

Brief Operating Instructions

Proline Prosonic Flow W

Ultrasonic time-of-flight 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.



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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 Instructions part 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*

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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		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
	<p>Potential equalization connection (PE: protective earth) Ground terminals that must be connected to ground prior to establishing any other connections.</p> <p>The ground terminals are located on the interior and exterior of the device:</p> <ul style="list-style-type: none"> ■ 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		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 Intended use

Application and media

The measuring device described in these Operating Instructions is intended only for the flow measurement of liquids.

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

Measuring devices for use in explosive atmospheres, in hygienic applications or where there is a high risk of pressures, are labeled accordingly on the nameplate.

To ensure that the measuring device is in proper condition during the operation period:

- ▶ 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.
- ▶ Refer to the nameplate to check whether the ordered instrument can be operated for the intended application in areas requiring specific approvals (e. g. explosion protection, pressure equipment safety).
- ▶ Use the measuring device 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 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.

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.
- ▶ Use suitable protective equipment.

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.

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..

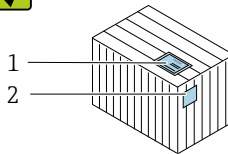
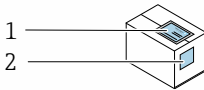
2.6 IT security

Our 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.

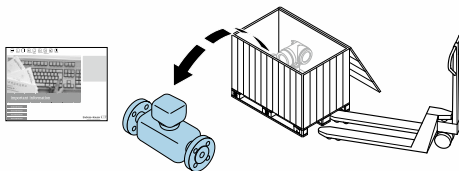
IT security measures, which provide additional protection for the product and associated data transfer, must be implemented by the operators themselves in line with their security standards.

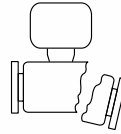
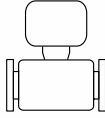
3 Incoming acceptance and product identification

3.1 Incoming acceptance

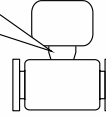
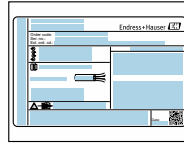


Are the order codes on the delivery note (1) and the product sticker (2) identical?





Are the goods undamaged?



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



Is the envelope present with accompanying documents?

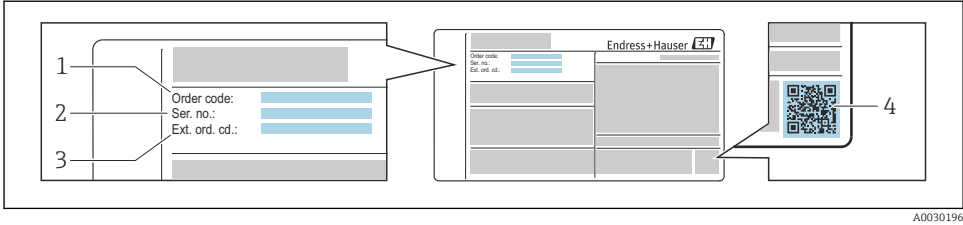


- If one of the conditions is not satisfied, contact your Endress+Hauser Sales Center.
- The Technical Documentation is available via the Internet or via the *Endress+Hauser Operations app*.

3.2 Product identification

The 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.



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1 Example of a nameplate

- 1 Order code
- 2 Serial number
- 3 Extended order code
- 4 2-D matrix code (QR code)

 For detailed information on the data 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.
- ▶ Protect from direct sunlight. Avoid unacceptably high surface temperatures.
- ▶ 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.

4.2.1 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.

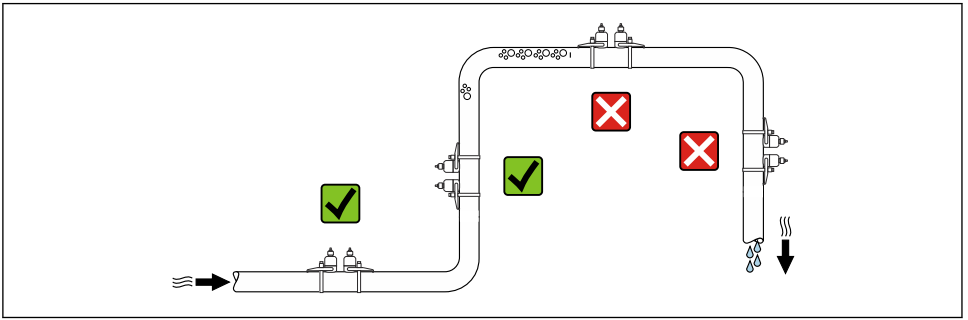
5 Mounting procedure

5.1 Mounting requirements

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

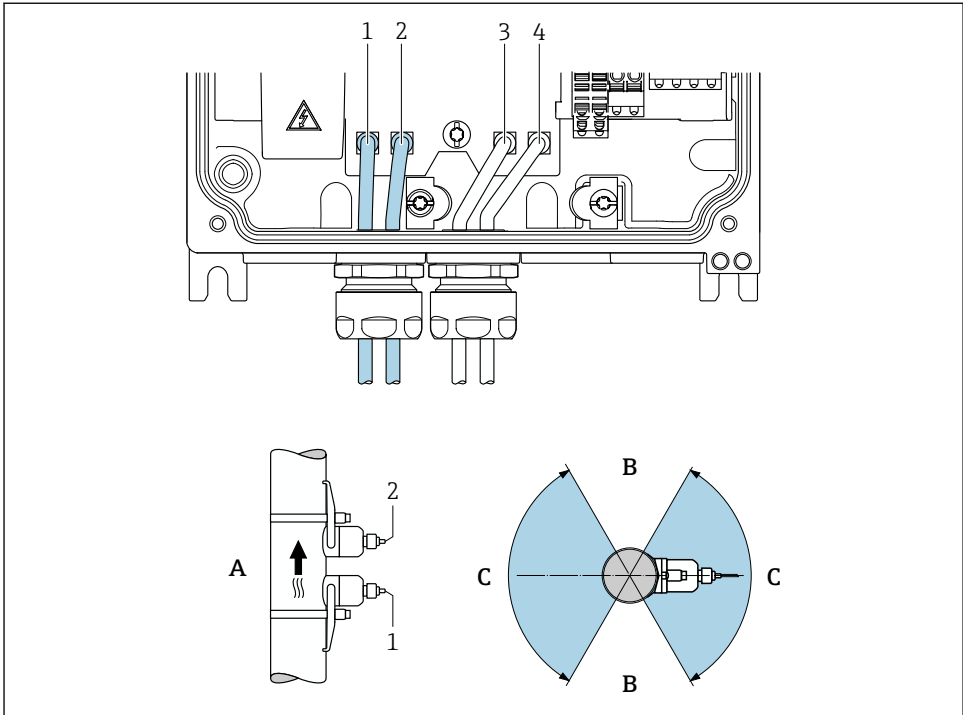
5.1.1 Mounting position

Mounting location



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Orientation



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2 Orientation views

- 1 Channel 1 upstream
- 2 Channel 1 downstream
- 3 Channel 2 upstream
- 4 Channel 2 downstream
- A Recommended orientation with upward flow direction
- B Non-recommended installation range with horizontal orientation (60°)
- C Recommended installation range max. 120°

Vertical

Recommended orientation with upward flow direction (view A) With this orientation, entrained solids sink and gases rise away from the sensor area when the medium is not flowing. In addition, the pipe can be completely drained and protected against the buildup of deposits.

