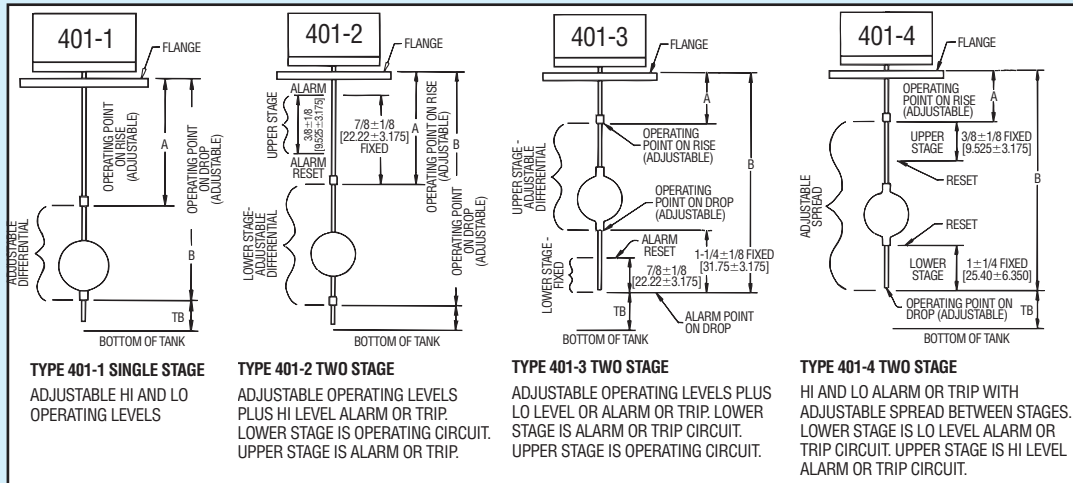




Series 401

# Top Mount — Float Type

Single or Two Stage for Pump or Alarm, Depth to 12 ft., Specific Gravity to 0.50, Hermetically Sealed Switches



## DIMENSIONS - TYPE 401 - 1, 2, 3, 4 - CHART A

APPROXIMATE MAXIMUM & MINIMUM OPERATING DEPTHS IN INCHES BELOW TOP OF FLANGE FOR STANDARD GUIDE ROD LENGTHS AT VARIOUS SPECIFIC GRAVITIES. FIGURES MAY VARY ± 2" (50 mm) DEPENDING ON FLOAT SIZE.

UPPER FIGURE - INCHES  
LOWER FIGURE - METRIC

FLOATS C = COPPER SS = STAINLESS STEEL	MINIMUM		MAXIMUM FOR "B" — DISTANCE BELOW TOP OF FLANGE FOR OPERATION											
	"A"	"B"	SP. GR. 1.0			SP. GR. 0.72			SP. GR. 0.62			SP. GR. 0.5		
			GUIDE RODS			GUIDE RODS			GUIDE RODS			GUIDE RODS		
			4'	8'	12'	4'	8'	12'	4'	8'	12'	4'	8'	12'
			1.22 M	2.44 M	3.66 M	1.22 M	2.44 M	3.66 M	1.22 M	2.44 M	3.66 M	1.22 M	2.44 M	3.66 M
			SLIGHTLY LESS FOR 0.72, 0.62, 0.5											
3 1/2" x 6" SS	13	15	46	93	141	*45	*92	*126	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.
	33cm	38 cm	1.17 M	2.36 M	3.58 M	1.14 M	2.33 M	3.2 M	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.
4 1/2" C	13	15	46	93	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.
	33 cm	38 cm	1.17 M	2.36 M	3.58 M	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.
4 1/2" SS	13	15	46	93	141	45	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.
	33 cm	38 cm	1.17 M	2.36 M	3.58 M	1.14 M	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.
7" SS	13	15	46	93	141	45	92	140	44	92	140	44	92	140
	33 cm	38 cm	1.17 M	2.36 M	3.58 M	1.14 M	2.33 M	3.56 M	1.18 M	2.33 M	3.56 M	1.18 M	2.33 M	3.56 M

\*Available for Type 401-1 and 3 only.

