

Small Size – Engineered Plastics

LS-300 Engineered Plastics Series Brings Multi-Point Switching to Shallow Tanks

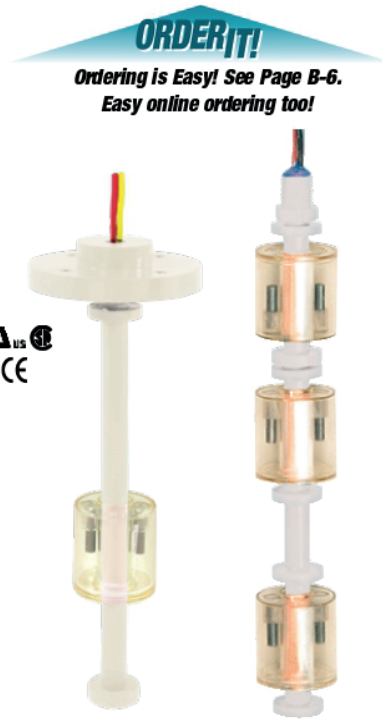
Your most complete line of small, polysulfone liquid level switches...all from Gems Sensors.

- ▶ All-Plastic Wetted Parts
- ▶ 1 to 4 Actuation Levels
- ▶ Lengths to 20 inches (50cm)
- ▶ U.L. Recognized; CSA Listed Versions Available

Designed for the high quantity needs of the OEM, LS-300 Series Switches are the ideal level sensor for shallow tanks and reservoirs. Compact and versatile, these low-cost, plastic level switches offer a broad choice of mountings and float materials. The following pages illustrate the various design parameters available to configure custom LS-300 Series Switches.

1. Mounting Types

Each mounting type can be configured with stem lengths (L_0) and float materials indicated in this bulletin.



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LEVEL SWITCHES – MULTI POINT



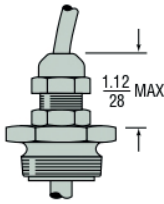
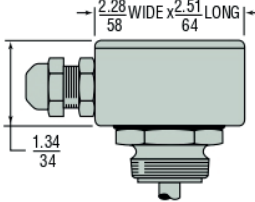
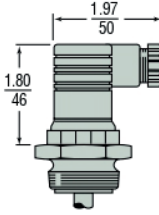
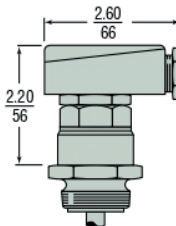
NPT Threads		Straight Threads		
Type 21 1/8" NPT 	Type 22 1" NPT 	Type 31 3/8" - 24 	Type 32 1-5/16" - 12 	Type 33 5/8" - 11
Metric Threads		Compression Types		Type 11 No Mounting
Type 41 G 1/4" (1/4" - 19 BSP) 	Type 42 G 1" (1" - 11 BSP) 	Type 51 M12 x 1.5 Straight Thread 	Type 71 5/8" - 11 	
Flange Mountings ²				
Type 61 2" O.D. Flange 		Type 63 Pop Flange 		

Stem, Mounting and Collar Material	Polysulfone, Noryl®
Max Length (L_0)	20 inches (50 cm) Tolerance of $L_0 = \pm 1/16"$ (2 mm)
Mounting Position	Vertical $\pm 30^\circ$ Inclination

Notes:
1. Type 71 mounting to be used with 3/4" diameter float only.
2. Not recommended for pressure applications.

Dimensions expressed as: $\frac{\text{inches}}{\text{millimeters}}$

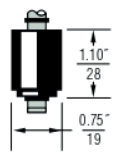
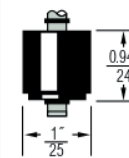
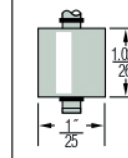
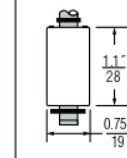
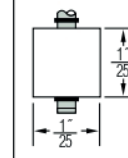
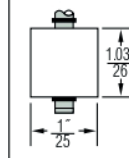
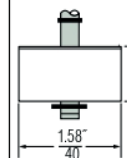
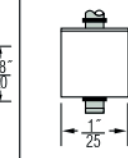
2. Electrical Connections

	Type 1 Leadwire	Type 2 Cable	Type 3 Liquid-Tight Cable	Type 4 Junction Box Assembly	Type 5 DIN43650 Plug	Type 6 DIN43651 Plug
						
Compatible Mounting Type(s)	All			42	42	42
Protection Rating	IP64		IP68	IP65		
Extended Leads	#22 AWG PVC Wire, 24" (610mm) Min.	#22 AWG PVC Jacketed Cable, 24" (610mm) Min.		Terminal Box (7 Terminals)	3 Poles	6 Poles
Max. Number of Levels						
Group I			4		2	4
Group II			2		1	2

* Not CSA Approved
 ** Not UL or CSA Listed

3. Float Types

A single float type is selected for use at all actuation points.

