Warranty, Service & Repair

To register your product with the manufacturer, fill out the enclosed warranty card and return it immediately to:

Flowline Inc.
10500 Humbolt Street
Los Alamitos, CA 90720.

If for some reason your product must be returned for factory service, contact Flowline Inc. to receive a Material Return Authorization number (MRA) first, providing the following information:

1. Part Number, Serial Number
2. Name and telephone number of someone who can answer technical questions related to the product and its application.
3. Return Shipping Address
4. Brief Description of the Symptom
5. Brief Description of the Application

Once you have received a Material Return Authorization number, ship the product prepaid in its original packing to:

Flowline Factory Service
MRA _____
10500 Humbolt Street
Los Alamitos, CA 90720

To avoid delays in processing your repair, write the MRA on the shipping label. Please include the information about the malfunction with your product. This information enables our service technicians to process your repair order as quickly as possible.

FLOWLINE ®

Smart Trak™
Multi-Switch Fitting
LM10 Series
Owner's Manual

WARRANTY

Flowline warrants to the original purchaser of its products that such products will be free from defects in material and workmanship under normal use and service for a period which is equal to the shorter of one year from the date of purchase of such products or two years from the date of manufacture of such products.

This warranty covers only those components of the products which are non-moving and not subject to normal wear. Moreover, products which are modified or altered, and electrical cables which are cut to length during installation are not covered by this warranty.

Flowline's obligation under this warranty is solely and exclusively limited to the repair or replacement, at Flowline's option, of the products (or components thereof) which Flowline's examination proves to its satisfaction to be defective. FLOWLINE SHALL HAVE NO OBLIGATION FOR CONSEQUENTIAL DAMAGES TO PERSONAL OR REAL PROPERTY, OR FOR INJURY TO ANY PERSON.

This warranty does not apply to products which have been subject to electrical or chemical damage due to improper use, accident, negligence, abuse or misuse. Abuse shall be assumed when indicated by electrical damage to relays, reed switches or other components. The warranty does not apply to products which are damaged during shipment back to Flowline's factory or designated service center or are returned without the original casing on the products. Moreover, this warranty becomes immediately null and void if anyone other than service personnel authorized by Flowline attempts to repair the defective products.

Products which are thought to be defective must be shipped prepaid and insured to Flowline's factory or a designated service center (the identity and address of which will be provided upon request) within 30 days of the discovery of the defect. Such defective products must be accompanied by proof of the date of purchase.

Flowline further reserves the right to unilaterally wave this warranty and to dispose of any product returned to Flowline where:
a. There is evidence of a potentially hazardous material present with product.
b. The product has remained unclaimed at Flowline for longer than 30 days after dutifully requesting disposition of the product.

THERE ARE NO WARRANTIES WHICH EXTEND BEYOND THE DESCRIPTION ON THE FACE OF THIS WARRANTY. This warranty and the obligations and liabilities of Flowline under it are exclusive and instead of, and the original purchaser hereby waives, all other remedies, warranties, guarantees or liabilities, express or implied. EXCLUDED FROM THIS WARRANTY IS THE IMPLIED WARRANTY OF FITNESS OF THE PRODUCTS FOR A PARTICULAR PURPOSE OR USE AND THE IMPLIED WARRANTY OF MERCHANT ABILITY OF THE PRODUCTS.

This warranty may not be extended, altered or varied except by a written instrument signed by a duly-authorized officer of Flowline, Inc.

SPECIFICATIONS

Smart Trak Fitting:

Track lengths:	2', 4', 6', 8', 10' or 12' (1m, 2m or 3m)
Adjustability:	Entire track length
Mixer velocity:	Up to 1.5 fps (.45 mps)
Temperature range:	F: -40° to 194°
	C: -40° to 90°
Pressure range:	Atmospheric
Track material:	Polypropylene (PP), 20% glass filled
Mounting thread:	2" NPT (2" G)
Mounting gasket:	Viton (2") metric only

Junction Box:

Enclosure rating:	NEMA 4X (IP65)
Enclosure material:	Polypropylene, U.L. 94 VO
Enclosure rotation:	300° swivel base
Conduit connection:	1/2" NPT
Termination:	12 pole socket terminal strip
Temperature range:	F: -40° to 158°
	C: -40° to 70°

Side Mount Bracket:

Bracket material:	Polypropylene
Mounting thread:	2" NPT (2" G)
Installation:	Bold or plastic weld

Smart Trak Fitting

LM10 - 1 __ 1

Track Length
2 - 2 feet
4 - 4 feet
6 - 6 feet
8 - 8 feet
0 - 10 feet
1 - 1 meter
3 - 2 meter
7 - 3 meter
Mounting Thread
0 - 2 NPT
6 - 2 G

About Smart Trak™:

Flowline's Smart Trak™ is an adjustable mounting system for installing multiple level sensors vertically within a tank. Mounted through a single point at the top of the tank, up to 6 different sensors can be located at any depth on Smart Trak. Flowline's LC05 or LC06 compact junction boxes, and LC10, LC11 or LC30 compact relay controllers are designed to be mounted directly to the 3/4" NPT fitting at the top of the assembly. Smart Trak mounts vertically through a standard 2" NPT tank adapter, or on a side mount bracket (such as the LM50-1001). Unlike prefabricated "trees" or pipes, Smart Trak allows you to experiment with sensor position to account for variations in the point of actuation of each sensor during process testing.

