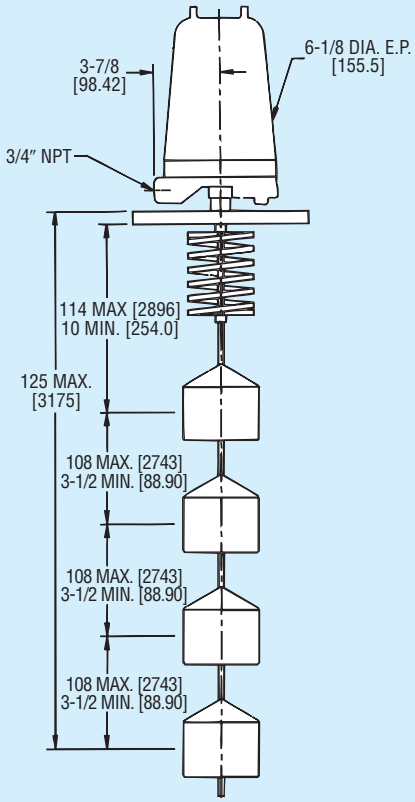
Mercoid®

Series 193

Top Mount-Displacer Type

Three Stage for Pumps or Alarms, Hermetically Sealed Switches



Type 193-1
Can operate one pump (C) to keep tank or sump empty. With high or abnormal filling which one pump (C) could not handle second pump (B) could be activated. Both pumps shut off at bottom.
Third stage (A) can be third pump or high alarm.

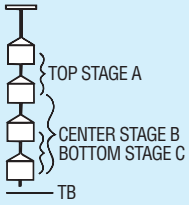


CHART 1

	MIN.		MAX.	
	INCHES	MM.	INCHES	CM.
A	3 1/2	89	108	27.4
B	7	178	111 1/2	28.3
C	3 1/2	89	108	27.4
TB	2 3/4	70	——	——

Type 193-4
Can operate one pump (A) to keep tank full. As demand rises second pump (B) can be activated. For greater demand third pump (C) will operate and shut off with second pump (B) as level rises.

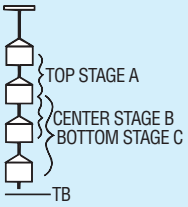


CHART 2

	MIN.		MAX.	
	INCHES	MM.	INCHES	CM.
A	3 1/2	89	108	27.4
B	3 1/2	89	108	27.4
C	7	178	111 1/2	28.3
TB	2 3/4	70	——	——

Type 193-5
For reporting high, middle and low level point. Or high and low alarm plus low shut down; or high and low alarm and high shut down.

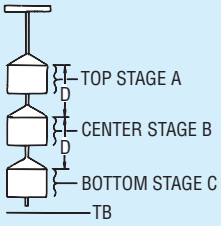


CHART 3

	MIN.		MAX.	
	INCHES	MM.	INCHES	CM.
A	1 1/4	31.8	Fixed	——
B	1 1/4	31.8	Fixed	——
C	1 1/4	31.8	Fixed	——
D	3 1/2	89	108	27.4
TB	2 3/4	70	——	——

Type 193-6
Can be used to operate a pump (B) with high (A) and low (C) alarm; or two pumps (B & C) with high alarm (A) or, two pumps (A & B) with low alarm (C).

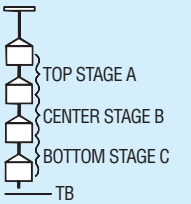


CHART 4

	MIN.		MAX.	
	INCHES	MM.	INCHES	CM.
A	3 1/2	89	108	27.4
B	3 1/2	89	108	27.4
C	3 1/2	89	108	27.4
TB	2 3/4	70	——	——

Three stage versatility for tanks or sumps, the 193 Series can be used to operate as many as 3 pumps or can provide up to 3 alarm/signal points.

Operation: Mercoid Displacer Controls use displacers that do not float on the surface of liquids, but are suspended on a coil spring. They work on the principle that submerged solids weigh less in liquids, and as the liquid level rises and their weight decreases, the tension on the spring by which they are suspended is decreased. This allows the spring to move the cable and armature upward, actuating the hermetically sealed switches. Because they work on a different principle than float type liquid level controls, displacers are not affected by turbulence, or pressure, and are excellent for applications with viscous or dirty liquids.

Standard Construction: Porcelain displacers, 10 foot 316SS cable and stops, 4″ 125# CI flange: for operation in specific gravities from 0.95 to 1.05 and a maximum temperature of 200°F (93°C). For special conditions, other choices include: 316SS displacers: longer cable: other flange sizes, materials or pressure ratings, or 3/4″ NPT top connection in lieu of flange.

Enclosure types include general purpose NEMA-1, watertight NEMA-4 - 4X, and explosion proof NEMA-7, 9 Class I Groups B, C, D: Class II Groups E, F, G. The EV enclosure is gasketed to help prevent corrosive gases in the atmosphere from damaging the switch mechanism.

APPLICATIONS

Oil refineries, chemical plants, power generating stations, pumping stations, sanitary/waste water facilities, sumps, open or covered tanks and vessels.

Dimensions are approximate and will vary depending on the specific gravity, displacer material and temperature. Critical dimensions must be verified with the factory before placing order.

