Warranty, Service & Repair

To register your product with the manufacturer, go to the Flowline website for on-line registration. The website address is as follows:

www.flowline.com

On-line Warranty Registration can be found under Contact Us in the Navigation Bar along the side of the home page.

If for some reason your product must be returned for factory service, contact Flowline Inc. at (562)598-3015 to receive a Material Return Authorization number (MRA), 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 ®

Switch Pak™
Single-Switch Fitting
LM45 Series
Owner's Manual
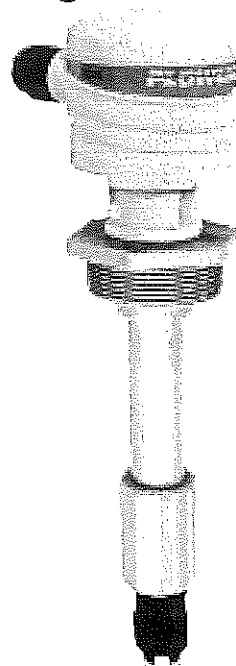
Version 3.1A
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Manual # LM900004   05/05

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 waive 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

| Step One |

Smart Trak Fitting:
Fitting length:	6" to 8' (15 cm to 2.4 m)
Fitting tolerance:	1/8" (3 mm) typical
Temperature range:	F: -40° to 194°
	C: -40° to 90°
Pressure range:	psi: 0 to 150
	bar: 0 to 10
Fitting material:	Polypropylene (PP)
	Polyvinylidene Fluoride (PVDF)
	Polyvinylchloride (PVC)
Mounting thread:	2" NPT (1-1/2" G)
Mounting gasket:	Viton (1-1/2") 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

Switch Adders for FLOWLINE Level Switch

Nominal Switch Adders	
Technology	Adder
Tuning Fork	3.5" (8.9 cm)
Ultrasonic	*2.0" (5.1 cm)
SuperGuard	4.0" (10.2 cm)
RF Capacitance	*2.0" (5.1 cm)
Optic	*2.0" (5.1 cm)
Vertical Buoyancy	4.3" (10.9 cm)
Vertical Float	2.0" (5.2 cm)
* Based on short length switch	

User Supplied Pipe Sizes:

Part Number	Material	Pipe Size
LM45-1001	PP	25 mm (Metric)
LM45-5001	PVDF	25 mm (Metric)
LM45-7001	PVC	3/4" (Schedule 40)

Switch Pak Fitting
LM45 - _ 0 _ 1
Fitting Material
1 - PP
5 - PVDF
7 - PVC
Mounting Thread
0 - 2 NPT
6 - 1-1/2 G

2.8" (71mm)
3.6" (92mm)
2.5" (64mm)
2" NPT (1-1/2" G)
Assembly Length
A (Specify)
Sensor Adder
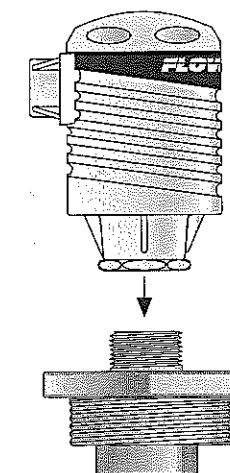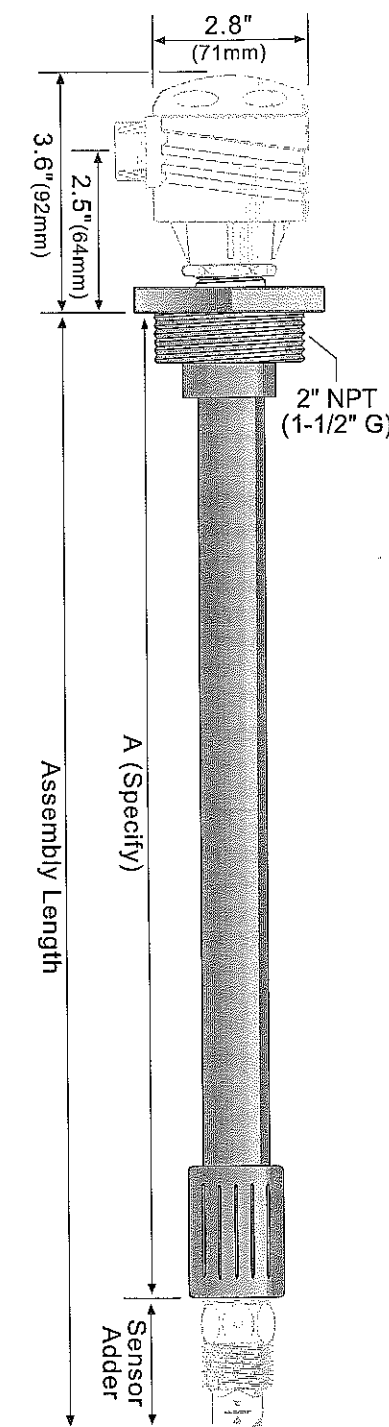
FLOWLINE Compact Controller / Compact Junction Box Mounted on Switch Pak

SAFETY PRECAUTIONS

⚠ About this Manual:
PLEASE READ THE ENTIRE MANUAL PRIOR TO INSTALLING OR USING THIS PRODUCT. This manual includes information on all models of Switch Pak™: LM45-_0_1. The units are identical except for material of construction and thread sizes.

