

# BAMOX 7200

## Dissolved oxygen sensor



## INSTRUCTION MANUAL

**BAMO** MESURES

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Dissolved oxygen sensor

**BAMOX 7200**

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**MES**

**460-02/1**

## PRINCIPLE

Your Dissolved Oxygen sensor BAMOX 7200 is a galvanic electrochemistry device; i.e. it does not require power from your meter or controller to generate its signal. The sensor will provide a mV signal proportional to the concentration of oxygen in the water. It does not measure oxygen directly. The measurement is done on partial pressure of oxygen in the water, which is directly proportional to the percent saturation of oxygen in the water. The concentration (mg/L or ppm) can be calculated based upon the oxygen solubility, temperature, salinity, and total atmospheric pressure.

Your Dissolved Oxygen sensor consists of a cathode, anode, and an electrolyte separated from your process fluid by an oxygen permeable membrane. The oxygen passing through the membrane reacts with the cathode, giving up electrons, which produce an electrical current.

## READY TO USE

Remove clear wire and label from vent hole on top of sensor as shown in FIG 1. Discard these parts after removing.

## CALIBRATION

The simplest method to calibrate your sensor is in air, since air is saturated with oxygen. The sensor is pre-calibrated at the factory (see Specifications Section for calibration range). If you want a 2 points calibration, a saturated solution of sodium sulphite -Na<sub>2</sub>SO<sub>3</sub>- is suggested.

Prepare a solution with 17g of Sodium sulphite in 125mL of distilled water. The Sodium sulphite solution will not reach a true zero output but it should reach less than 1 mV (see Specifications Section for range).

