

Operating Instructions

Cleanfit CUA451

Retractable process assembly







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1 Document information



1.1 Warnings

Structure of information	Meaning
 Causes (/consequences) If necessary, Consequences of non-compliance (if applicable) ▶ Corrective action	This symbol alerts you to a dangerous situation. Failure to avoid the dangerous situation will result in a fatal or serious injury.
 Causes (/consequences) If necessary, Consequences of non-compliance (if applicable) ▶ Corrective action	This symbol alerts you to a dangerous situation. Failure to avoid the dangerous situation can result in a fatal or serious injury.
 Causes (/consequences) If necessary, Consequences of non-compliance (if applicable) ▶ Corrective action	This symbol alerts you to a dangerous situation. Failure to avoid this situation can result in minor or more serious injuries.
 Cause/situation If necessary, Consequences of non-compliance (if applicable) ▶ Action/note	This symbol alerts you to situations which may result in damage to property.

1.2 Symbols

-  Additional information, tips
-  Permitted or recommended
-  Not permitted or not recommended
-  Reference to device documentation
-  Reference to page
-  Reference to graphic
-  Result of a step


1.3 Symbols on the device

-  Reference to device documentation
-  Do not dispose of products bearing this marking as unsorted municipal waste. Instead, return them to the manufacturer for disposal under the applicable conditions.

2 Basic safety instructions

2.1 Requirements for personnel

- Installation, commissioning, operation and maintenance of the measuring system may be carried out only by specially trained technical personnel.
- The technical personnel must be authorized by the plant operator to carry out the specified activities.
- The electrical connection may be performed only by an electrical technician.
- The technical personnel must have read and understood these Operating Instructions and must follow the instructions contained therein.
- Faults at the measuring point may only be rectified by authorized and specially trained personnel.

 Repairs not described in the Operating Instructions provided must be carried out only directly at the manufacturer's site or by the service organization.

2.2 Designated use

The manually operated Cleanfit CUA451 retractable assembly is designed for the installation of turbidity sensors in vessels and pipelines.

Thanks to its design, it can be operated in pressurized systems.

The assembly is designed exclusively for use in liquid media.

Use of the device for any purpose other than that described, poses a threat to the safety of people and of the entire measuring system and is therefore not permitted.

The manufacturer is not liable for damage caused by improper or non-designated use.

2.3 Workplace safety

As the user, you are responsible for complying with the following safety conditions:

- Installation guidelines
- Local standards and regulations

Electromagnetic compatibility

- The product has been tested for electromagnetic compatibility in accordance with the applicable international standards for industrial applications.
- The electromagnetic compatibility indicated applies only to a product that has been connected in accordance with these Operating Instructions.

2.4 Operational safety

Before commissioning the entire measuring point:

1. Verify that all connections are correct.
2. Ensure that electrical cables and hose connections are undamaged.
3. Do not operate damaged products, and protect them against unintentional operation.
4. Label damaged products as defective.

During operation:

- ▶ If faults cannot be rectified:
products must be taken out of service and protected against unintentional operation.

CAUTION

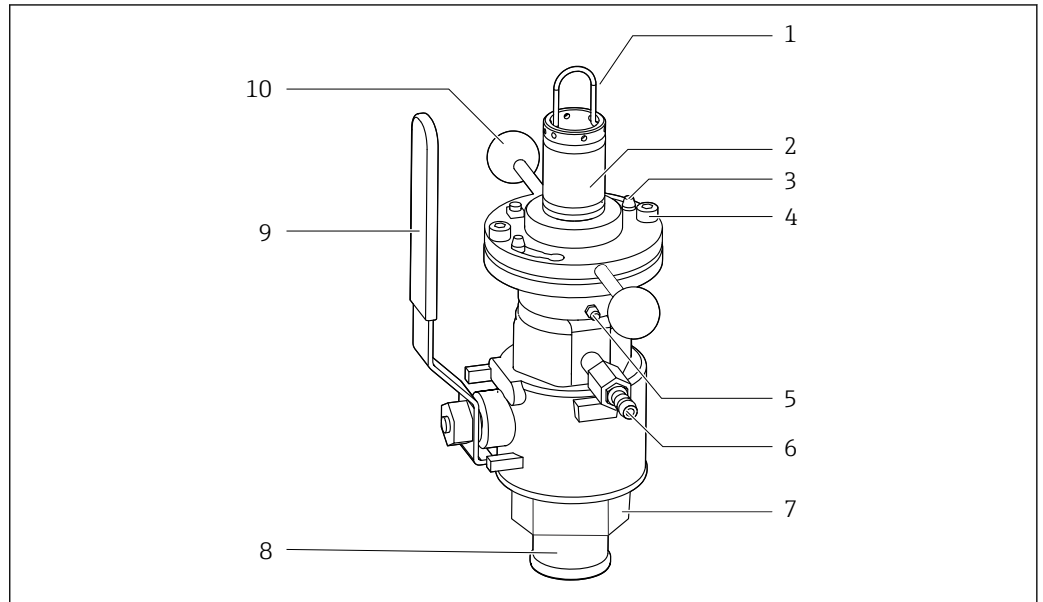
Cleaning not switched off during calibration or maintenance activities

Risk of injury due to medium or cleaning agent!


- ▶ If a cleaning system is connected, switch it off before removing a sensor from the medium.
- ▶ If you need to test the cleaning function while cleaning is in progress, wear protective clothing, goggles and gloves or take other suitable measures to protect yourself.

3 Product description

3.1 Product design



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 1 Assembly in operational state (ball valve open)

- 1 Bracket for sensor holder
- 2 Sensor holder
- 3 Bayonet lock
- 4 Securing screws
- 5 Grease nipple
- 6 Ball valve/valve for venting or rinse connection
- 7 Process connection
- 8 Retraction pipe
- 9 Hand lever for opening/closing the ball valve
- 10 Handles

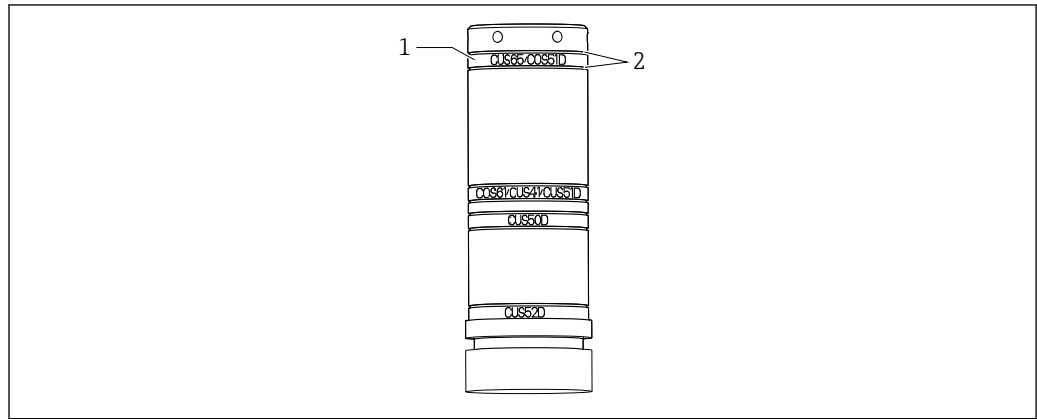


An additional rinse chamber valve can be mounted in the locking screw opposite the vent valve.


3.1.1 Universal sensor holder

The sensor holder is used to position the sensor correctly in order to ensure correct measuring accuracy.

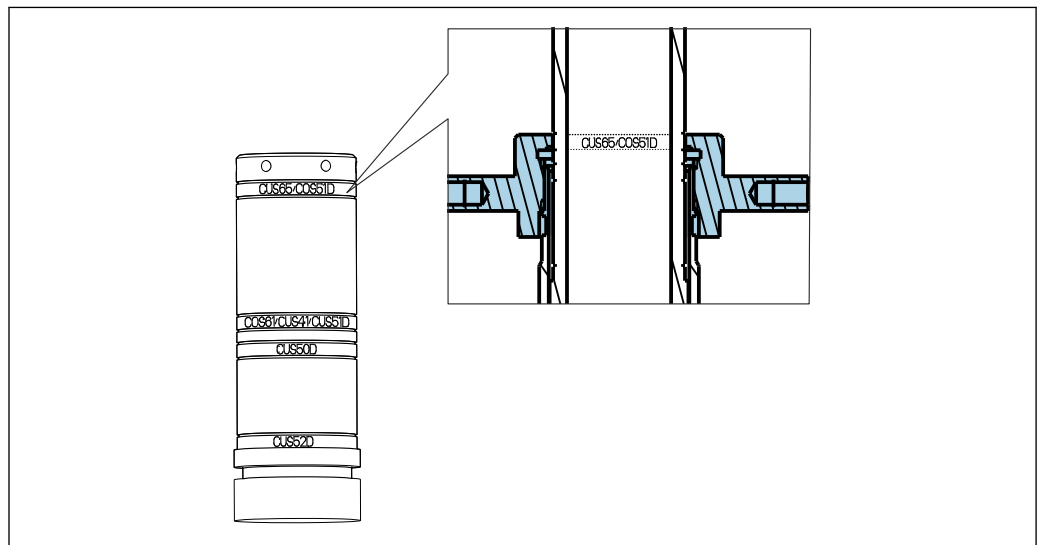
If the sensor is not positioned correctly, the ball valve may be blocked or the sensor may be located in the dead space as a result.




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 2 Short sensor holder

- 1 Mounting position of the bayonet nut to hold the relevant sensor
- 2 Grooves of the safety rings to mount the bayonet nut



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 3 Mounting position of bayonet nut for turbidity sensor and oxygen sensor CUS65D or COS51D

 The name indicated on the holder serves as a mounting aid. The bayonet nut covers over the marking for the selected sensor position.

4 Incoming acceptance and product identification

4.1 Incoming acceptance

1. Verify that the packaging is undamaged.
 - ↳ Notify the supplier of any damage to the packaging.
Keep the damaged packaging until the issue has been resolved.
2. Verify that the contents are undamaged.
 - ↳ Notify the supplier of any damage to the delivery contents.
Keep the damaged goods until the issue has been resolved.
3. Check that the delivery is complete and nothing is missing.
 - ↳ Compare the shipping documents with your order.
4. Pack the product for storage and transportation in such a way that it is protected against impact and moisture.
 - ↳ The original packaging offers the best protection.
Make sure to comply with the permitted ambient conditions.

If you have any questions, please contact your supplier or your local Sales Center.

4.2 Product identification

4.2.1 Nameplate

The nameplate provides you with the following information on your device:

- Manufacturer identification
 - Order code
 - Extended order code
 - Operating conditions
 - Serial number
 - Safety information and warnings
 - Approvals as per version ordered
- Compare the information on the nameplate with the order.

4.2.2 Product identification

Product page

www.endress.com/CUA451

Interpreting the order code

The order code and serial number of your product can be found in the following locations:

- On the nameplate
- In the delivery papers

Obtaining information on the product

1. Go to www.endress.com.
2. Call up the site search (magnifying glass).
3. Enter a valid serial number.
4. Search.
 - ↳ The product structure is displayed in a popup window.

5. Click on the product image in the popup window.
 - ↳ A new window (**Device Viewer**) opens. All of the information relating to your device is displayed in this window as well as the product documentation.

4.2.3 Manufacturer's address

Endress+Hauser Conducta GmbH+Co. KG
Dieselstraße 24
D-70839 Gerlingen

4.3 Scope of delivery

The delivery comprises:

- Assembly in the version ordered
 - Operating Instructions
- If you have any queries:
Please contact your supplier or local sales center.

