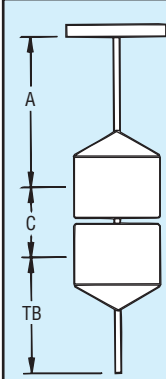




Series  
190/  
195

# Top Mount-Displacer Type

Single or Two Stage, Fixed or Adjustable Deadband,  
Hermetically Sealed Switches, For Pumps or Alarms

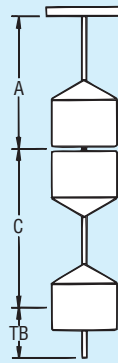


Single stage fixed differential.  
**AA190 for 3" flange.**  
**A190 for 4" flange or larger.**

**CHART 1**

SP GR *	100° F (38°C)		UPPER # = INCHES LOWER # = METRIC	
	A		C FIXED	MIN. TB
	MAX.	MIN.		
.5	121 1/2	7 1/2	1 1/2	2 3/4
.5	3.09 M	191 mm	38 mm	7 mm
1.0	123	9	3/4	2
1.0	3.12 M	229 mm	19 mm	51 mm

\* Control can be factory set for other specific gravities.



Single stage adjustable differential.  
**BB190 for 3" flange.**  
**B190 for 4" flange or larger.**

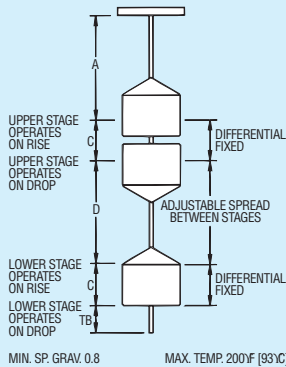
**CHART 2**

SP GR *	100° F (38°C)		UPPER # = INCHES LOWER # = METRIC		
	A		C		TB
	MAX.	MIN.	MAX.	MIN.	MIN.
.6	116 1/2	6 1/2	114	6 3/4	2 1/2
.6	2.96 M	165 mm	2.90 M	172 mm	64 mm
1.0	119	9	114 1/2	4 5/8	2
1.0	3.02 M	229 mm	2.91 M	117.5 mm	51 mm

\* Control can be factory set for other specific gravities.

**A195 - 4 Two Stage**  
**For 3" Flange.** Fixed differentials. Adjustable spread between stages. Specific gravity 0.6 to 1.2.

**195-4 Two Stage**  
**For 4" flange or larger.** Fixed Differentials. Adjustable spread between stages. Specific Gravity 0.8 to 1.2.

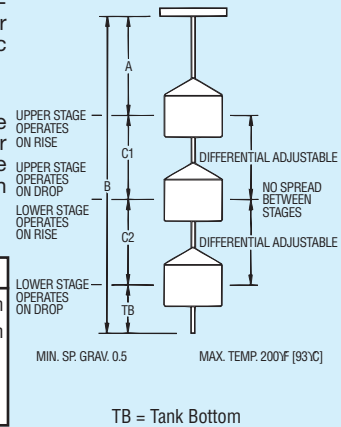


**CHART 3**

	MIN.	MAX.
A	9"	229 mm
C	3/4"	19 mm
D	3 1/2"	89 mm
TB	1 1/2"	38 mm

**A195 - 6 Two Stage**  
**For 3" flange.** Adjustable differential each stage. Lower stage operates on rise at same point upper stage operates on drop. Specific gravity 0.5 to 1.2.

**195-6 Two Stage**  
**For 4" flange or larger.** Adjustable Differential each stage. Lower stage operates on rise at same point upper stage operates on drop. Specific Gravity 0.5 to 1.2.



**CHART 4**

	MIN.	MAX.
A	9"	229 mm
B	15 1/2"	394 mm
C <sub>1</sub>	3 1/2"	89 mm
C <sub>2</sub>	3 1/2"	89 mm
TB	2"	51 mm

Level

The most versatile liquid level controls in our line, displacer controls can be used to trigger alarms, provide shutdown or operate pumps.

**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.

**Dimensions are based** on porcelain displacers with 4" minimum flange type control. All dimensions are approximate and will vary depending on specific gravity, temperature, displacer material and size. Critical dimensions must be verified with the factory before placing order.

**Standard Construction:** Porcelain displacers, 10 foot 316SS cable and stops, 4" 125# CI flange: for operation in specific gravities as low as 0.5 and a maximum temperature of 200°F (93°C). For special conditions, other choices include: 316SS displacers: longer cable: monel or hastalloy cable and stops: other flange sizes, materials or pressure ratings, or 3/4" NPT top connection in lieu of flange.

**APPLICATIONS**

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

**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:** 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, neoprene.

**Wetted Parts:** Porcelain and 316SS standard. 316SS optional.

**Weight:** All types with G or WT enclosure and 49 125# CI flange approximately 28 lb (12.7 kg). E and EV enclosure approximately 32 lb (14.5 kg).

**Suggested Specification:**

Liquid level control shall be top mounted for direct insertion into tank or sump. Operation shall be single stage with fixed (A190), adjustable (B190) deadband, or two stage for high and low alarm (195-4) or for two pumps (195-6). Circuit shall be (SPST) (SPDT) or (DPDT) (hermetically sealed) snap action (mercury) each stage. Control shall include 10 ft. SS cable porcelain (316SS) displacers and 4" flanges.