Track:

The track itself is approximately 1" square, and is from 2' to 12' long depending on model. The track may be cut to length if desired. Four separate grooves run the length of the track, one on each side of the square. These grooves hold the sensor cars that attach to Flowline sensors, and also serve to contain the sensor wire. The bottom of the track is capped with an end cap. About 3/8" from the top of the track is a hole for a locking pin that holds the track in position in the top fitting.
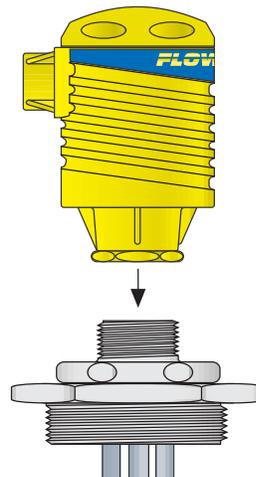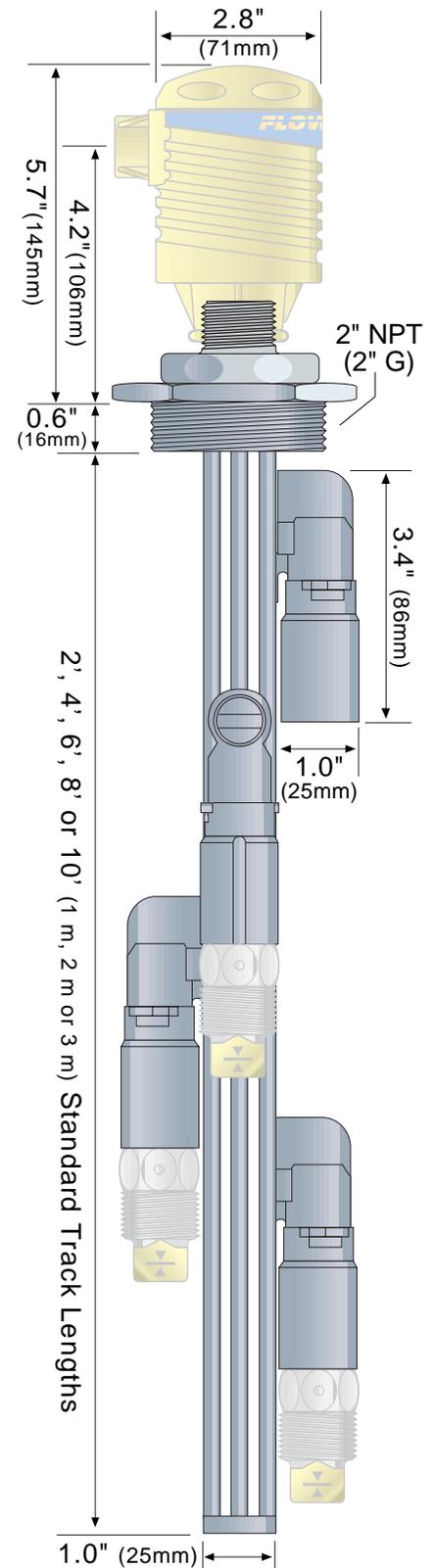
2" NPT to Smart Trak fitting:

The track slides into the square center of a large fitting which has coarse threads on the top, and 2" NPT-standard threads on the bottom. A slot inside the fitting mates with the locking pin to hold the track in position.

Top compression fitting and wire gasket:

Once the track is in the 2" fitting, the wires pass through a thrust plate and a thick rubber gasket, and the assembly is held firmly in place by a top compression fitting that screws onto the coarse threads. The top fitting has a 3/4" NPT threaded outlet for connecting to conduit or for direct mounting of a Flowline LC05/06 terminal strip housing, LC10, LC11, or LC30 series controller. Make sure the seal plug has been installed for added protection.

Note: The wire gasket is not a vapor or water seal.

