Series 391

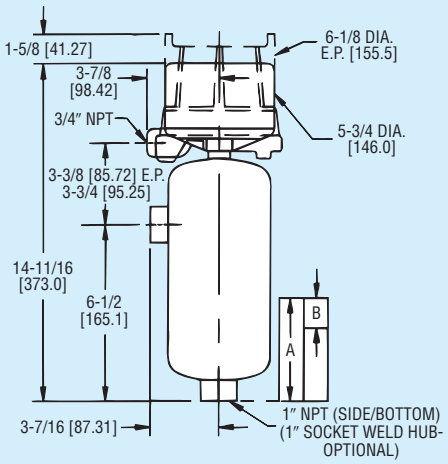
Welded Chamber

Single Stage, Low Cost, Pressure to 775 psi (53 bar), Hermetically Sealed Switches, Temperature to 600°F (315°C), Optional Explosion-Proof

Series 393 has one vertical and one horizontal flanged connection (1″ RF forged steel – ANSI specifications). Flange centerline 9-1/4″ (235 mm). Other centerlines available.

Series 391 has one vertical and one horizontal 1″ NPT pipe connection. 1″ socket weld optional.

"A" is the level at which stage operates on level rise.
"B" is the operating differential drop in level to restore switch to original position.



Series 394 has one vertical and one horizontal flanged connection (1″ RF forged steel – ANSI specifications). Flange centerline 10″ (254 mm). Other centerlines available.

Switch Level Change
Single Stage-Not Adjustable

CODE	SP GR	A	B
C1-70	1.0	4″ (101.6 mm)	1″ (25.4 mm)
	0.70	4 11/16″ (119 mm)	1 5/16″ (33.34 mm)

Switch Level Change
Single Stage-Not Adjustable

CODE	SP GR	A	B
C1-80	1.0	4 3/8″ (111 mm)	1″ (25.4 mm)
	0.80	4 11/16″ (119 mm)	1 3/16″ (112.3 mm)

Switch Level Change
Single Stage-Not Adjustable

CODE	SP GR	A	B
C1-95	1.0	4 3/4″ (120.7 mm)	7/8″ (22 mm)
	0.95	5″ (127 mm)	1″ (25.4 mm)

Heavy duty, low cost. The perfect description for the 391 control. This series features three individual controls in high quality welded steel chambers to handle a large variety of liquids.

C1-70 type for 0.70 minimum specific gravity liquids to 500 psig (34 bar).
C1-80 type for 0.80 minimum specific gravity liquids to 650 psig (45 bar).
C1-95 type for 0.95 minimum specific gravity liquids to 775 psig (53 bar).

All at a maximum temperature of 600°F (315°C) and SPST, SPDT or DPDT circuits are available in hermetically sealed snap action or mercury switches to handle most electrical applications. A full compliment of enclosures are available including general purpose, weatherproof, explosion-proof, or explosion-proof–vapor proof construction.

APPLICATIONS

Oil refineries, chemical plants, power generating stations, pumping stations, heat transfer systems, sanitary/waste water facilities, drip legs, hydraulic systems, boilers.

SPECIFICATIONS

C1-70: Minimum specific gravity 0.70. Process pressure 500 psig (34 bar) at 600°F (315°C).
C1-80: Minimum specific gravity 0.80. Process pressure 650 psig (45 bar) at 600°F (315°C).
C1-95: Minimum specific gravity 0.95. Process pressure 775 psig (53 bar) at 600°F (315°C).
Switch Type: Snap action or mercury. See charts A & B.
Electrical Rating: See charts A & B.
Wiring Connections: G, WT or E enclosure, terminal block. EV enclosure, 18″ (460 mm) leads.
Process Connections: 1″ NPT (1″ socket weld hub or flanged optional). See Model Chart.
Enclosure: G, painted steel; WT, painted steel and neoprene; E, aluminum; EV, aluminum and neoprene.
Wetted Parts: C1 construction, carbon steel 303SS, 304SS, 316SS, and 430SS.
Weight: 391, 10 lb (4.5 kg); 393, 15 lb (6.8 kg); 394, 17 lb (7.7 kg).

Suggested Specifications:

Liquid level control shall be 391 (393)(394) Series with 1″ NPT (flanged) process connections. Chamber shall be welded carbon steel suitable for operation at 500 psig (34 bar) C1-70, 650 psig (45 bar) C1-80, 775 psig (53 bar) C1-95, at 600°F (315°C). Circuit shall be (hermetically sealed) snap action (mercury) switch (SPST)(SPDT)(DPDT). Switch mechanism shall be gravity return activated by a stainless steel float. Enclosure shall be general purpose, (weatherproof)(explosion-proof)(explosion-proof–vapor proof).

