

Installation Instructions

Kit COS41/COS51D/E

for maintenance of the Oxymax W COS41/COS51D
and Memosens COS51E oxygen sensors

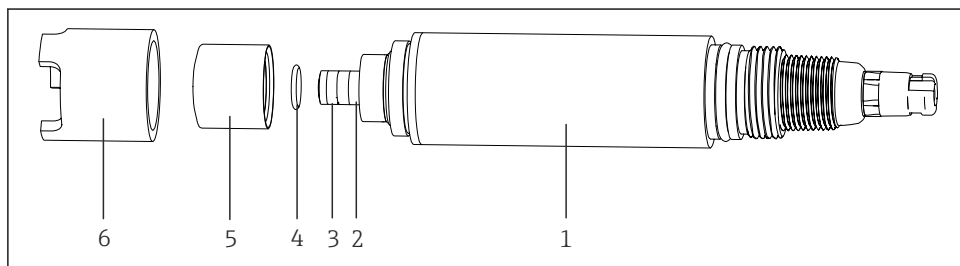


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1 Sensor overview

The exploded view shows the sensor design using the COS51D/E sensor as an example.



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 1 Design of COS51D/E sensor


- 1 Sensor shaft
- 2 Reference electrode (in the COS41, the reference electrode and counter electrode are the same)
- 3 Counter electrode
- 4 O-ring
- 5 Membrane cap
- 6 Protection cage

2 Intended use

- Parts from the kits must only be used as maintenance parts for COS41/COS51D/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 perform the stated tasks.
- The electrical connection may only be established by an electrical technician.
- The technical personnel must have read and understood the Operating Instructions and must follow the instructions contained therein.
- Measuring point faults may be repaired only 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

Risk to health due to contact with the electrolyte and the process medium!

- ▶ 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 device to control process variables. Coordinate service tasks with the operator!

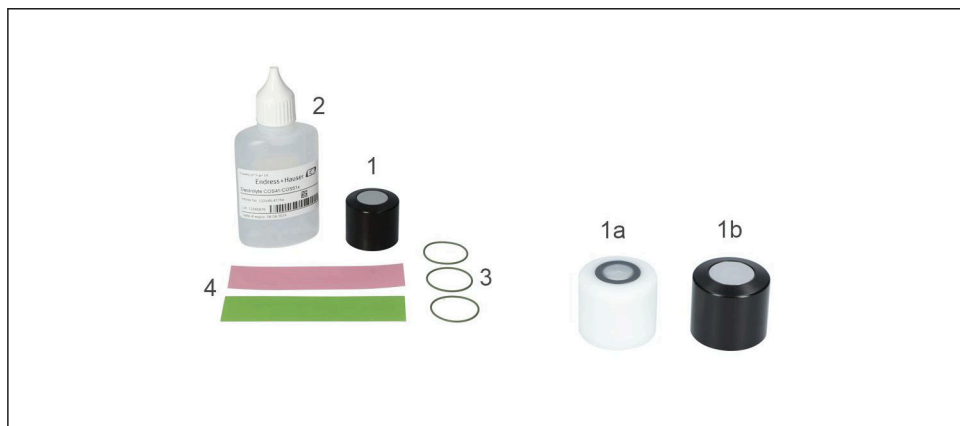
Electrical safety

The COS41/COS51D/E sensor operates only with protective extra-low voltage. There is therefore no electrical hazard.

5 Scope of delivery

The COV45 service kit has a product structure. The quantity and design of a kit's contents therefore depend on the version ordered (see product structure below).

COV45-	For sensor	
	41	COS41
	51	COS51x
	Response time	
	0	Normal, T90, approx. 3 min
	1	Fast, T90, approx. 0.5 min.
	> Maintenance parts	
	1	Complete maintenance kit
	2	Sensor electrolyte
	3	2x membrane cap
	4	Sealing ring set
	5	Polishing foil



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2 Maintenance kit COV45

- 1 Membrane cap
- 1a Fast response time (COS51D/E)
- 1b Normal response time (COS41 and COS51D/E)
- 2 Electrolyte
- 3 O-rings
- 4 Polishing foil

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 electrolyte!

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

 The following sections 7.1 to 7.5 describe the basic work steps for replacing individual spare parts. The individual steps are described in detail in the Section **Carrying out full maintenance** →  8.

7.1 Preliminaries


CAUTION

Risk to health due to contact with the process medium!

- ▶ 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.

Before you can carry out maintenance tasks, you must complete the following preparatory steps:

1. Remove the sensor from the process.
2. Clean the sensor.

 Use a cleaning agent that is suited to the type of contamination.

7.2 Removing the sealing ring

You must replace the sealing ring if any mechanical damage is present.

1. Unscrew the protection cage and membrane cap.
2. Check the sealing ring for damage and replace it if necessary.
3. Fit a new sealing ring.
4. Screw on the protection cage and membrane cap.

