

Installation Instructions

Kit COS22Z-xxxx

Parts replacement for oxygen sensors COS22/
COS22D/COS22E

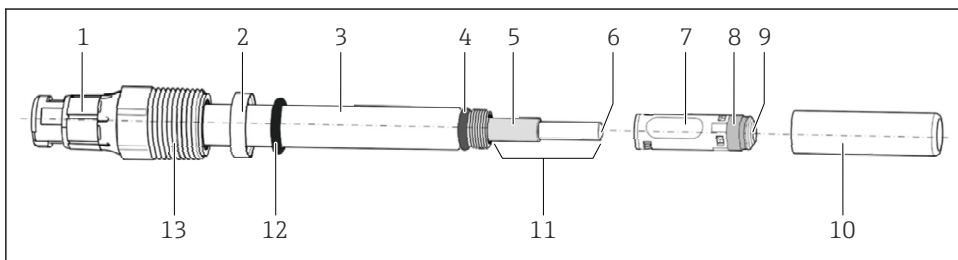


Table of contents

1	Sensor overview	3
2	Intended use	3
3	Authorized installation personnel	4
4	Safety instructions	4
5	Scope of delivery	5
6	Additional documentation	7
7	Replacement of spare parts	7
8	Disposal	18

1 Sensor overview

The exploded view shows the sensor design using the COS22D/E sensor as an example.



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1 Design of COS22D/E sensor


- 1 Memosens plug-in head
- 2 Thrust collar
- 3 Sensor shaft
- 4 Sensor cap O-ring
- 5 Anode (Ag/AgCl)
- 6 Cathode (Pt)
- 7 Membrane body
- 8 Membrane ring
- 9 Membrane
- 10 Sensor cap
- 11 Glass inner body with anode and cathode
- 12 Process seal
- 13 Process connection Pg 13.5

2 Intended use

- The components of the kits are to be used exclusively as maintenance parts for COS22/ COS22D/E sensors . Any other use is not permitted!
- Use only original parts from Endress+Hauser.
- In the W@M Device Viewer, check if the spare part is suitable for the existing device.

3 Authorized installation 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 Installation Instructions and must follow the instructions they contain.
- Faults at the measuring point may only be rectified by authorized and specially trained personnel.

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

4 Safety instructions

CAUTION

Risk to health due to the removal of sensors from the process!

- ▶ When removing the sensor from the process, pay attention to pressure, process temperature and the corrosiveness or toxicity of the medium.

CAUTION

Contact with the medium poses a health hazard!

- ▶ Pay attention to the warnings in the safety data sheets.
- ▶ Wear protective gloves, protective goggles and protective clothing, particularly when working with reagents, chemicals or process solutions.
- ▶ In case of contact with eyes or skin, rinse the affected area with plenty of water and then seek medical advice. Show the relevant safety data sheet to the physician.

Potential impact on the process

Before decommissioning an active device, the potential impact on the overall process must be taken into account! This applies in particular when using the switching contacts, the analog signal outputs or the communication interface of the associated measuring instrument to control process variables. Coordinate service tasks with the operator!

Electrical safety

The COS22/COS22D/E sensor operates only with protective extra-low voltage. There is therefore no electrical hazard.

5 Scope of delivery

The COS2ZZ service kit has a product structure. The contents of a kit (quantity and type) therefore depend on the version ordered (see product structure below).