4.4 Certificates and approvals

4.4.1 CE/PED

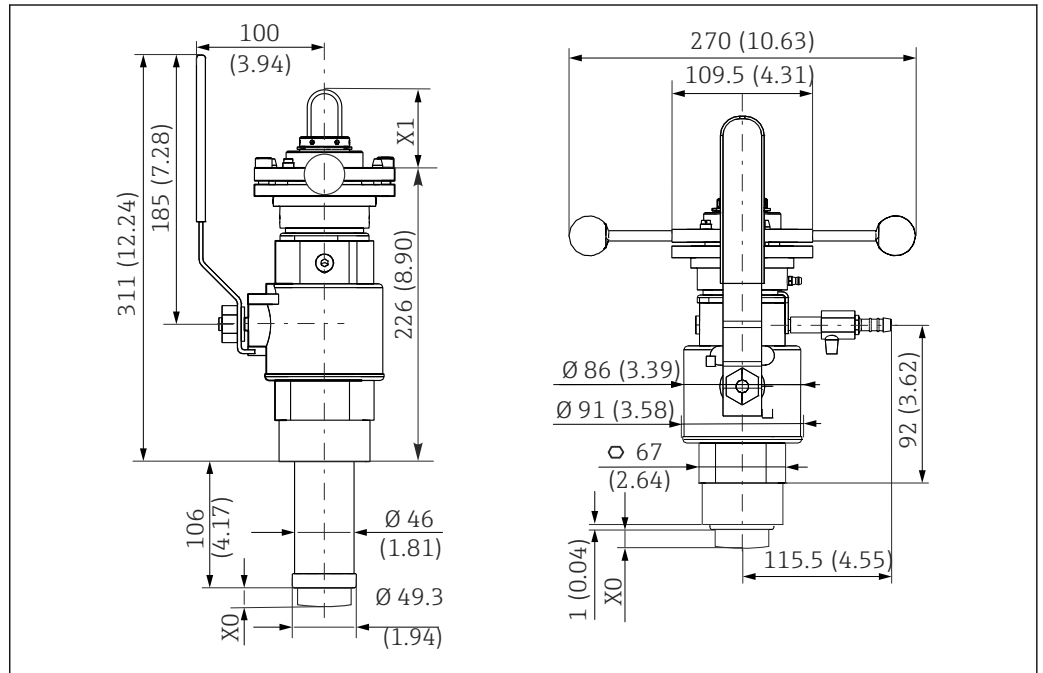
The assembly has been manufactured according to good engineering practice as per Article 4, Paragraph 3 of the Pressure Equipment Directive 2014/68/EU and is therefore not required to bear the CE label.

5 Installation

5.1 Installation conditions

5.1.1 Dimensions

Assembly with G2 thread and weld-in adapter in measuring position (long and short stroke)



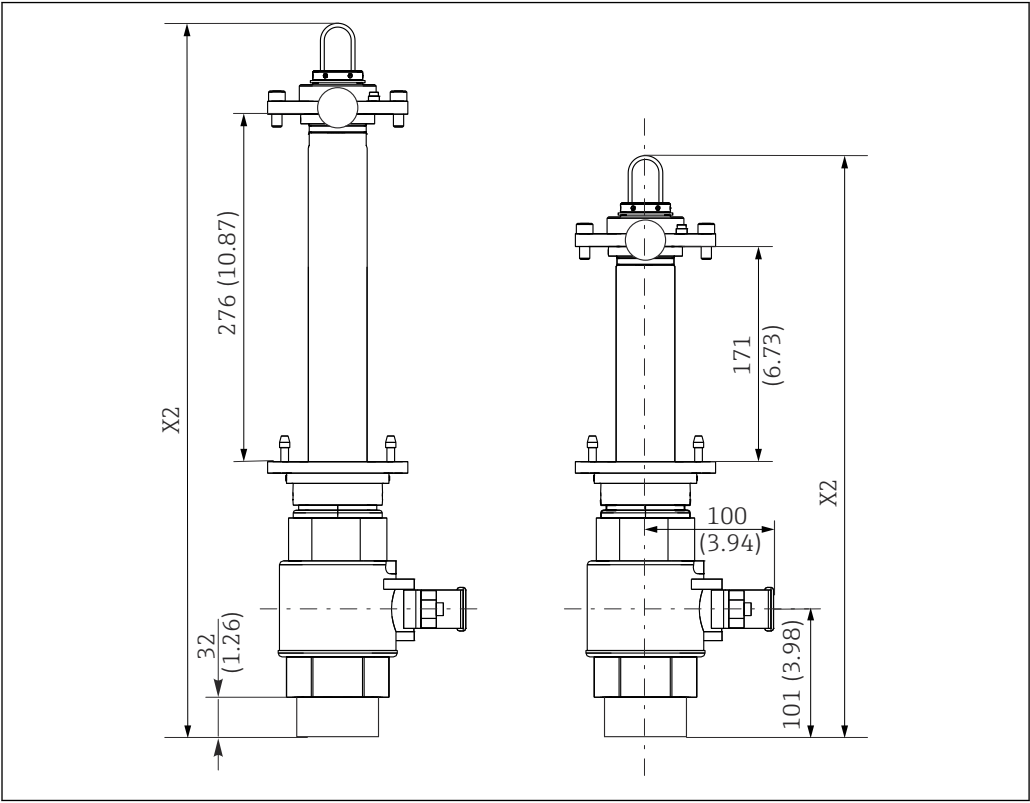
4 Dimensions in mm (in)

X0, Dimensions depend on the sensor

X1,

X2

Assembly with G2 thread and weld-in adapter in service position (long and short stroke)

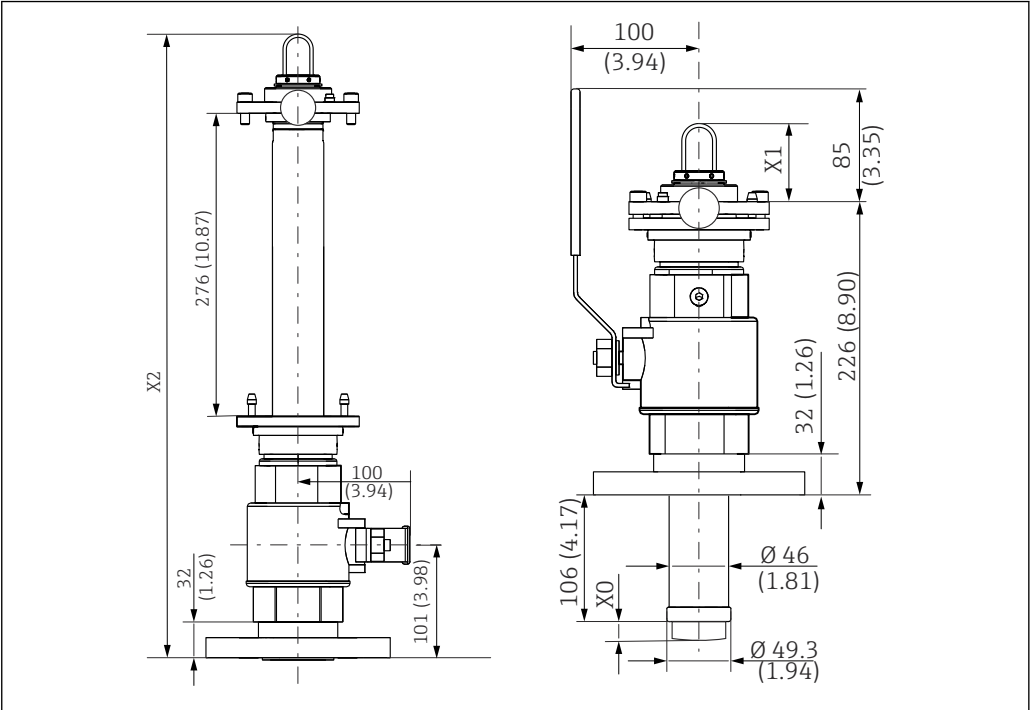


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5 Dimensions in mm (in)

X2 Dimensions depend on the sensor

Assembly with flange connection



6 Dimensions in mm (in)
X0, Dimensions depend on the sensor
X2

Sensor	X0
CUS52D	25 (0.98)
CUS50D	26 (1)
CUS41/	16 (0.63)
CUS51D	5 (0.2)
COS61D	12 (0.47)
CUS65	21 (0.83)
COS51D	12 (0.47)

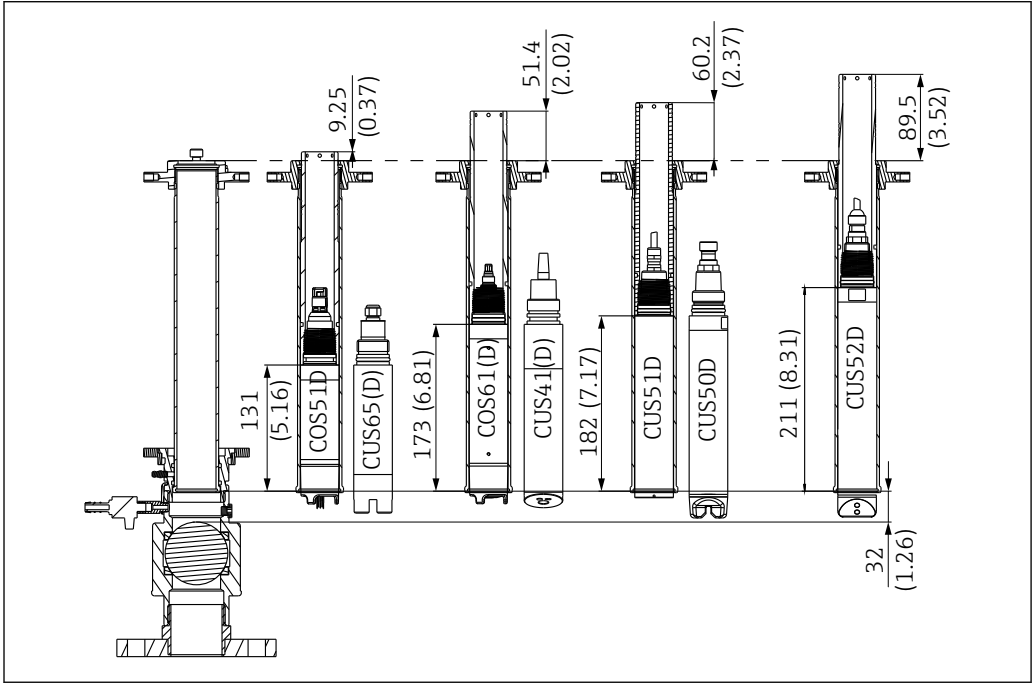
Sensor measuring position	X1
CUS52D	139 (5.47)
CUS50D	110 (4.33)
CUS41/CUS51D, COS61D	101 (3.98)
CUS65, COS51D	59 (2.32)

Sensor service position, long	X2
CUS52D	638 (25.12)
CUS50D	609 (23.98)

Sensor service position, long	X2
CUS41/CUS51D, COS61D	600 (23.62)
CUS65, COS51D	558 (21.97)