DIMENSIONS TB & B (see diagrams). Minimum distance below flange required for clearance for following guide rod lengths: 49 1/2" for 4 ft. rod; 97 1/2" for 8 ft rod; 145 1/2" for 12 ft rod. All dimensions are approximate and will vary slightly depending on specific gravity, float material and size. Critical dimensions must be verified with the factory before placing order.

These heavy duty top-mounted liquid level controls operate in pressurized or non-pressurized tanks and sumps with pressures to 600 psi and temperatures to 500°F. They can be ordered to operate at depths to 12 feet with a 12 foot guide rod. Adjustable in single stage and two stage operation to provide action such as operating a pump; pump and high alarm or shutdown; pump and low alarm, or high and low alarm; or high, high alarm; or low, low alarm. Alarm functions can also be used as shutdowns. Series 401 is available in mercury or snap action contact switches. The charts on these pages indicate the range of floats, flange sizes, operating depths, guide rods and electrical circuits offered. Specific gravity applications from 0.5 to 1.0.

### APPLICATIONS

Oil refineries, chemical plants, power generating stations, pumping stations, sanitary/waste water facilities, tank and vessels.

### SPECIFICATIONS

**Minimum Specific Gravity:** See chart A.

**Temperature Rating:** -20°F (-29°C) to 500°F (260°C).

**Switch Type:** Snap action or mercury.

**Electrical Rating:** See charts D and E.

**Wiring Connections:** G, WT or E enclosure, terminal block. EV enclosure, 18" (460 mm) leads.

**Process Connection:** Top mount flange.

**Enclosures:** G, painted steel and aluminum; WT, painted steel, aluminum and neoprene; E, aluminum; EV, aluminum and neoprene.

**Wetted Parts:** Depends on configuration. Check charts A, B, and C.

**Weights:** Electrical head and float assembly only: G, WT 10 lb (4.5 kg); E, EV 14 lb (6.3 kg). Flange only: 4", 17 lb (7.7 kg); 5", 20 lb (9 kg); 6", 27 lb (12.3 kg); 8", 47 lb (21.3 kg). Guide rods assembly: 4 ft (1.2 m), 14 lb (6.4 kg); 8 ft (2.4 m), 28 lb (12.7 kg); 12 ft (3.6 m), 42 lb (19 kg).

### Suggested Specifications

Liquid level control shall be top flange mounted, float operated, with (Brass)(Stainless Steel) guide rod assembly for operation to (4)(8)(12) foot depth. Float and flange shall be sized for intended specific gravity. Operation shall be 401-1 (pump), 401-2 (pump and high alarm), 401-3 (pump and low alarm), 401-4 (high and low alarm), Circuit shall be (SPST) (SPDT) (DPDT) hermetically sealed snap action (mercury) switch. Switch mechanism shall be gravity return. Enclosure shall be general purpose (weatherproof) (explosion-proof) (explosion-proof - vapor proof).