A kit always contains:

- Membrane body
- Process seal and sensor cap O-ring
- Removal and O-ring mounting tool
- Kit instructions

If necessary, the following parts must be added to the order code:

- Electrolyte (sufficient for \approx 15 maintenance operations)
- Glass inner body
- Sensor cap
- Certificate/approvals
- TAG plate, stainless steel or paper

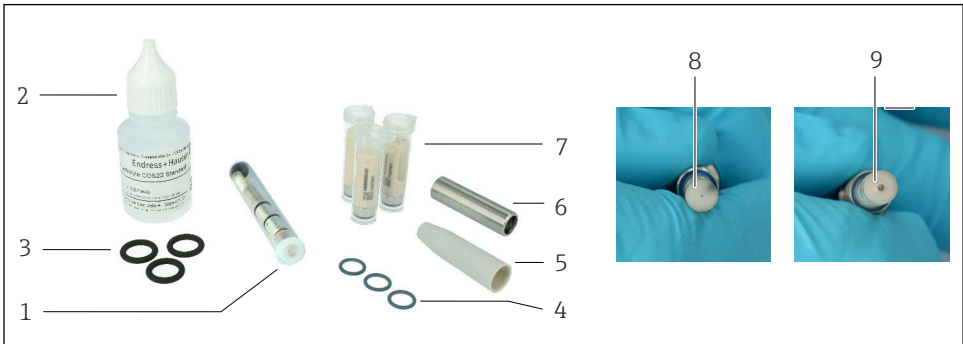
COS2ZZ		Number of membrane bodies and seals	
	A	3 membrane bodies + 3 O-rings	
	B	10 membrane bodies + 10 O-rings	
Material of O-rings			
	1	EPDM	
	2	Fluorelastomer (FDA FKM)	
	5	FFKM perfluoroelastomer USP Cl. VI	
Material of membrane rings			
	B	Stainless steel	
	D	Titanium	
	E	Alloy C22	
Material of process seal			
	2	Fluorelastomer (FDA FKM)	
	3	Fluoroelastomer for Ex applications	
+ options ← Complete order code			

Options	Electrolyte (optional)
E1	Standard, 25 ml
E2	Trace, 25 ml
Glass inner body (optional, 1 piece)	
F1	Standard
F2	Trace

	Sensor cap (optional, 1 piece)
G1	Stainless steel
G2	Titanium
G3	Alloy C22
	Certificate (optional, multiple selection)
HA	Inspection certificate 3.1, EN10204 (factory certificate, wetted parts)
J1	EU Food Contact Materials (EG) 1935/2004
J2	US Food Contact Materials FDA CFR 21
J3	CN Food Contact Materials GB 4806
JE	CoC AMSE BPE, Declaration
JG	Compliance with requirements derived from cGMP, Declaration
	Other approvals (optional, multiple selection)
IA	Pharmaceutical approval



Use the order code options E1 or E2 to order the electrolyte!



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2 Maintenance kit COS22Z

- 1 Glass inner body
- 2 Electrolyte
- 3 Process seals
- 4 Sensor cap O-rings
- 5 Removal and O-ring mounting tool
- 6 Shaft sleeve
- 7 Membrane body
- 8 Standard sensor (detailed view: glass inner body with cathode)
- 9 Trace sensor (detailed view: glass inner body with cathode)

6 Additional documentation

Detailed information on the device can be found in the Operating Instructions for the sensor and in the other documentation available via:



- www.endress.com/device-viewer
- Smartphone/tablet: Endress+Hauser Operations app

7 Replacement of spare parts

CAUTION

Risk of injury due to severely irritating standard electrolyte!

► Pay attention to the safety instructions (see Section 4).

 The following sections 7.1 to 7.4 describe the basic work steps for replacing individual spare parts. The individual steps are described in detail in the **Carrying out full maintenance** →  9 section.

7.1 Replacing the process seal or the sensor cap O-ring

The process seal and/or the sensor cap O-ring must be replaced in the event of mechanical damage.

1. Remove the sensor cap.
2. Check the process seal or the sensor cap O-ring for damage and replace if necessary.
3. Mount the new process seal or the new sensor cap O-ring.
4. Mount the sensor cap.

 If the O-ring of the membrane body is damaged, the entire membrane body must be replaced!

7.2 Replacing the electrolyte

The electrolyte always needs to be replaced when the membrane body is detached. In addition, any electrolyte that has been used must be refilled.