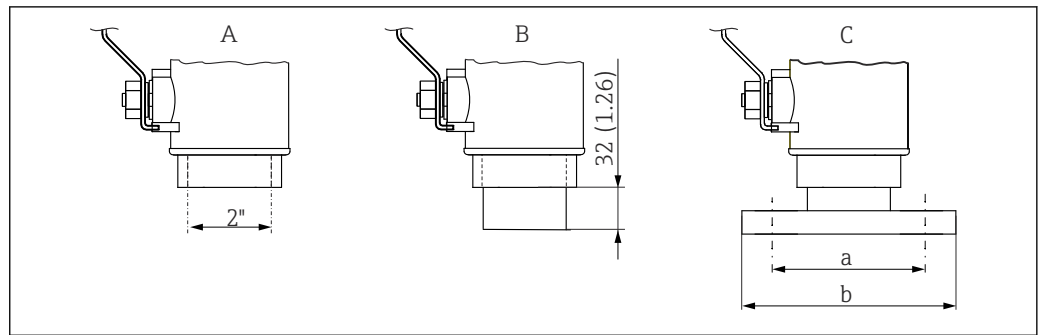
Sensor service position, short	X2
CUS52D	533 (20.98)
CUS50D	504 (19.84)
CUS41/CUS51D, COS61D	495 (19.49)
CUS65, COS51D	453 (17.83)

Sensor holder with sensors



7 Dimensions of sensor holder with sensors in mm (in)

5.1.2 Process connections



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8 Dimensions of process connections in mm (in)

A G2" female thread

B G2" female thread with weld-in adapter

C Flange DN 50 / PN 16 (as per EN 1092-1) and flange ANSI 2" / 150 lbs

a DN 50: Ø 125 (4.92), ANSI 2": Ø 120.7 (4.75)

b DN 50: Ø 165 (6.50), ANSI 2": Ø 152.4 (6.00)

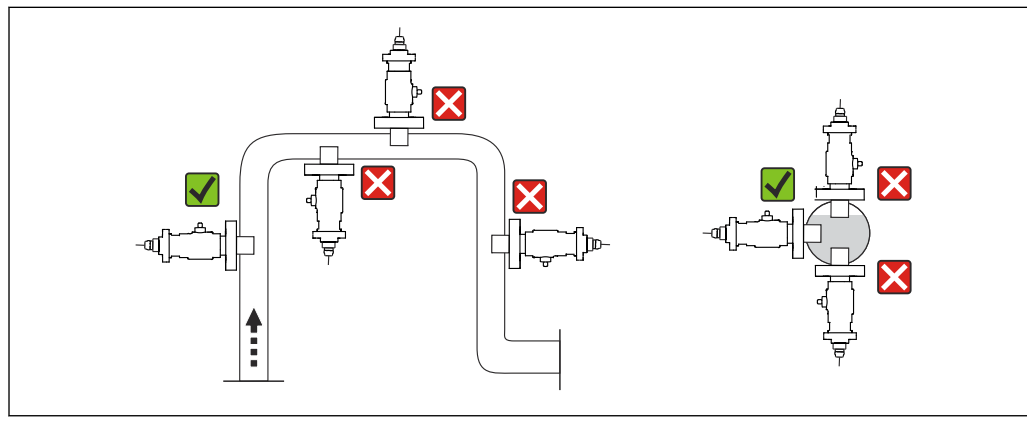
5.1.3 Installation instructions

Mounting location

The assembly is designed for installation on vessels and pipes. Suitable nozzles must be available for this. The minimum pipe diameter is DN 80.

- Before mounting the sensor, mount the assembly on the vessel or in the pipe.

The following diagram shows different installation positions in pipes, and indicates whether they are permitted or not.

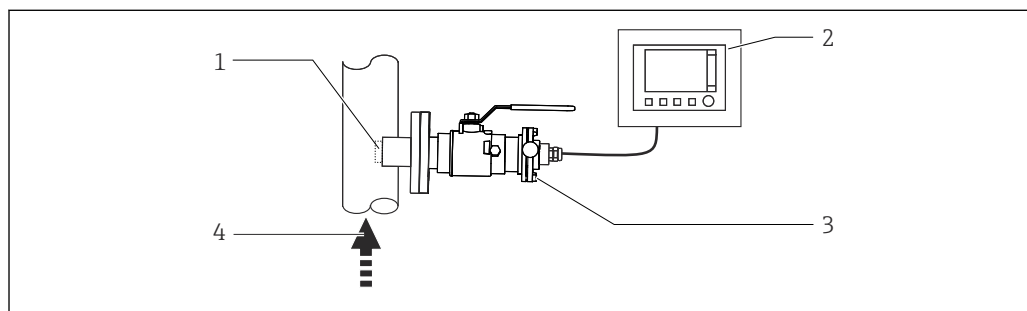


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9 Schematic of installation positions and orientations

- Ideally, the assembly should be mounted in an ascending pipe. Installation in a horizontal pipe is also possible.
- When using reflective materials (e.g. stainless steel), the pipe diameter must be at least 100 mm (4"). An onsite calibration is recommended.
- Install the sensor in places with uniform flow conditions.
- Do not install the sensor in places where air may collect or foam bubbles form or where suspended particles may settle.
- Avoid installation in the down pipe.
- Avoid fittings downstream from pressure reduction stages which can lead to outgassing.

Orientations



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10 Orientations, schematic

- 1 Sensor (see Accessories)
- 2 Transmitter
- 3 Retractable assembly
- 4 Direction of flow

i The orientation depends on the sensor head. Pay attention to the Operating Instructions for the relevant sensor. An inclination of at least 15° is recommended for amperometric sensors

- Make sure to avoid a siphon effect at the rinse chamber outlet. The inflow to the rinse chamber is always from below.

Clearance between the sensor and pipe wall

If the sensor is installed in pipes or very close to the wall, this can cause backscatter and therefore a higher sensor signal.

- Follow the instructions in the Operating Instructions for the sensor used.

5.2 Mounting the assembly

WARNING

Medium flows out.

Risk of injury

- ▶ Only install the assembly when the process is deactivated.
- ▶ Before disassembling, always ensure that the process pipe and vessel are unpressurized, empty and rinsed.
- ▶ Move the assembly to the service position.
- ▶ Close the ball valve.

5.2.1 Installing the assembly in the process

1. Mount the hand lever on the assembly.
2. Open the ball valve.
3. Move the assembly to the service position.
 - ↳ Retraction pipe is in the assembly.
4. Secure the assembly to the vessel or pipe using the selected process connection.

Flange process connection:

- ▶ Prior to installation, check the flange seal between the flanges.

G2" process connection

- ▶ Use a commercially available sealant (e.g. LOCTITE 561) to seal the G2" process connection.

5.2.2 Rinse water connection (optional)

NOTICE


Water pressure too high

The assembly can be damaged.

- ▶ A pressure-reducing valve must be connected in series upstream if the water pressure can increase to over 10 bar (87 psi).

Rinse the sensor in the service position with a second ball valve for the rinse chamber (see accessories).

1. Connect the rinse water line to the rinsing nozzle provided. The two rinse nozzles on the assembly are identical and can be used in the inlet and outlet.
2. Operate the rinse water connection of the assembly with a water pressure of 2 bar to max. 6 bar (29 to 87 psi).
3. Also install a check valve and a dirt trap (100 µm, see "Accessories") in the water pipe (at the inlet to the assembly).

-  Apart from water, you can also pass other or additional cleaning solutions through the rinse chamber. When doing so, pay attention to the material resistance of the assembly and make sure to comply with the maximum permitted temperatures and pressures.

5.2.3 Sensor installation

CAUTION

High pressure in the rinse chamber

Risk of injury from medium and pressure.

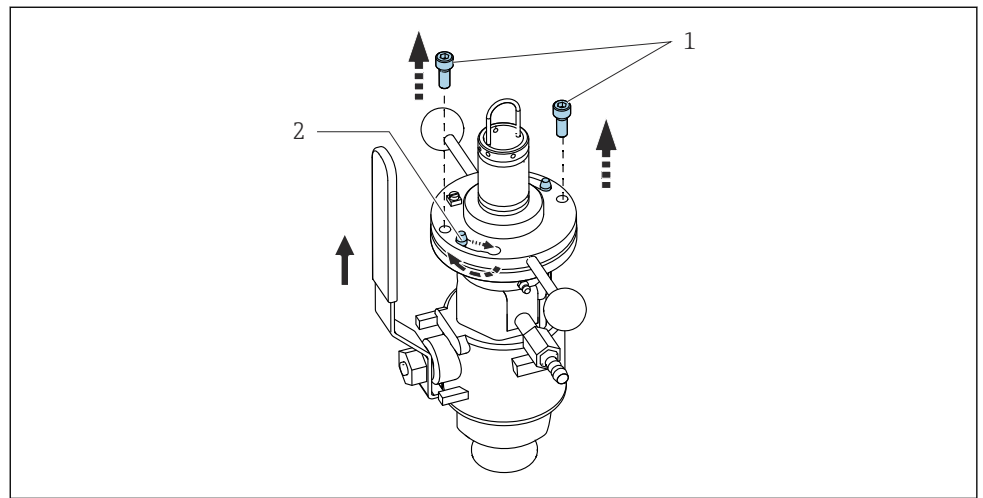
- ▶ Connect a hose to the vent valve and vent the rinse chamber carefully.

Release the screws

Use the following tools to install the sensor:

- 2.5 mm Allen screw
- 6 mm Allen screw

1.



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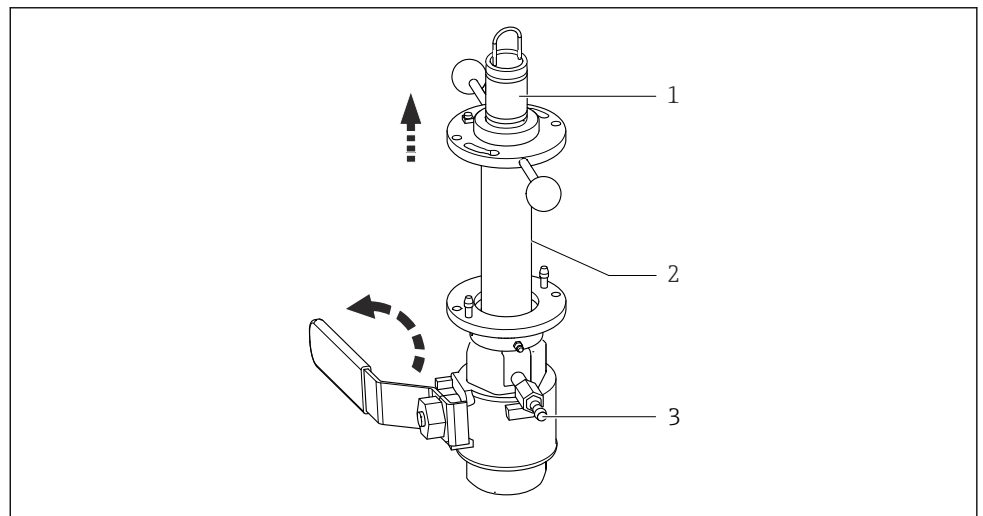
Release the securing screws (item 1) and put them in a safe place within reach.

2.

Turn the bayonet nut.

↳ The bayonet lock (item 2) is released.

3.



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Taking the handles, pull out the retraction pipe (item 2) together with the sensor holder (item 1) as far as it will go.

4.

Close the ball valve! Push down the hand lever as far as possible (only possible in one direction!).

↳ When the ball valve is closed, the assembly is sealed from the process.