**MODEL CHART – SERIES 401**

<b>EXAMPLE</b>	401	1	WT	7810	XX	A	1.0	48	1	401-1-WT-7810-A-1.0-48-1 Single stage with adjustable deadband. Normally used for pump operation.	UL	CSA
<b>CONSTRUCTION</b>		2								Two stage. Lower stage has adjustable deadband. Upper stage has fixed deadband. Normally used for pump operation and high alarm or shutdown.	UL	CSA
		3								Two stage. Upper stage has adjustable deadband. Lower stage has fixed deadband. Normally used for pump operation and low alarm or shutdown.	UL	CSA
		4								Two stage. Each stage has fixed deadband with adjustable deadband between stages. Normally used for high and low alarm or shutdown.	UL	CSA
<b>ENCLOSURES</b>			G WT E							General purpose NEMA-1 enclosure. Water tight enclosure suitable for NEMA-1, 2, 3, 4, 4X. Explosion proof enclosure, NEMA-7, 9. Class I Groups B, C, D. Class II Groups E, F, G. Division I and II. (CSA approved Groups C, D, E, F, G only).	UL	CSA
			EV							Explosion proof – vapor proof enclosure. NEMA-7, 9. Class I Groups B, C, D. Class II Groups E, F, G. Division I and II.	UL	CSA
<b>CIRCUITS</b>				48XX						Single stage. Mercury switch. See Chart D.		
				48XX	XX					Two stage. Mercury switch. See Chart D.		
				78XX						Single stage. Snap switch. See Chart D.		
				78XX	XX					Two stage. Snap switch. See Chart E.		
				78XXHM						Hermetically sealed snap switch. See Chart E.		
				98XX						Single stage. High capacity DC snap switch. Use heat fins (HF) if process temperature exceeds 350°F (177°C). Do not exceed 450°F (232°C). See Chart E.		
					XX					Two stage. High capacity DC snap switch. Use heat fins (HF) if process temperature exceeds 350°F (177°C). Do not exceed 450°F (232°C). See Chart E.		
						A				Float, float rod and stops. See Chart B.		
							1.0			Specific gravity of process fluid. See Chart A on previous page for operating limits.		
								48		Operating point. See Chart A for operating limits.		
									1	Flange size, material, rating and guide rod assembly. See Chart C		

**FLOAT, FLOAT ROD AND STOPS – CHART B**

CODE	SIZE	MATERIAL	PRESS/TEMP MAX.	ROD	STOPS
<b>A</b>	3 1/2" × 6" (89 × 152.4 mm)	304SS Float	300 PSI (21 BAR) 500°F (260°C)	303SS Rod	Brass Stops
<b>B</b>	3 1/2" × 6" (89 × 152.4 mm)	304SS Float	300 PSI (21 BAR) 500°F (260°C)	303SS Rod	316SS Stops
<b>C</b>	4 1/2" (114 mm)	Copper Float	150 PSI (10 BAR) 300°F (149°C)	303SS Rod	Brass Stops
<b>D</b>	4 1/2" (114 mm)	316SS Float	300 PSI (21 BAR) 500°F (260°C)	303SS Rod	316SS Stops
<b>E</b>	7" (178 mm)	304SS Float	300 PSI (21 BAR) 500°F (260°C)	303SS Rod	316SS Stops

**FLANGE AND GUIDE ROD ASSEMBLY FOR: 3 1/2" × 6" (89 × 152.4 mm) FLOAT – CHART C**

CODE	FLANGE SIZE	GUIDE ROD		CODE	FLANGE SIZE	GUIDE ROD	
		LENGTH	MATERIAL			LENGTH	MATERIAL
1	5" 125# CI	4' (1.2 M)	Brass	13	6" 125# CI	4' (1.2 M)	Brass
2	5" 125# CI	8' (2.4 M)	Brass	14	6" 125# CI	8' (2.4 M)	Brass
3	5" 125# CI	12' (3.6 M)	Brass	15	6" 125# CI	12' (3.6 M)	Brass
4	5" 125# CI	4' (1.2 M)	303SS	16	6" 125# CI	4' (1.2 M)	303SS
5	5" 125# CI	8' (2.4 M)	303SS	17	6" 125# CI	8' (2.4 M)	303SS
6	5" 125# CI	12' (3.6 M)	303SS	18	6" 125# CI	12' (3.6 M)	303SS
7	5" 150# CS	4' (1.2 M)	Brass	19	6" 150# CS	4' (1.2 M)	Brass
8	5" 150# CS	8' (2.4 M)	Brass	20	6" 150# CS	8' (2.4 M)	Brass
9	5" 150# CS	12' (3.6 M)	Brass	21	6" 150# CS	12' (3.6 M)	Brass
10	5" 150# CS	4' (1.2 M)	303SS	22	6" 150# CS	4' (1.2 M)	303SS
11	5" 150# CS	8' (2.4 M)	303SS	23	6" 150# CS	8' (2.4 M)	303SS
12	5" 150# CS	12' (3.6 M)	303SS	24	6" 150# CS	12' (3.6 M)	303SS

