Installation Instructions **Kit COS22Z-xxxx**

Replacement for oxygen sensors COS22 / COS22D / COS22E



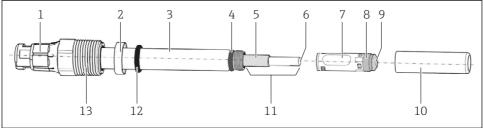


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1 Overview of the sensor

The exploded drawing shows the sensor structure, taking the example of the COS22D/E sensor.



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■ 1 Structure of the COS22D/E sensor

- 1 Memosens plug-in head
- 2 Thrust collar
- 3 Sensor shaft
- 4 Sensor cap O-ring
- 5 Anode (Ag/AgCI)
- 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 the COS22 / COS22D/E. 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

A CAUTION

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

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

A CAUTION

Risk to health due to contact with the process medium!

- ▶ Pay attention to the warning notices 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 device to control process variables. Coordinate service tasks with the operator!

Electrical safety

The COS22 / COS22D/E sensor works exclusively with protective extra-low voltage. Therefore it does not pose an electrical hazard.

5 Scope of delivery

The COS22Z service kit has a product structure. The content of a kit (quantity and type) therefore depends on the version ordered (see the 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 required, the following parts must be added to the order code:

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

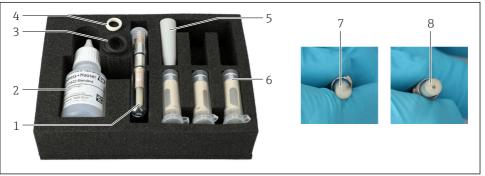
COS22Z	Number of membrane bodies and seals				
A 3 membrane bo			nbrane	bodies	s + 3 O-rings
B 10 membrane bodies				ne bodi	es + 10 O-rings
Material of O-rings					s
		1	EPDN	I	
		2	Fluor	oelasto	mer FDA FKM
		5	FFKM	l perflu	oroelastomer USP Cl. VI
Material of membrane rings					
			В	Stainl	less steel
			D	Titan	ium
			Е	Alloy	C22
Materia					rial of process seal
				2	Fluoroelastomer FDA FKM
				3	Fluoroelastomer for Ex applications
+ Op					+ Options ← complete order code

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

	Sensor cap (optional, x 1)
G1	Stainless steel
G2	Titanium
G3	Alloy C22
	Certificate (optional, multiple selection)
НА	Inspection certificate 3.1, EN10204 (factory certificate, wetted parts)
J1	EU Food Contact Materials (EC) 1935/2004
J2	EU Food Contact Materials FDA CFR 21
J3	EU Food Contact Materials GB 4806
JE	CoC AMSE BPE, Declaration
JG	Compliance with requirements derived from cGMP, Declaration
	Additional approvals (optional, multiple selection)
IA	Pharmaceutics 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 Membrane body
- 7 Standard sensor (detailed view: glass inner body with cathode)
- 3 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

A CAUTION

The standard electrolyte is a strong irritant! Risk of injury!

- ▶ Observe the safety instructions (see Section 4).

7.1 Replacing the process seal or sensor cap O-ring

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

- 1. Remove the sensor cap.
- 2. Inspect the process seal and/or sensor cap O-ring for damage and replace if necessary.
- 3. Mount a new process seal or 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 must always be changed if the membrane body is detached. In addition, it is necessary to refill any electrolyte that has been consumed.

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 (only for CM44x: 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 (only for CM44x: 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 result in the functional impairment or complete failure of the sensor. Wiping gently with a soft cloth is permitted, however.
- 1. Remove the sensor cap.
- 2. Remove the glass inner body.
- 3. Insert a (new) glass inner body.
- 4. Perform a calibration.

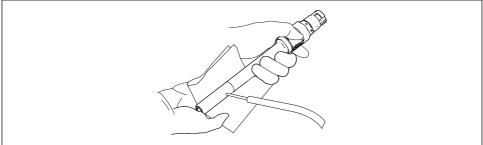
7.5 Performing full maintenance

▶ Observe the warnings in Section 4.

The following section describes the sensor maintenance procedure on a step-by-step basis. Depending on the necessary maintenance, not all steps are required. See Sections 7.1 - 7.4.

Removing the sensor cap

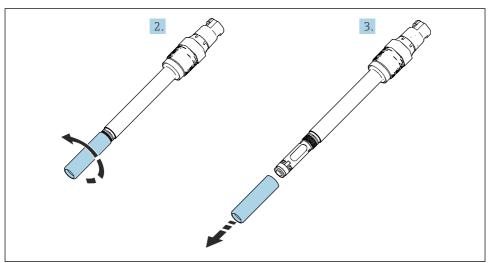
1. Remove the sensor from the process and clean it. A cleaning agent appropriate to the type of contamination should be used for this purpose.



A CAUTION

Danger from leaking electrolyte!

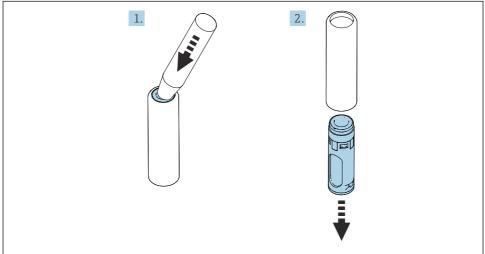
- ► Leaking electrolyte can be very caustic. For this reason, wear protective gloves, protective goggles and protective clothing!
- 2. Unscrew the sensor cap.