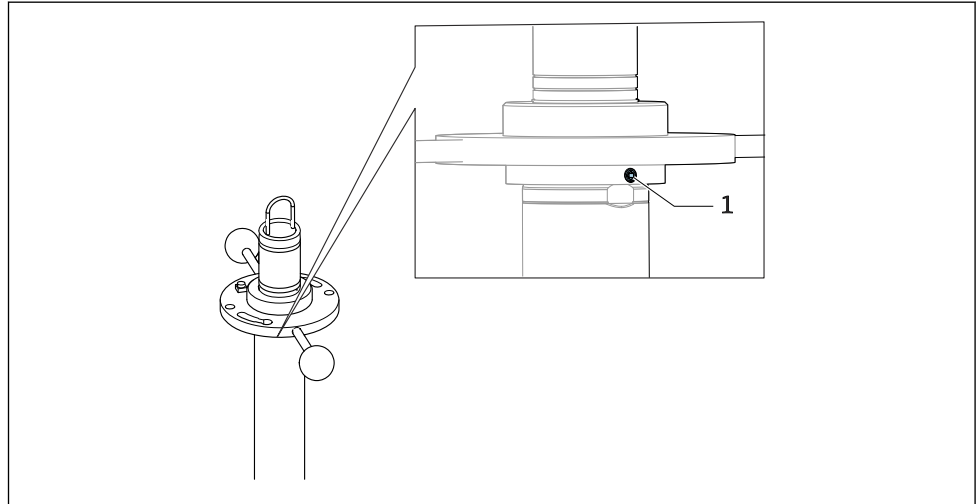
5.

Connect a hose to the vent valve (item 3).

6.

Vent the rinse chamber.

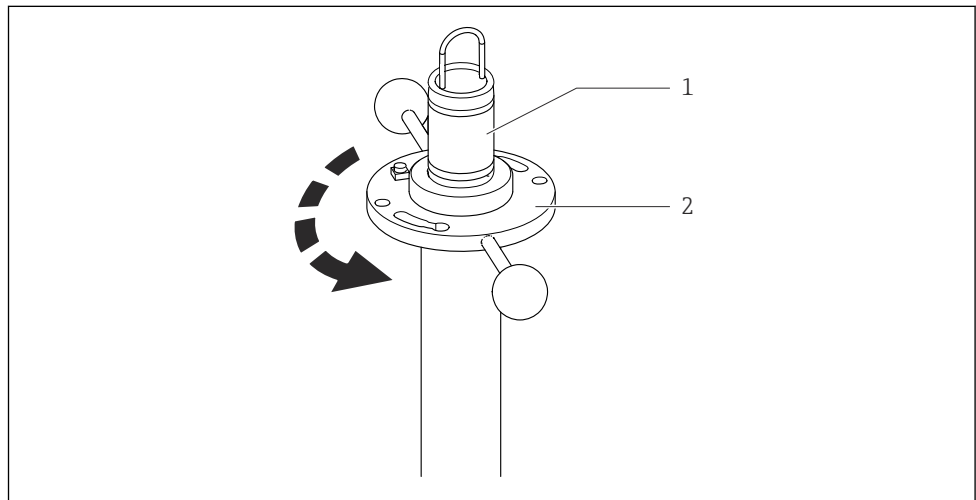
7.



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Release the grub screw (item 1) on the underside of the bayonet nut.

8.



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Unscrew the bayonet nut and the sensor holder (item 1) from the retraction pipe. In doing so, hold the retraction pipe steady and turn the handles (2) counterclockwise (approx. 9 turns).

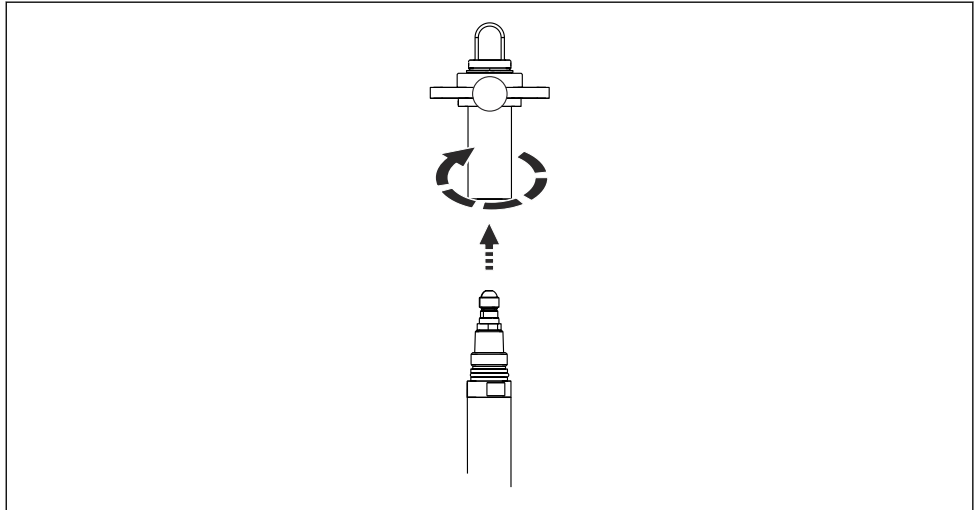
9. Holding the handles, pull the bayonet nut, along with the sensor holder, out of the retraction pipe.

i When the sensor is installed, the bracket is the only possible way to check the alignment of the sensor in the process! Observe the instructions on sensor alignment in the Operating Instructions for the sensor.

Screwing in the sensor

1. Guide the sensor cable through the sensor holder.
2. Grease the internal thread of the sensor holder.

3.

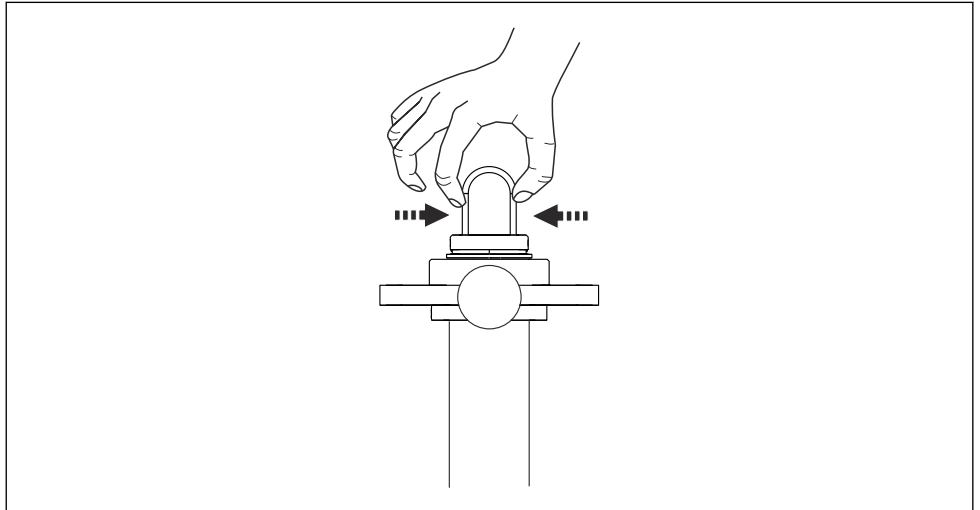


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Screw the sensor hand-tight into the female thread of the sensor holder.

Aligning the bracket

1.

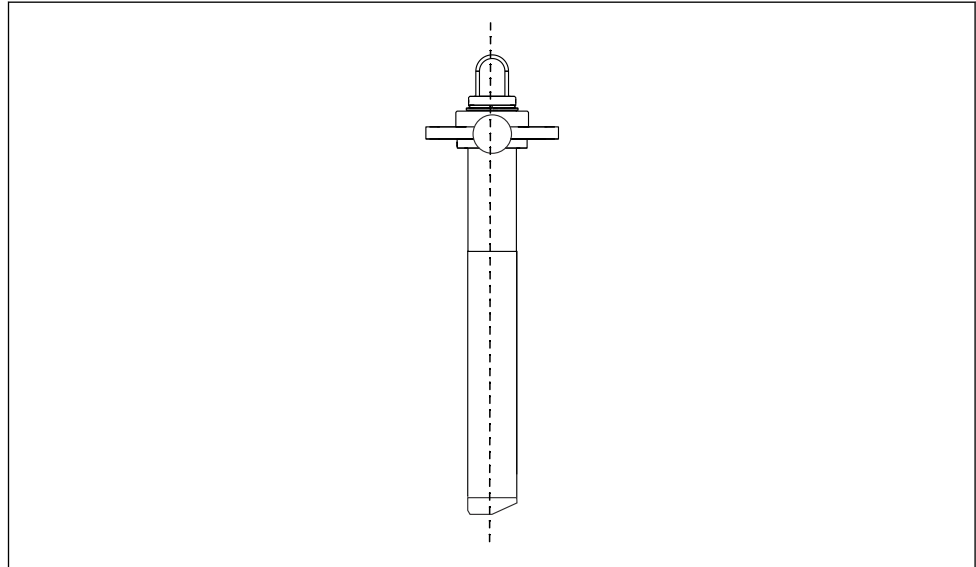


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Push the bracket out of the installation bore holes.

- The sensor holder bracket can be fitted in various positions at 60° intervals. In this way, you can use the bracket to mark the alignment of the sensor in the retraction pipe.

2.



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 11 Bracket alignment taking the example of the turbidity sensor CUS52D sensor

While paying attention to the flow side of the sensor, align the bracket with the axis of the sensor head.

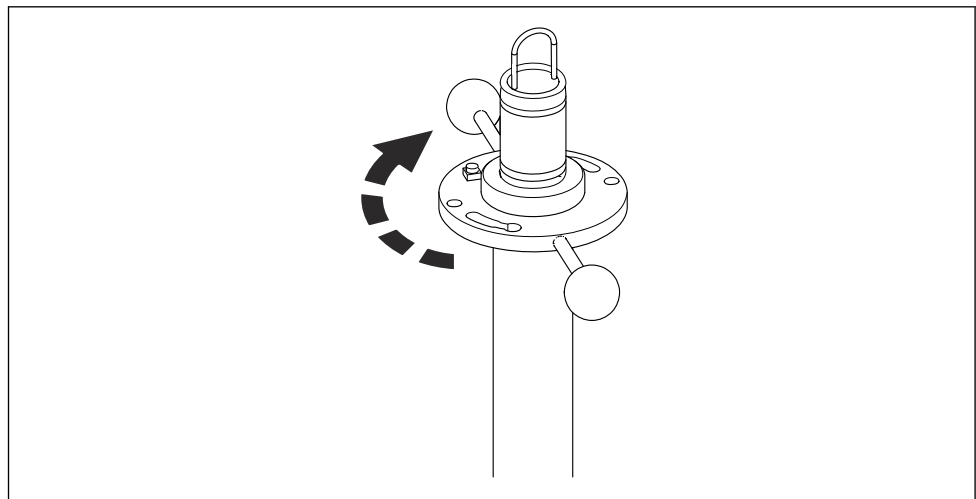
- ↳ In this way, you can determine the position of the sensor surface in the process and align the sensor with the medium flow.

