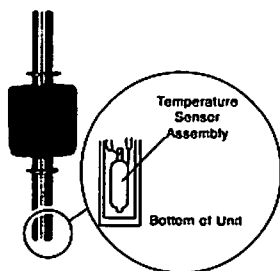


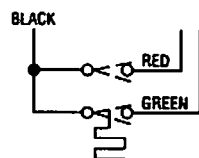
Integrated Temperature Sensors Options

- 1. Thermistor for Continuous Indication**
 - Excellent Repeatability
 - Value:** 10,000 ohms @ 77°F (25°C)
 - Tolerance:** ±0.2°C from 32°F to 158°F (0°C to 70°C)
 - Operating Temperature:** 302°F (150°C), Max.
 - Alpha @ 25°C:** -4.39%/°C
 - Dissipation Constant:** 1mW/°C in Still Air
8 mW/°C in Oil Bath



Note
End of unit stem must be submerged a minimum of 2-3/4" for level switch actuation.

Typical Wiring Diagram



Note
Contact Dwyer Instruments for Additional Information.

MAINTENANCE/REPAIR

Regular maintenance of the total system is recommended to assure sustained optimum performance. These devices are not field repairable and should be returned to the factory if recalibration or other service is required. After first obtaining a Returned Goods Authorization (RGA) number, send the unit freight prepaid to the following. Please include a clear description of the problem plus any application information available.

Dwyer Instruments, Inc.
Attn: Repair Department
102 Highway 212
Michigan City, IN 46360

Important Points!

Product must be maintained and installed in strict accordance with the National Electrical Code and Dwyer product catalog and instruction bulletin. Failure to observe this warning could result in serious injuries or damages.

For hazardous area applications involving such things as (but not limited to) ignitable mixtures, combustible dust and flammable materials, use an appropriate explosion-proof enclosure or intrinsically safe interface device.

The pressure and temperature limitations shown on the individual catalog pages and drawings for the specified flow switches must not be exceeded. These pressures and temperatures take into consideration possible system surge pressures/temperatures and their frequencies.

Selection of materials for compatibility with the media is critical to the life and operation of Dwyer flow switches. Take care in the proper selection of materials of construction, particularly wetted materials.

Life expectancy of switch contacts varies with applications. Contact Dwyer if life cycle testing is required.

Ambient temperature changes do affect switch set points, since the specific gravity of a liquid can vary with temperature.

Flow switches have been designed to resist shock and vibration, however, shock and vibration should be minimized.

Filter liquid media containing particulate and/or debris to ensure the proper operation of our products.

Electrical entries and mounting points in an enclosed tank may require liquid/vapor sealing.

Flow switches must not be field-repaired.

Physical damage sustained by the product may render it unserviceable.



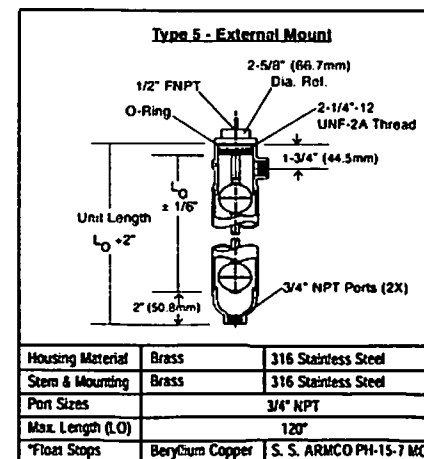
**Series F7-MS, F7-MQ
Multi-Station Level Switches**

Installation Multi-station level switches install vertically in tank top (mounting up) or in tank bottom (mounting down). Level switches will operate normally inclined up to 30°.

Mounting Types

Note: Units greater than 72" overall length are supplied with collars with setscrews (made of same material as stem and mounting). In place of float-stop rings. Collars are optional on units less than 72" overall length. Units requiring 316 SS float stops must be special-ordered with 316 SS collars instead of grip rings.

Type 1 1/2" NPT	Type 2 1-1/4" NPT	Type 3 2" NPT	Type 4 3" 150# Flange
Stem and Mounting Material			Flange: Carbon Steel or 316 SS Stem: 316 SS
Max. Length (LO)	36"	60"	140"
Mounting Position			
Vertical ±30° Inclination			
*Float Stops (See *Note Above)			
Brass Units: Beryllium Copper Grip Rings; Stainless Steel Units: S.S. ARMCO PH-15-7MO Grip Rings			



DWYER INSTRUMENTS, INC.
P.O. BOX 373 MICHIGAN CITY, INDIANA 46361, U.S.A.

Phone: 219/879-8000
Fax: 219/872-9057
Lit-By Fax: 888/891-4963

www.dwyer-inst.com
e-mail: info@dwyer-inst.com

Float Types

Float Material	Buna N		316 Stainless Steel	
Compatible Mounting Types	2	1, 3, 4, 5	1, 3, 4, 5 (Units <72")	3, 4, 5 (Units >72")
Float Dimensions				
Part Number	28032	10558	14569	15666
Operating Temperature	Water: To 180°F (82.2°C) Oil: -40°F to +230°F (-40°C to 110°C)		-40°F to +300°F (-40°C to +148.9°C)	
Min. Media Specific Gravity	.75	.55	.75	.75

Pressure Ratings Chart (PSI, Max.)

