

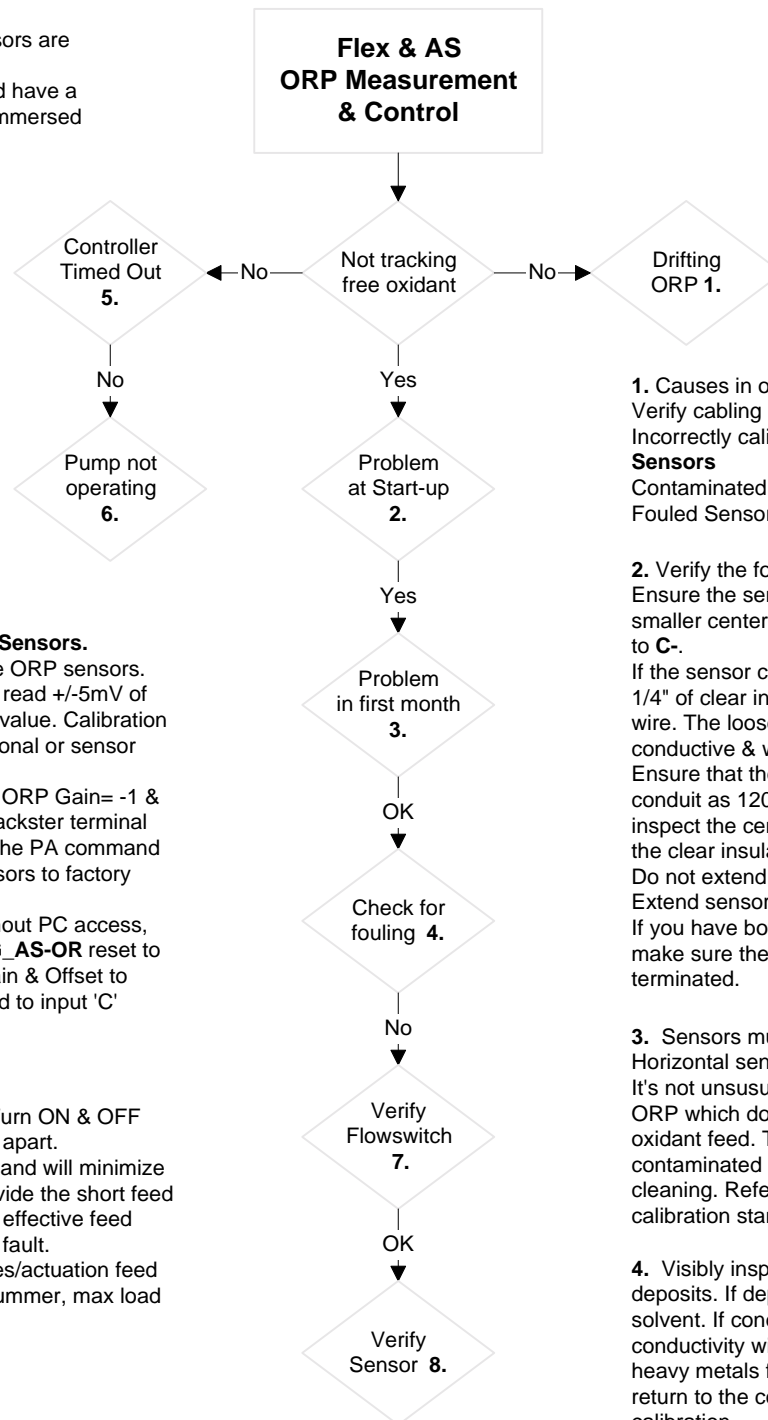
# Troubleshooting# 04

Revised 01/11/01

TR\_0104.vsd

## Got the right sensor?

Single junction ORP sensors are RED.  
Double junction, flat faced have a bright metal disk on the immersed end.



## Calibrating ORP Sensors.

1. Do not calibrate ORP sensors. The controller will read +/-5mV of the actual sensor value. Calibration only hides operational or sensor problems
2. Factory default ORP Gain= -1 & Offset= 0. Use Trackster terminal screen access & the PA command to reset ORP sensors to factory Gain & Offset.
3. Controllers without PC access, use procedure **UG\_AS-OR** reset to restore factory Gain & Offset to sensors connected to input 'C'

## ORP Setpoints.

1. Set the pump Turn ON & OFF setpoints 5-10mV apart.
2. 5-10mV deadband will minimize undershoot & provide the short feed times required for effective feed limiting on sensor fault.
3. Set your minutes/actuation feed limit timer twice summer, max load pump run time.

7. Valve OFF flow & verify that the controller shows flow off. A single tower controller uses input 'U', Tower Recirculating to monitor the flowswitch. If flowswitch not working or bypassed, check for flow at the sensor and at the return. Flow at the sensor does not ensure that you are not blocked downstream from the sensor.

8. Remove the sensor immerse in an ORP standard for five minutes. Sensors are OK if within +/-25mV of the standard. Single point calibration is only available in Trackster. Sensors reading low are usually iron/copper contaminated. Sensors reading high are usually zinc contaminated. Clean with 5-10% nitric acid - See **FLXADV10 & 2**.

1. Causes in order of frequency:  
Verify cabling & terminations - See**2**.  
Incorrectly calibrated sensor - See**Calibrating ORP Sensors**  
Contaminated Sensor - See**3**.  
Fouled Sensor - See **4**.

2. Verify the following  
Ensure the sensor is connected correctly & securely, smaller center wire typically to **C+** & thicker shield wire to **C-**.  
If the sensor cable has been shortened, ensure that 1/4" of clear insulation is visible on the smaller center wire. The loose black cover on the center wire is conductive & will short circuit the sensor. Ensure that the sensor cable is not in the same conduit as 120VAC. If the cable has been extended, inspect the center conductor splice to ensure that only the clear insulation enters the wire nut. Do not extend sensor cabling over 200ft. Extend sensor cabling in metallic conduit only. If you have both pH & ORP in the same controller, make sure the cables have not been switched & mis-terminated.

3. Sensors must be installed vertically, tip down. Horizontal sensors may intermittently air-block & drift. It's not unusual a month after start-up to have low ORP which does not respond, or responds slowly to oxidant feed. These sensors typically have contaminated platinum and require a nitric acid cleaning. Refer to **FLXADV10** for cleaning & calibration standards.

4. Visibly inspect sensor for mechanical damage or deposits. If deposits, clean with dilute HCl or a solvent. If conductivity sensor in the same piping, conductivity will foul first. Oil & greases foul and heavy metals foul ORP sensors. A fouled sensor will return to the correct ORP after cleaning, without re-calibration.

5. Controllers have two feed limit timers, minutes per actuation & minutes per day. Select Adust Alarms, scroll to Oxidant Pump & press Previous to view timer settings. Clear Alarms to reset the feed limit timers. The neon light on the relay powering the Oxidant pump will turn ON if you are below the Oxidant feed setpoint. If neon does not turn ON, See**6**.

6. Prime Pumps & select your Oxidant Pump. If the flowswitch is not operating, you'll get an error message. If Prime accepted, open controller door and verify that the neon indicator on the relay driving the pump is ON. If neon ON, the problem is with the pump or wiring to the pump. If neon OFF check Configure Control using Trackster for interlocking pumps.