3. Push the bracket into the desired installation bore holes.

Fitting the sensor in the retraction pipe

1. Fit the mounted sensor into the retraction pipe.

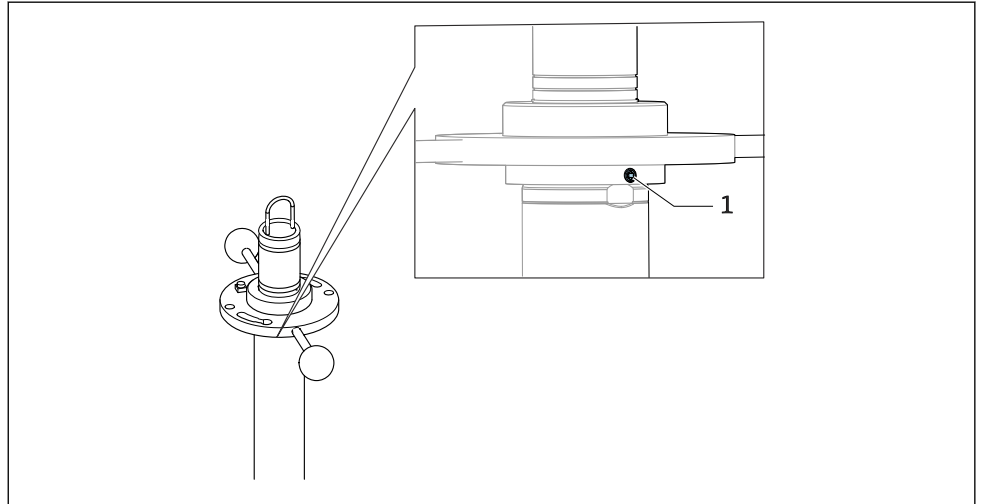
2.



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Hold the retraction pipe steady and tighten the bayonet nut (turn the handles clockwise).

3.



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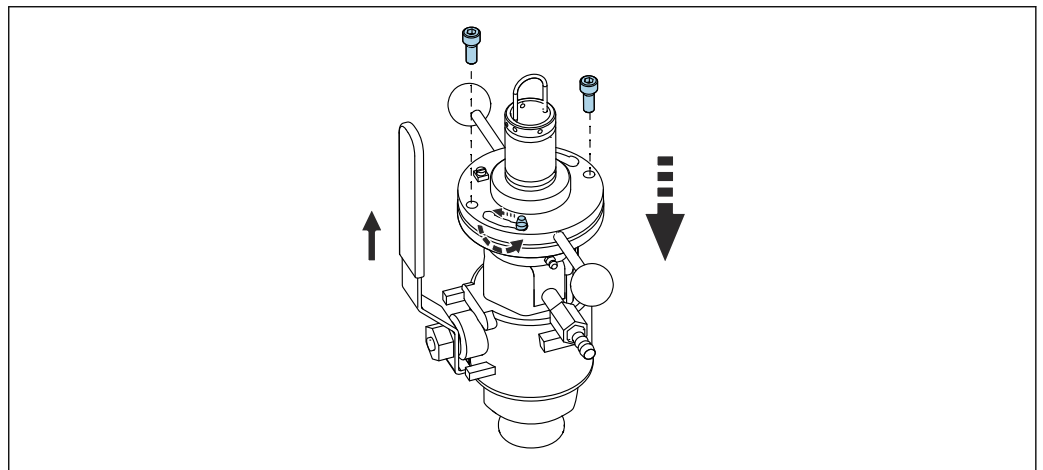
Tighten the grub screw of the bayonet nut.

4.

Connect the rinse chamber connection.

Fitting the sensor in the assembly

Assembly is in the service position.



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1.

Grease the retraction pipe.

↳ This helps the retraction pipe move more smoothly in the direction of the measuring position.

2.

Push up the hand lever as far as possible.

↳ The ball valve is open.

3.

Push the retraction pipe in the direction of the measuring position as far as it will go.

↳ The retraction pipe with the sensor is in the measuring position.

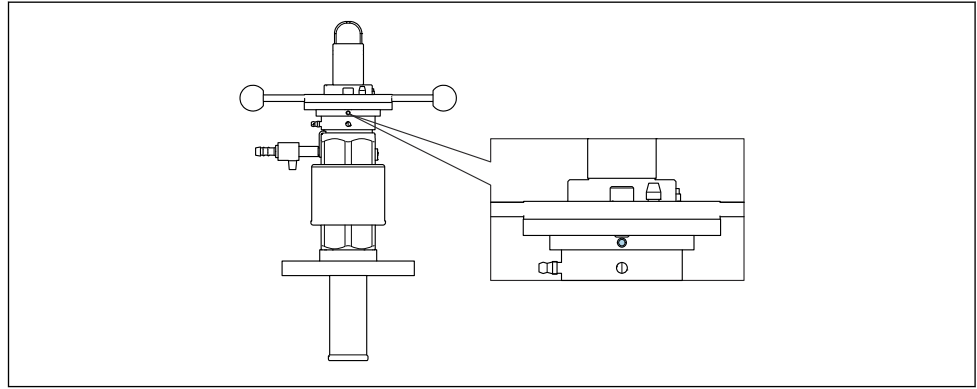
4.

Hold the bayonet lock steady and close it.

5.

Secure the retraction pipe with the securing screws.

6.



A0042643

Loosen the grub screw under the flange.

7. Turn the entire top assembly part around its own axis until the sensor is in the right position in relation to the medium flow.
8. Tighten the grub screw again.

5.2.4 Fitting the sensor holder onto another sensor

The universal sensor holder can subsequently be fitted onto another sensor.

The sensor holder has several sensor-specific grooves.

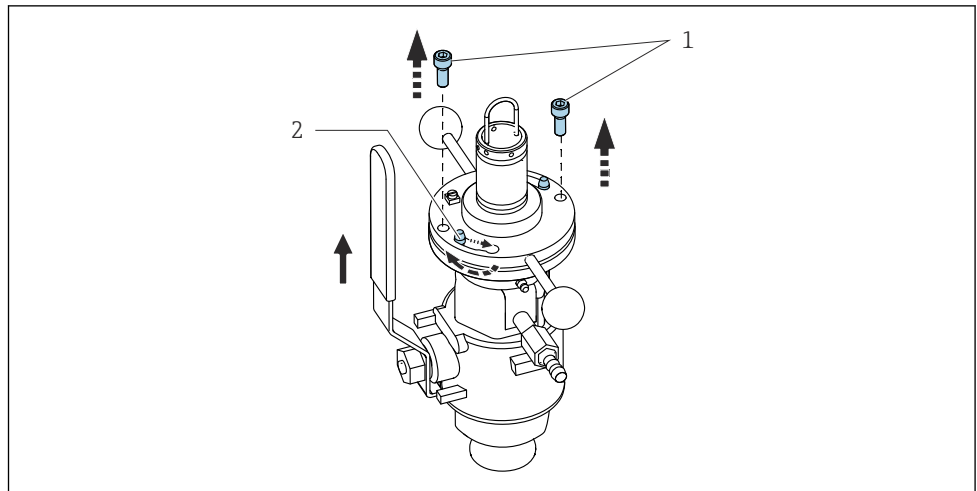
The desired sensor is aligned at the grooves. The grooves are used to adapt the sensor holder to the installation length of the sensor.

Disassembling the sensor holder

Use the following tools to install the sensor:

- 2.5 mm Allen screw
- 6 mm Allen screw

1.

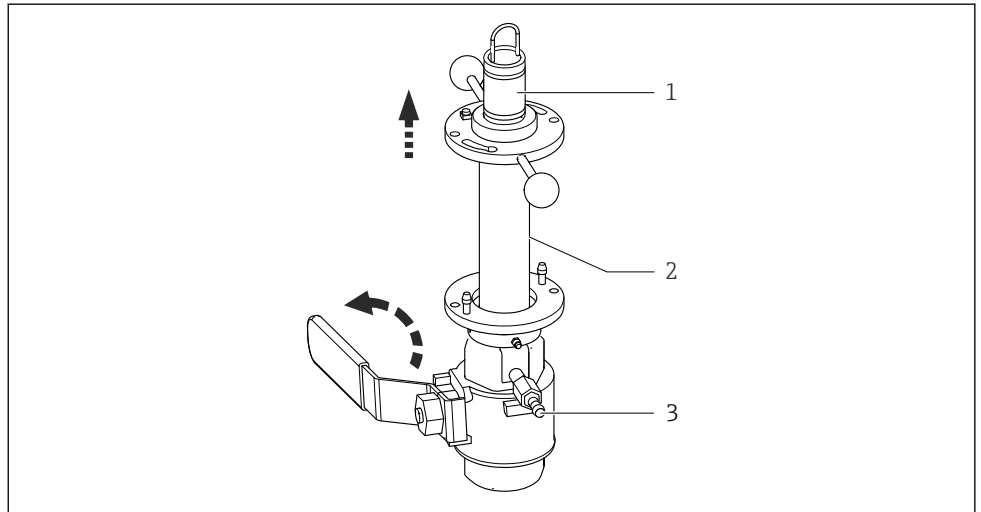


A0038431

Release the securing screws (item 1) and put them in a safe place within reach.

2. Turn the bayonet nut.
 - ↳ The bayonet lock (item 2) is released.

3.



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Taking the handles, pull out the retraction pipe (item 2) together with the sensor holder (item 1) as far as it will go.

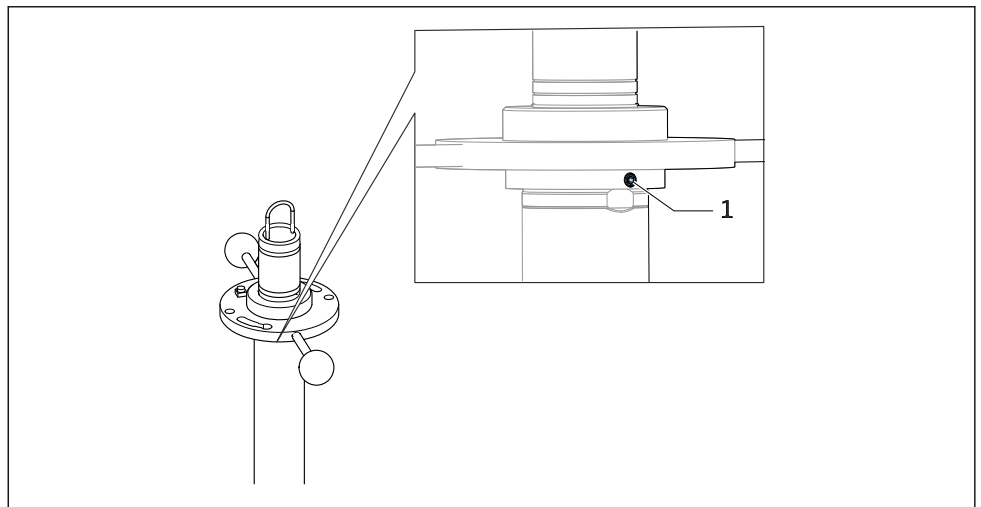
4. Close the ball valve! Push down the hand lever as far as possible (only possible in one direction!).

↳ When the ball valve is closed, the assembly is sealed from the process.

5. Connect a hose to the vent valve (item 3).

6. Vent the rinse chamber.

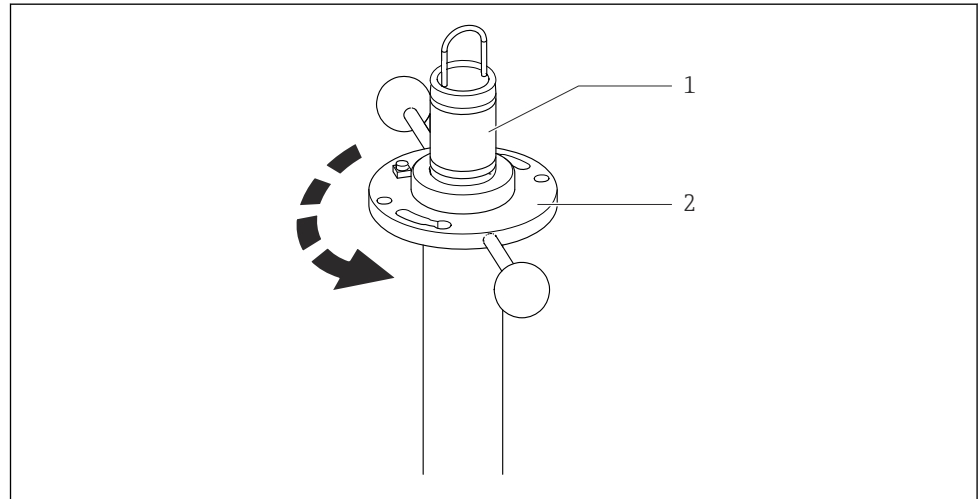
7.



