 29

## 5.2.4 Mounting the transmitter of the remote version:

**CAUTION**

**Ambient temperature too high!**

Danger of electronics overheating and housing deformation.

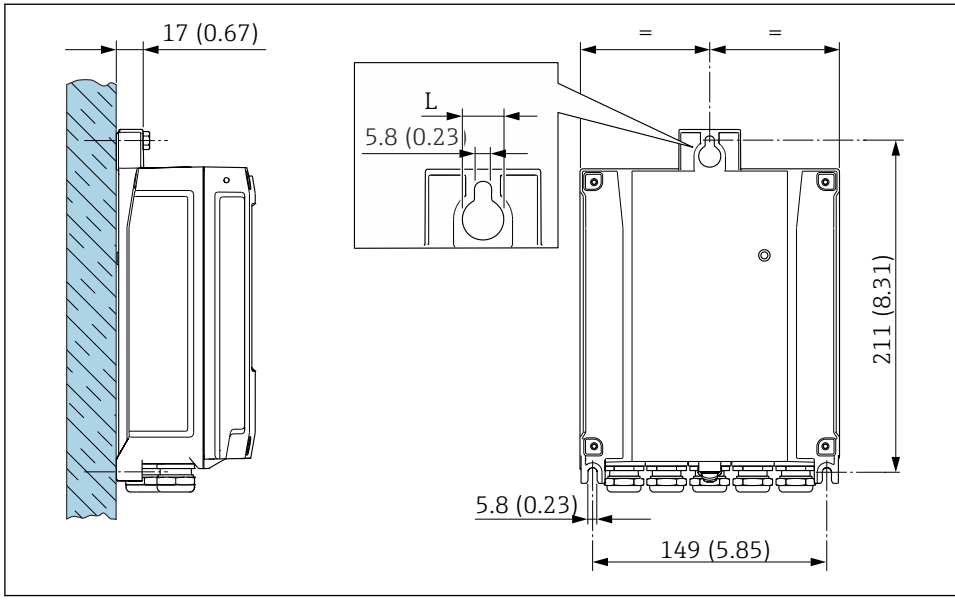
- Do not exceed the permitted maximum ambient temperature .
- If operating outdoors: Avoid direct sunlight and exposure to weathering, particularly in warm climatic regions.

**CAUTION**

**Excessive force can damage the housing!**

- Avoid excessive mechanical stress.

## Wall mounting




6 *Engineering unit mm (in)*

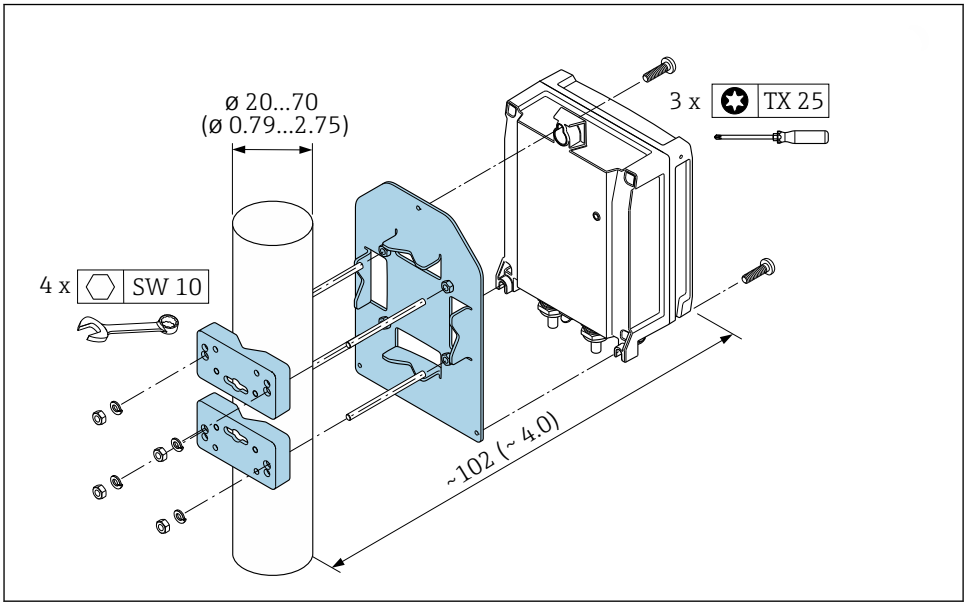
*L Depends on order code for "Transmitter housing"*

Order code for "Transmitter housing"
- Option **A**, aluminum coated: L =14 mm (0.55 in)
- Option **D**, polycarbonate: L = 13 mm (0.51 in)

### Post mounting

**WARNING**

**Excessive tightening torque applied to the fixing screws on plastic housing!**
Risk of damaging the plastic transmitter.
- ▶ Tighten the fixing screws as per the tightening torque: 2 Nm (1.5 lbf ft)