## MOUNTING

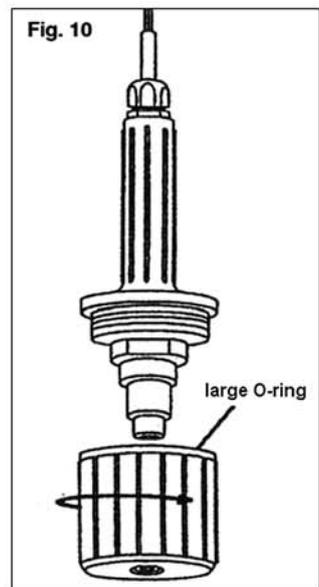
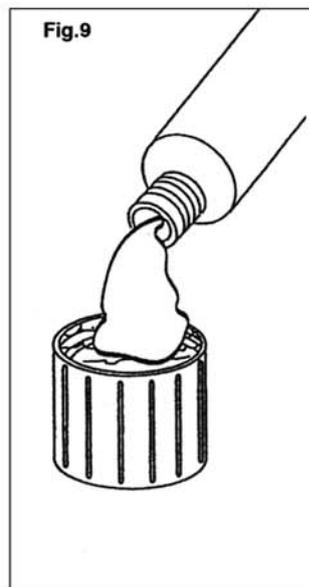
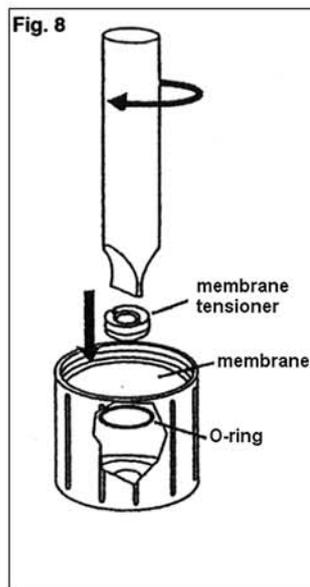
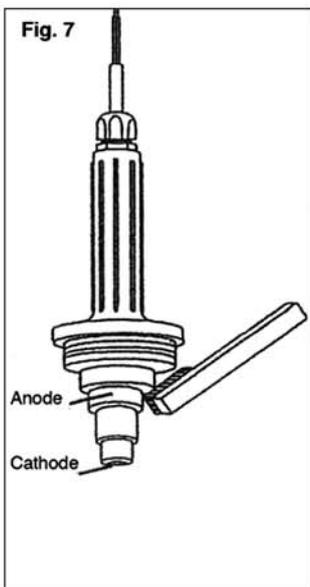
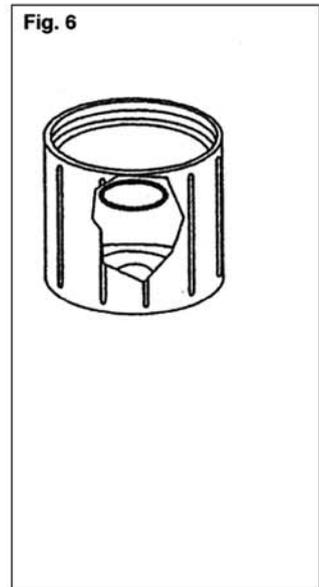
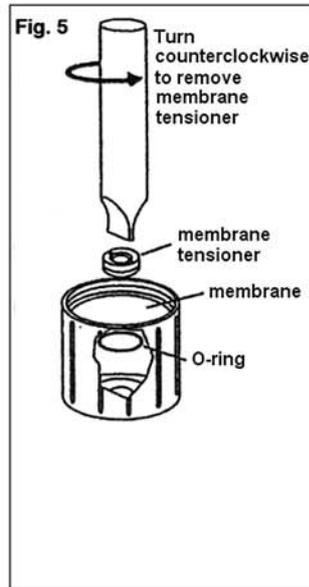
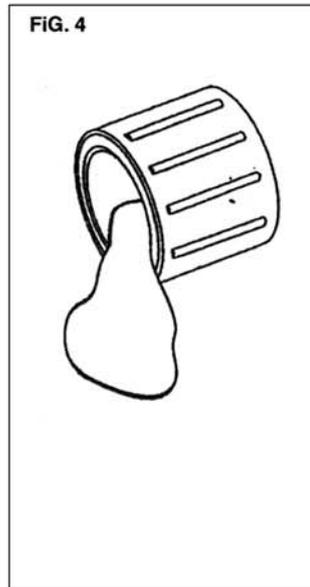
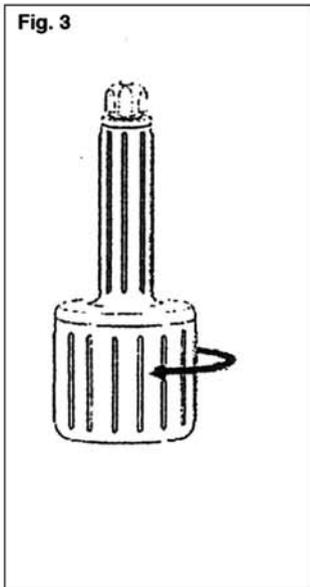
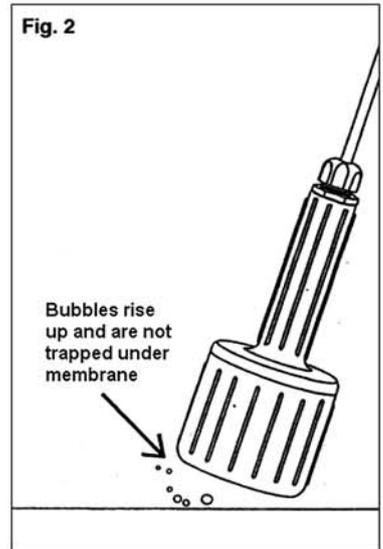
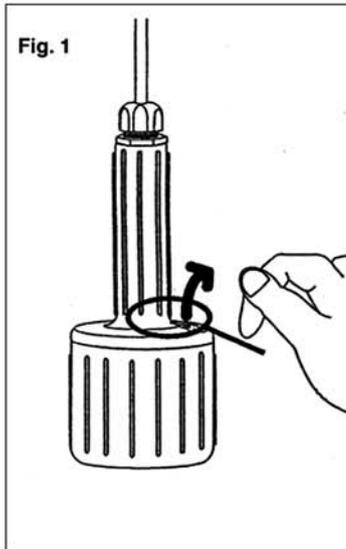
Submersion mounting of the sensor is recommended, the immersion probe is specially designed for this application. To prevent air bubbles from becoming trapped on the membrane and producing falsely high %O<sub>2</sub> readings, it is recommended that the sensor be mounted with the membrane pointing slightly upward (not horizontal) as shown in FIG. 2.