MODEL CHART – SERIES 391

EXAMPLE	391	WT	7810	HF	C1	70			391-WT-7810-C1-70. Liquid level control with welded carbon steel chamber. Watertight - NEMA-4X. Enclosure, single pole double throw snap action switch rated 12 amp 120 VAC, 5 amp 240 VAC. Fixed deadband and automatic reset. Operating pressure 600 PSIG (41 BAR) at 100°F (38°C), 500 PSIG (34 BAR) at 600°F (315°C). Side/bottom process connections 1″ NPT. Minimum specific gravity 0.70.	
ENCLOSURE		G WT E EV							General purpose, NEMA-1. Weather proof, NEMA-3R, 4, 4X. Explosion proof, NEMA-7, 9. Class I Group B, C, D. Class II Group E, F, G. Explosion proof, vapor proof, NEMA-7, 9. Class I Group B, C, D. Class II Group E, F, G.	UL UL UL UL
CIRCUITS **(For Electrical Circuits see charts A & B below.)**			48XX 78XX 78XXHM 98XX 10XX						Single stage. Mercury switch. See Chart A. Single stage. Snap switch. See Chart B. Hermetically sealed snap switch. See Chart B. Single stage. High DC capacity snap switch. Use heat fins (HF) if process temperature exceeds 350°F (177°C). Do not exceed 450°F (232°C). See Chart B. Single stage. High temp. snap switch. Continuous rating shall be 800°F (425°C)391-C1-70 type rated at 350 psig (25 bar); 391-C1-80 type rated at 450 psig (32 bar); 391-C1-95 type rated at 525 psig (37 bar).	
WELDED CHAMBER CONSTRUCTION 1″ NPT PROCESS CONNECTIONS	391 391 391				C1 C1 C1	70 80 95			Carbon steel chamber. Minimum specific gravity 0.70. 1″ NPT side/bottom process connections. Pressure rating 600 psig (41 bar) at 100°F (38°C), 500 psig (34 bar) at 600°F (315°C). Carbon steel chamber. Minimum specific gravity 0.80. 1″ NPT side/bottom process connections. Pressure rating 800 psig (55 bar) at 100°F (38°C), 650 psig (45 bar) at 600°F (315°C). Carbon steel chamber. Minimum specific gravity 0.95. 1″ NPT side/bottom process connections. Pressure rating 900 psig (62 bar) at 100°F (38°C), 775 psig (53 bar) at 600°F (315°C).	UL UL UL
WELDED CHAMBER CONSTRUCTION WITH FLANGED PROCESS CONNECTIONS	393 393 393 393 393 393 393 393 394 394 394 394 394 394 394 394				C1 C1 C1 C1 C1 C1 C1 C1 C1 C1 C1 C1 C1 C1 C1 C1	170 180 195 370 380 395 680 695 170 180 195 370 380 395 680 695			1″ 150# RF flanges side/bottom process connection. Pressure rating 275 psi (19 bar) at 100°F (38°C), 150 psi (10 bar) at 600°F (315°C). Minimum specific gravity 0.70. 1″ 150# RF flanges side/bottom process connection. Pressure rating 275 psi (19 bar) at 100°F (38°C), 150 psi (10 bar) at 600°F (315°C). Minimum specific gravity 0.80. 1″ 150# RF flanges side/bottom process connection. Pressure rating 275 psi (19 bar) at 100°F (38°C), 150 psi (10 bar) at 600°F (315°C). Minimum specific gravity 0.95. 1″ 300# RF flanges side/bottom process connection. Pressure rating 600 psi (41 bar) at 100°F (38°C), 500 psi (34 bar) at 600°F (315°C). Minimum specific gravity 0.70. 1″ 300# RF flanges side/bottom process connection. Pressure rating 720 psi(50 bar) at 100°F (38°C), 555 psi (38 bar) at 600°F (315°C). Minimum specific gravity 0.80. 1″ 300# RF flanges side/bottom process connection. Pressure rating 720 PSI (50 bar) at 100°F (38°C), 555 psi (38 bar) at 600°F (315°C). Minimum specific gravity 0.95. 1″ 600# RF flanges side/bottom process connection. Pressure rating 800 psi (55 bar) at 100°F (38°C), 650 psi (45 bar) at 600°F (315°C). MInimum specific gravity 0.80. 1″ 600# RF flanges side/bottom process connection. Pressure rating 900 psi (62 bar) at 100°F (38°C), 775 psi (53 bar) at 600°F (315°C). MInimum specific gravity 0.95. 1″ 150# RF flanges side/side process connection. Pressure rating 275 psi (19 bar) at 100°F (38°C), 150 psi (10 bar) at 600°F (315°C). MInimum specific gravity 0.70. 1″ 150# RF flanges side/side process connection. Pressure rating 275 psi (19 bar) at 100°F (38°C), 150 PSI (10 bar) at 600°F (315°C). MInimum specific gravity 0.80. 1″ 150# RF flanges side/side process connection. Pressure rating 275 psi (19 bar) at 100°F (38°C), 150 psi (10 bar) at 600°F (315°C). MInimum specific gravity 0.95. 1″ 300# RF flanges side/side process connection. Pressure rating 600 psi (41 bar) at 100°F (38°C), 500 psi (34 bar) at 600°F (315°C). Minimum specific gravity 0.70. 1″ 300# RF flanges side/side process connection. Pressure rating 720 psi (50 bar) at 100°F (38°C), 555 psi (38 bar) at 600°F (315°C). Minimum specific gravity 0.80. 1″ 300# RF flanges side/side process connection. Pressure rating 720 psi (50 bar) at 100°F (38°C), 555 psi (38 bar) at 600°F (315°C). Minimum specific gravity 0.95. 1″ 600# RF flanges side/side process connection. Pressure rating 800 psi (55 bar) at 100°F (38°C), 650 psi (45 bar) at 600°F (315°C). MInimum specific gravity 0.80. 1″ 600# RF flanges side/side process connection. Pressure rating 900 psi (62 bar) at 100°F (38°C), 775 psi (53 bar) at 600°F (315°C). MInimum specific gravity 0.95.	UL UL UL UL UL UL UL UL UL UL UL UL UL UL UL UL
OPTIONS				HF			H2	12	High temperature fins should be considered if ambient temperature exceeds 500°F (260°C) for extended periods. 1″ socket weld hub instead of 1″ NPT. Breather and drain for E type enclosure. Recommended for high humidity or outdoor service.	

