

## INSTALLATION, OPERATION AND INSTRUCTION MANUAL

### *Level-Trac* Model LT-500 and LT-501 Probe Manifolds

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Note: This document should be reviewed in its entirety prior to installation of equipment.

## 1. Operating Principle

Quest-Tec Level-Trac LT-500/501 probe manifolds are simple devices designed to position conductivity probes per customer specifications. In general, the probe manifold is mounted to a steam drum via a steam and water leg with at least one set of isolation valves. The probes are horizontally placed on the manifold, and when coupled with the correct control unit, will simulate the water level within the steam drum.

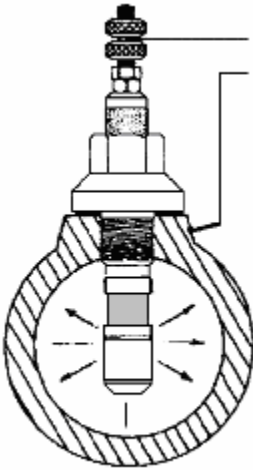


Figure 1.1

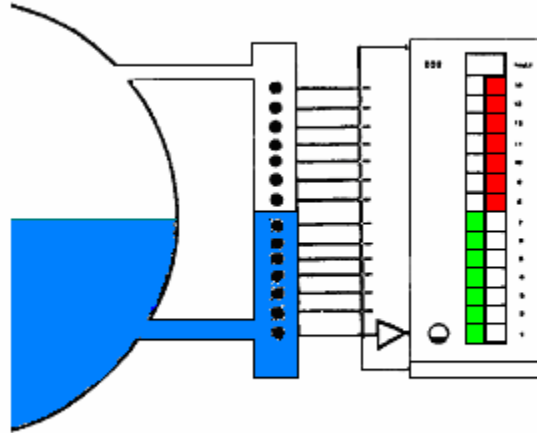


Figure 1.2

Figure 1.1 above shows a cross sectional view of a probe, as mounted to the probe manifold. Figure 1.2 illustrates the level of water in the probe manifold with respect to the steam drum and installed control unit.

## 2.0 Mechanical Installation Considerations

There are compliance considerations respective to ASME Section I PG 60. A current revision should be reviewed prior to purchasing a probe manifold, along with any specific local requirements. Level-Trac and Steam-Trac equipment is specifically designed in compliance with ASME Section 1, however Quest-Tec cannot be responsible for compliance issues with regard to installation and piping to the equipment.

The steam and water leg lengths should be kept to a minimum, and must be installed with at least one set of isolation valves to allow service to the manifold and any water gauge glasses mounted on the manifold.

## 3.0 Installation & Cabling

Pre-terminated, high temperature multi-conductor cable/wire bundles are available for the probe manifold. It is recommended that the wires are taped to the 1/4" vertical tie rods using high temp tape. The common connection should be made at the 1/2" nut supplied on the top probe cover support. For clarity, please refer to the specific wiring diagram referencing the Control Unit to be used.

## 4.0 Probes

The LT-500 or 501 probe manifold are identical in all mechanical respects, with the exception of the probe type used. LT-500 manifolds will use the Type 800, TFE insulated probe rated for Working Steam Pressure to 1000 PSI. LT-501 manifolds will use the Type 801, brazed, zirconia insulated probe rated for Working Steam Pressure to 2000 PSI. The probes are interchangeable, so care must be taken that the intended probe is used.

### 4.1 Probe Maintenance

Typical probe maintenance is limited to ensuring that the probes are clean. This can be accomplished by gently blowing down the manifold, or removal and re-installation. Individual installations will have site specific water quality, and this should be performed either "as needed" or per established maintenance cycle.

#### 4.2 Probe Removal

Probe removal requires isolation and draining of the probe manifold.

1. Prior to isolating the probe manifold, ensure that there will be no false alarm ramifications that could lead to expensive boiler trips.
2. Upon isolation of the probe manifold, drain all water out. Keep the drain open until probes have been re-installed.
3. Remove the probe covers.
4. Disconnect the probe wire(s).
5. Using a 3/4" deep socket, remove the probe.

#### 4.3 Probe Installation

1. Clean the threads and gasket sealing surface on the probe manifold.
2. Clean and lubricate the threads on the probe.
3. Thread the probe and gasket into the manifold hand tight.
4. Torque the probe to 53 ft/lbs.
5. Re-attach probe wires.
6. Replace Probe covers

#### 4.4 Bringing the Manifold On-Line

1. Notify personnel of the intention to commission the Water Level Monitoring System.
2. Ensure Probe Guards are in place.
3. Close Drain Valves.
4. Slightly crack open the Steam Isolating Valve and observe by the Display that the manifold fills slowly due to condensation (15 minutes +).
5. After 15 minutes crack open the Water Isolating Valve and check with Display that the water level falls to the expected NWL in approximately 2 minutes.
6. Check valves and probes for steam leaks. **Tighten probes if necessary.** If steam leaks from the probe top insulator replace probe.
7. Open Water Isolation Valves fully.
8. Open Steam Isolation Valves fully.
9. The System is now operational.

Spare Parts	
P/N	Description
QTLT-PR800	Type 800, TFE Insulated Probe (For LT-500 Manifold)
QTLT-PR801	Type 801, Brazed Zirconia Insulated Probe (For LT-501 Manifold, or to upgrade LT-500 Manifold)
QTLT-801G	Probe Gasket, Type 800 or Type 801