7.3 Replacing the electrolyte

The electrolyte always needs to be replaced when the membrane cap is loosened. In addition, used electrolyte must be topped up.


Electrolyte service life with air-saturated water:

- COS41-**: 2 years
- COS51D/E-***0*: 2 years
- COS51D/E ***1*: 1 year

1. Unscrew the protection cage and membrane cap.
2. Replace the electrolyte.
3. Screw on the protection cage and membrane cap.
4. Reset the electrolyte counter and cap counter in the transmitter (for COS51D/E only: **Menu/Calibration/Oxygen (amp.)/ Change Electrolyte**)
5. Perform calibration.

7.4 Cleaning the working electrode

The working electrode needs to be cleaned if it is coated or silver-plated.

 The sensor is unusable if the silver halide layer on the counter electrode or reference electrode has degraded (normal: brownish layer), (silvered counter electrode and/or reference electrode) and must be returned for recoating. **The counter electrode and the reference electrode must not be cleaned under any circumstances!**


1. Unscrew the protection cage and membrane cap.
2. Add a drop of electrolyte to the green polishing foil.
3. Hold the sensor vertically and rotate the working electrode in small circles on the wet polishing foil.
4. Repeat the cleaning step using the pink polishing foil.
5. Replace the electrolyte.
6. Screw on the protection cage and membrane cap.

7.5 Replacing the membrane cap

The membrane cap must be replaced if it is damaged or overstretched.

1. Unscrew the protection cage and membrane cap.
2. Replace the electrolyte.
3. Screw on the membrane cap.
4. Screw on the protection cage.
5. Reset the counter in the transmitter (for COS51D/E only: **Menu/Calibration/Oxygen (amp.)/ Change sensor cap**)

6. Perform calibration.

 Using the membrane caps several times is not recommended.

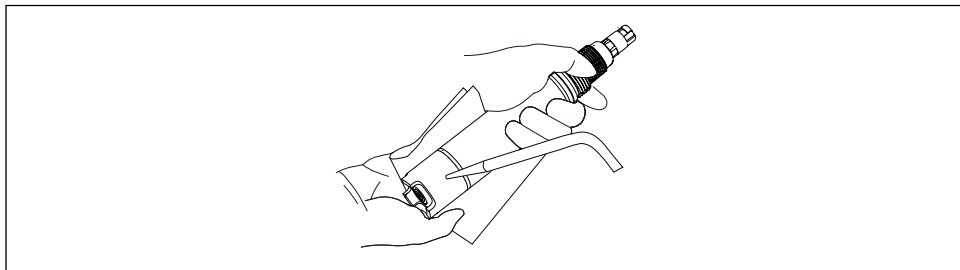
7.6 Carrying out full maintenance

- ▶ 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 - 7.5.

Cleaning the sensor

- ▶ 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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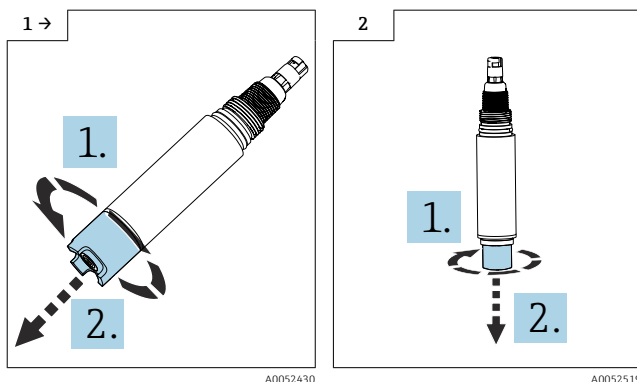
Unscrewing the protection cage and membrane cap

- ▶ Unscrew the protection cage and membrane cap.

⚠ CAUTION

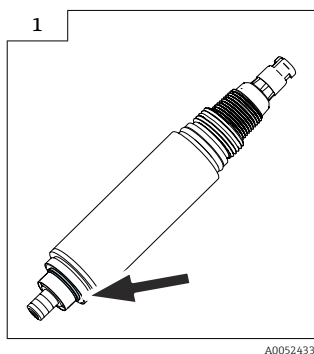
Danger due to leaking electrolyte!

- ▶ Since leaking electrolyte can be highly corrosive, you must wear protective gloves, goggles and protective clothing!



Checking the O-ring

- ▶ Check the O-ring for damage.
- ▶ Replace the O-ring if it is visibly damaged.

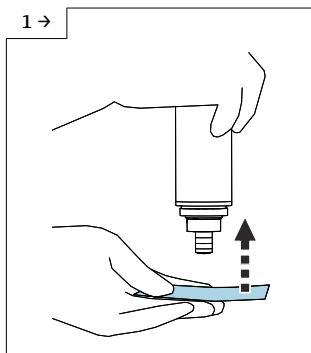


- i** Carefully pull the O-ring into position. The O-ring must not be damaged during assembly.