CHARTS A & B - ELECTRICAL CIRCUITS AND RATINGS

SWITCH TYPE	SWITCH ACTION	ELECTRICAL RATINGS IN AMPS AC 120V	AC 240V	AC 440V	DC 30V	DC 125V	DC 250V	ORDERING CODE SINGLE STAGE	TWO STAGE LOWER	TWO STAGE UPPER	
CHART A Mercury Contacts	**SP-ST** Open on level FALL	10	5	3†		10	5	-4821	-4821	-21	UL
	SP-ST Open on level RISE	10	5	3†		10	5	-4820	-4820	-20	UL
	SP-DT One Switch	4	2	1†		4	2	-4810	-4810	-10	UL
	SP-DT Two switches E.I.*	10	5	3†		10	5	-4815	-4815	-15	UL
	DP-ST Two switches E.I.* Open on level FALL	10	5	3†		10	5	-4813	-4813	-13	UL
	DP-ST Two switches E.I.* Open on level RISE	10	5	3†		10	5	-4814	-4814	-14	UL
	DP-DT Two SP-DT switches	4	2	1†		4	2	-4806	-4806	-06	UL
CHART B Snap Action Contacts	**SP-DT** One switch	12	5	3†		0.5**	0.25**	-7810	-7810	-10	UL
	DP-DT Two SP-DT switches	12	5	3†		0.5**	0.25**	-7806	-7806	-06	UL
	SP-DT One hermetically sealed switch	5	5		5**			-7810HM	-7810HM	-10HM	
	DP-DT Two hermetically sealed SP-DT switches	5	5		5**			-7806HM	-7806HM	-06HM	
	DP-DT Two SP-DT switches	10	3			10‡	3‡	-9806	-9806	-06	
	SP-DT One switch	10	3			10‡	3‡	-9810	-9810	-10	
	DP-DT Two SP-DT switches	2	2			0.4**	0.25**	-1006	-1006	-06	
	SP-DT One switch	2	2			0.4**	0.25**	-1010	-1010	-10	

*Electrically Independent
‡10 Amp inductive (Polarized) at 125 VDC

†Available on special order. Change 1st digit in Ordering Code from 4 to 5 or 7 to 8 i.e. -4820 becomes -5820, -7810 becomes -8810, etc.
**Resistive