A0038433

Release the grub screw (item 1) on the underside of the bayonet nut.

8.



A0038434

Unscrew the bayonet nut and the sensor holder (item 1) from the retraction pipe. In doing so, hold the retraction pipe steady and turn the handles (2) counterclockwise (approx. 9 turns).

9. Holding the handles, pull the bayonet nut, along with the sensor holder, out of the retraction pipe.
10. Clean the sensor holder, sensor and seals if necessary.

For fixed cable sensors

1. Release the sensor cable on the transmitter or junction box.
2. Remove the cable from the bayonet nut and sensor holder.

Removing the sensor

Use the following tools to remove the sensor:

- Special pliers with flat jaws for outer locking rings without bores
- Alternatively a small screwdriver

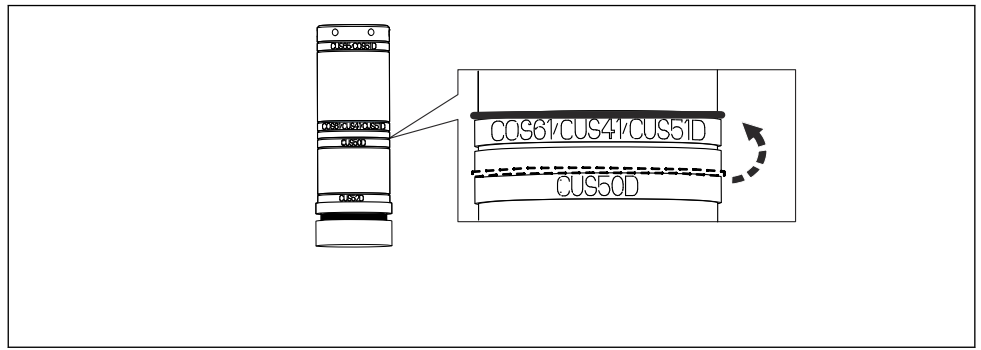
1. Hold the sensor steady and unscrew the sensor holder from the sensor.
2. Remove the top locking ring with the special pliers on the sensor holder above the bayonet nut.
3. Remove the bayonet nut from the sensor holder from above.
4. Loosen the bottom locking ring with the special pliers.

For sensors with the Memosens plug-in head

- Release the Memosens cable on the sensor.

Changing the position of the locking ring

1.



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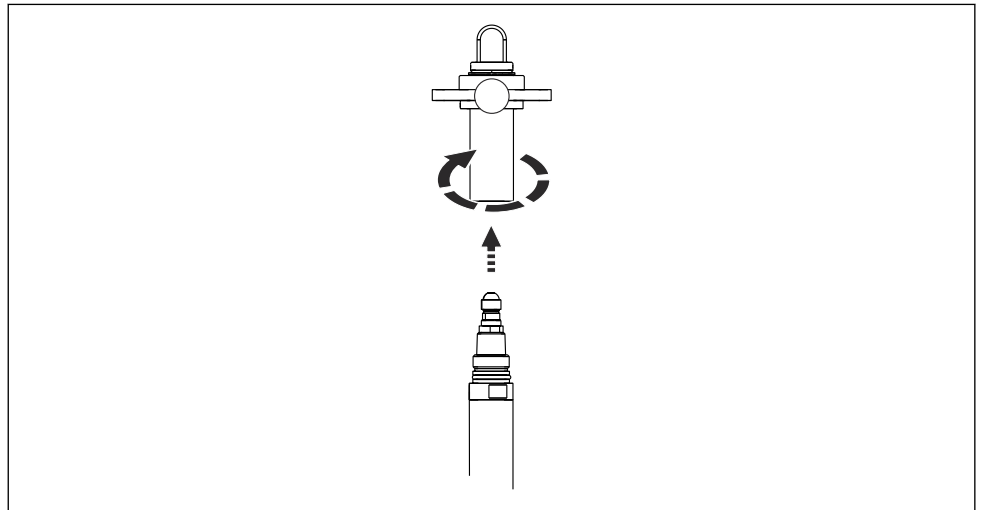
Fit the bottom locking ring on the correct groove

↳ The sensor marking on the sensor holder is no longer visible. → 8

2. Position the bayonet nut on the lower locking ring
3. Mount the upper locking ring

Installing the sensor

1. Guide the sensor cable through the sensor holder.
2. Grease the internal thread of the sensor holder.
- 3.



A0038441

Screw the sensor hand-tight into the female thread of the sensor holder.

4. Fit the mounted sensor into the retraction pipe.
5. Hold the retraction pipe steady and tighten the bayonet nut (turn the handles clockwise).
6. Tighten the grub screw of the bayonet nut.
7. Connect the rinse chamber connection.
8. Grease the retraction pipe.
 - ↳ This helps the retraction pipe move more smoothly in the direction of the measuring position.
9. Push up the hand lever as far as possible.
 - ↳ The ball valve is open.
10. Secure the retraction pipe with the securing screws.

5.3 Post-installation check

- After mounting, check all the connections to ensure they are secure and leak-tight.
- Ensure that the hoses of the (optional) rinse water connections cannot be removed without force. These pipes are in open contact with the medium and must be secured accordingly.
- Check the hoses for damage.

6 Commissioning

6.1 Preparatory steps

⚠ WARNING

Risk of injury if medium escapes!

- ▶ Before commissioning, check whether rinse hoses are connected to the assembly or whether dummy plugs are fitted at the rinse connections.
- ▶ Otherwise, do not introduce the assembly into the process.

Before commissioning check whether:

1. All seals are correctly seated on the assembly and on the process connection.
2. The sensor is correctly installed and connected.

7 Operation

7.1 Adapting the device to the process conditions

7.1.1 From the service position to the measuring position

1. Check the rinse chamber connections to ensure they are closed.
2. Open the ball valve.
3. Push the retraction pipe in the direction of the process as far as it will go.
4. Lock the retraction pipe via the bayonet lock.
5. Tighten the securing screws.
6. Loosen the grub screw under the flange.
7. At the handles, turn the top assembly part around its own axis in order to align the sensor.
8. Tighten the grub screw again.

7.1.2 From the measuring position to the service position

1. Release the securing screws with an Allen key.
2. Open the bayonet lock.
3. Pull out the sensor holder as far as it will go (service position).
4. Close the ball valve.
5. Vent the rinse chamber.
6. Perform the necessary service work.

8 Maintenance

WARNING

Medium flows out.

Risk of injury

- ▶ Only install the assembly when the process is deactivated.
- ▶ Before disassembling, always ensure that the process pipe and vessel are unpressurized, empty and rinsed.
- ▶ Move the assembly to the service position.
- ▶ Close the ball valve.

8.1 Maintenance tasks

NOTICE

Unfavorable ambient conditions such as plant vibrations or atmospheres that encourage corrosion can affect the functional integrity of the safety ring.

There is the danger of the ring breaking or coming free from the groove.

- ▶ Visually inspect for potential signs of corrosion.
- ▶ Make sure that the ring is fully seated in the groove.

8.1.1 Cleaning agent

The choice of cleaning agent depends on the degree and type of contamination. The most common types of contamination and the appropriate cleaning agents can be found in the following table.

Type of contamination	Cleaning agent
Greases and oils	Agents containing surfactants (alkaline agents) or water-soluble organic solvents (halogen-free, e.g. ethanol)
Limescale deposits, metal hydroxide buildup, lyophobic biological buildup	Approx. 3% hydrochloric acid
Sulfide deposits	Mixture of 3% hydrochloric acid and thiocarbamide (commercially available)
Protein buildup	Mixture of 3% hydrochloric acid and pepsin (commercially available)
Fibers, suspended substances	Pressurized water, possibly surface-active agents
Light biological buildup	Pressurized water

CAUTION

Inhalation of solvents

Health hazard due to solvents

- ▶ Do not use any halogen-containing organic solvents or acetone. These solvents may destroy plastic components of the sensor and are also suspected carcinogens (e.g. chloroform).

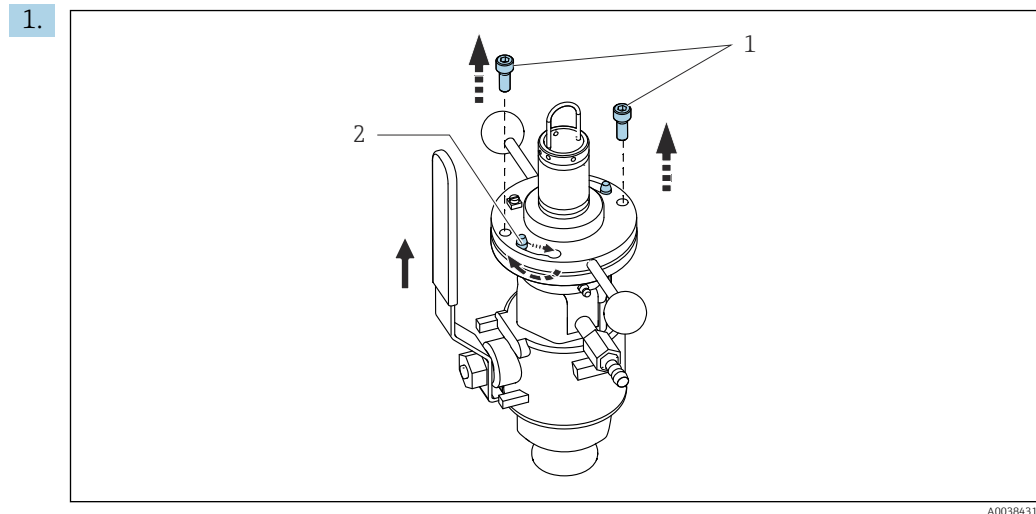
8.1.2 Removing the assembly

Disassembling the sensor

All parts in contact with the medium, such as the sensor and the sensor guide, must be cleaned regularly.

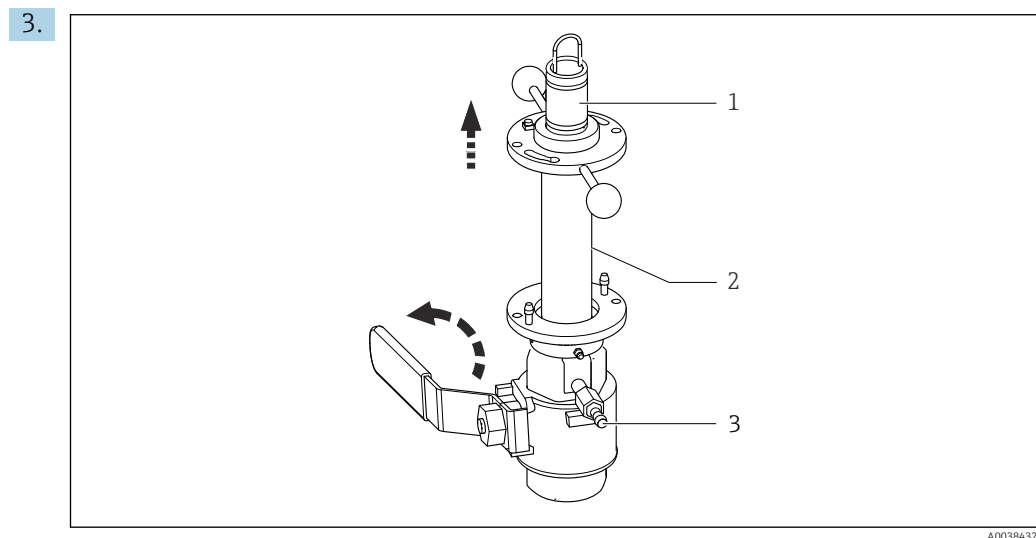
Use the following tools to remove the sensor:

- 2.5 mm Allen screw
- 6 mm Allen screw



Release the securing screws (item 1) and put them in a safe place within reach.