3. Remove the sensor cap.

Removing the membrane body

1. Using the removal and O-ring mounting tool supplied, push the membrane body out of the sensor cap towards the back.



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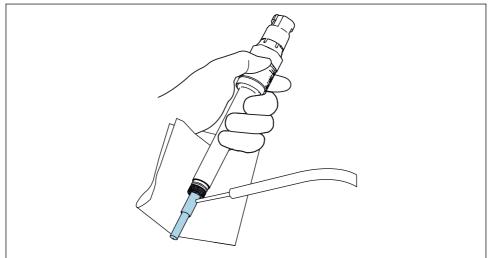
- 2. Remove the membrane body.
- The membrane body must be replaced if the membrane is damaged or overstretched. The membrane body can be reused if the membrane is OK. **Recommendation:** Use a new membrane body!



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:

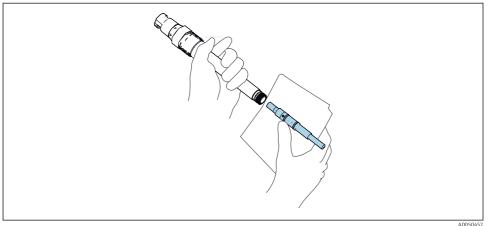
- COS22Z-x2xx = FKM material
- COS22Z-x**5**xx = FFKM material
- 3. Clean and dry the glass inner body. When doing so, only gently dab the cathode. Do not wipe it!



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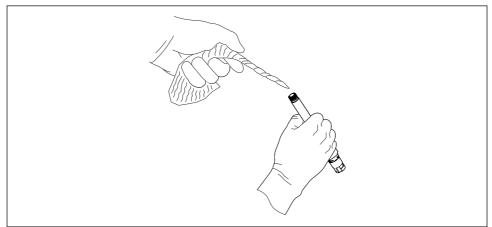
Removing the glass inner body

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



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- 2. If the glass inner body should 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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Inspecting the process seal and/or sensor cap O-ring

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

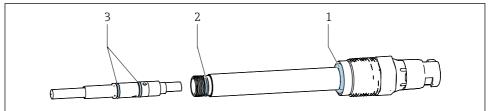


Pay attention to the material of the process seal and the sensor cap O-ring (see the order code $\rightarrow \triangleq 5$)!

The process seal (1) can be made from the materials Viton (FDA) or FKM.

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

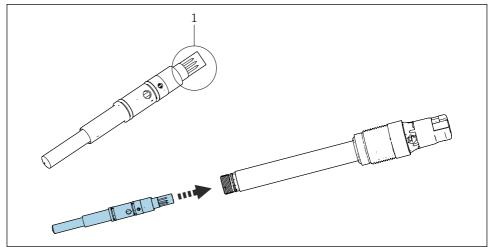
The O-rings (3) are an integral part of the **glass inner body** spare part. These O-rings cannot be purchased individually!



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Inserting the glass inner body

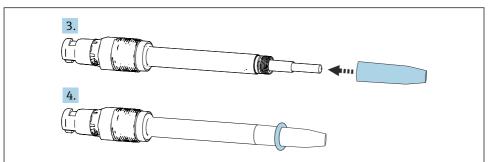
► Insert the glass inner body back into the sensor shaft. Pay attention to the guide for the plug-in contacts (1)!



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

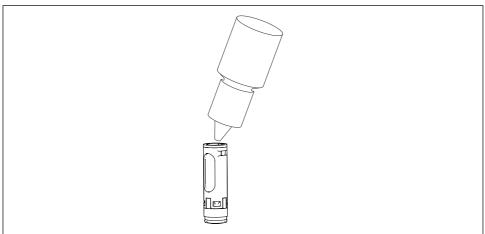
- 1. To mount the O-ring on the sensor cap, fit the removal and O-ring mounting tool on the sensor.
- 2. Slide the O-ring over the removal and O-ring mounting tool onto the sensor until it has reached its end position.
- Only replace this O-ring if it is damaged. On the other hand, in SIP and CIP applications (sterilization in place, cleaning in place) this O-ring should also always be replaced each 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

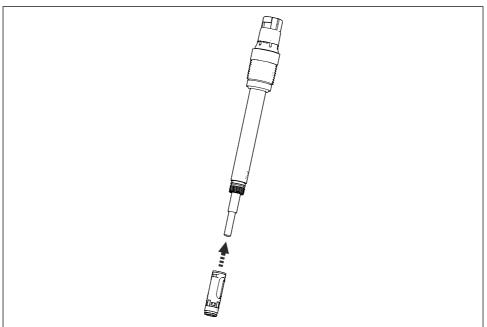
1. Hold the membrane body upright and fill it with electrolyte up to the halfway point. Make sure you use the correct electrolyte type (trace/standard)!



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

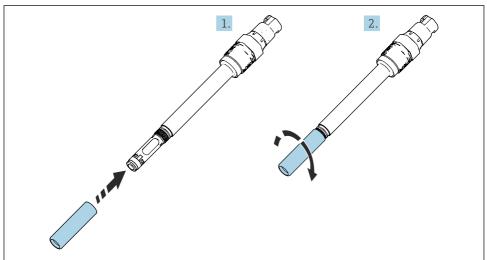
Inserting the membrane body

- 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.



Screwing 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.



Resetting the counters

- 1. Reset the counters in the transmitter after every sensor maintenance involving an electrolyte or sensor cap replacement.
- In addition, warnings can be programmed into the counters to provide assistance during sensor maintenance. The menu paths indicated refer to the Liquiline CM44x:

Menu path for electrolyte replacement

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

Menu path for sensor cap change

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

- 2. Then press the **Save** key to confirm the process.
- 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.

A CAUTION

Risk of damage to property!

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

Performing a calibration

- 1. Perform a calibration.
- 2. Put the measuring system back into operation.
- The calibration must be performed after every sensor maintenance! Follow the Operating Instructions for the measuring device 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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