SPECIFICATIONS

Temperature Rating: –20°F (–29°C) to 200°F (93°C).
Switch Type: Snap action or mercury.
Electrical Rating: See charts A and B.
Wiring Connections: WT or E enclosure, terminal block. EV enclosure, 18″ (460 mm) leads.
Process Connection: Top mount flange.
Enclosures: WT, aluminum and neoprene. E, aluminum. EV, aluminum and neoprene.
Wetted Parts: Porcelain and 316SS standard. 316SS optional.
Weight: All types with WT, E and EV enclosures and 49 125# CI flange approximately 38 lb (17.3 kg).

Suggested Specifications

Liquid level control shall be three stage top mount displacer type with porcelain (316SS) displacers, ( ) feet SS cable, and ( ) flange. Circuit shall be (hermetically sealed) snap action (mercury) (SPST) (SPDT). Enclosure shall be (watertight) (explosion-proof) (explosion-proof - vapor proof).

MODEL CHART – SERIES 193

EXAMPLE	193-6	WT	7810-10-10	P	A	1.0	2	193-6-WT-7810-10-10-P-A-1.0-2 Top mounted three stage, displacer type liquid level control. Watertight, NEMA-4 enclosure. SPDT snap action switch at 1.0 specific gravity. Maximum operating temperature 200°F (93°C). With 10 ft. SS cable, porcelain displacers, and 4˝ 125# cast iron flange
DISPLACERS				P S				Porcelain displacers. Not suitable for non-vented steam systems. 316SS displacers.
CABLE LENGTH					A B C D E			10 ft. 316SS cable and stops (approx. 3 mtrs). 15 ft. 316SS cable and stops (approx. 4.5 mtrs). 20 ft. 316SS cable and stops (approx. 6 mtrs). 25 ft. 316SS cable and stops (approx. 7.5 mtrs). 30 ft. 316SS cable and stops (approx. 9 mtrs). Longer length cable available. Consult factory.
SPECIFIC GRAVITY						1.0		Specific gravity. Operating specific gravity from 0.95 to 1.05 must be specified on order.
CONSTRUCTION	193-1							Low stage will operate one pump to keep tank or sump empty. With high or abnormal filling which one pump could not handle second pump, center stage, could be activated. Both pumps shut off at bottom. Upper stage (A) can be third pump or high alarm. See Chart 1.
	193-4							Upper stage operates one pump to keep tank full. As demand rises second pump at center stage is activated. With more demand third pump will operate. As level rises, lower and middle stage shut off. See Chart 2.
	193-5							To report high, middle and low level point. Or high and low alarm plus low shut down; or high and low alarm and high shut down. All stages have fixed deadband. See Chart 3.
	193-6							Center stage is used to operate a pump with high and low alarm. Can also be used to operate two pumps with high alarm or, two pumps with low alarm or three pumps. See Chart 4.
ENCLOSURES		WT E EV						Watertight NEMA-4, 4X. Explosion proof. Class I Groups C and D. Class II Groups E, F, G. NEMA-7, 9. Explosion proof, vapor proof. Class I Groups C and D. Class II Groups E, F, G. NEMA-7, 9.
CIRCUITS: THREE STAGE			48XX-XX-XX 78XX-XX-XX 78XXHM 98XX-XX-XX					See Chart A. See Chart B. See Chart B. See Chart B.
FLANGE							0 2 3 4 5	No flange, 3/4˝ male NPT. Mounting flange. 4″ 125# Cast Iron. Mounting flange 5″ 125# Cast Iron Mounting flange 6″ 125# Cast Iron Mounting flange 8″ 125# Cast Iron
							6 7 8 9 10	Mounting flange 3″ 150# R.F. Carbon Steel Mounting flange 4″ 150# R.F. Carbon Steel Mounting flange 5″ 150# R.F. Carbon Steel Mounting flange 6″ 150# R.F. Carbon Steel Mounting flange 8″ 150# R.F. Carbon Steel

CHARTS A & B - ELECTRICAL CIRCUITS AND RATINGS – 193 SERIES

SWITCH TYPE	SWITCH ACTION	ELECTRICAL RATINGS IN AMPS					ORDERING CODE		
		AC		DC					
		120V	240V	30V	125V	250V	LOWER STAGE	MIDDLE STAGE	UPPER STAGE
CHART A									
Mercury Contacts	**SP-DT** One Switch	4	2		4	2	-4810	-10	-10
	SP-DT Two switches E.I.*	10	5		10	5	-4815	-15	-15
CHART B	**SP-DT** One switch	12	5		0.5**	0.25**	-7810	-10	-10
	DP-DT Two SP-DT switches	12	5		0.5**	0.25**	-7806	-06	-06
Snap Action Contacts	**SP-DT** One hermetically sealed switch	5	5	5**			-7810HM	-10HM	-10HM
	DP-DT Two hermetically sealed SP-DT switches	5	5	5**			-7806HM	-06HM	-06HM
	DP-DT Two SP-DT switches	10	3		10‡	3‡	-9806	-06	-06
	SP-DT One switch	10	3		10‡	3‡	-9810	-10	-10

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