

Advantages

- Easy to use and install.
- Uses innovative, magnetostrictive position measurement technology to report liquid levels.
- Highly stable performance.
- Unparalleled accuracy and performance when used with a Franklin Fueling Systems Automatic Tank Gauge.
- Screw-in electrical connector provides quick installation or removal eliminating the need to resplice wires.
- Intrinsically safe circuits for hazardous locations.

Theory of Operation

- An electromagnetic field is created inside the probe head and forms around a long waveguide within the probe shaft when position measurements are taken.
- The electromagnetic field interacts with the magnetic field of the float(s) and produces a shock wave in the waveguide that travels at a known speed.
- When the shock wave is detected at the probe head, the probe creates a signal that corresponds precisely to the product level.
- Product expansion calculations are enabled by temperature sensors that are located at various points in the probe shaft.

Leak Detection and Inventory Control Probes

TSP-LL2 and TSP-LL2-I liquid level probes are advanced instruments that use magnetostrictive position measurement technology to accurately report inventory levels in storage tanks.



Specifications

- Operating temperature: -40° to 140 °F (-40° to 60 °C).
- Storage temperature: -40° to 158 °F (-40° to 70 °C).
- Intrinsic safety rating: Class I, Div. I, Group D.
- Non-linearity: $\pm 0.025\%$ of full scale.
- Repeatability: $\pm 0.001"$.
- Temperature sensors: Up to 5 thermistors located in the shaft.
- Temperature resolution: ± 0.02 °F (± 0.01 °C).
- Leak Detection: (TSP-LL2 ONLY)
Static - 0.1 gph (0.38 lph), 0.2 gph (0.76 lph)
SCALD - 0.2 gph (0.76 lph)
- Probe pigtail: 10' long two conductor cables with shield and polyurethane jacket.
- Interface cable:
0' to 500' - Belden 87760, 87761.
0' to 1500' - Belden 89182.
Consult factory for others.
- Materials:
Housing - Anodized aluminum
Shaft & Washer - #316 Stainless Steel
E-clip - Stainless Steel
- Float kits must be ordered separately.

Applications

The LL2 Series of liquid level probes feature exceptional linearity, resolution and stability, and are used in underground and aboveground storage tanks. Two types of probes are manufactured for use with Franklin Fueling Systems automatic tank gauges.

- The TSP-LL2 leak detection probe should be used in underground storage tanks when density measurement, static or SCALD leak detection is required.

- The TSP-LL2-I inventory control probe should be used on aboveground or underground tanks that require inventory management but not leak detection.
- Probes are available in many sizes that are suitable for all common tanks.
- Easily installed into 2", 3" or 4" riser pipes.

Capabilities

TSP-LL2 Leak Detection Probe:

- Can report the level of one, two or three (Density) floats.
- Capable of precise leak detection, density measurement, inventory control and reconciliation.

TSP-LL2-I Inventory Control Probe:

- Can report the level of one or two floats
- Capable of precise inventory control and reconciliation.

Installation Kits:

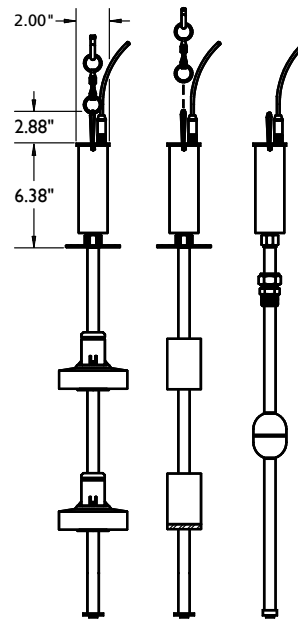
- Use the appropriate FFS suspension style installation kits to install all TSP-LL2 leak detection probes.
- Use the appropriate FFS bottom mount style installation kits or appropriate riser cap with compression gland to install all TSP-LL2-I inventory control probes.
- TSP-LL2-I probes include special hardware to allow them to rest on the tank bottom.

Probes and Sensors

Leak Detection Probes

Model	Description
TSP-LL2-29	2' diameter tank probe
TSP-LL2-41	3' diameter tank probe
TSP-LL2-53	4' diameter tank probe
TSP-LL2-65	5' diameter tank probe
TSP-LL2-69	5'4" diameter tank probe
TSP-LL2-77	6' diameter tank probe
TSP-LL2-81	6'4" diameter tank probe
TSP-LL2-89	7' diameter tank probe
TSP-LL2-101	8' diameter tank probe
TSP-LL2-113	9' diameter tank probe
TSP-LL2-125	10' diameter tank probe
TSP-LL2-131	10'6" diameter tank probe
TSP-LL2-137	11' diameter tank probe
TSP-LL2-149	12' diameter tank probe

- Notes: 1. Custom probe lengths are available; contact factory for price and delivery.
 2. These probes are used with all Franklin Fueling Systems ATG consoles.
 3. Float kits must be ordered separately.
 4. Must be installed using FFS Suspension style install kits.



Inventory Control Probes

Model	Description
TSP-LL2-29-I	2' diameter tank probe
TSP-LL2-41-I	3' diameter tank probe
TSP-LL2-53-I	4' diameter tank probe
TSP-LL2-65-I	5' diameter tank probe
TSP-LL2-69-I	5'4" diameter tank probe
TSP-LL2-77-I	6' diameter tank probe
TSP-LL2-81-I	6'4" diameter tank probe
TSP-LL2-89-I	7' diameter tank probe
TSP-LL2-101-I	8' diameter tank probe
TSP-LL2-113-I	9' diameter tank probe
TSP-LL2-125-I	10' diameter tank probe
TSP-LL2-131-I	10'6" diameter tank probe
TSP-LL2-137-I	11' diameter tank probe
TSP-LL2-149-I	12' diameter tank probe
TSP-LL2-161-I	13' diameter tank probe
TSP-LL2-173-I	14' diameter tank probe
TSP-LL2-185-I	15' diameter tank probe
TSP-LL2-197-I	16' diameter tank probe
TSP-LL2-209-I	17' diameter tank probe
TSP-LL2-221-I	18' diameter tank probe



Bottom Mount Hardware

- Notes: 1. Orders for probes larger than 149" cannot be canceled and are non-returnable.
 2. These probes are used with Franklin Fueling Systems ATGs.
 3. Not for leak detection.
 4. Float kits must be ordered separately.
 5. Comes with hardware allowing the probe to rest on the tank bottom. FFS bottom mount style installation kit or appropriate riser cap with cable gland still required.



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