**FLANGE AND GUIDE ROD ASSEMBLY FOR: 4 1/2" (114 mm) FLOAT – CHART C**

CODE	FLANGE SIZE	GUIDE ROD	
		LENGTH	MATERIAL
25	6" 125# CI	4' (1.2 M)	Brass
26	6" 125# CI	8' (2.4 M)	Brass
27	6" 125# CI	12' (3.6 M)	Brass
28	6" 125# CI	4' (1.2 M)	303SS
29	6" 125# CI	8' (2.4 M)	303SS
30	6" 125# CI	12' (3.6 M)	303SS
31	6" 150# CS	4' (1.2 M)	Brass
32	6" 150# CS	8' (2.4 M)	Brass
33	6" 150# CS	12' (3.6 M)	Brass
34	6" 150# CS	4' (1.2 M)	303SS
35	6" 150# CS	8' (2.4 M)	303SS
36	6" 150# CS	12' (3.6 M)	303SS

**FLANGE AND GUIDE ROD ASSEMBLY FOR: 7" (178 mm) FLOAT – CHART C**

CODE	FLANGE SIZE	GUIDE ROD	
		LENGTH	MATERIAL
37	8" 125# CI	4' (1.2 M)	Brass
38	8" 125# CI	8' (2.4 M)	Brass
39	8" 125# CI	12' (3.6 M)	Brass
40	8" 125# CI	4' (1.2 M)	303SS
41	8" 125# CI	8' (2.4 M)	303SS
42	8" 125# CI	12' (3.6 M)	303SS
43	8" 150# CS	4' (1.2 M)	Brass
44	8" 150# CS	8' (2.4 M)	Brass
45	8" 150# CS	12' (3.6 M)	Brass
46	8" 150# CS	4' (1.2 M)	303SS
47	8" 150# CS	8' (2.4 M)	303SS
48	8" 150# CS	12' (3.6 M)	303SS

**ELECTRICAL CIRCUITS AND RATINGS**

SWITCH TYPE	SWITCH ACTION	ELECTRICAL RATINGS IN AMPS					ORDERING CODE			UL	CSA	
		120V	240V	440V	30V	DC		SINGLE STAGE	TWO STAGE			
						125V	250V		LOWER			UPPER
<b>CHART D</b>	<b>SP-ST</b> Open on level FALL	10	5	3†		10	5	-4820	-4820	-21		
	<b>SP-ST</b> Open on level RISE	10	5	3†		10	5	-4821	-4821	-20		
	<b>SP-DT</b> One Switch	4	2	1†		4	2	-4810	-4810	-10		
	<b>SP-DT</b> Two switches E.I.*	10	5	3†		10	5	-4815	-4815	-15		
	<b>DP-ST</b> Two switches E.I.* Open on level FALL	10	5	3†		10	5	-4814	-4814	-13		
	<b>DP-ST</b> Two switches E.I.* Open on level RISE	10	5	3†		10	5	-4813	-4813	-14		
	<b>DP-DT</b> Two SP-DT switches	4	2	1†		4	2	-4806	-4806	-06		
<b>CHART E</b>	<b>SP-DT</b> One switch	12	5	3†		0.5**	0.25**	-7810	-7810	-10		
	<b>DP-DT</b> Two SP-DT switches	12	5	3†		0.5**	0.25**	-7806	-7806	-06		
	<b>SP-DT</b> One hermetically sealed switch	5	5		5**			-7810HM	-7810HM	-10HM		
	<b>DP-DT</b> Two hermetically sealed SP-DT switches	5	5		5**			-7806HM	-7806HM	-06HM		
	<b>DP-DT</b> Two SP-DT switches	10	3			10‡	3‡	-9806	-9806	-06		
	<b>SP-DT</b> One switch	10	3			10‡	3‡	-9810	-9810	-10		

\*Electrically Independent †Available on special order. Change 1st digit in Ordering Code from 4 to 5 or 7 to 8  
‡10 Amp inductive (Polarized) at 125 VDC i.e. -4820 becomes -5820, -7810 becomes -8810, etc.  
\*\*Resistive