## SENSOR RE-CONDITIONING

1. Unscrew the lower body from the upper body (FIG. 3)
2. Safely dispose of the electrolyte that is a special molarity, reagent grade, as shown in FIG. 4
3. Using the Membrane Tool, unscrew the Membrane Lock in the lower body as shown in FIG. 5
4. Remove and dispose of the membrane and its O-Ring as show in FIG 6
5. Using a toothbrush, dish washing powder and clear water, clean the cathode, anode, and plastic between them. Rinse all components thoroughly. Household Ammonia may be used to clean the silver anode overnight. If Ammonium Hydroxide is used, expose it for no more than 3 minutes (it is very strong), see FIG. 7.
6. Install a new O-Ring into the lower body membrane cavity then a new membrane into the lower body. Using the Membrane Tool, screw the Membrane Lock on top of the membrane as shown in FIG. 8.
7. Inspect the membrane for wrinkles; replace if it is wrinkled.
8. Pour some water into the lower body and look for leakage around the membrane; replace it if there is leakage. If there is no leakage, dispose of the water.
9. Fill the lower body to its rim with fresh Electrolyte as shown in FIG. 9.
10. Inspect the large O-Ring between the upper and lower body. Replace it if it appears deteriorated. See FIG. 10.
11. Screw the lower body onto the upper body. Excess Electrolyte will squirt out of a small pressure balance hole atop the upper body. If no electrolyte squirts out, clear the hole of its blockage before installing the lower body.

## SENSOR STORAGE

If long-term storage of probes is required, empty electrolyte out of probe leaving only a little quantity of solution to wet the membrane to keep it wet. Leaving a full volume of electrolyte during a long term without use will deplete the anode. See section "Sensor re-conditioning" for steps on how to open and close probe housing.



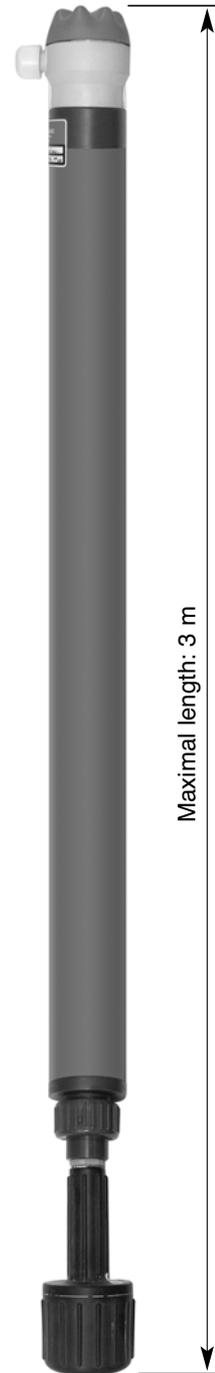
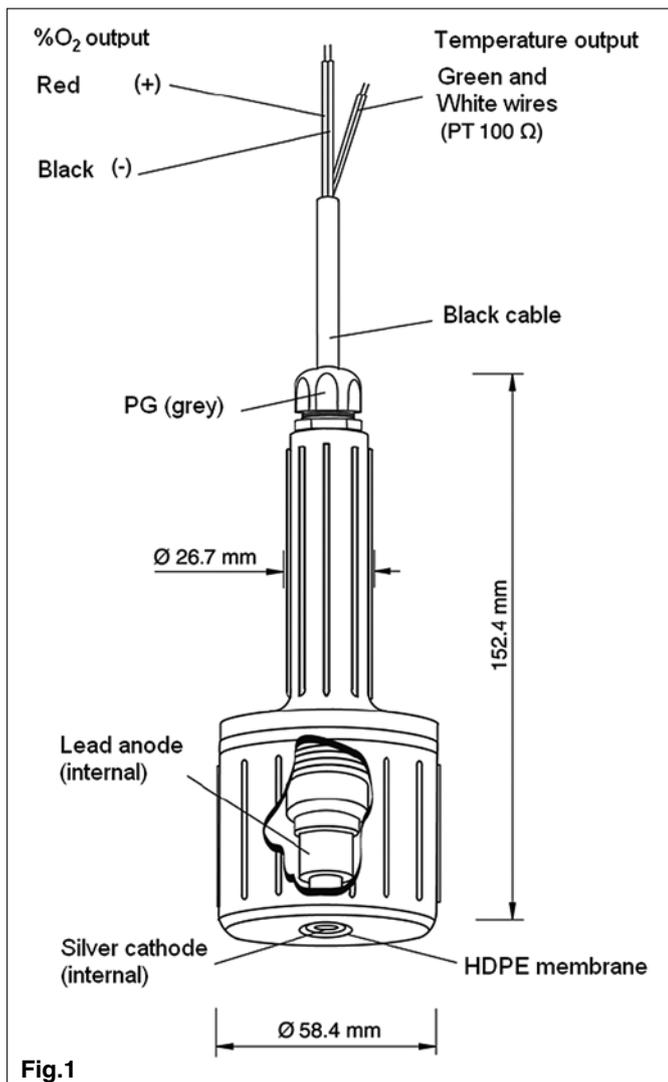
## TECHNICAL FEATURES