Electrolyte operating life in air-saturated water:

- COS22/COS22D/E standard sensor: >1.5 years
- COS22/COS22D/E trace sensor: >3 months

1. Remove the sensor cap.
2. Remove the membrane body.
3. Refill the electrolyte.
4. Insert the membrane body.
5. Screw on the sensor cap.

6. Reset the counter (for CM44x only: **calibration/oxygen (amp.)/change electrolyte.**)
7. Perform a calibration.


7.3 Replacing the membrane body

The membrane body must be replaced if the membrane is damaged or overstretched.

1. Remove the sensor cap.
2. Remove the membrane body.
3. Refill the electrolyte.
4. Insert the (new) membrane body.
5. Screw on the sensor cap.
6. Reset the counter (for CM44x only: **calibration/oxygen (amp.)/change sensor cap.**)
7. Perform a calibration.

7.4 Replacing the glass inner body

The glass inner body must be replaced if there is deposit buildup on the cathode.

 Do not clean the cathode mechanically. Polishing the cathode can cause the impaired functioning or total failure of the sensor! However, gentle wiping with a soft cloth is permitted.

1. Remove the sensor cap.
2. Remove the glass inner body.
3. Insert the (new) glass inner body.
4. Perform a calibration.

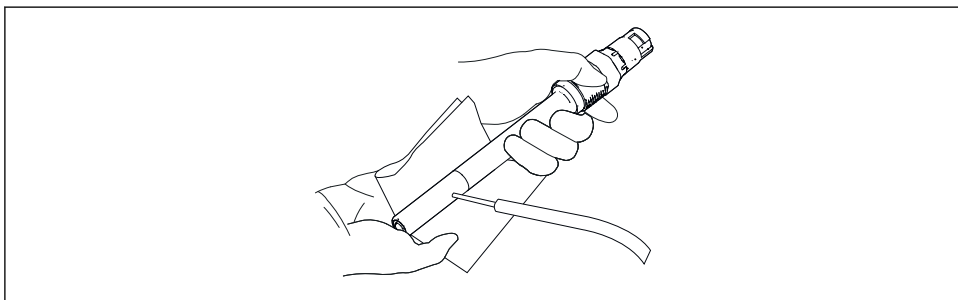
7.5 Carrying out full maintenance

- ▶ Pay attention to the warnings in Section 4.

The following instructions explain each of the steps in sensor maintenance. Depending on the maintenance required, some steps may not be necessary. See Sections 7.1 - 7.4.

Remove the sensor cap

1. Remove the sensor from the process and clean it. A cleaning agent appropriate to the type of contamination should be used for this purpose.

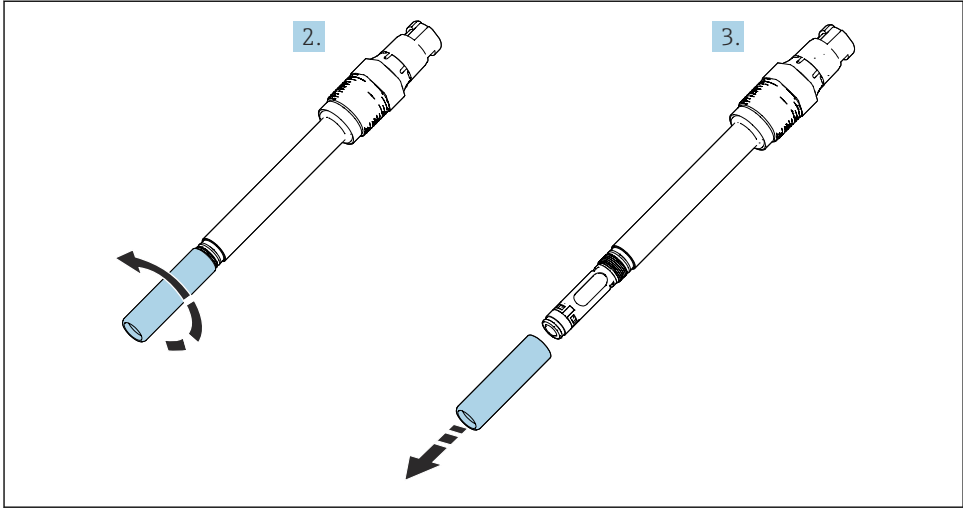


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CAUTION

Danger due to leaking electrolyte!