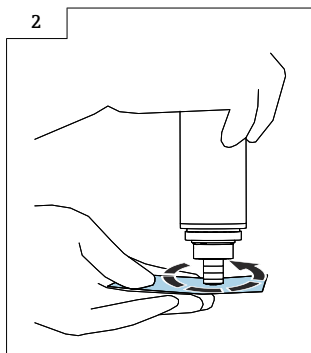
Cleaning the cathode

- ▶ Apply a drop of electrolyte to the **green polishing foil**.
- ▶ Hold the cathode upright in relation to the polishing foil.
- ▶ Rotate the cathode in small circles on the wet polishing foil.

- ▶ Repeat the cleaning step using the **pink polishing foil**.



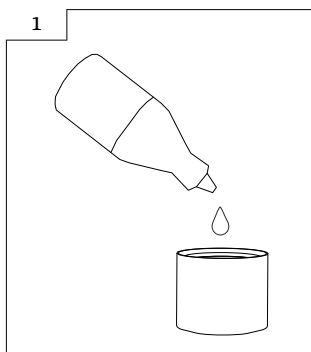
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Filling the membrane cap with electrolyte

- ▶ Hold the membrane cap upright.
- ▶ Fill the membrane cap half way with electrolyte.



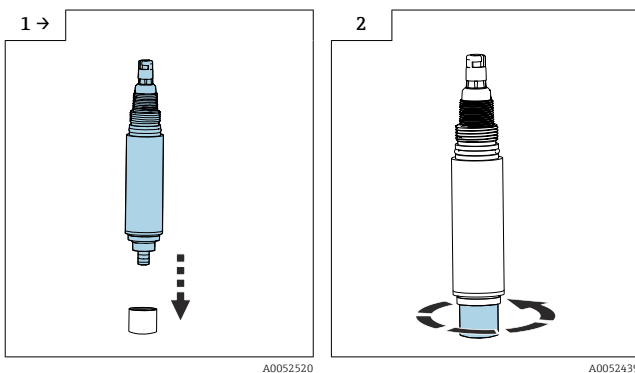
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- i** Remove all air bubbles from the electrolyte by tapping the side of the membrane cap (using a pencil, for example).

Screw on membrane cap

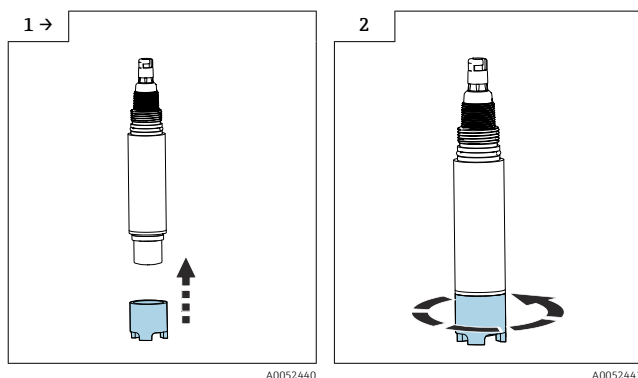
- ▶ Hold the sensor upright.
- ▶ **Slowly** screw the membrane cap onto the sensor as far as it will go.

- Use a paper towel to collect any leaking electrolyte.



Screwing on the protection cage

- Screw the protection cage or cleaning unit back on.



i Reset the counter in the transmitter after each time you perform sensor maintenance in the COS51D/E and change the electrolyte or cap. Warnings can also be configured for the counters to assist with sensor maintenance. The menu paths specified refer to the Liquiline CM44x:


Resetting the counter after changing the electrolyte (for COS51D/E only)


1. In the CM44, follow the menu path for changing the electrolyte: **Menu/Calibration/Oxygen (amp.)/ Change Electrolyte**.
2. Confirm the operation by pressing **Save**.

i You can view the current electrolyte charge at **Menu/Diagnostics/Sensor information/Oxygen (amp.) /Sensor operation/Charge**.

Resetting the counter after replacing membrane caps - replacement (for COS51D/E only)


1. In CM44, follow the menu path for replacing the electrolyte: **Menu/Calibration/Oxygen (amp.)/ Change sensor cap**
2. Confirm the operation by pressing **Save**.

 Calibration must be carried out after every sensor maintenance. Refer to the Operating Instructions and Technical Information for the sensor.

 The number of calibrations per sensor cap is displayed at **Menu/Diagnostics/ Sensor information/Oxygen (amp.)/ Sensor operation/number of calibrations cap**.

 CAUTION**Risk of material damage!**

- ▶ Wait for the required polarization time in air before calibration.

 The polarization time is one hour.

Performing a calibration

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

8 Disposal

- ▶ Observe the local regulations.



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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