Horizontal

In the recommended installation range with a horizontal orientation (View B), gas and air accumulations at the top of the pipe and interference from deposit buildup at the bottom of the pipe can influence the measurement to a lesser degree.

Inlet and outlet runs

If possible, install the sensors upstream of assemblies such as valves, T-pieces, elbows, and pumps. If this is not possible, the specified measurement accuracy of the measuring device is achieved by observing the specified minimum inlet and outlet runs with optimum sensor configuration. If there are several flow obstructions, the longest specified inlet run must be taken into account.

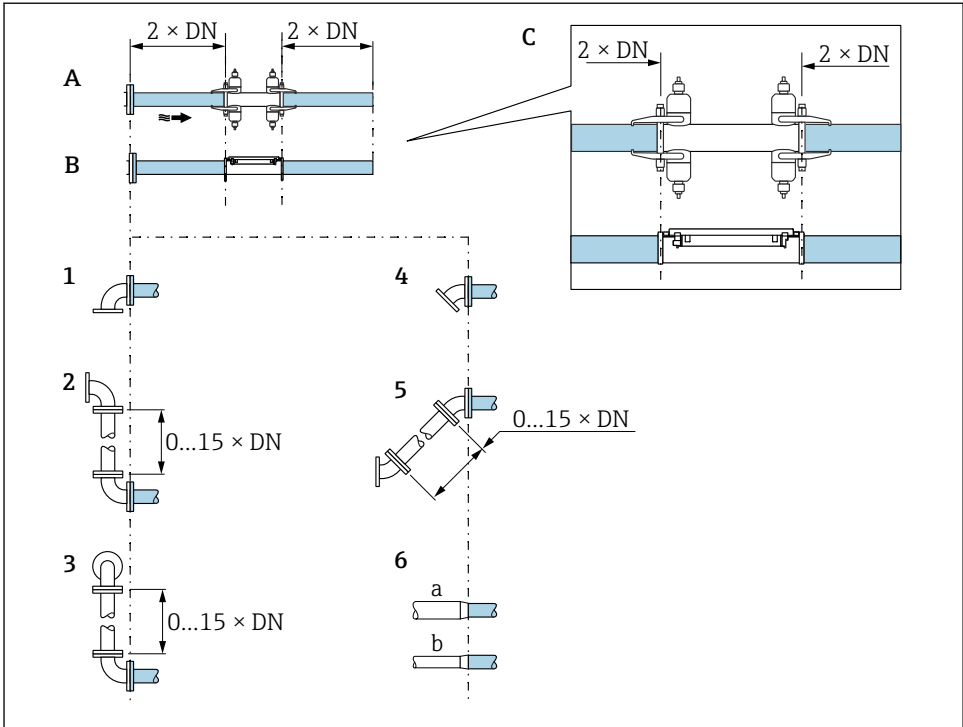


For the dimensions and installation lengths of the device, see the "Technical Information" document, "Mechanical construction" section

Inlet and outlet runs with FlowDC

Shorter inlet and outlet runs are possible with the following device versions:

Two-path measurement with 2 sensor sets (order code for "Mounting type", option A2 "Clamp-on, 2-channel, 2-sensor sets") and FlowDC



A0053788

A Inlet and outlet runs DN 50 to 4000 (2 to 160")

B Inlet and outlet runs DN 15 to 65 (½ to 2½")

C Position of inlet and outlet runs on sensor

1 Single elbow

2 Double elbow (2 × 90° in the same plane, with 0 to 15 x DN between the elbows)

3 Double elbow 3D (2 × 90° in different planes, with 0 to 15 x DN between the elbows)

4 45° bend

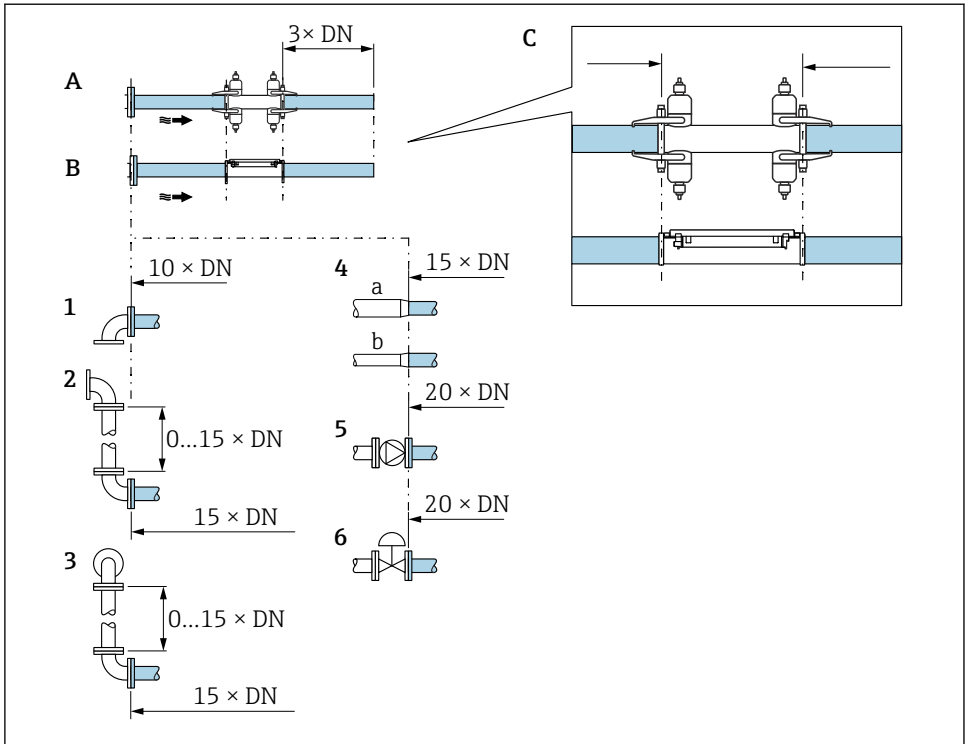
5 "2 x 45° bend" option (2 × 45° in the same plane, with 0 to 15 x DN between the elbows)

6a Concentric diameter change (contraction)

6b Concentric diameter change (expansion)

Inlet and outlet runs without FlowDC

Minimum inlet and outlet runs without FlowDC with 1 or 2 sensor sets with different flow obstructions



A0053787

- A Inlet and outlet runs DN 50 to 4000 (2 to 160")
 B Inlet and outlet runs DN 15 to 65 ($\frac{1}{2}$ to $2\frac{1}{2}$ ")
 C Position of inlet and outlet runs on sensor
 1 Pipe elbow 90° or 45°
 2 Two pipe elbows 90° or 45° (in one plane, with 0 to 15 x DN between the elbows)
 3 Two pipe elbows 90° or 45° (in two planes, with 0 to 15 x DN between the elbows)
 4a Reduction
 4b Extension
 5 Control valve (2/3 open)
 6 Pump

5.1.2 Environmental and process requirements

Ambient temperature range



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

If operating outdoors:

- Mount the measuring device in a shaded location.
- Avoid direct sunlight, particularly in warm climatic regions.
- Avoid direct exposure to weather conditions.