⚠ 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 pipe, fitting and coupling for all the LM45 models are made of either Polypropylene (PP), a polyolefin, Polyvinylidene Fluoride (PVDF) or Polyvinylchloride (PVC). 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 858-589-9636).

⚠ Temperature and Pressure:
Switch Pak™ is designed for use in application temperatures up to 90° C (194° F). It is designed for use in application pressures up to 150 psi (10 bar).

⚠ 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 Switch Pak system. Such breaks of the liquid seal of the sensor system may lead to component failure.

⚠ Flammable, Explosive and Hazardous Applications:
Switch Pak may be used within flammable or explosive applications only if the associated components are rated intrinsically safe for such use. Refer to the National Electric Code (NEC) for all applicable installation requirements in hazardous locations. 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.

INTRODUCTION

About Switch Pak™:
Flowline's Switch Pak™ is an industrial mounting system for installing a liquid level switch vertically within a tank. 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. Switch Pak™ mounts vertically through a standard 2" NPT (1-1/2"G) tank adapter, or on a side mount bracket (such as the LM50-1001).

Pipe:
The Switch Pak™ features a standard 3/4" pipe as the extension for the switch. When assembling a Switch Pak™, use a thermal weld for the LM45-10_1 (PP) and LM45-50_1 (PVDF) and a solvent weld for the LM45-70_1 (PVC). Welds must be made for the 2"/1-1/2" fitting and for the 3/4" coupling.

2"/1-1/2" fitting:
The pipe slides into the center of a large fitting which has a 3/4" threads on the top, and 2"/1-1/2" standard threads on the bottom. The 3/4" thread is available for attaching a junction box or conduit.
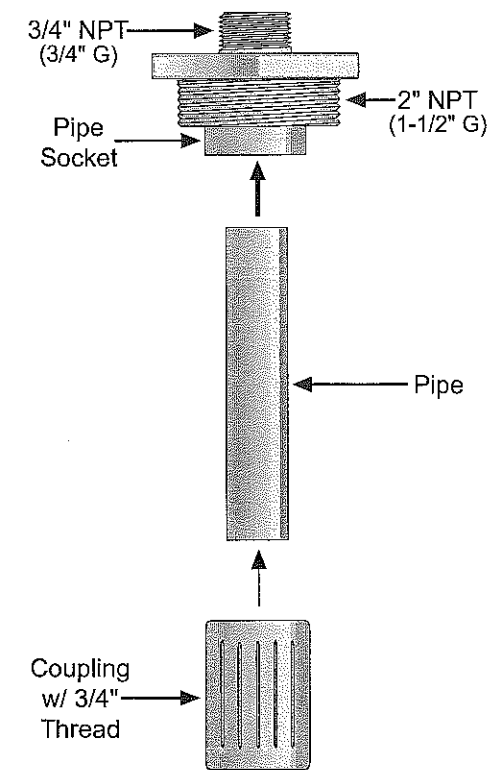
Coupling:
A 3/4" thread attaches the level switch to the Switch Pak™.

ASSEMBLY OF SWITCH PAK

Switch Pak Assembly Drawing (Side View)

Inventory:
One Switch Pak kit (LM45-_0_1) includes the following parts:
- 1 Fitting
- 1 Coupling
- 1 Customer specified pipe

INSTALLATION

Switch Pak™ In-Tank Installation:
FLOWLINE's Switch Pak™ mounting system is an in-tank fitting, which enables the users to install any technology. Switch Pak may be installed through the top wall of any tank or flange, using a standard 2"/1-1/2" tank adapter or blind flange. If the tank top is not available, FLOWLINE's side mount bracket, LM50-1001, enables Switch Pak™ to be installed directly to the side wall or lip of the tank.
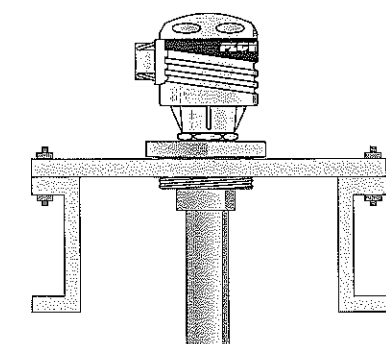
Tank Adapter:
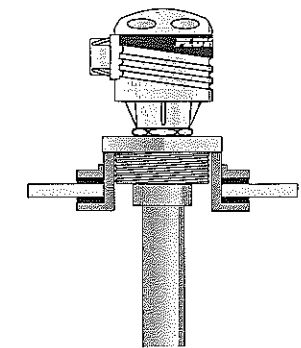
Flange Mounting:
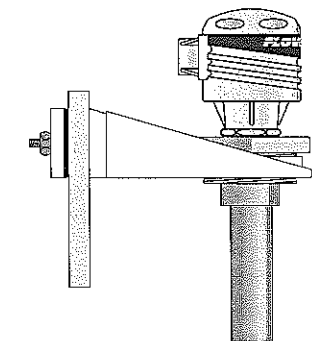
Side Mount Bracket:

Lip of Tank   Side-Wall