- ▶ Since leaking electrolyte can be highly corrosive, you must wear protective gloves, goggles and protective clothing!
2. Unscrew the sensor cap.

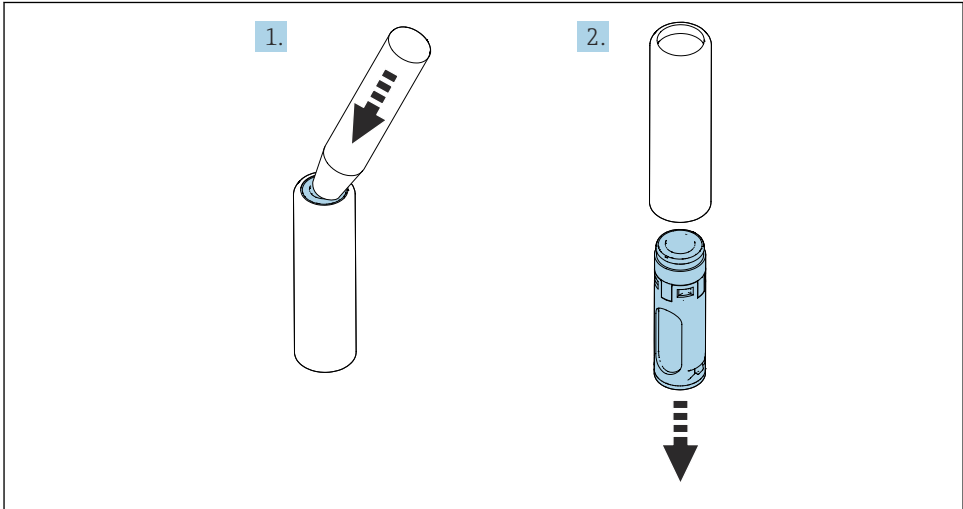


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3. Remove the sensor cap.

Remove the membrane body

1. Push the membrane body towards the back out of the sensor cap using the removal and O-ring mounting tool supplied.



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2. Remove the membrane body.

- i** The membrane body must be replaced if the membrane is damaged or overstretched. The membrane body can be reused if the membrane is OK. **Recommended:** Use a new membrane body!



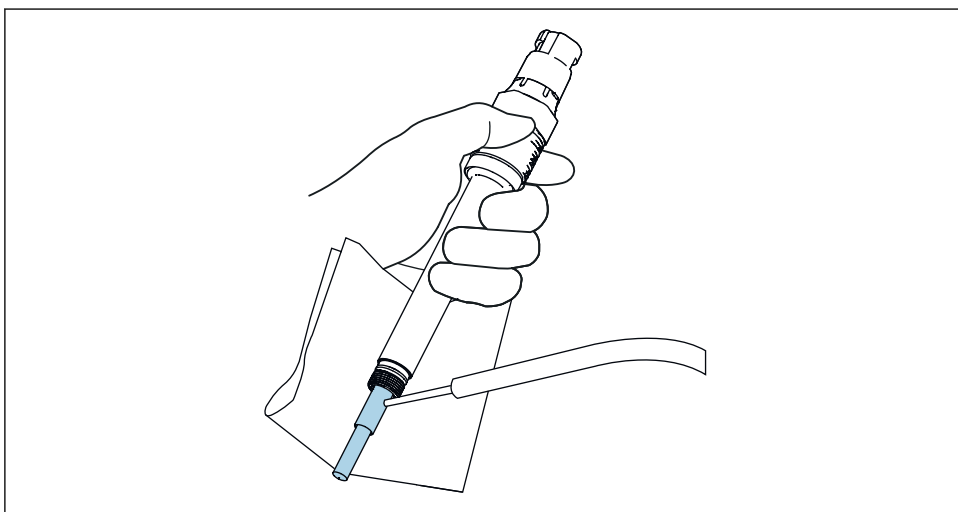
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- i** The O-ring (1) is an integral part of the **membrane body** spare part. This O-ring cannot be purchased individually!

