

Small Size – Engineered Plastics

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

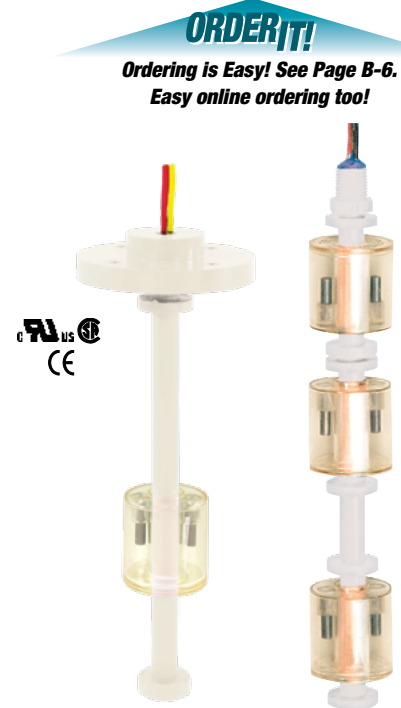
Your most complete line of small, polysulfone liquid level switches...all from Gems Sensors.

- ▶ 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.



LEVEL SWITCHES – MULTI POINT



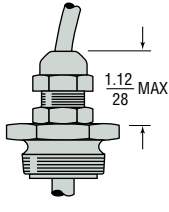
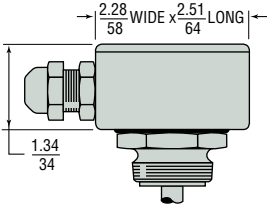
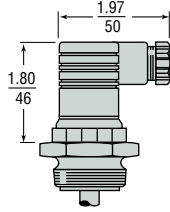
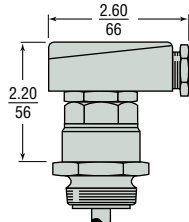
NPT Threads		Straight Threads		
Type 21 1/8" NPT	Type 22 1" NPT	Type 31 3/8" - 24	Type 32 1-5/16" - 12	Type 33 5/8" - 11
Metric Threads		Compression Types		
Type 41 G 1/4" (1/4" - 19 BSP)	Type 42 G 1" (1" - 11 BSP)	Type 51 M12 x 1.5 Straight Thread	Type 71' 5/8" - 11	Type 11 No Mounting
Flange Mountings 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: $\frac{\text{inches}}{\text{millimeters}}$

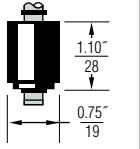
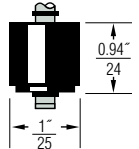
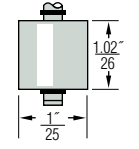
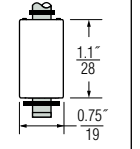
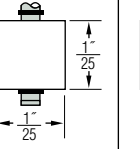
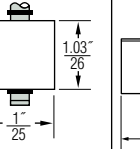
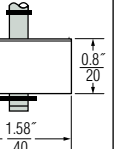
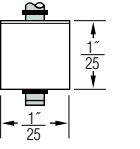
2. Electrical Connections

	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 Temperature¹	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:
 1. Operating temperature range based on float ratings.
 2. 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:

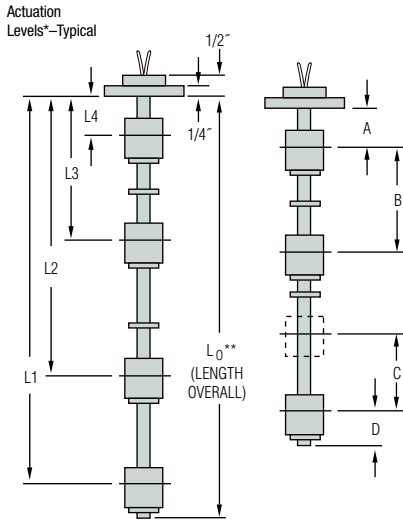
1. Units with 50 and 100 VA switches are not U.L. Recognized or CSA Listed.
2. Other wiring options available. Consult factory.
3. Consult Factory for load information.

5. Wiring Group

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

*Pin correlation of plug connectors shown in parenthesis.

6. Actuation Level Dimensions



* Actuation level distances and L₀ (overall unit length) are measured from inner surfaces of mounting plug or flange. See mounting types on Page B-3 for L₀ reference point.