5.2 Mounting the measuring device

5.2.1 Required tools

For sensor

For mounting on the measuring tube: Use a suitable mounting tool.

5.2.2 Preparing the measuring device

1. Remove all remaining transport packaging.
2. Remove stick-on label on the electronics compartment cover.

5.2.3 Mounting the sensor

⚠ WARNING

Risk of injury when mounting sensors and strapping bands!

- ▶ Suitable gloves and goggles must be worn due to the increased risk of cuts.

Sensor configuration and settings

DN 15 to 65 (½ to 2½")	DN 50 to 4000 (2 to 160")			
	Strapping band		Welded bolt	
	2 traverses [mm (in)]	1 traverse [mm (in)]	2 traverses [mm (in)]	1 traverse [mm (in)]
Sensor distance ¹⁾	Sensor distance ¹⁾	Sensor distance ¹⁾	Sensor distance ¹⁾	Sensor distance ¹⁾
–	Wire length → 📄 28	Measuring rail ^{1) 2)}	Wire length	Measuring rail ^{1) 2)}

- 1) Depends on the conditions at the measuring point (e.g. measuring pipe, medium). The dimension can be determined via FieldCare or Applicator. See also **Result sensor distance / measuring aid** parameter in **Measuring point** submenu
- 2) Up to DN 600 (24")

Determining the mounting positions of the sensor

Sensor holder with U-shaped screws)

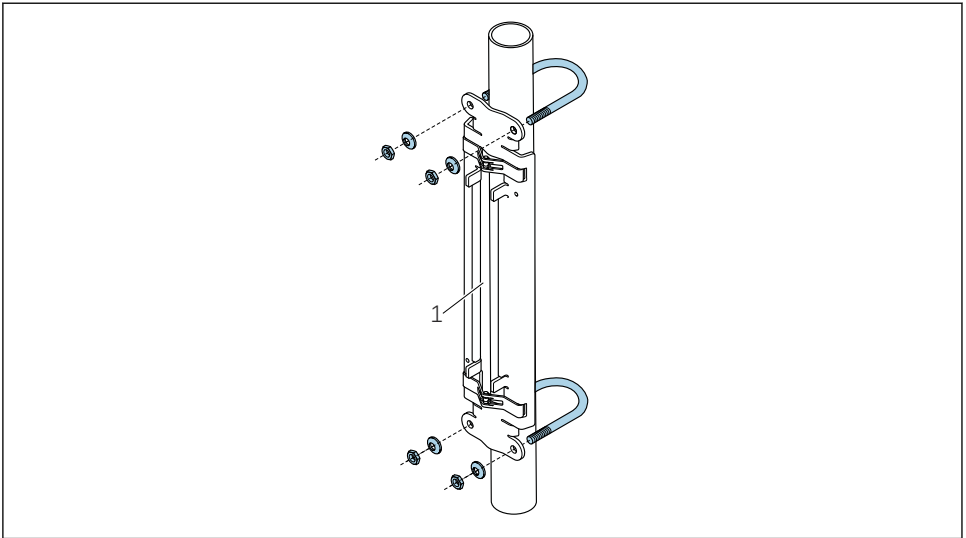


Can be used for

- Measuring devices with measuring range DN 15 to 65 (½ to 2½")
- Mounting on pipes DN 15 to 32 (½ to 1¼")

Procedure:

1. Disconnect the sensor from the sensor holder.
2. Position the sensor holder on the measuring pipe.
3. Insert the U-shaped screws through the sensor holder and lightly grease the threads.
4. Screw the nuts onto the U-shaped screws.
5. Position the sensor holder exactly and tighten the nuts evenly.



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3 Holder with U-shaped screws

1 Sensor holder

CAUTION

Damage to the plastic, copper or glass pipes due to overtightening the nuts of the U-shaped screws!

- ▶ The use of a metal half-shell (on the opposite side of the sensor) is recommended for plastic, copper or glass pipes.

i To ensure good acoustic contact, the visible measuring pipe surface must be clean and free from flaking paint and/or rust.

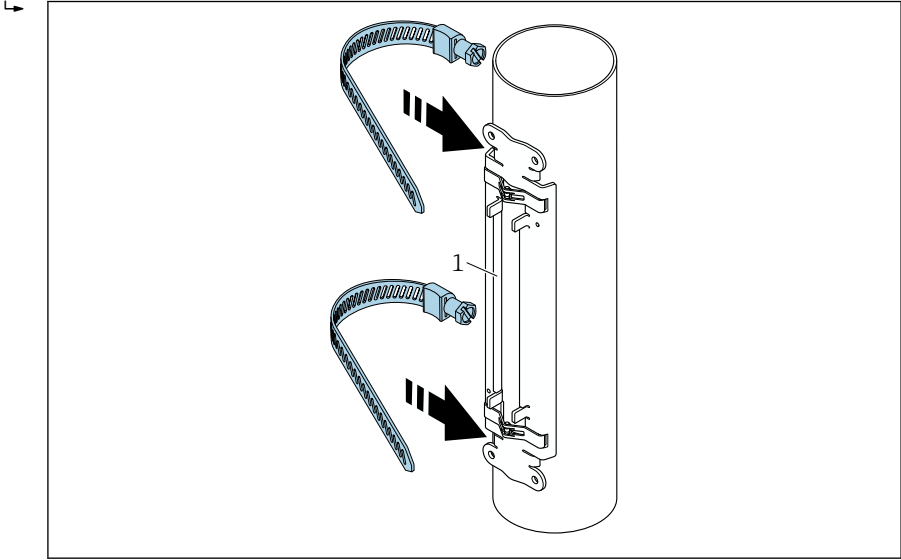
Sensor holder with strapping bands (small nominal diameters))

- i** Can be used for
- Measuring devices with measuring range DN 15 to 65 (½ to 2½")
 - Mounting on pipes DN > 32 (1¼")

Procedure:

1. Disconnect the sensor from the sensor holder.
2. Position the sensor holder on the measuring pipe.

3. Wrap the strapping bands around the sensor holder and measuring pipe without twisting them.



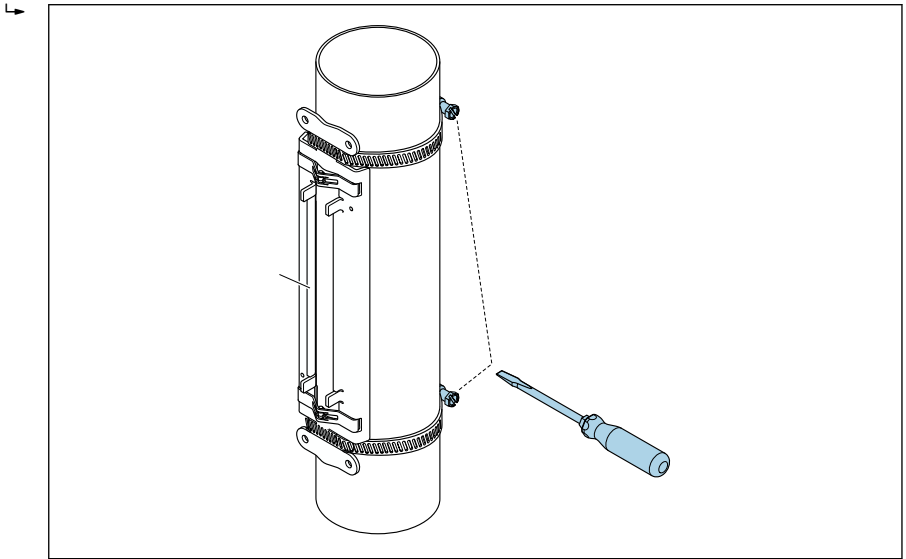
A0043371

4. Position the sensor holder and fit the strapping bands.

1 Sensor holder

4. Guide the strapping bands through the strapping band locks.
5. Tighten the strapping bands as tightly as possible by hand.
6. Align the sensor holder in the desired position.