		Float Part Number			
		28032	10558	14569	15666
Mounting Type	1, 2, 3	150	750	300	
	4	150			
	5	Brass	100 @ +70°F (21.1°C)		
	316 S.S.	150	750	300	

Wiring Color Codes

SPST Switches			SPDT Switches 20 VA					
Wiring	Group I	Group II	Group III			Group IV		
Com. Wire	Black	None	Black			None		
	NO/NC	Sw. Com.	NO/NC	NO	NC	Sw. Com.	NO	NC
L1	Red	Red	Red	Red	Wh/Rod	Red	Wh/Rod	Wh/Blu/Rod
L2	Yellow	Yellow	Yellow	Yellow	Wh/Yel	Yellow	Wh/Yel	Wh/Blu/Yel
L3	Blue	Blue	Blue	Blue	Wh/Blu	Blue	Wh/Blu	Wh/Blu/Blu
L4	Brown	Brown	Brown	Brown	Wh/Brn	Brown	Wh/Brn	Wh/Blu/Brn
L5	Orange	Orange	Orange	Orange	Wh/Orn	Orange	Wh/Orn	Wh/Blu/Orn
L6	Gray	Gray	Gray	Gray	Wh/Gray	Gray	Wh/Gray	Wh/Blu/Gray

Notes:

- Multi-station units included in shaded areas of chart can be supplied in UL-recognized configurations.
- Wire size is #18 AWG for units of UL-recognized configurations and #22 AWG (Teflon) for non-UL-recognized configurations.
- Units with 50 or 100 VA switches are not UL-recognized.

Electrical Specifications

Switch (N.O. or N.C.):

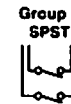
SPST: 20 VA or 100 VA

SPDT: 20 VA

Lead Wires: #22 AWG, 24" L., Polymeric

Typical Wiring Diagrams

For clarity, only two actuation levels are shown in each group diagram.



Switch Ratings - Maximum Resistive Load

VA	Volts	Amps AC	Amps DC
10 General Use	0-50	.2	.13
	120	.08	N.A.
	100	N.A.	.1
20 Pilot Duty	1-30	.4	.3
	120	.17	.13
	240	.08	.06
50 General Use	0-50	0.5	0.5
	120	.4	.4
	240	.2	.2
100*	120	.8**	N.A.
	240	.4	N.A.

* Level switch units with 50 VA and 100 VA switches are not UL recognized or CSA approved.

** Limited to 50,000 operations

Switch actuation levels are determined following the guidelines below:

All units 72" or less length overall with stainless steel or Buna N floats. Also Type 5 units over 72" length overall with Buna N floats:

A = 1-1/2" minimum distance to highest level (2", Type 5 only)

B = 2" minimum distance from end of unit to lowest level

C = 3" minimum distance between levels

D = 1/4" minimum distance between actuation levels (Note: One float for two levels can be used only when low level is N.C. dry and high level is N.O. dry.)

Types 1, 3, 4 and 5 units with stainless steel float P/N 15666:

A = 1-5/8" minimum distance to highest level (2", Type 5 only)

B = 2-1/2" minimum distance from end of unit to lowest level

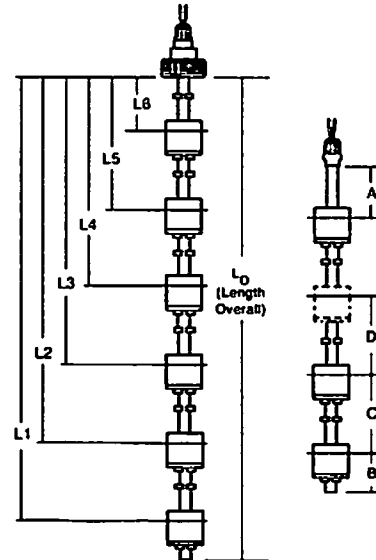
C = 4" minimum distance between levels

D = 1/4" minimum distance between actuation levels (Note: One float for two levels can be used only when low level is N.C. dry and high level is N.O. dry.)

Notes:

- A, B, and C dimensions are based on liquid specific gravity of 1.0.
- One float for two levels can be used only when 20VA switch is used.
- Actuation levels are calibrated on descending fluid level, with water as the calibrating fluid, unless otherwise specified.
- Tolerance on actuation levels is $\pm 1/8"$.

Actuation Level Dimensions



*Actuation level distances and L_0 (overall unit length) are measured from inner surfaces of mounting plug or flange.

** Length Overall $L_0 = L_1 + \text{Dimension B}$. See mounting types for maximum length values.