

# Troubleshooting# 03

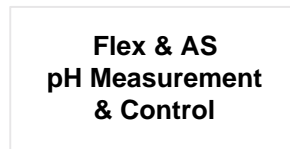
Revised 01/10/01

Tr\_0103.vsd

## Got the right sensor?

Single junction pH sensors are BLUE.

Double junction, flat faced have a glass eye at the immersed end.



## Calibrating pH Sensors.

1. Use single point calibration for all pH's. Use the Key Current Value option with IR Remote.
2. Measure the tower pH & Key Current Value. If you get an Offset from 6-8, key Enter. Your sensor & installation's OK.
3. Offsets outside 6-8 occur on double junction flat faced sensors, sensors operating below 45F and failed sensors.

## pH Setpoints.

1. Set the pump Turn ON & OFF setpoints 0.02pH apart.
2. 0.02 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 pH sensor immerse in 10 buffer for five minutes and single point calibrate. Key Current Value if using the IR Remote. Gain will always be 0.017. An offset from 6-8 is an OK sensor. An offset outside of 5-9 is a failed sensor. Wiring errors can also cause the Offset errors.

## 1. Causes in order of frequency:

Verify solution ground & controller grounding - See3. Verify sensor - See 8. Verify cabling & terminations - See2. See **Calibrating pH Sensors**

## 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 35ft. Extend sensor cabling in metallic conduit only. Coil excess sensor wire outside of the controller enclosure, away from 120VAC wiring. Route the sensor wire across the 120VAC on it's way to terminal blocks. Do not parallel 120VAC wiring with the sensor cable.

**3.** pH sensors must be installed vertically, tip down. Horizontal sensors may intermittantly air-block & drift. pH sensors must have a green solution ground wire connected to controller ground and the controller and door mounted circuit board must be grounded.

**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 pH sensors. A fouled sensor will return to the correct pH after cleaning, without re-calibration.

**5.** Controllers have two feed limit timers, minutes per actuation & minutes per day. Select Adust Alarms, scroll to Acid Pump & press Previous to view timer settings. Clear Alarms to reset the feed limit timers. The neon light on the relay powering the acid will turn ON if you are above the Acid feed setpoint. If neon does not turn ON, See6.

**6.** Prime Pumps & select your Acid 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.