7. Push down the tensioning screw and tighten the strapping bands so they cannot slip.



5 Tighten the tensioning screws of the strapping bands.

8. If necessary, shorten the strapping bands and trim the cut edges.

WARNING

Risk of injury due to sharp edges!

- ▶ After shortening the strapping bands, trim the cut edges.
- ▶ Wear suitable protective goggles and safety gloves.

i To ensure good acoustic contact, the visible measuring pipe surface must be clean and free from flaking paint and/or rust.

Sensor holder with strapping bands (medium nominal diameters)

- i** Can be used for
- Measuring devices with measuring range DN 50 to 4000 (2 to 160")
 - Mounting on pipes DN ≤ 600 (24")

Procedure:

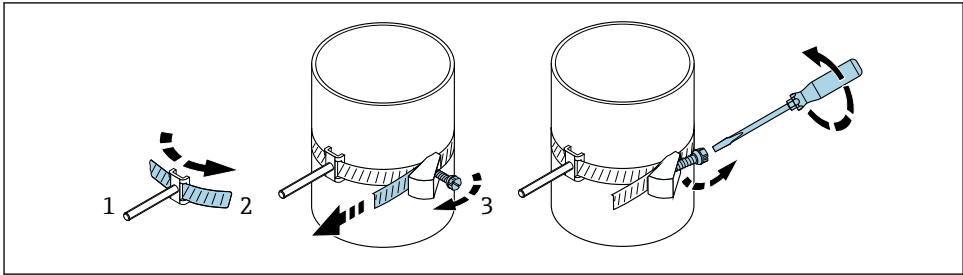
1. Fit the mounting bolt over strapping band 1.
2. Position strapping band 1 as perpendicular as possible to the measuring pipe axis without twisting it.
3. Guide the end of strapping band 1 through the strapping band lock.
4. Tighten strapping band 1 as tightly as possible by hand.
5. Align strapping band 1 in the desired position.

6. Push down the tensioning screw and tighten strapping band 1 so it cannot slip.
7. Strapping band 2: proceed as for strapping band 1 (steps 1 to 6).
8. Slightly tighten strapping band 2 for final assembly. It must be possible to move strapping band 2 for final alignment.
9. If necessary, shorten the strapping bands and trim the cut edges.

⚠ WARNING

Risk of injury due to sharp edges!

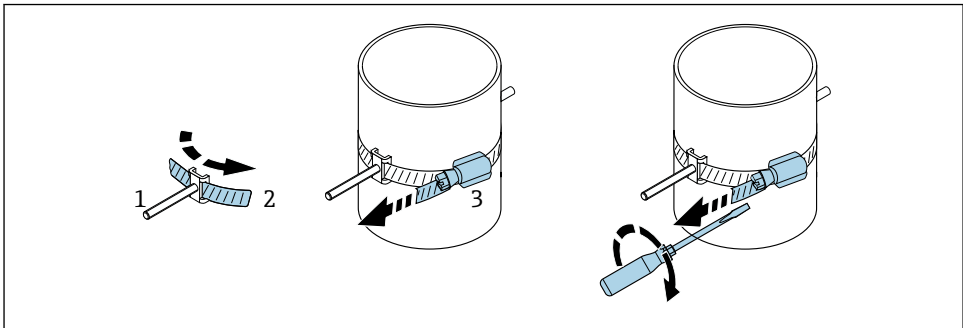
- ▶ After shortening the strapping bands, trim the cut edges.
- ▶ Wear suitable protective goggles and safety gloves.



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6 Holder with strapping bands (medium nominal diameters), with hinged screw

- 1 Mounting bolts
- 2 Strapping band
- 3 Tensioning screw



A0044350

7 Holder with strapping bands (medium nominal diameters), without hinged screw

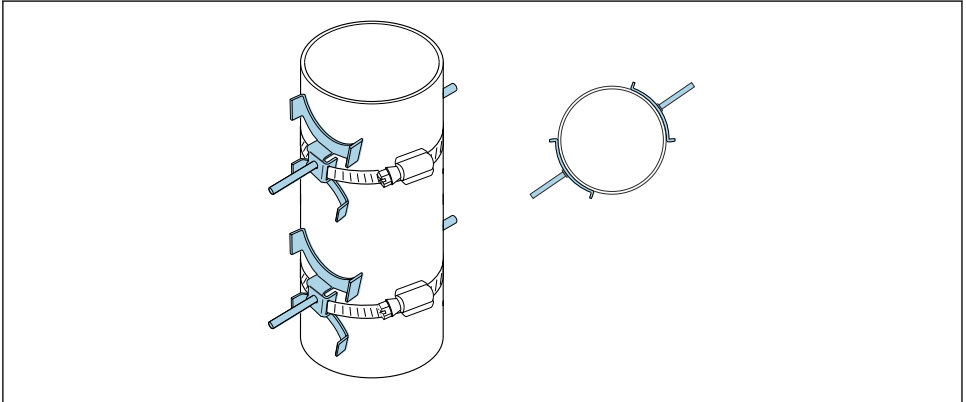
- 1 Mounting bolts
- 2 Strapping band
- 3 Tensioning screw

Sensor holder with strapping bands (large nominal diameters)



Can be used for


- Measuring devices with measuring range DN 50 to 4000 (2 to 160")
- Mounting on pipes DN > 600 (24")
- 1-traverse mounting or 2-traverse mounting with 180° arrangement
- 2-traverse mounting with two-path measurement and 90° arrangement (instead of 180°)



A0044648

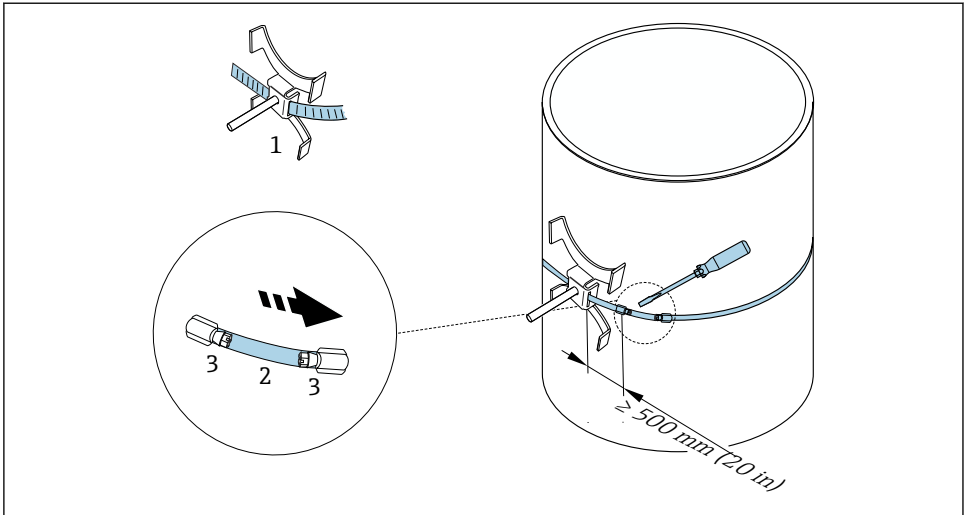
Procedure:

1. Measure the pipe circumference. Note down the full/half or quarter circumference.
2. Shorten the strapping bands to the required length (= measuring pipe circumference + 30 mm (1.18 in)) and trim the cut edges.
3. Select the mounting location of the sensors with the given sensor distance and optimum inlet run conditions,. In doing so, ensure there is nothing impeding sensor mounting over the entire circumference of the measuring pipe.
4. Fit two strap bolts over strapping band 1 and guide approx. 50 mm (2 in) of one of the strapping band ends into one of the two strapping band locks and into the lock. Then guide the protective flap over this strapping band end and lock in place.
5. Position strapping band 1 as perpendicular as possible to the measuring pipe axis without twisting it.
6. Guide the second strapping band end through the strapping band lock that is still free and proceed in the same way as for the first strapping band end. Guide the protective flap over the second strapping band end and lock in place.
7. Tighten strapping band 1 as tightly as possible by hand.
8. Align strapping band 1 in the desired position and place it as perpendicular as possible to the measuring pipe axis.

9. Position the two strap bolts on strapping band 1, arranging them at a half circumference in relation to one another (180° arrangement, e. g. 7:30 o'clock and 1:30 o'clock) or quarter circumference (90° arrangement, e.g. 10 o'clock and 7 o'clock).
10. Tighten strapping band 1 so that it cannot slip.
11. Strapping band 2: proceed as for strapping band 1 (steps 4 to 8).
12. Slightly tighten strapping band 2 for final assembly. It must be possible to move strapping band 2 for final alignment. The distance/offset from the center of strapping band 2 to the center of strapping band 1 is indicated by the sensor distance of the device.
13. Align strapping band 2 so that it is perpendicular to the measuring pipe axis and parallel to strapping band 1.
14. Position the two strap bolts on strapping band 2 on the measuring pipe so they are parallel to one another and offset at the same height/clock position (e. g. 10 o'clock and 4 o'clock) in relation to the two strap bolts on strapping band 1. A line drawn on the measuring pipe wall in parallel with the measuring pipe axis can be helpful here. Now set the distance between the center of the strap bolts at the same level so that it exactly matches the sensor distance. Alternatively, you can use the wire length here →  28.
15. Tighten strapping band 2 so that it cannot slip.

 WARNING**Risk of injury due to sharp edges!**

- ▶ After shortening the strapping bands, trim the cut edges.
- ▶ Wear suitable protective goggles and safety gloves.



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8 Holder with strapping bands (large nominal diameters)

- 1 Strap bolt with guide*
- 2 Strapping band*
- 3 Tensioning screw

*The distance between the strap bolts and strapping band lock must be at least 500 mm (20 in).

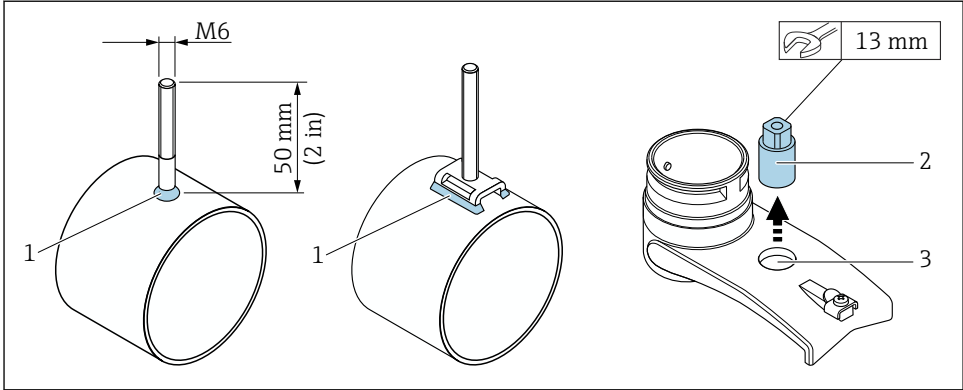
- i** ■ For 1-traverse mounting with 180° (opposite) (single-path measurement, A0044304), (two-path measurement, A0043168)
- For 2-traverse mounting (single-path measurement, A0044305), (two-path measurement, A0043309)
- Electrical connection

Sensor holder with welded bolts)

- i** Can be used for
 - Measuring devices with measuring range DN 50 to 4000 (2 to 160")
 - Mounting on pipes DN 50 to 4000 (2 to 160")

Procedure:

- The welded bolts must be fastened with the same installation distances as the mounting bolts with strapping bands. The following sections explain how to align the mounting bolts, depending on the mounting method and measurement method:
 - Installation for measurement via 1 traverse → 26
 - Installation for measurement via 2 traverses → 31
- The sensor holder is fastened as standard using a locking nut with a metric M6 ISO thread. If a different thread is to be used for fastening, a sensor holder with a detachable locking nut must be used.



A0043375

9 Holder with welded bolts

- 1 Welding seam
- 2 Locking nut
- 3 Hole diameter max. 8.7 mm (0.34 in)

Installing sensor – small nominal diameters DN 15 to 65 (½ to 2½")

Requirements

- The installation distance is known
- Sensor holder is pre-assembled.

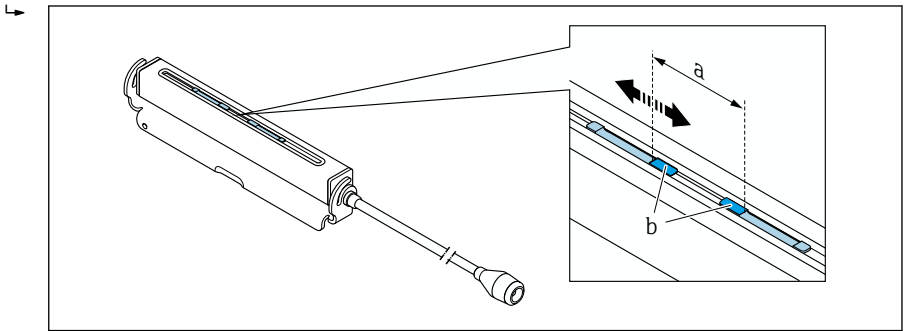
Material

The following material is required for mounting:

- Sensor incl. adapter cable
- Sensor cable for connection to the transmitter
- Coupling medium (coupling pad or coupling gel) for an acoustic connection between the sensor and pipe

Procedure:

1. Set the distance between the sensors to the value determined for the sensor distance. Press the movable sensor down slightly to move it.