2.8" (71mm)

5.7" (145mm)

4.2" (106mm)

0.6" (16mm)

2" NPT (2" G)

3.4" (86mm)

1.0" (25mm)

2', 4', 6', 8' or 10' (1 m, 2 m or 3 m) Standard Track Lengths

1.0" (25mm)

FLOWLINE Compact Controller / Compact Junction Box Mounted on Smart Trak

SAFETY PRECAUTIONS

⚠ About this Manual:

PLEASE READ THE ENTIRE MANUAL PRIOR TO INSTALLING OR USING THIS PRODUCT. This manual includes information on five different models of Smart Trak: LM10-1201, LM10-1401, LM10-1601, LM10-1801 and LM10-1X01. The units are identical except for the length of the track.

⚠ User's Responsibility for Safety:

Flowline manufactures a wide range of liquid level sensors, controllers, and mounting systems. It is the user's responsibility to select components that are appropriate for the application, install them properly, perform tests of the installed system, and maintain all components. The failure to do so could result in property damage or serious injury.

⚠ Proper Installation and Handling:

Use a proper sealant with all installations. Never overtighten the components. Always check for leaks prior to system start-up.

⚠ Material Compatibility:

The track, end cap, wire retainer clips, bayonet adapter and sensor car for all the LM10 models are made of glass filled PP (Polypropylene, a polyolefin). The sensor car locking bolt and screw are made of PCTFE (polychlorotrifluoroethylene, a fluoroplastic), the top compression fitting, thrust plate, locking pin and 2" NPT fitting are made of PP and the O-ring is made of Viton (a fluorocarbon). The wire gasket is made of Neoprene, the seal plug is made of Santoprene and both have a silicon gel for lubrication. Make sure that the application liquids are compatible with the materials that will be wetted. To determine the chemical compatibility between the components and its application liquids, refer to the Compass Corrosion Guide, available from Compass Publications (phone 619-589-9636).

⚠ Temperature and Pressure:

Smart Trak is designed for use in application temperatures up to 90° C (194° F). It is not designed for pressurized applications due to the wiring that must travel through a gasket at the head.

⚠ Wiring and Electrical:

Electrical wiring of any liquid level control system should be performed in accordance with all applicable national, state, and local codes. Take care not to cut or break the outer insulation jacket of wiring that may be immersed while routing cables in the Smart Trak system. Such breaks of the liquid seal of the sensor system may lead to component failure.

⚠ Flammable, Explosive and Hazardous Applications:

Smart Trak may be used within flammable or explosive applications only if the associated components are rated intrinsically safe for such use. In hazardous applications, use redundant measurement and control points, each having a different sensing technology.
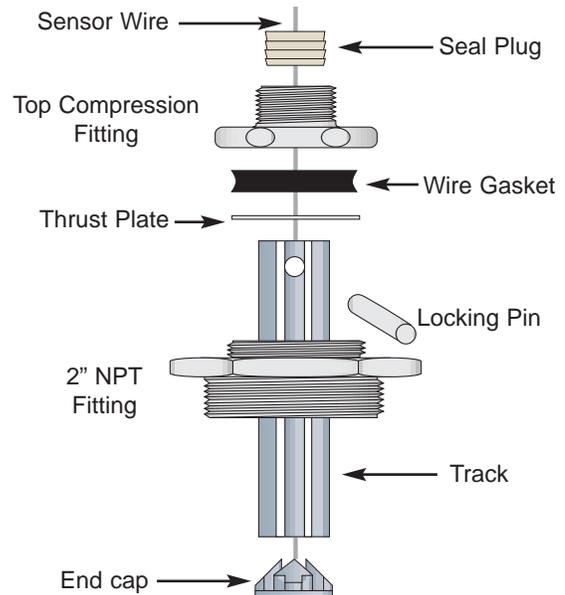
⚠ Make a Fail-Safe System:

Design a fail-safe system that accommodates the possibility of transmitter or power failure. In critical applications, Flowline recommends the use of redundant backup systems and alarms in addition to the primary system.

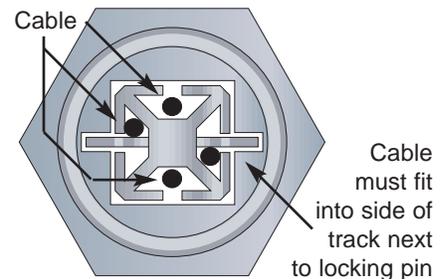# ASSEMBLY OF SMART TRAK

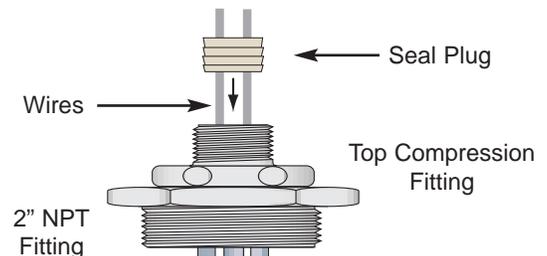## Smart Trak Assembly Drawing (Side View)