** Length Overall (L₀) = L₁ + Dimension D. See Mounting Types for Maximum Length values.

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:

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

 <p>Photocopy This Form Use one form for each product type you are selecting. This form may also be completed online at gemssensors.com for RFQ.</p>	<p>This is a Request for a Quote Order P.O. _____ Name _____</p> <p>Quantity Needed _____ Company _____</p> <p>Date Required ____/____/____ Street _____</p> <p>Shipping Method: _____ City _____ State _____ Zip _____</p> <p>Partials Accepted: Yes _____ Phone (_____) _____</p> <p style="padding-left: 100px;">No _____ Fax (_____) _____</p>
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LS-300 Engineered Plastics Custom Length, Float Type Level Switch Check List

Operational Parameters

This information is essential to the accurate and proper operation of your GEMS configurable sensor. Please complete fully and accurately before ordering.

- | | |
|---|---|
| <p>1. Liquid Media: _____</p> <p>2. Pressure: Minimum _____ <input type="checkbox"/> psig <input type="checkbox"/> bar Maximum _____</p> <p>3. Temperature: Minimum _____ <input type="checkbox"/> °F <input type="checkbox"/> °C Maximum _____ <input type="checkbox"/> °F <input type="checkbox"/> °C</p> <p>4. Specific Gravity: Minimum _____ Maximum _____</p> | <p>5. Viscosity: _____ SSU</p> <p>6. Tank Material: _____</p> <p>Tank Depth: _____</p> <p>7. Unit is Mounted In: <input type="checkbox"/> T – Top Mounted <input type="checkbox"/> B – Bottom Mounted</p> |
|---|---|

Product Parameters

1. Mounting Type:

- | | |
|--|---|
| <input type="checkbox"/> 11 – No Mounting | <input type="checkbox"/> 21 – 1/8" NPT |
| <input type="checkbox"/> 22 – 1" NPT | <input type="checkbox"/> 31 – 3/8"-24 Straight Thread |
| <input type="checkbox"/> 32 – 1-5/16"-12 | <input type="checkbox"/> 41 – G1/4" (1/4"-19BSP) |
| <input type="checkbox"/> 42 – G1" (1"-11BSP) | <input type="checkbox"/> 51 – M12 x 1.5 Straight Thread |
| <input type="checkbox"/> 61 – 2" O.D. Flange | <input type="checkbox"/> 33 – 5/8"-11 |
| <input type="checkbox"/> 63 – Pop Flange | <input type="checkbox"/> 71 – 5/8"-11 with 3/4" floats only |

2. Electrical Connections:

✓	Type	Description	Compatible Mountings
	1	Lead Wires, 24" to 26" (610mm, Min.)	All
	2	Cable, 24" to 26" (610mm, Min.)	All
	3	Liquid-Tight Cable Fitting	42
	4	Junction Box Assembly	42
	5	DIN43650 Plug Connector, 3 Poles	42
	6	DIN43651 Plug Connector, 6 Poles	42

3. Float Type:

- Buna N – P/N 187553
- Buna-N – P/N 39049
- Polysulfone – P/N 39005
- Solid Foamed Polypropylene – P/N 197732
- Solid Foamed Polypropylene – P/N 119455
- Hollow Polypropylene – P/N 145730
- Hollow Polypropylene – P/N 239292
- PVDF – P/N 174515

4. Electrical Rating:

- | | |
|---|--|
| <input type="checkbox"/> 010 – SPST, 10VA | <input type="checkbox"/> 020 – SPST, 20VA |
| <input type="checkbox"/> 050 – SPST, 50VA | <input type="checkbox"/> 100 – SPST, 100VA |

5. Wiring Group:

- Group 1 – Common Return
- Group 2 – Independent Return

6. Switch Actuation Level:

Actuation Level	Distance to Actuation Level* <input type="checkbox"/> Inches <input type="checkbox"/> Millimeters	SPST Switch Operation** (Check Type)	
		N.O.	N.C.
L4			
L3			
L2			
L1***			

* Measured from inner surface of mounting plug or flange.

See mounting types on page B-3.

** Switch position is "normal" with unit dry (tank empty).

*** L1 is the distance to the lowest actuation level with mounting "up," and is the distance to the highest actuation level with mounting "down."

B. Length Overall _____ Inches Millimeters

Please contact GEMS Sensors Inc. for any configuration or special requirements not covered on this form. **800-378-1600**

Quote \$ _____

Date Quoted ____/____/____