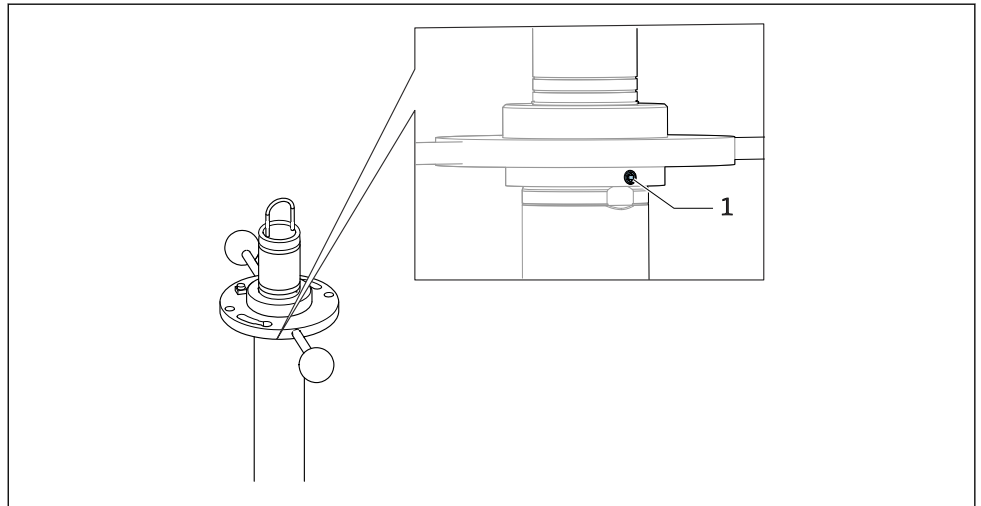
2. Release the bayonet lock (item 2).



Taking the handles, pull out the retraction pipe (item 2) together with the sensor holder (item 1) as far as it will go.

4. Close the ball valve! Push down the hand lever as far as possible (only possible in one direction!).
- ↳ When the ball valve is closed, the assembly is sealed from the process.
5. Connect a hose to the vent valve.
6. Vent the rinse chamber.

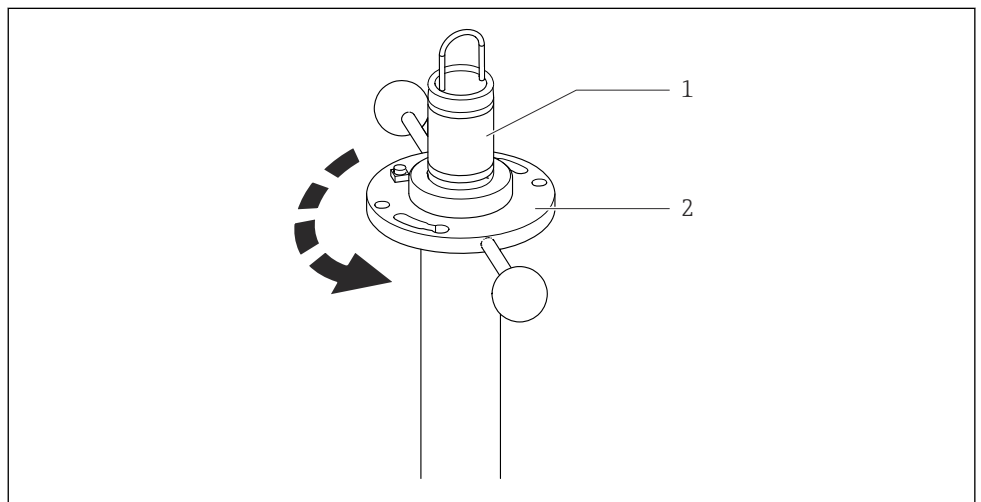
7.



A0038433

Release the grub screw (item 1) on the underside of the bayonet nut.

8.



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Unscrew the bayonet nut and the sensor holder (item 1) from the retraction pipe. In doing so, hold the retraction pipe steady and turn the handles (2) counterclockwise (approx. 9 turns).

9. Holding the handles, pull the bayonet nut, along with the sensor holder, out of the retraction pipe.
10. Unscrew the sensor from the sensor holder.

8.1.3 Cleaning the assembly

To ensure stable and reliable measurements, the assembly and the sensor must be cleaned regularly. The frequency and intensity of the cleaning process depend on the medium.



A typical example of a cleaning interval would be 6 months in the case of drinking water.

Cleaning the assembly

1. Remove light dirt and fouling with suitable cleaning solutions.
2. Remove heavy soiling using a soft brush and a suitable cleaning agent.
3. For very persistent dirt, soak the parts in a cleaning solution. Then clean the parts with a brush.

4. After cleaning, grease the retraction pipe to ensure the assembly moves in and out easily. A suitable grease is SYNTHESO GLEP 1 (from Klüber). PARALIQ GTE 703 (from Klüber) is suitable for use in the food sector.
5. Also grease the area between the O-rings using the grease nipple.

8.1.4 Replacing the seals

CAUTION

Residual medium and elevated temperatures can cause irritation

Risk of injury

- ▶ When handling parts that are in contact with the medium, protect yourself against residual medium and elevated temperatures.
- ▶ Wear protective goggles and safety gloves.

Keeping seals clean


1. Keep the sealing surfaces of the assembly free from dirt.
2. Remove caking and buildup from time to time.
3. If leaks are discovered, contact your Endress+Hauser sales office.

Preparing the assembly

The seals are available as an accessory kit. When replacing the seals, interrupt the process and remove the assembly completely.

Use the following materials and tools:

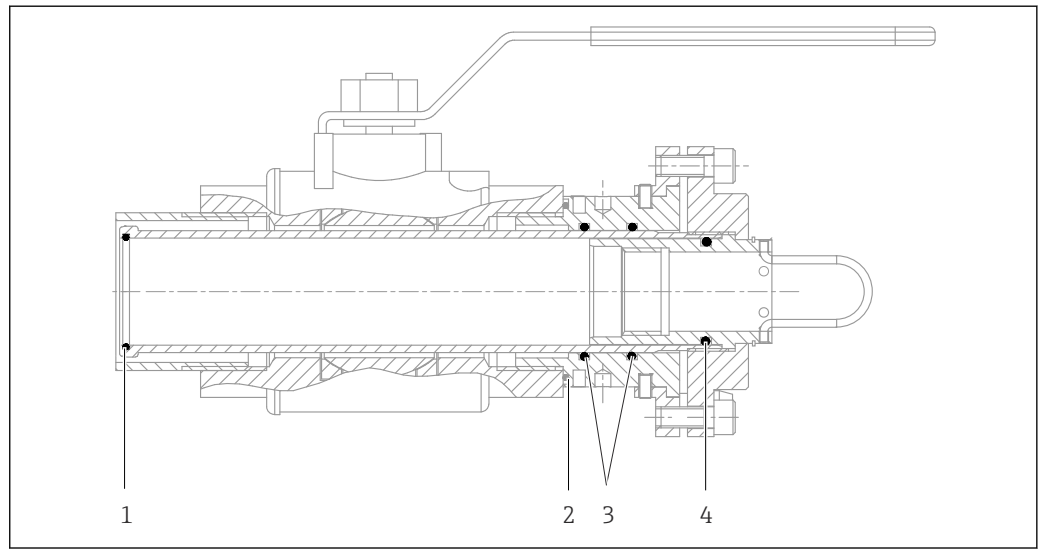
- Teflon tape
- Grease (e.g. SYNTHESO GLEP 1 or PARALIQ GTE 703)
- 2.5 mm Allen screw
- 6 mm Allen screw
- Adjustable open-ended wrench (up to 45 mm)
- Open-ended wrench set (only for flange connection)
- Special pliers
- Adjustable pin wrench DIN 1810 B, size 68 to 75

1. Switch off the process
2. Empty the pipe or vessel.
3. Disassemble the assembly →  31

Removing the retraction pipe and sensor holder

1. Unscrew the sensor holder.
 - ↳ The thread of the retraction pipe can now be accessed.
2. Wrap Teflon tape around the thread of the retraction pipe. This protects the seals from damage when inserting and removing the retraction pipe.
 - ↳ The seals are therefore protected from damage when inserting and removing the retraction pipe.
3. Press the retraction pipe downwards out of the ball valve.
4. Using the special pliers, remove the locking ring above the bayonet nut.
5. Remove the bayonet nut from the sensor holder.

Access to the seals



12 Seals

- 1 Viton O-ring, retraction pipe
- 2 Viton O-ring, between ball valve and bottom part of bayonet lock
- 3 Viton O-rings, bottom part of bayonet lock
- 4 Viton O-ring, sensor holder

1. Only when replacing the O-ring, item 2: unscrew the vent cock (with safety bracket).
2. Only when replacing the O-ring, item 2: using a hook spanner, unscrew the bottom part of the bayonet lock.
 - ↳ The seals can now be accessed.

Replacing the seals and assembling the assembly

1. Lightly grease the O-rings (e.g. with Syntheso Glep 1).
2. Replace the seals (O-rings) if necessary.
3. If you have not already done so, wrap Teflon tape around the thread of the retraction pipe.
 - ↳ This protects the seals from damage when inserting the retraction pipe.
4. Grease the retraction pipe.
5. Reassemble the assembly.
6. Make sure that the locking ring above the bayonet nut is correctly seated.
7. Remove the Teflon tape once you have inserted the retraction pipe.
8. Check for leaks before returning the assembly to the measuring position.

9 Repair

9.1 General information

CAUTION

Risk of injury due to medium escaping and elevated temperatures

Pressure safety is compromised

- ▶ Damage to the assembly, which compromises pressure safety, must be repaired only by authorized and qualified personnel.
- ▶ Following all repair and maintenance work, suitable measures must be taken to check the assembly for leaks and ensure it is leak-tight. Following this, the assembly must again comply with the specifications in the technical data.

9.2 Spare parts

The repair and conversion concept provides for the following:

- The product has a modular design
- Spare parts are grouped into kits which include the associated kit instructions
- Only use original spare parts from the manufacturer
- Repairs are carried out by the manufacturer's Service Department or by trained users
- Certified devices can only be converted to other certified device versions by the manufacturer's Service Department or at the factory
- Observe applicable standards, national regulations, Ex documentation (XA) and certificates

1. Carry out the repair according to the kit instructions.
2. Document the repair and conversion and enter, or have entered, in the Life Cycle Management tool (W@M).

Device spare parts that are currently available for delivery can be found on the website:

www.endress.com/device-viewer

- ▶ Quote the serial number of the device when ordering spare parts.