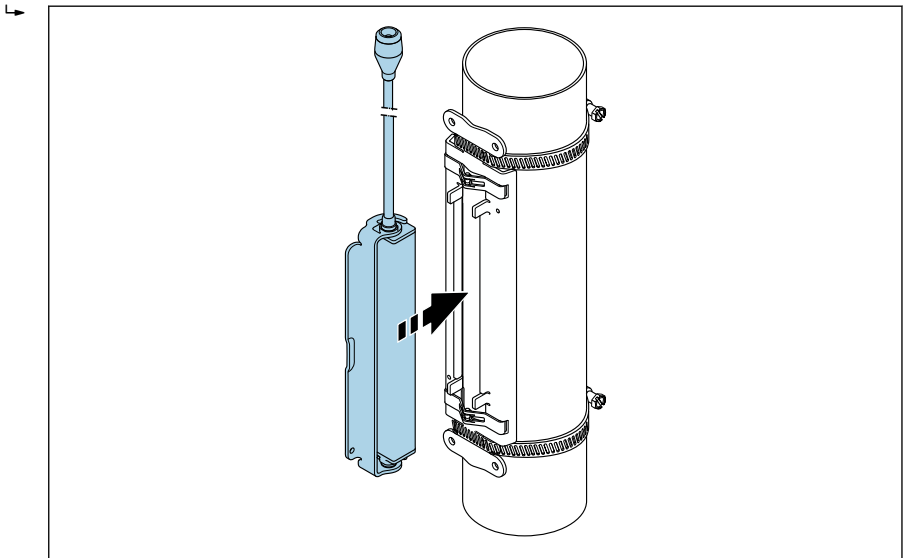


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10 Distance between sensors as per the installation distance

- a* Sensor distance (back of sensor must touch the surface)
b Sensor contact surfaces

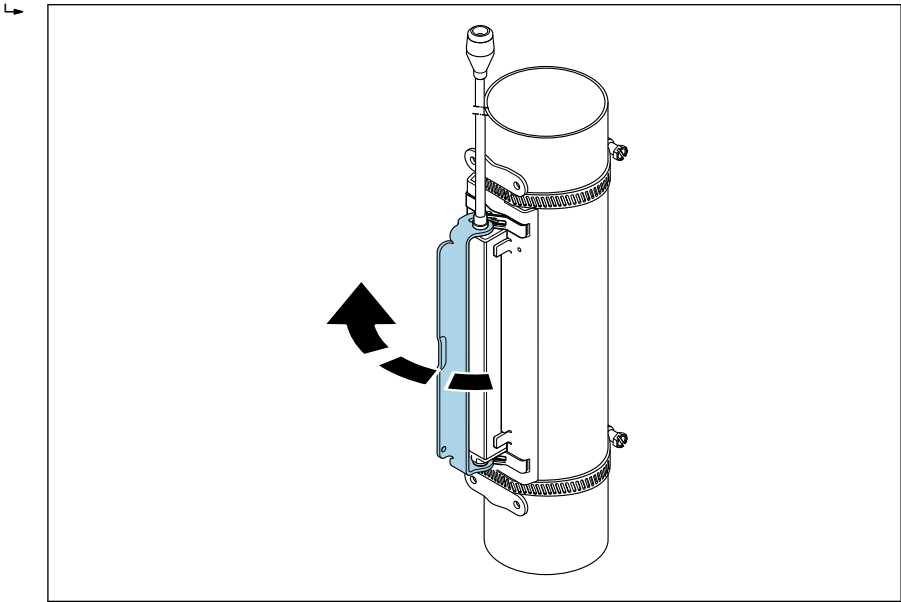
2. Stick the coupling pad under the sensor onto the measuring pipe. Alternatively, coat the contact surfaces of the sensor (*b*) evenly with coupling gel (approx. 0.5 to 1 mm (0.02 to 0.04 in)).
3. Position the sensor housing on the sensor holder.



A0043377

11 Positioning the sensor housing

4. Attach the sensor housing to the sensor holder by locking the bracket into place.



A0043378

12 Fastening the sensor housing

5. Connect the sensor cable to the adapter cable.

↳ This completes the mounting procedure. The sensors can be connected to the transmitter via the connecting cables.

- i** To ensure good acoustic contact, the visible measuring pipe surface must be clean and free from flaking paint and/or rust.
- If necessary, the holder and sensor housing can be secured with a screw/nut or a lead seal (not supplied).
- The bracket can only be released using an auxiliary tool e.g. screwdriver).

Installing sensors – medium/large nominal diameters DN 50 to 4000 (2 to 160")



Installation for measurement via 1 traverse

Requirements

- The installation distance and wire length are known
- Strapping bands are pre-assembled.

Material

The following material is required for mounting:

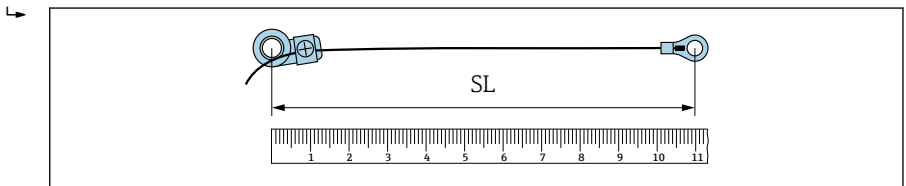
- Two strapping bands incl. mounting bolts and centering plates where necessary (already pre-assembled →  19, →  21)
- Two measuring wires, each with a cable lug and a fixer to fix the strapping bands
- Two sensor holders
- Coupling medium (coupling pad or coupling gel) for the acoustic connection between the sensor and pipe
- Two sensors incl. connecting cables




Installation is unproblematic up to DN 400 (16"); as of DN 400 (16") check the distance and angle ($180^\circ, \pm 5^\circ$) diagonally with the wire length.

Procedure for using measuring wires:

1. Prepare the two measuring wires: arrange the cable lugs and fixer such that the distance they are apart corresponds to the wire length (SL). Screw the fixer onto the measuring wire.

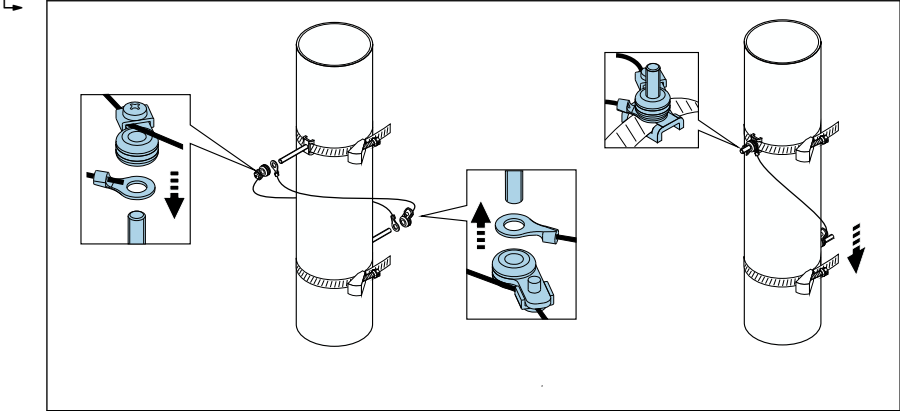


A0043379

 13 *Fixer and cable lugs at a distance that corresponds to the wire length (SL)*

2. With measuring wire 1: fit the fixer over the mounting bolt of strapping band 1 that is already securely mounted. Run measuring wire 1 clockwise around the measuring pipe. Fit the cable lug over the mounting bolt of strapping band 2 that can still be moved.
3. With measuring wire 2: fit the cable lug over the mounting bolt of strapping band 1 that is already securely mounted. Run measuring wire 2 counterclockwise around the measuring pipe. Fit the fixer over the mounting bolt of strapping band 2 that can still be moved.

