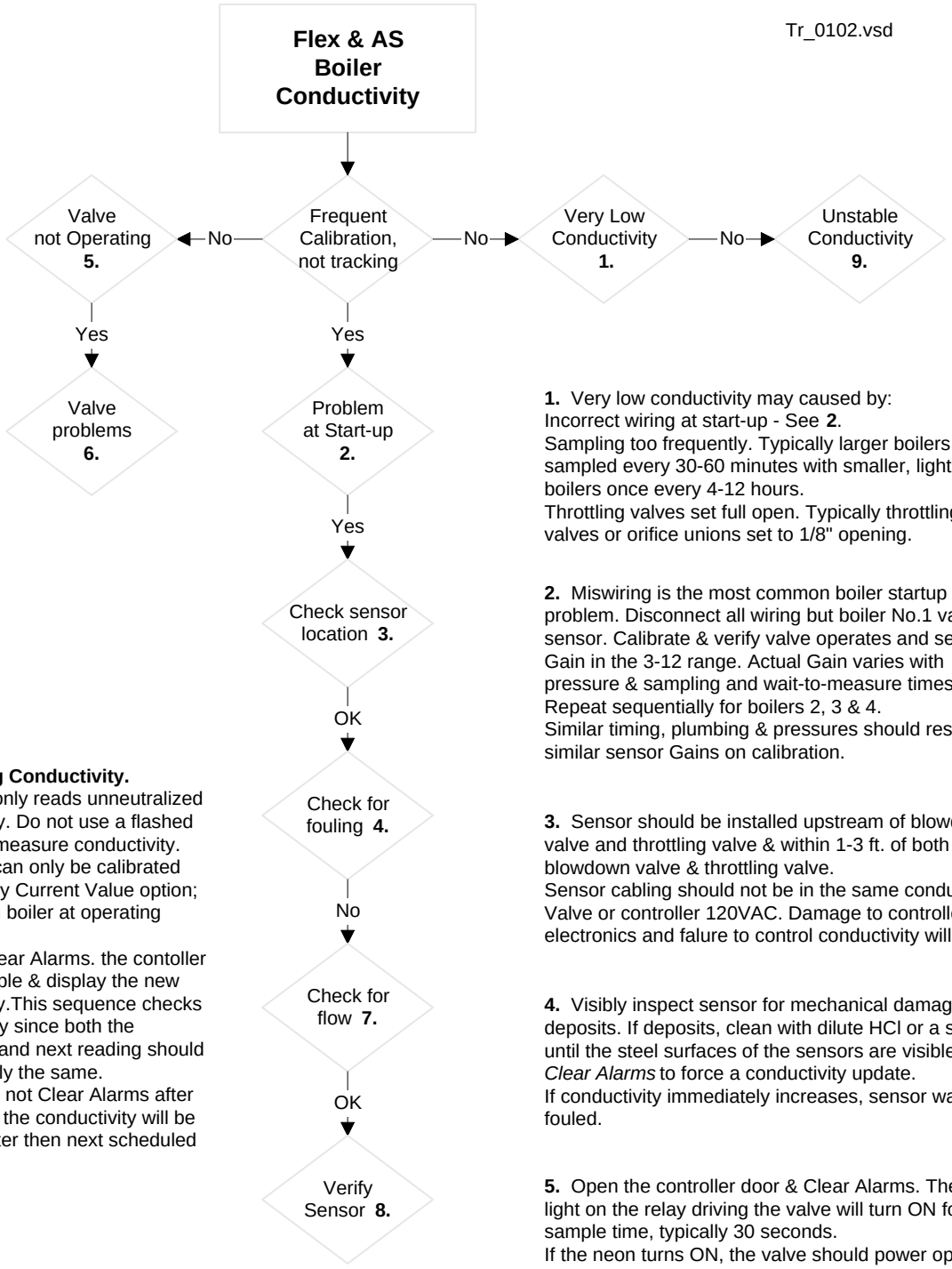
Troubleshooting# 02

Revised 01/10/01

Tr_0102.vsd



Calibrating Conductivity.
1. Sensor only reads unneutralized conductivity. Do not use a flashed sample to measure conductivity.
2. Sensor can only be calibrated with the Key Current Value option; in-line, with boiler at operating pressure.
3. If you Clear Alarms. the contoller will re-sample & display the new conductivity.This sequence checks repeatability since both the calibration and next reading should be nominally the same.
4. If you do not Clear Alarms after calibrating, the conductivity will be updated after then next scheduled sample.

1. Very low conductivity may caused by:
Incorrect wiring at start-up - See **2**.
Sampling too frequently. Typically larger boilers are sampled every 30-60 minutes with smaller, light load boilers once every 4-12 hours.
Throttling valves set full open. Typically throttling valves or orifice unions set to 1/8" opening.

2. Miswiring is the most common boiler startup problem. Disconnect all wiring but boiler No.1 valve & sensor. Calibrate & verify valve operates and sensor Gain in the 3-12 range. Actual Gain varies with pressure & sampling and wait-to-measure times. Repeat sequentially for boilers 2, 3 & 4.
Similar timing, plumbing & pressures should result in similar sensor Gains on calibration.

3. Sensor should be installed upstream of blowdown valve and throttling valve & within 1-3 ft. of both blowdown valve & throttling valve.
Sensor cabling should not be in the same conduit as Valve or controller 120VAC. Damage to controller electronics and falure to control conductivity will occur.

4. Visibly inspect sensor for mechanical damage or deposits. If deposits, clean with dilute HCl or a solvent until the steel surfaces of the sensors are visible.
Clear Alarms to force a conductivity update.
If conductivity immediately increases, sensor was fouled.

5. Open the controller door & Clear Alarms. The neon light on the relay driving the valve will turn ON for the sample time, typically 30 seconds.
If the neon turns ON, the valve should power open.
If neon ON but valve closed verify that valve has Power Open to **NO** terminal, Power Closed to **NC** terminal and neutral to **N** terminal.
If neon OFF check interlock & verify interlock ON.
If Flex, check fuse if no other neon's ON.

6. A partially open valve is either miswired or blocked - visibly inspect valve seating.
A Worcester Series36 valve (yellow top) that continues to rotate, has a loose microswitch. Power OFF, remove the cover & tighten switch mounting.
If not a Worcester valve, contact the valve vendor for correct 3 wire valve wiring terminals.

7. Clear Alarms & verify that the piping downstream of the blowdown valve is too hot to touch. If not very hot, surface blowdown line is bolcked or valved OFF.

8. Remove the sensor, twist the two sensor wires together and measure 1 ohm or less between the sensor pins. Sand the pins to ensure you have a good connection to the pins. An open circuit is a failed sensor. Calibrating a failed sensor will result in a Gain >20. Wiring errors can also cause the same Gain.

9. A valve or solenoid that does not close or is partially blocked will cause the conductivity to wander, with varying Gains. Test the sensor - See **8**.
If Start-up - See **2**.