FUCHS LUBRICANTS CO.

SENSOR INFORMATION, CARE AND WARRANTY

RM CONCENTRATION / BRIX SENSOR
MANUFACTURER Warranty is 1 year from date of sale

RANGE: 0-35 BRIX

GENERAL RM CONCENTRATION SENSOR CARE AND MAINTENANCE RECOMMENDATIONS BY MANUFACTURER
Periodic sensor checks should be performed bi-weekly with a zeroed out (using DI water) refractometer, and compared against routine lab analysis.
Removing the sensor cap cover and wiping the sensor iris with a clean paper towel, then rinsing with di water suggested as needed.
Fluid conditions that can cause potential sensor inaccuracies include heavy hydralic oil contamination, fluid level dropping below the sensor and the sensor being exposed to tramp oils, heavy mill swarf coating the sensor iris.
Best position for the RM sensor is the clean tank with moderate fluid circulation
Average in-service life of the sensor varies depending on the actual tank environment.

- Machining of cast parts with light tramp oil contamination and little to no bacterial contamination – 6+ months
- Machining of oxidized parts with light tramp oil contamination and little to no bacterial contamination – 6 months
- Machining of moderate to heavy oxidized parts with light tramp oil contamination and little to no bacterial - contamination 2-3 months
- Tanks with microbial stability challenges – 2-3 month
- Tanks with moderate to heavy oil (hydraulic) contamination - 1 month

Should storage of the Fluid Vision Technologies RM Concentration sensor be necessary, storage in a protective packaging box that is located in a cool, dry location.

SERVICE
The sensor should be kept free from deposit build-up. A film or contaminate layer composed of fines or bacteria will cover all surfaces in a biologically active or contaminated system. This contamination can act as a barrier that will require the sensor iris to be cleaned, and this frequency depends on the level of tank contamination.

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Rinsing the RM Concentration fluid interface with water and wiping the sensor iris with a clean cloth to remove any residue will increase service life

CALIBRATION
RM sensors used in environments where there are extreme temperatures, wide temperature fluctuations, humidity or pressure variations, high condensation, dirt, dust and other debris will require more frequent intervals of field checks (with a calibrated refractometer) and calibration. Additional checks may be necessary if the instrument is dropped, subjected to rough handling, or is subjected to conditions of extreme temperature cycling.
It is further recommended the manufacturer that a certified traceable calibration be done at minimum on a yearly basis. Having a traceable calibration performed once a year decreases measurement uncertainty and establishes a baseline upon which field confirmation/calibrations are subsequently made. It also ensures that every instrument will be checked by a specially trained technician at least once a year. An annual traceable calibration is NEVER a substitute for frequent field confirmation/calibrations.

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pH SENSOR
MANUFACTURER Warranty is 1 year from date of sale

RANGE: 0-14

pH CARE AND MAINTENANCE RECOMMENDATIONS BY MANUFACTURER
Periodic Sensor accuracy checks should be performed on a regular basis. We suggest every two weeks...best to check against lab analysis. Rinse the sensor diode with di water once per month or as needed to keep clean.
Fluid conditions that can cause potential sensor inaccuracies: include hydraulic fluid contamination, heavy mill swarf, bacterial contamination and cleaners, soaps or degreasers .
Best position for the pH sensor is the clean tank with moderate fluid circulation
Average life before sensor in a machining application requires service varies depending on the actual tank environment.

- Machining of cast parts with light tramp oil contamination and little to no bacterial contamination – 2 months
- Machining of oxidized parts with light tramp oil contamination and little to no bacterial contamination – 2 months
- Machining of moderate to heavy oxidized parts with light tramp oil contamination and little to no bacterial - contamination 1-2 months

- Tanks with microbial stability challenges - 1 month
- Tanks with moderate to heavy oil (hydraulic) contamination - >1 month

The standard shelf life for all pH sensors is one year from the date of shipment.
Sensors stored longer than this period may still be functional but are no longer under warranty.
Sensors should be stored in a cool, dry location with the sensor tip (where the pH element is located) oriented toward the ground. All sensors come standard with a conditioning solution in the cap. This conditioning solution is 50% pH 4 buffer and 50% saturated potassium chloride (mixed by volume).
The sensor cap should be keep tightly affixed to the sensor body and sealed with common piping
teflon tape when the sensor is not in use. Sensors that are to be returned for shelf life warranty claim must have the
original sensor cap and conditioning solution intact to be eligible for warranty replacement.
Contact Fluid Vision Technologies before returning any sensor for warranty claim to obtain a valid RMA.

Cleaning
Cleaning methods can vary greatly depending upon the application for which the sensor is used. Some common rules
for cleaning include:
1) Never scratch or aggressively scrub the pH elements. These are delicate glass electrochemical electrodes. They can be broken easily by mechanical force.
2) The reference junction is a solid state non-porous cross-linked conductive polymer embedded in a porous kynar
matrix. Since the reference is solid state, it can be cleaned with aggressive chemicals. This solid state
reference can also be cleaned effective by using a sharp razor edged tool. GREAT CARE SHOULD BE TAKEN
NOT TO SCRATCH THE pH GLASS OR ELEMENT DURING CLEANING OF THE REFERENCE JUNCTION.