**MODEL CHART – SERIES 190**

<b>EXAMPLE</b>	A190	WT	7810	P	A	1.0	2	A190-WT-7810-P-A-1.0-2 Top mounted single stage, displacer type liquid level control. Watertight. NEMA-4 enclosure. SPDT snap action switch, fixed deadband 3/4" (19 mm) at 1.0. Specific gravity. Specific gravity from 0.5 to 1.2. Must be specified on order. Maximum operating temperature 200°F (93°C). With 10 ft. SS cable and porcelain displacers, and 4" 125# cast iron flange.		
<b>DISPLACERS</b>				P	S			Porcelain displacers. Not suitable for non-vented steam systems. 316SS displacers.		
<b>CABLE LENGTH</b>				A	B	C	D	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.		
<b>SPECIFIC GRAVITY</b>						1.0		Specific gravity. Operating specific gravity must be specified on order, from .5 to 1.2		
<b>CONSTRUCTION</b>	AA190							Single stage. Fixed deadband. Normally used for alarm. See Chart 1.	UL	CSA
	BB190							Single stage. Adjustable deadband. Normally used to operate a pump. See Chart 2.	UL	CSA
	A195-4							Two stage. Fixed deadband each stage. Adjustable spread between stages. Normally used for high and low alarm. See Chart 3.	UL	CSA
	A195-6							Two stage. Adjustable deadband each stage. No spread between stages. Normally used to operate two pumps one above the other, or, pump and high alarm; or, pump and low alarm. See Chart 4.	UL	CSA
<b>ENCLOSURES</b>		G						General purpose NEMA-1. Watertight NEMA-4, 4X. Explosion proof. Class I Groups B, C, D. Class II Groups E, F, G. NEMA-7, 9. (CSA approved Groups C, D, E, F, G only). Explosion-proof, vapor proof, Class I Groups B, C, D. Class II Groups E, F, G. NEMA-7, 9 (CSA approved Groups C, D, E, F, G only).	UL	CSA
		WT							UL	CSA
<b>CIRCUITS: SINGLE STAGE</b> A190-AA190 B190-BB190			48XX					See Chart A. See Chart B. Hermetically sealed snap switch. See Chart B. See Chart B.		
			78XX							
<b>TWO STAGE</b> 195-4, 6 A195-4, 6			48XX-XX					See Chart A. See Chart B. Hermetically sealed snap switch. See Chart B. See Chart B.		
			78XX-XX							
<b>FLANGE</b>							2	Mounting flange. 4" 125# cast iron. Other flanges available. See Chart 5. 0 No flange, 3/4" male NPT.		
							0			

**FLANGE CHART #5**

CODE NUMBER	FLANGE DESCRIPTION
1	3" 125# Cast Iron**
2	4" 125# Cast Iron
3	5" 125# Cast Iron
4	6" 125# Cast Iron
5	8" 125# Cast Iron
6	3" 150# R.F. Carbon Steel
7	4" 150# R.F. Carbon Steel
8	5" 150# R.F. Carbon Steel
9	6" 150# R.F. Carbon Steel
10	8" 150# R.F. Carbon Steel

\*\* For use with AA190, BB190, A195-4, A195-6 only. Stainless steel flanges also available.

EXAMPLE: How to order (see model chart)

A190 WT 7810 P A 1.0 2  
1 2 3 4 5 6 7

- 1 Construction
- 2 Enclosure
- 3 Circuit
- 4 Displacer Type
- 5 Cable Length
- 6 Specific Gravity
- 7 Flange Size, Material and Rating

**CHARTS A & B ELECTRICAL CIRCUITS AND RATINGS**

SWITCH TYPE	SWITCH ACTION	A190 – B190 AA190 – BB190						195 – 4, 6 A195 – 4, 6			UL	CSA
		ELECTRICAL RATINGS IN AMPS						ORDERING CODE				
		AC			DC			SINGLE STAGE	TWO STAGE			
120V	240V	440V	30V	125V	250V	LOWER	UPPER					
<b>CHART A</b>	SP-ST Open on level FALL	10	5	3‡		10	5	-4821	-4820	-21		
	SP-ST Open on level RISE	10	5	3‡		10	5	-4820	-4821	-20	UL	CSA
	SP-DT One Switch	4	2	1‡		4	2	-4810	-4810	-10	UL	CSA
	SP-DT Two switches E.I.*	10	5	3‡		10	5	-4815	-4815	-15	UL	CSA
	DP-ST Two switches E.I.* Open on level FALL	10	5	3‡		10	5	-4813	-4814	-13	UL	CSA
	DP-ST Two switches E.I.* Open on level RISE	10	5	3‡		10	5	-4814	-4813	-14	UL	CSA
<b>CHART B</b>	DP-DT Two SP-DT switches	4	2	1‡		4	2	-4806	-4806	-06	UL	CSA
	SP-DT One switch	12	5	3‡		0.5**	0.25**	-7810	-7810	-10	UL	CSA
	DP-DT Two SP-DT switches	12	5	3‡		0.5**	0.25**	-7806	-7806	-06	UL	CSA
	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			

\*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

Level