9.3 Return

The product must be returned if repairs or a factory calibration are required, or if the wrong product was ordered or delivered. As an ISO-certified company and also due to legal regulations, Endress+Hauser is obliged to follow certain procedures when handling any returned products that have been in contact with medium.

To ensure the swift, safe and professional return of the device:

- ▶ Refer to the website www.endress.com/support/return-material for information on the procedure and conditions for returning devices.

The product must be returned if repairs or a factory calibration are required, or if the wrong product was ordered or delivered.

To ensure safe, professional and swift product returns, please contact your local Sales Center for information on the procedure to be followed and general conditions.

9.4 Disposal

- ▶ Please observe local regulations!

10 Accessories

The following are the most important accessories available at the time this documentation was issued.

- For accessories not listed here, please contact your Service or Sales Center.

10.1 Device-specific accessories

10.1.1 Sensors

Turbimax CUS50D

- For nephelometric measurements of turbidity and solids in wastewater
- 4-beam scattered light method
- With Memosens technology
- Product Configurator on the product page: www.endress.com/cus50d



Technical Information TI00461C

Turbimax CUS51D

- For nephelometric measurements of turbidity and solids in wastewater
- 4-beam scattered light method
- With Memosens technology
- Product Configurator on the product page: www.endress.com/cus51d



Technical Information TI00461C

Turbimax CUS52D

- Hygienic Memosens sensor for turbidity measurement in drinking water, process water and in utilities
- With Memosens technology
- Product Configurator on the product page: www.endress.com/cus52d

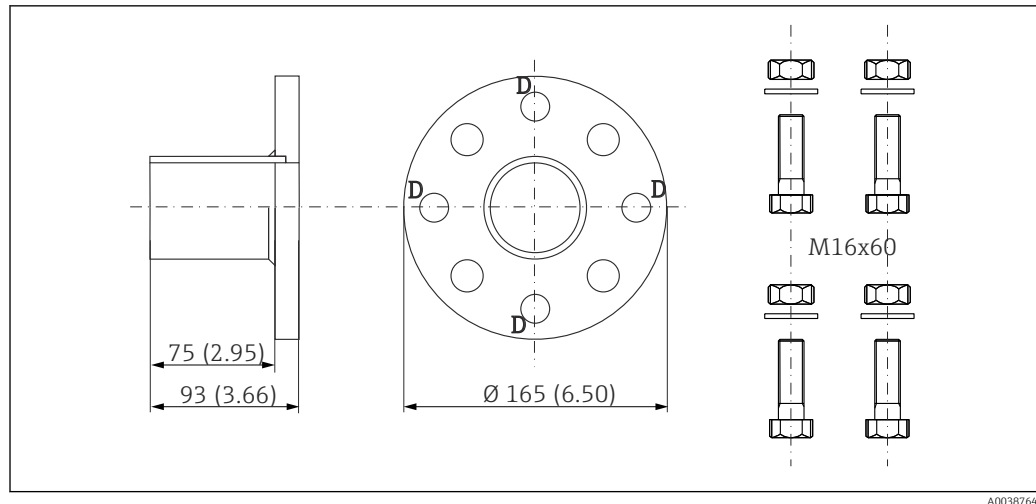


Technical Information TI01136C

10.1.2 Welding socket

Welding socket

- Welding socket for pipe diameter from 80 mm, with combination flange DN 50 / ANSI 2":
 - Bores for DN 50 flange: 4 x 90° Ø18 on bolt circle Ø125 (4.92)
 - Bores for ANSI 2" flange: 4 x 90° Ø19 on bolt circle Ø121 (4.75)
- Flange seal, 4 screws M16x60, 4 M16 nuts including washers,
- Stainless steel 1.4571 (AISI 316 Ti)
- Order No. 50080249

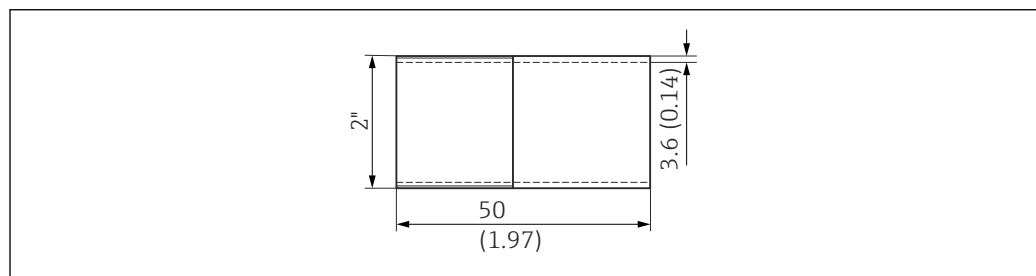


 13 Welding socket, dimensions in mm (in)

D Markings for bores, DN 50 flange

Welding nipple

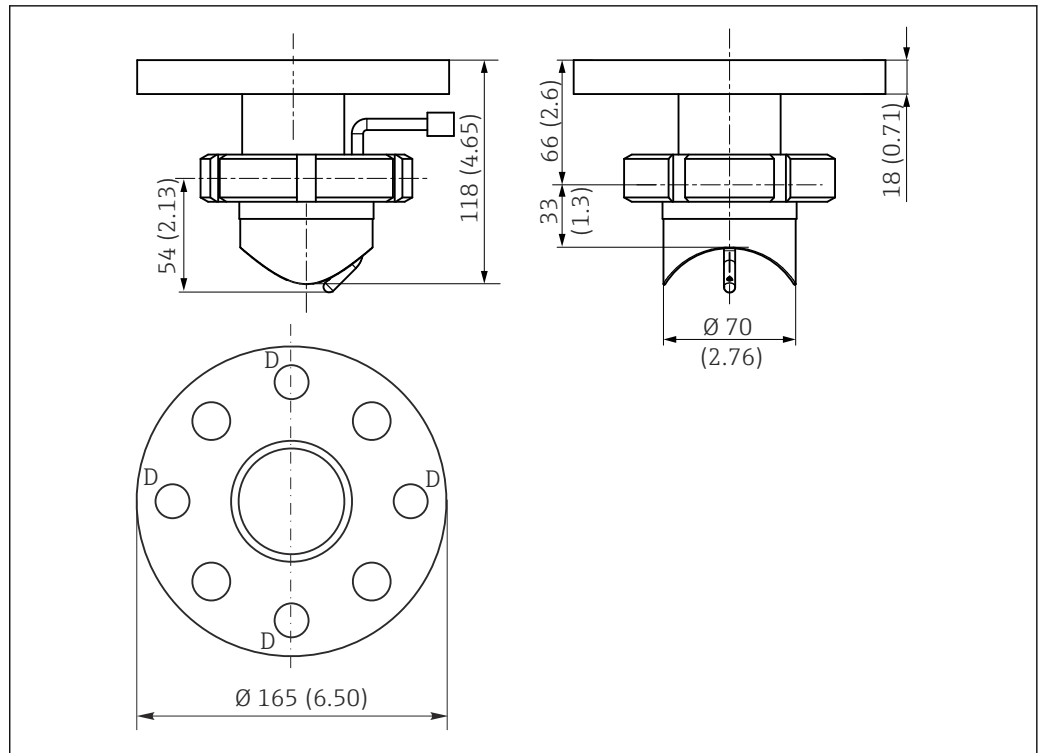
- Welding nipple for 2" thread
- Stainless steel 1.4404 (AISI 316 L)
- Order No. 71448684



 14 Welding nipple, dimensions in mm (in)

Welding rinse socket DN 65

- For automatic spray cleaning of CUS51D/31/41 sensors in pipes and vessels:
 - Bores for DN 50 flange: 4 x 90° Ø18 on bolt circle Ø125
 - Bores for ANSI 2" flange: 4 x 90° Ø19 on bolt circle Ø121
- Rinse connection: male thread R $\frac{1}{4}$
- With removable rinse nozzle
- Up to 6 bar (87 psi), 80 °C (176 °F)
- Order No. 51500912



15 Welding rinse socket, dimensions in mm (in)

D Markings for bores, DN 50 flange

10.2 Service-specific accessories

Ball valve for rinse chamber

- As rinse connection complementing or replacing the vent cock supplied;
- Order No. 51512982

O-ring set

- Viton + FPM
- Order No. 51512981

11 Technical data

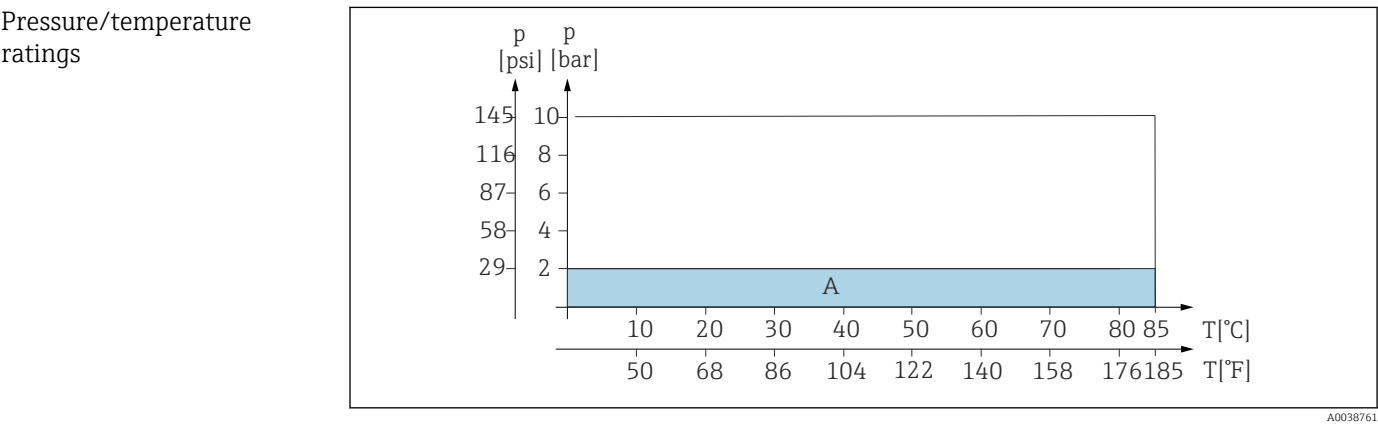
11.1 Environment


Ambient temperature	0 to 50 °C (32 to 122 °F)
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11.2 Process

Medium temperature	0 to 85 °C (32 to 185 °F)
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Medium pressure	Max. 10 bar (145 psi) <div><div><div></div><div>i</div></div><div>For manual insertion/retraction of the assembly, the medium pressure must not exceed 2 bar (29 psi)! Also take the process conditions of the sensor used into consideration!</div></div>
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 16 Pressure/temperature ratings
A Range in which the assembly can be operated manually

11.3 Mechanical construction

Dimensions	<div>→ Section "Installation"</div> <div>Rinse connection nozzles Connection options:<ul style="list-style-type: none">■ 2 x ball valve with hose connection OD 9mm (see "Accessories"). (A ball valve is included in the delivery for the assembly. On its own it acts as a vent cock.)■ Customer's own rinse connections with G1/8 external thread■ 2 x G1/8 (internal)</div> <div>Vent cock Ball valve with hose connection OD 9 mm</div>
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Weight	Depending on version: 8 to 11 kg (17.6 to 24.3 lbs)
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Materials	Wetted:	Viton (seals)
		Stainless steel 1.4404 (AISI 316 L)
		Nickel-plated brass (vent cock or rinse connection)
	Not wetted:	Stainless steel 1.4404 (AISI 316 L)

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