4. Take strapping band 2 (still movable), including the mounting bolt, and move it until both measuring wires are evenly tensioned. Then tighten strapping band 2 so that it cannot slip. Then check the sensor distance from the middle of the strapping bands. If the distance is too small, release strapping band 2 again and position it better. The two strapping bands should be as perpendicular as possible to the measuring pipe axis and parallel to one another.



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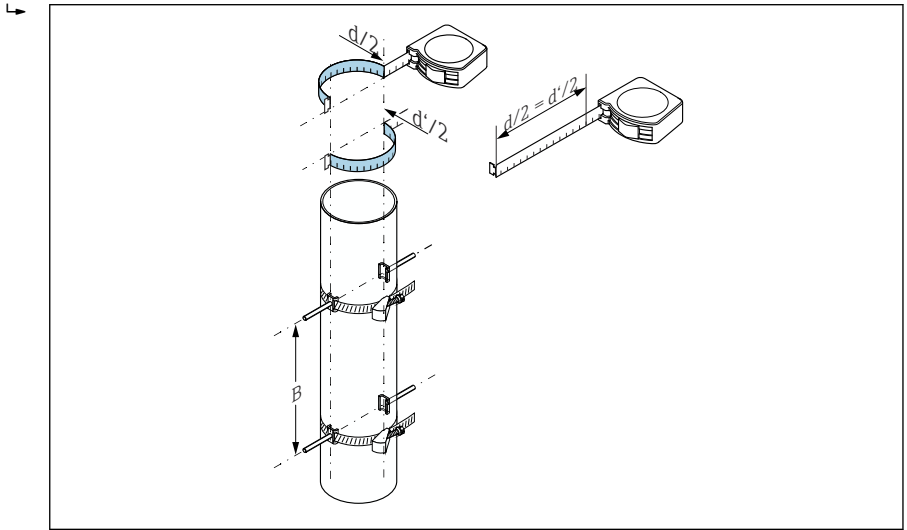
14 Positioning the strapping bands (steps 2 to 4)

5. Loosen the screws of the fixers on the measuring wires and remove the measuring wires from the mounting bolts.

Procedure with a tape measure:

1. Use a tape measure to determine the pipe diameter d .
2. Mount the opposite mounting bolt at $d/2$ from the front mounting bolt. The distance must be $d/2 = d/2$ on both sides.

3. Check distance B.

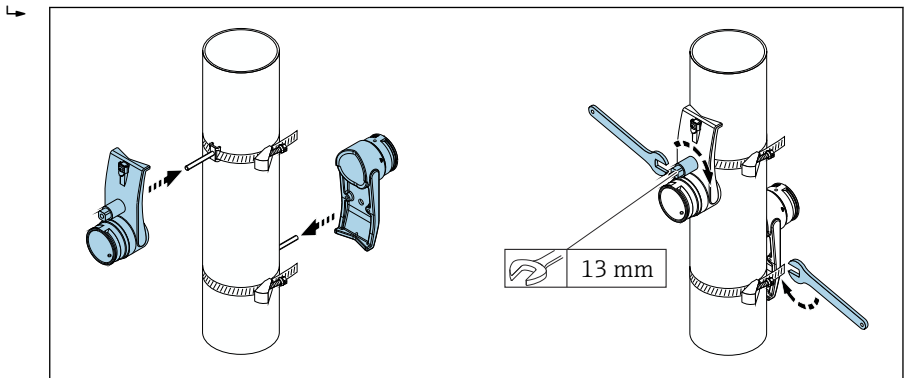


A0052445

15 Positioning the strapping bands and mounting bolts with a tape measure (steps 2 to 4)

Fastening the sensors:

1. Fit the sensor holders over the individual mounting bolts and tighten securely with the locking nut.

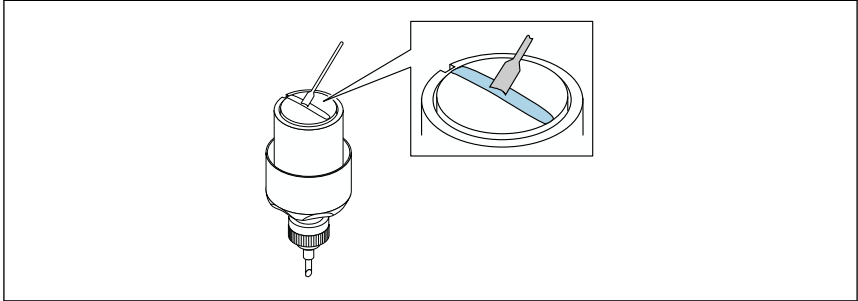


A0043381

16 Mounting the sensor holders

2. Stick the coupling pad under the sensor . Alternatively, coat the contact surfaces of the sensor evenly with coupling gel (approx. 1 mm (0.04 in)). In doing so, start from the groove through the center to the opposite edge.

↳

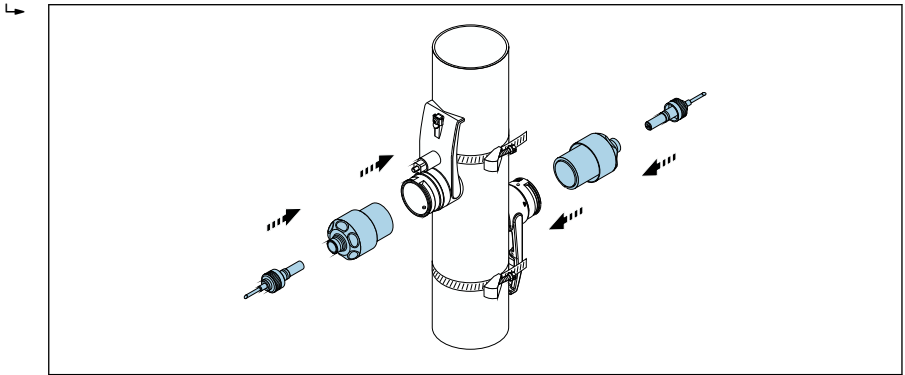



A0043382

- ☐ 17 *Coating the contact surfaces of the sensor with coupling gel (if there is no coupling pad)*

3. Insert the sensor into the sensor holder.
4. Fit the sensor cover on the sensor holder and turn until the sensor cover engages with a click and the arrows (▲ / ▼ "close") are pointing towards one another.

5. Insert the sensor cable into each individual sensor until the end stop.



 18 *Mounting the sensors and connecting the sensor cables*

This completes the mounting procedure. The sensors can now be connected to the transmitter via the sensor cables and the error message can be checked in the sensor check function.