A0029051

7 *Engineering unit mm (in)*

## 5.3 Post-installation check

| | |
|---|---|
| Is the device undamaged (visual inspection)? | ❑ |
| Does the measuring device conform to the measuring point specifications?<br><br>For example:<br>▪ Process temperature<br>▪ Process pressure (refer to the "Pressure-temperature ratings" section of the "Technical Information" document)<br>▪ Ambient temperature<br>▪ Measuring range | ❑ |
| Has the correct orientation been selected for the sensor ?<br><br>▪ According to sensor type<br>▪ According to medium temperature<br>▪ According to medium properties (outgassing, with entrained solids) | ❑ |
| Does the arrow on the sensor nameplate match the actual direction of flow of the fluid through the piping ? | ❑ |
| Are the measuring point identification and labeling correct (visual inspection)? | ❑ |
| Is the device adequately protected from precipitation and direct sunlight? | ❑ |
| Have the fixing screws been tightened with the correct tightening torque? | ❑ |

# 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 Endress+Hauser for disposal under the applicable conditions.

## 6.1 Removing the measuring device

1. Switch off the device.

**⚠ WARNING**

**Danger to persons from process conditions!**

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

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

Observe the following notes during disposal:

- Observe valid federal/national regulations.
- Ensure proper separation and reuse of the device components.

# 7 Appendix

## 7.1 Screw tightening torques

For detailed information on the screw tightening torques, see the "Mounting the sensor" section of the Operating Instructions for the device

Please note the following:
- The torques listed only apply:
  - For lubricated threads.
  - For pipes that are free from tensile stress.
  - If using an EPDM soft-material flat seal (e.g. 70° Shore).
- Tighten the screws uniformly and in diagonally opposite sequence.
- Overtightening the screws will deform the sealing faces or damage the seals.

*mounting bolts and centering sleeves for EN 1092-1 (DIN 2501), PN 16*

| Nominal diameter | Mounting bolts | Length Centering sleeve | Max. screw tightening torque [Nm] for a process flange with ... | |
|---|---|---|---|---|
| [mm] | [mm] | [mm] | smooth seal face | Raised face |
| 25 | 4 × M12 × 145 | 54 | 19 | 19 |
| 40 | 4 × M16 × 170 | 68 | 33 | 33 |
| 50 | 4 × M16 × 185 | 82 | 41 | 41 |
| 65 [1] | 4 × M16 × 200 | 92 | 44 | 44 |
| 65 [2] | 8 × M16 × 200 | – [3] | 29 | 29 |
| 80 | 8 × M16 × 225 | 116 | 36 | 36 |
| 100 | 8 × M16 × 260 | 147 | 40 | 40 |

1) EN (DIN) flange: 4-hole → with centering sleeves
2) EN (DIN) flange: 8-hole → without centering sleeves
3) A centering sleeve is not required. The device is centered directly via the sensor housing.

*mounting bolts and centering sleeves for ASME B16.5, Class 150*

| Nominal diameter | | Mounting bolts | Length Centering sleeve | Max. screw tightening torque [Nm] ([lbf · ft]) for a process flange with ... | |
|---|---|---|---|---|---|
| [mm] | [in] | [in] | [in] | smooth seal face | Raised face |
| 25 | 1 | 4 × UNC ½" × 5.70 | – [1] | 19 (14) | 10 (7) |
| 40 | 1 ½ | 4 × UNC ½" × 6.50 | – [1] | 29 (21) | 19 (14) |
| 50 | 2 | 4 × UNC 5/8" × 7.50 | – [1] | 41 (30) | 37 (27) |
| 80 | 3 | 4 × UNC 5/8" × 9.25 | – [1] | 43 (31) | 43 (31) |
| 100 | 4 | 8 × UNC 5/8" × 10.4 | 5.79 | 38 (28) | 38 (28) |

1) A centering sleeve is not required. The device is centered directly via the sensor housing.

*mounting bolts and centering sleeves for JIS B2220, 10K*

| Nominal diameter [mm] | Mounting bolts [mm] | Length Centering sleeve [mm] | Max. screw tightening torque [Nm] for a process flange with ... | |
|---|---|---|---|---|
| | | | smooth seal face | Raised face |
| 25 | 4 × M16 × 170 | 54 | 24 | 24 |
| 40 | 4 × M16 × 170 | 68 | 32 | 25 |
| 50 | 4 × M16 × 185 | – [1] | 38 | 30 |
| 65 | 4 × M16 × 200 | – [1] | 42 | 42 |
| 80 | 8 × M16 × 225 | – [1] | 36 | 28 |
| 100 | 8 × M16 × 260 | – [1] | 39 | 37 |

1) A centering sleeve is not required. The device is centered directly via the sensor housing.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