### BAMOX 7200 sensor (Fig. 1)

Construction:	POM
Membrane 45 mV	HDPE
	Output at 100% saturation: 45 mV
	Output at 0% saturation: < 1mV
Temperature limits:	0...50°C
Accuracy:	2% when measuring temperature equals calibration one
Response time:	1 minute to reach 95% of final reading
Minimal fluid speed:	0.05 m/s
Range:	0.03...20 ppm
Cathode:	Silver
Anode:	Lead
Electrolyte:	Sodium carbonate
Wiring:	Red = +
	Black = -
	Temperature sensor Pt100,
	2 wires (green and white)

### Sensor holder (Fig. 2)

Immersion probe:	standard length 1 m; maximal length 3 m
Construction:	PVC
Electrical connection:	Screw connectors
Housing:	PBT, IP65

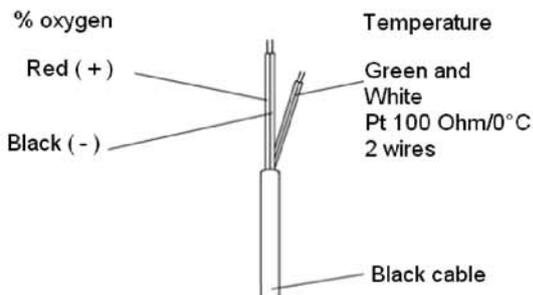


# SENSOR HOLDER PROBE WIRING



Wiring probe sensor holder to a BAMOPHOX

Probe housing	BAMOPHOX
%Oxygen signal	
D + (1)	31
D - (2)	30
Pt 100 Ω	
3	11
4	9
5	10



Wiring BAMOX 7200 sensor to a BAMOPHOX

BAMOX 7200	BAMOPHOX
% oxygen signal	
Red wire (+)	31
Black wire (-)	30
Pt 100 Ω	
Green wire	9 and 10
White wire	11

## Screw connectors on BAMOPHOX

1	+ %oxygen mA output
2	- %oxygen mA output
3	- temperature mA output
4	+ temperature mA output
5	+ 24 V
6	- 24 V
7	- 24 V
8	+ 24 V
9	Pt 100 Ω
10	
11	Shield
12	
13	Wiring to extension unit (blind BAMOPHOX)
14	
15	
16	
17	S4 contact NO - alarm on temperature or probe cleaning
18	
19	S2 threshold NO - %oxygen / temperature
20	
21	S1 threshold NO - %oxygen / temperature
22	
23	S3 threshold NO - %oxygen / temperature
24	
25	Not in use
26	Ground
27	Main power (N= neutral, L= Live)
28	
29	NC
30	Sensor BAMOX 7200
31	