Float Material	Buna N		Polysulfone	Polypropylene				PVDF
	3/4"	1"		Solid Foamed		Hollow – 20% Glass Filled		
Compatible Mounting Types	11, 21, 22, 31, 32, 33, 41, 42, 51, 61, 63, 71	11, 21, 22, 31, 32, 33, 41, 42, 51, 61, 63	11, 21, 22, 31, 32, 33, 41, 42, 51, 61, 63	11, 21, 22, 31, 32, 33, 41, 42, 51, 61, 63, 71	11, 21, 22, 31, 32, 33, 41, 42, 51, 61, 63	11, 21, 22, 31, 32, 33, 41, 42, 51, 61, 63	11, 21, 31, 33, 41, 51	11, 21, 22, 31, 32, 33, 41, 42, 51, 61, 63
Float Dimensions								
Part Number	187553	39049	39005	197732	119455	145730	239292	174515
Float Material Suitable for...	Oil, Fuels		Water-based Liquids	Broad Chemical Use		Low Specific Gravity Liquids		Highest Temperature
Operating Temperature ¹	Water: to 180°F (80°C) Oil: to 221°F (105°C)		-40°F to +221°F (-40°C to +105°C)	-40°F to +212°F (-40°C to +100°C)		-40°F to +221°F (-40°C to +105°C)		-40°F to +250°F (-40°C to +121°C)
Pressure, psi (bar) Max. ²	300 (21)	250 (17)	50 (3.5)	100 (6.9)	150 (10)	50 (3.5)	100 (7)	50 (3.5)
Min. Media Specific Gravity	0.70	0.50	0.75	0.95	0.90	0.60	0.37	0.86

Notes:

- Operating temperature range based on float ratings.
- When used with mounting Type 21, 32 or 22 only; Mounting Type 61, and 63 are not recommended for pressure applications. Pressures are derated with increasing temperature above 70°F

Dimensions expressed as: $\frac{\text{inches}}{\text{millimeters}}$

4. Electrical Specifications

Typically, one float is required for each point at which you need a switch action to occur. The number of actuation levels available depends on the Group Type Wiring selected; see below.

Group I Wiring: 1 to 4 Actuation Levels.

Group II Wiring: 1 or 2 Actuation Levels.

Switch (SPST, N.O. or N.C.): 10/20/50/100 VA.

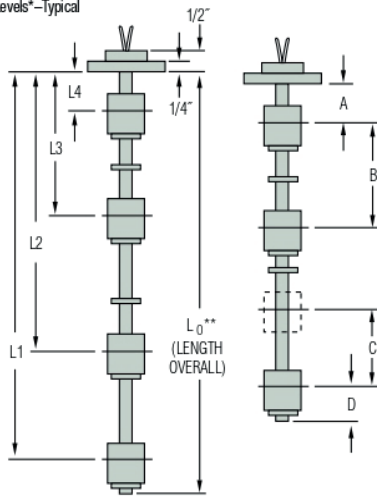
Approvals: LS-300 Series switches are U.L. Recognized – File No. E45168; CSA Listed – 30200.

Notes:

- Units with 50 and 100 VA switches are not U.L. Recognized or CSA Listed.
- Other wiring options available. Consult factory.
- Consult Factory for load information.

6. Actuation Level Dimensions

Actuation Levels* – Typical



* Actuation level distances and L_0 (overall unit length) are measured from inner surfaces of mounting plug or flange. See mounting types on Page B-3 for L_0 reference point.

** Length Overall (L_0) = L_1 + Dimension D. See Mounting Types for Maximum Length values.

5. Wiring Group

Electrical Connection	Group 1	Group 2
Lead Wire (*)		
Cable (*)		

*Pin correlation of plug connectors shown in parenthesis.

Switch actuation levels are determined following the guidelines below.

A = Minimum distance to highest actuation level.

B = Minimum distance between actuation levels.

C = Minimum distance between two actuation levels with one float (Note: One float for two levels can be used only when low level is N.C. dry and high level is N.O. dry).

D = Minimum distance from end of unit to lowest level.

Float Type	Dimensions			
	A	B	C	D
Buna N – 0.75" (P/N 187553)	11/16" (17 mm)	1-7/16" (11.1 mm)	1/8" (3 mm) Minimum	7/8" (22 mm)
Buna N – 1" (P/N 39049)	.69" (18 mm)			.81" (21 mm)
Polysulfone (P/N 39005)	.56" (14 mm)			0.95" (24 mm)
Solid P.P. – 0.75" (P/N 197732)	0.5" (13 mm)	1.5" (38 mm)		1.19" (30 mm)
Solid P.P. – 0.97" (P/N 119455)	0.43" (11 mm)			1.13" (29 mm)
Hollow P.P. – 1" (P/N 145730)	0.62" (16 mm)			0.88" (22 mm)
Hollow P.P. – 1.58" (P/N 239292)	0.63" (16 mm)	1.70" (43 mm)		0.98" (25 mm)
PVDF (P/N 174515)	0.63" (16 mm)	1.5" (38 mm)	1.13" (29 mm)	

Notes:

- Actuation levels are calibrated on ascending fluid level with water, specific gravity 1.0, as the calibrating fluid, unless otherwise specified.
- Tolerance on actuation levels is $\pm 1/8"$ (3 mm).