The material of the O-ring depends on the spare parts kit used:

- COS22Z-x2xx = FKM material
- COS22Z-x5xx = FFKM material

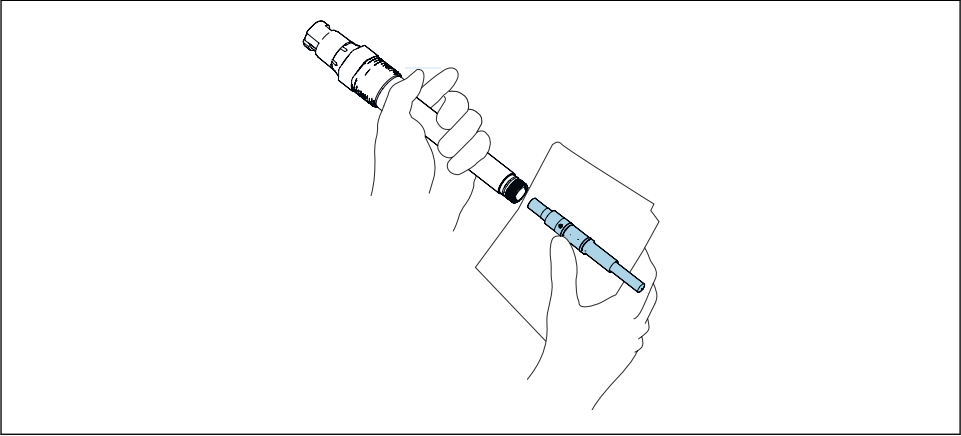
3. Clean and dry the glass inner body. In doing so, only gently dab the cathode. Do not wipe it!



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Remove the glass inner body

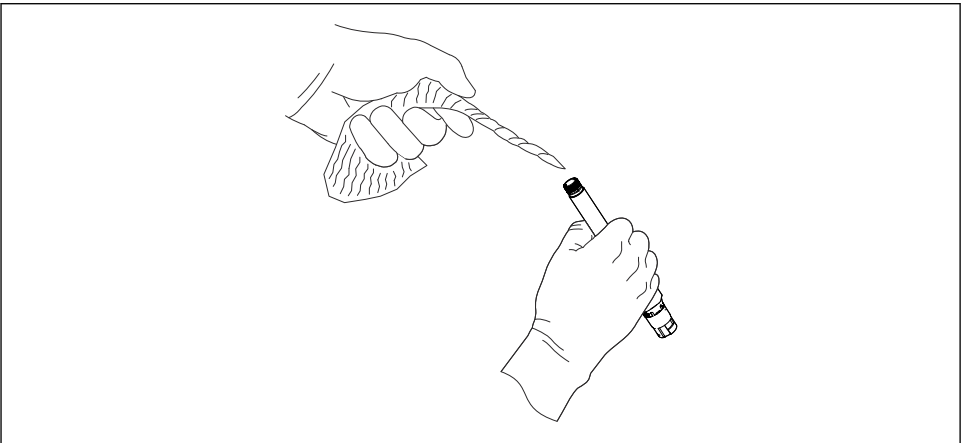
1. Remove the glass inner body, making sure not to turn it. The glass inner body has plug-in contacts.



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2. If the glass inner body is to be reused:
Clean and dry the entire glass inner body including the O-rings.
3. Dry the inside of the sensor shaft and remove all traces of moisture.

 If available, use dry, cleaned compressed air. If compressed air is not available, use a lint-free cloth.