Common approved cleaning solutions include:
5-15% Hydrochloric Acid – (For Alkaline deposits)
5-15% Sodium Hydroxide – (For Organic Contaminants)
Surfactant (NON-IONIC SOAPS SUCH AS MICRO-90)
Please inquire to the factory if you plan to use any other cleaning agent.

Conditioning for Calibration
After the sensor has been cleaned, it must be thoroughly rinsed with deionized water to remove any residual cleaning
reagents. The sensor can then be soaked in pH 4 buffer to recondition the pH and reference elements. Some sensors
will also require a conditioning in saturated potassium chloride if the reference junction has been depleted of the ions in
the solid state conductive polymer (typical for clean water applications). Condition the sensor in saturated potassium
chloride and/or pH 4 buffer for whatever period of time is required to achieve optimal calibration results.

Service
For a nominal fee, the pH sensor can be sent in for reconditioning.
We suggest having replacement pH sensors readily available in case changing out the sensor is necessary.

CONDUCTIVITY SENSOR

MANUFACTURER Warranty is 1 year from date of sale

RANGE: 5 – 200,000 µS/cm

CONCENTRATION SENSOR CARE AND MAINTENANCE RECOMMENDATIONS BY MANUFACTURER

Should storage of the Conductivity sensor be necessary, storage should be in a cool, dry location with the sensor always fitted with the protective cap it was shipped in.

SERVICE
The sensor should be kept free from deposit build-up. A film or contaminate layer composed of fines or bacteria will cover all surfaces in a biologically active or contaminated system. This contamination can act as a barrier that will require the sensors to be cleaned, and this frequency depends on the level of tank contamination.

Rinsing the sensor with water and gently wiping the sensor with a clean cloth to remove residue

Calibration

The Conductivity probe works by measuring the electrical current of the water between two graphite plates. These plates do not degrade so a recalibration is not necessary.

DISSOLVED OXYGEN SENSOR

MANUFACTURER Warranty is 1 year from date of sale

RANGE: 0 – 35+ mg/L

DISSOLVED OXYGEN SENSOR CARE AND MAINTENANCE RECOMMENDATIONS BY MANUFACTURER

The standard shelf life for all Dissolved Oxygen sensors is one year from the date of shipment. Sensors stored longer than this period may still be functional but are no longer under warranty. Sensors should be stored in a cool, dry location with the sensor tip (where the membrane element is located) oriented toward the ground. All sensors come standard with a protective cap.

The sensor's membrane must be kept free from deposits. A film composed mostly of bacteria will cover ALL surfaces in a biologically active system. This bacteria film acts as a diffusion barrier for the oxygen that must diffuse through the membrane. For industrial type process solution the most likely form of contamination and build-up will be particulates and solids from the solution if the media has high turbidity or viscosity or is an abrasive slurry in nature. The membrane must, therefore, be cleaned at regular intervals, the frequency depending on the actual conditions.
Cleaning can be performed with a cloth or soft paper. The membrane is strong and not easily damaged, but do not try to scratch clean. The sensor should not be taken apart for membrane replacement and rebuilding of the DO cell unless the membrane is damaged or you cannot calibrate to the correct value after long use.

Calibration
Because every use case is different, there is no set schedule for recalibration. The Dissolved Oxygen probe reacts with oxygen in the water, the more oxygen it reacts with the more the sensor is depleted of its electrolyte solution. Typically a Dissolved Oxygen sensor will last ~2 years before the electrolyte is depleted (results will vary). When the electrolyte is depleted, the sensor will read very low numbers. Best practice is to replace the Electrolyte Solution and Teflon Membrane every 2 years; both are available from the manufacturer.

Cleaning

Dissolved Oxygen Sensors come with a removable HDPE sensing membrane and a refillable electrolyte chamber located inside the probe. Although it is not necessary to replace the sensing membrane or electrolyte solution during normal operation; the membrane can be damaged. If your dissolved oxygen probe has not been in use for more than 1 year the HDPE sensing membrane can dry out and the internal electrolyte solution could leach out of the probe.

The Dissolved Oxygen Sensor should not be taken apart for service unless the membrane is damaged or the response (slope) is significantly reduced by fouling or deposits on the membrane that cannot be cleaned off. This is typically only the case after some prolonged period of use or an exceedingly aggressive process condition during a shorter time.

PREPARATION FOR CHANGING MEMBRANE AND REPLENISHING ELECTROLYTE SOLUTION:

Unscrew the cap, rinse with water and wipe the membrane.
1. Unscrew the pre-membraned cap from the tip of the sensor, rinse with water and wipe to remove any visible contamination.

2. Remove the cap from the bottle of D.O. Electrolyte Solution (Available from the manufacturer). Remove the 10mL syringe from packaging and attach hub needle to end of syringe.
3. Use needle and syringe to withdraw 5mL solution from bottle
4. Insert needle into one of the four holes surrounding the silver cathode. Inject solution until it leaks out of a fill hole
5. Replace cap by threading on sensor clockwise