Inventory:

One smart trak kit (LM10-1__1) includes the following parts:

1 Seal Plug	1 Top compression fitting
1 Wire gasket	1 Thrust Plate
1 Locking pin	1 2" NPT fitting
1 Track	1 End cap
2 Wire retainer clips (not shown)	

Smart Trak Assembly Drawing (Top View):


Seal Plug Assembly Drawing (Side View)

ASSEMBLY OF SWITCH CAR

Sensor car and bayonet adapter:

The sensor car assembly is the heart of the Smart Trak system. It slides in the grooves of the track, and is locked into position by a plastic bolt and screw. The bayonet to 3/4" NPT adapter has a female 3/4" NPT fitting on one end where the sensor (not included) will screw in, and a bayonet fitting on the other end that attaches it onto the sensor car with a slight turn, with an O-ring in-between to provide tension for the push-and-turn connection.

Switch Car Kit Assembly Drawing (Side View)

Sensor Wire — Sensor Lock Bolt & Nut — Sensor Car — Shoe — O-ring — Bayonet to 3/4" NPT Adapter — Flowline Sensor
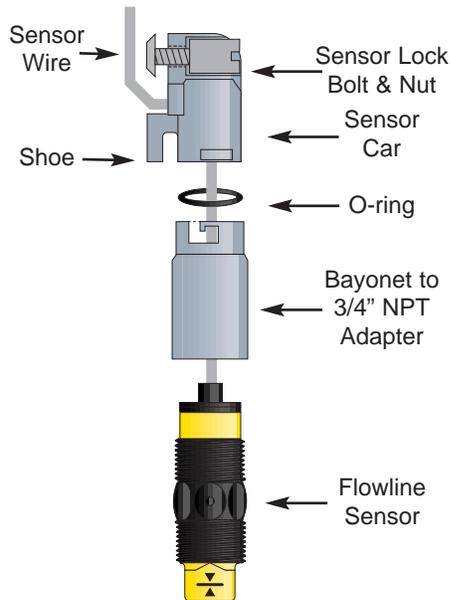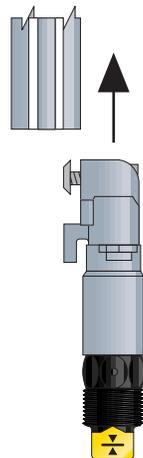
Inventory:

One switch car kit (LM30-10_1) consists of the following parts:

- 1 Locking bolt
- 1 Locking Nut
- 1 Sensor car
- 1 O-ring
- 1 Bayonet to 3/4" NPT adapter

Switch Car Kit to Smart Trak
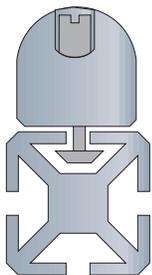
(Top View)   (Side View)

Determine the Proper Wire Length:

Don't make the mistake of trimming the sensor wires too short before the process is tested. If the sensors might need to be lowered in the future, leave sufficient slack in the wires to allow for future adjustment. This extra wire may be stored in the bottom of the terminal strip housing, or elsewhere above the compression fitting.

INSTALLATION

Smart Trak™, In-Tank Installation:

Flowline's Smart Trak mounting system is an in-tank fitting, which enables users to install any technology, along the entire length of track. Smart Trak may be installed thru the top wall of any tank or flange, using a standard 2" NPT tank adapter or blind flange. If tank top is not available, Flowline's side mount bracket, LM50-1001, enables Smart Trak to be installed directly to the side wall or lip of the tank.
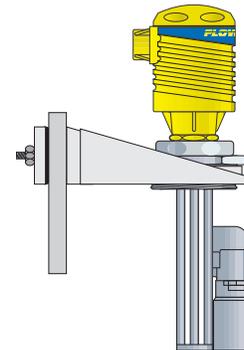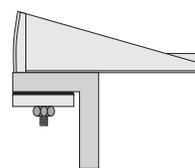
Tank Adapter:
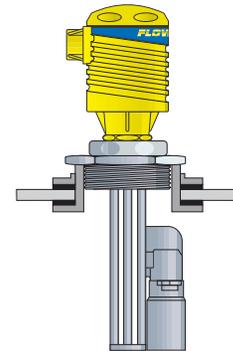
Flange Mounting:
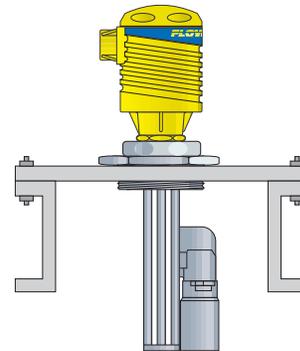
Side Mount Bracket:

Lip of Tank   Side-Wall