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Check the process seal and/or sensor cap O-ring

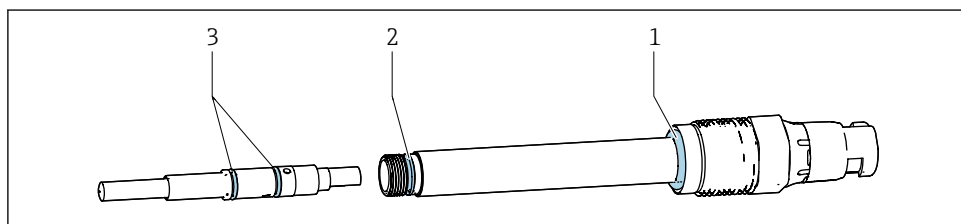
- ▶ Check the process seal and the sensor cap O-ring for damage. If in doubt, always replace it!

i Pay attention to the material of the process seal and the sensor cap O-ring (see order code → 5)!

The process seal (1) can be made of Viton (FDA) or FKM material.

The sensor cap O-ring (2) can be made of FKM or FFKM material.

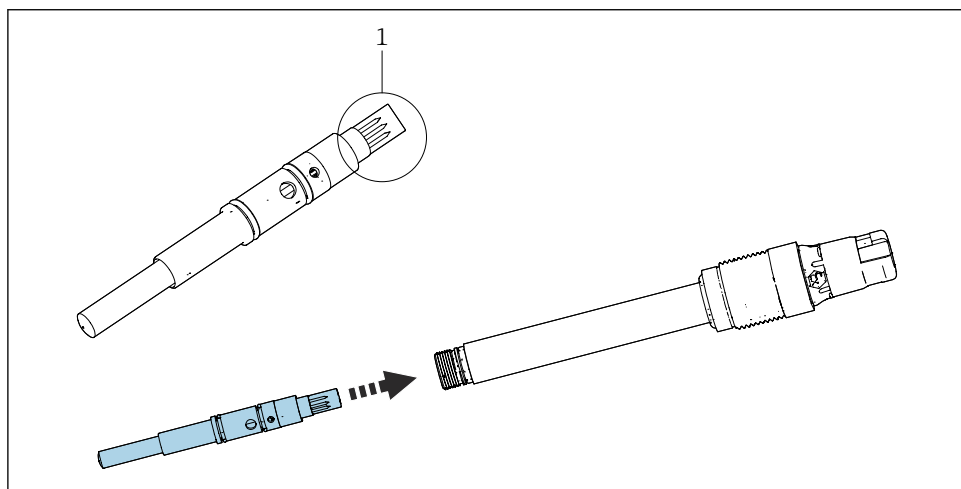
The O-rings (3) are an integral part of the **glass inner body** spare part. These O-rings cannot be purchased individually!



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Insert the glass inner body

- ▶ Insert the glass inner body back into the sensor shaft. Pay attention to the guide for the plug-in contacts (1)!



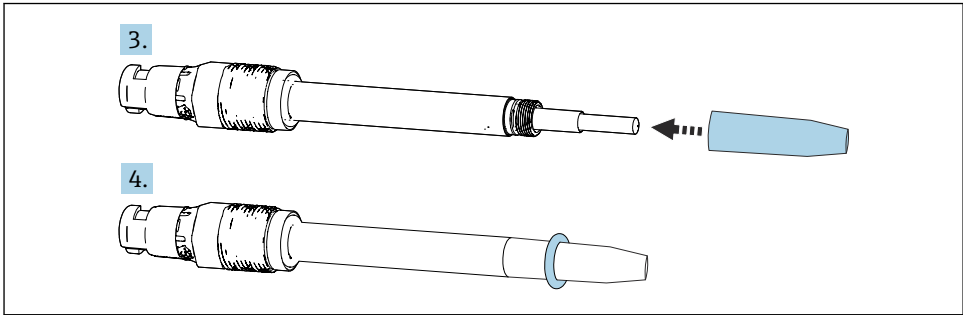
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Mount the process seal and/or sensor cap O-ring

1. To mount the O-ring on the sensor cap, fit the removal and O-ring mounting tool on the sensor.
2. Slide the O-ring over the removal and O-ring mounting tool onto the sensor until it has reached its end position.

i Only replace this O-ring if it is damaged. However, in SIP and CIP applications (sterilization in place, cleaning in place), this O-ring should also always be replaced every time the membrane body is replaced.