- To ensure good acoustic contact, the visible measuring pipe surface must be clean and free from flaking paint and/or rust.
- If the sensor is removed from the measuring pipe, it must be cleaned and new coupling gel applied (if there is no coupling pad).
- On rough measuring pipe surfaces, the gaps in the rough surface must be filled with sufficient amounts of coupling gel if use of the coupling pad does not suffice (installation quality check).



Installation for measurement via 2 traverses

Requirements

- The installation distance is known.
- Strapping bands are pre-assembled.

Material

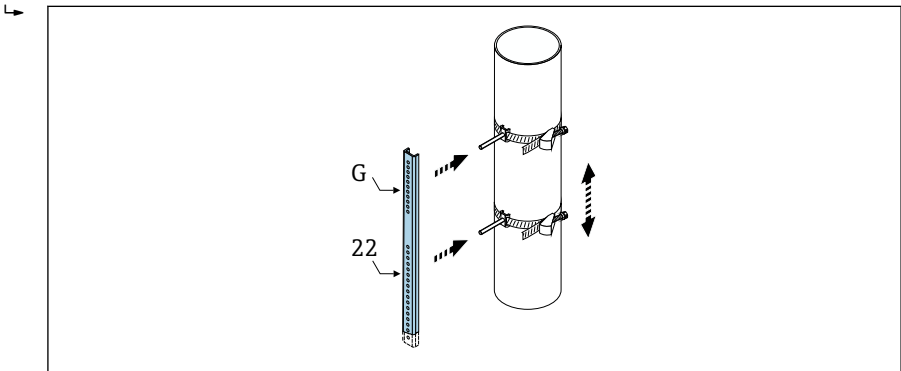
The following material is required for mounting:

- Two strapping bands incl. mounting bolts and centering plates where necessary (already pre-assembled →  19, →  21)
- A mounting rail to position the strapping bands:
 - Short rail up to DN 200 (8")
 - Long rail up to DN 600 (24")
 - No rail > DN 600 (24"), as distance measured by sensor distance between the mounting bolts
- Two mounting rail holders
- Two sensor holders
- Coupling medium (coupling pad or coupling gel) for an acoustic connection between the sensor and pipe


- Two sensors incl. connecting cables
- Open-ended wrench (13 mm)
- Screw driver

Procedure:

1. Position the strapping bands using the mounting rail [only DN50 to 600 (2 to 24")], for larger nominal diameters, measure the distance between the center of the strap bolts directly]: Fit the mounting rail with the bore identified by the letter (from the **Result sensor distance / measuring aid** parameter) over the mounting bolt of strapping band 1 that is fixed in place. Position the adjustable strapping band 2 and fit the mounting rail with the bore identified by the numerical value over the mounting bolt.

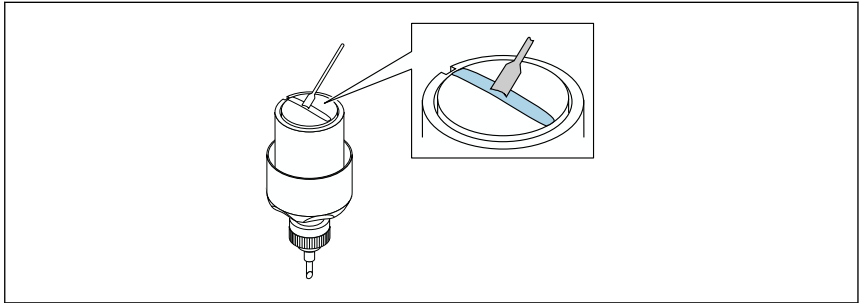


A0043384


 19 Determining the distance in accordance with the mounting rail (e.g. G22).

2. Tighten strapping band 2 so that it cannot slip.
3. Remove the mounting rail from the mounting bolt.
4. Fit the sensor holders over the individual mounting bolts and tighten securely with the locking nut.

5. Place the coupling pad under the sensor . Alternatively, coat the contact surfaces of the sensor evenly with coupling gel (approx. 1 mm (0.04 in)). In doing so, start from the groove through the center to the opposite edge.

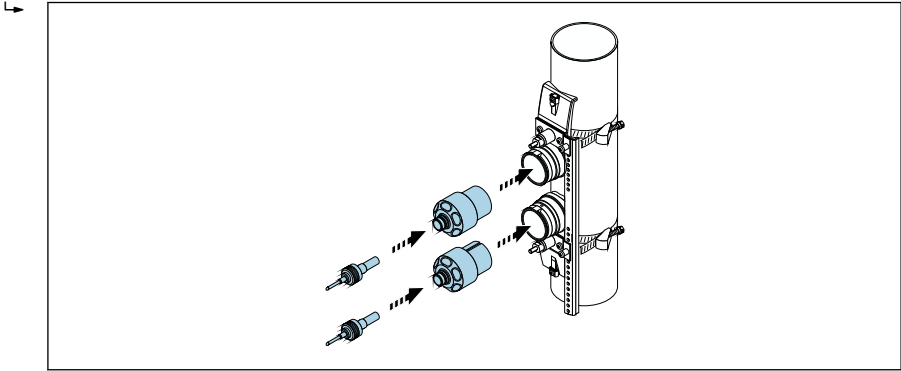



A0043382

 20 *Coating the contact surfaces of the sensor with coupling gel (if there is no coupling pad)*


6. Insert the sensor into the sensor holder.
7. Fit the sensor cover on the sensor holder and turn until the sensor cover engages with a click and the arrows (▲ / ▼ "close") are pointing towards one another.

8. Insert the sensor cable into each individual sensor until the end stop and tighten the locking nut.




 21 *Mounting the sensors and connecting the sensor cables*

This completes the mounting procedure. The sensors can now be connected to the transmitter via the sensor cables and the error message can be checked in the sensor check function.

-  To ensure good acoustic contact, the visible measuring pipe surface must be clean and free from flaking paint and/or rust.
- If the sensor is removed from the measuring pipe, it must be cleaned and new coupling gel applied (if there is no coupling pad).
- On rough measuring pipe surfaces, the gaps in the rough surface must be filled with sufficient amounts of coupling gel if use of the coupling pad does not suffice (installation quality check).

5.3 Post-mounting check

Is the measuring device undamaged (visual inspection)?	<input type="checkbox"/>
Does the measuring device correspond to the measuring point specifications? For example: <ul style="list-style-type: none"> ▪ Process temperature ▪ Inlet run conditions ▪ Ambient temperature ▪ Measuring range 	<input type="checkbox"/>
Has the correct orientation for the sensor been selected →  12? <ul style="list-style-type: none"> ▪ According to sensor type ▪ According to medium temperature ▪ According to medium properties (outgassing, with entrained solids) 	<input type="checkbox"/>
Are the sensors correctly connected to the transmitter (upstream/downstream) ?	<input type="checkbox"/>
Are the sensors correctly mounted (distance, 1 traverse, 2 traverses) ?	<input type="checkbox"/>
Is the tag name and labeling correct (visual inspection)?	<input type="checkbox"/>

Is the device sufficiently protected from precipitation and direct sunlight?	<input type="checkbox"/>
Are the securing screw and securing clamp tightened securely?	<input type="checkbox"/>
Is the sensor holder properly grounded (in the event of different potential between the sensor holder and transmitter)?	<input type="checkbox"/>

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.



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