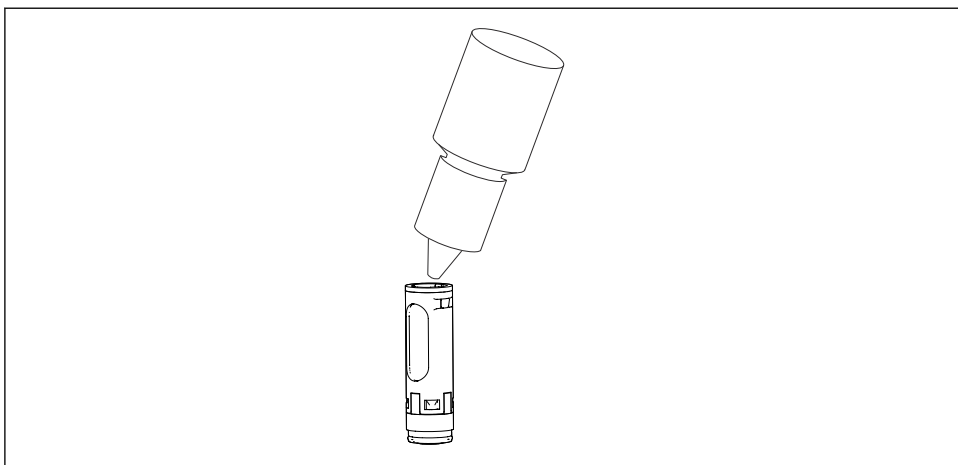
3. To mount the process seal, fit the removal and O-ring mounting tool on the sensor.
4. Slide the process seal over the removal and O-ring mounting tool onto the sensor until it has reached its end position.



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Refilling the electrolyte

1. Hold the membrane body upright and fill it with electrolyte up to the halfway point. Make sure you use the correct electrolyte type (trace/standard)!

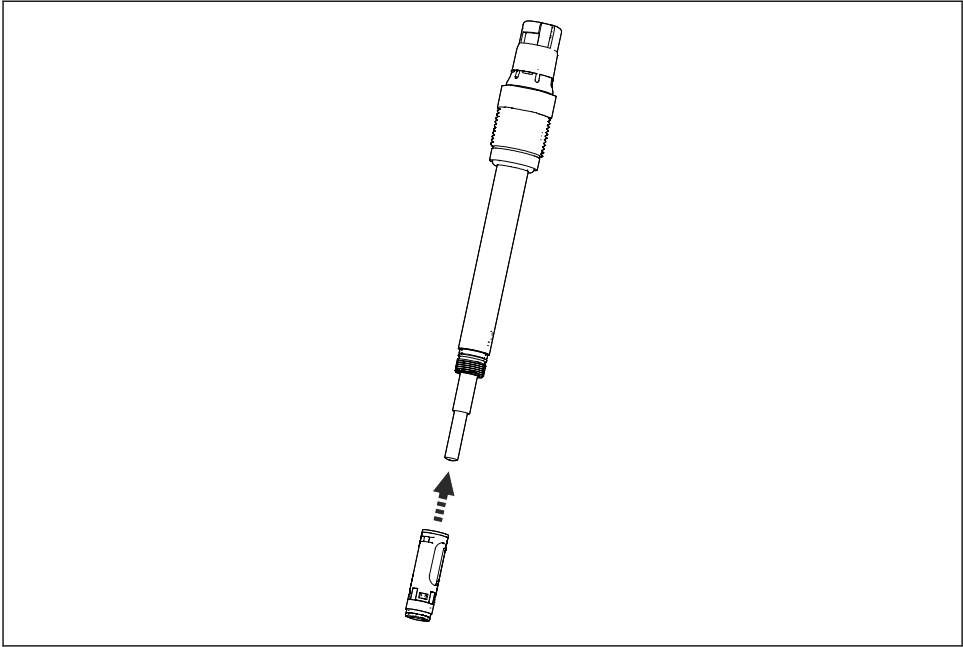


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2. Remove all air bubbles from the electrolyte by tapping the side of the membrane body (using a pen or pencil, for example).

Insert the membrane body

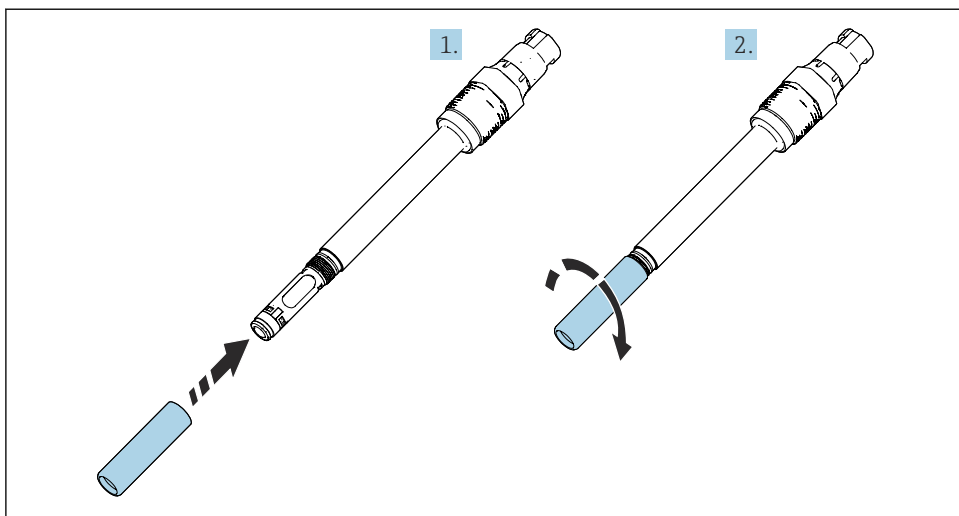
1. Hold the sensor shaft as vertically as possible.
2. Now slide the membrane body slowly onto the glass inner body until the end stop. Wipe away any electrolyte that may leak out with a paper towel.



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Screw on the sensor cap

1. Fit the sensor cap on the sensor head.
2. Screw the sensor cap onto the sensor shaft to the end stop so that a gap is no longer visible between the sensor cap and the sensor shaft.



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Reset the counters

1. Reset the counters in the transmitter each time maintenance is carried out on the sensor replacing the electrolyte or sensor cap.

i Warnings can also be configured for the counters to assist with sensor maintenance. The menu paths specified refer to the Liquiline CM44x:

Menu path for electrolyte change

Menu/Calibration/Oxygen (amp.)/Change electrolyte

Menu path for sensor cap change

Menu/Calibration/Oxygen (amp.)/Change sensor cap

2. Confirm the operation by then pressing **Save**.

i The current electrolyte charge can be viewed in the menu/Diagnostics/Sensor information/Oxygen (amp.)/Sensor operation/Charge.

The number of calibrations per sensor cap is displayed in the menu/Diagnostics/Sensor information/Oxygen (amp.)/ Sensor operation/Number of cap calibrations.


CAUTION

Risk of material damage!

- ▶ Wait for the required polarization time in air to elapse before the calibration (at least 2 hrs in the case of COS22/COS22D/E-xx1xxxx; at least 12 hrs in the case of COS22/COS22D/E-xx3xxxx).

Perform a calibration

1. Perform a calibration.
2. Put the measuring system back into operation.

 Calibration must be performed each time maintenance is carried out on the sensor!
Follow the Operating Instructions for the measuring instrument used.

8 Disposal

8.1 Sensors



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.



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