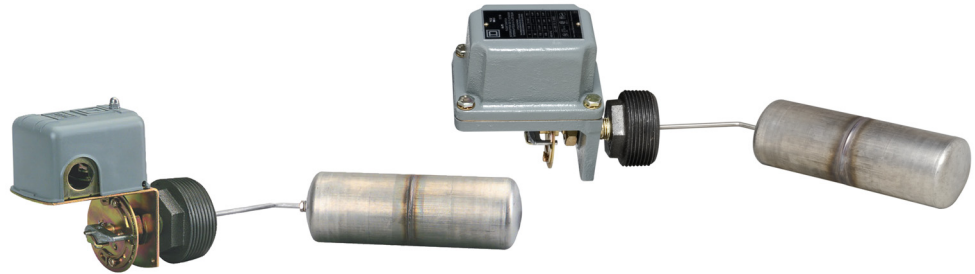


Commercial Pressure and Float Switches for Power Circuits

Selection Guide—Float Switches

Class 9037 Type H—Closed Tank with Bushing

Type of Installation	Horsepower rated
Product Features	2-pole switch Standard action—contacts close on liquid rise Reverse action—contacts open on liquid rise



Fluids Controlled	Water, hydraulic oils, corrosive fluids		
Fluid Characteristics	Fresh water, sea water, hydraulic oils, and corrosive fluids with a density ≥ 0.8		
Contact Arrangement	Standard: 2 N.O. (DPST). Form R: 2 N.C. (DPST). [1]		
Degree of Protection	NEMA Type 1	NEMA Type 4	NEMA Type 7, 9
Electrical Connection	4 screw terminals, 3 knockouts for 1/2 in. conduit entry	4 screw terminals, 2 cable entries, 3/4-14 conduit entry	
Ambient Temperature	-22 to +220 °F (-30 to +105 °C)		
Catalog Numbers	9037HG	9037HW	9037HR
Page	57		

¹ NEMA Type 1 devices can be field modified for reverse action. NEMA Type 4, 7, and 9 devices **cannot** be field modified for reverse action.

Commercial Pressure and Float Switches for Power Circuits

Float Switches—Class 9036, 9037, and 9038

Class 9037 Closed Tank

Type E



9037E

The Class 9037 Type E switches are flange mounted. Float movement is transmitted through a quad ring seal. Each switch consists of a basic switch, float rod, and float. The switch can be configured in the field for contacts that open on liquid rise or close on liquid rise. These switches are used for top mounted or side mounted, closed tank applications.

Type H

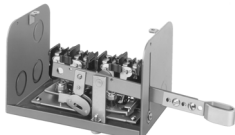


9037H

The Class 9037 Type H switches are attached to the tank by means of a 2-1/2 in. bushing. An external pointer indicates the float position within the tank when the unit is mounted. Switches come complete with stainless steel float and rod. A nitrile rubber seal, such as a Buna-N quad ring seal, is used between the float rod and the sealing connector. Normal application is at atmospheric pressure. Where higher pressures are encountered, the available Viton® seal allows the switch to withstand tank pressures up to 50 psi at ambient temperatures up to 220 °F. Occasional replacement of the quad ring seal may be necessary.

Class 9038 Mechanical Alternators

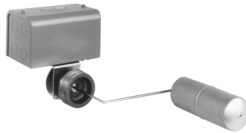
Type A (Open Tank)



9038AG1

The Class 9038 Type A Open Tank level switch is a mechanical alternator designed to provide motor alternation in the operation of two motors.

Type C (Closed Tank, Bushing Mounted)



9038CG

The Class 9038 Type C Closed Tank level switches are bushing mounted. Float movement is transmitted through a quad ring seal. Each switch consists of a basic switch, rod, and float.

Type C switches are attached to the tank by means of a 2-1/2 in. bushing. An external pointer indicates the float position within the tank when the unit is mounted. Switches come complete with bushing, stainless steel float, and rod.

Occasional replacement of the quad ring may be necessary.

Type D (Closed Tank, Flange Mounted, Top)



9038DG
9049ER5
9049EF1

Type D mechanical alternators are designed for applications where flange mounting is to be made at the top of a closed tank.

Commercial Pressure and Float Switches for Power Circuits

Float Switches—Class 9036, 9037, and 9038

The center-hole float is used in applications requiring long lengths of tubing and large liquid level changes. A compensating spring, used for longer lengths of tubing, supports the weight of the tubing and stops. When a compensating spring is used, the float must be buoyant enough to lift up the switch lever and heavy enough to trip the switch lever down. The rod has four stops. The position of the stops on the rod above and below the float determines the amount of water level change.

Temperature Ratings

Table 8: Temperature Limitations for all Float Switches

Ambient	Min.	-30 °C (-22 °F)
	Max.	105 °C (220 °F)

Electrical Ratings

Table 9: Class 9036, 9037, and 9038 Electrical Ratings

Class	Type	Single Phase AC Ratings (hp)			Polyphase AC Ratings (hp)			DC (hp)			Control Circuit Rating
		115 V	230 V	460/575 V	115 V	230 V	460/575 V	32 V	115 V	230 V	
9036	D (2 pole)	2	3	—	3	5	1	0.25	0.5	0.5	A600
	G (2 pole)	2	3	5	3	5	5	0.5	1	1	A600
	G Form H (1 N.O., 1 N.C.)	1	2	2	—	—	—	—	0.5	0.5	A300
9037	E, H (2 pole)	2	3	—	3	5	1	0.25	0.5	0.5	A600
9038	All (2 pole)	2	3	—	3	5	1	0.25	0.5	0.5	A600

The following float switches are UL Listed under file E12158, CCN NKPZ:

- Class 9036 Types DG, DW, GG, GW
- Class 9037 Types EG, EW, HG, HW
- Class 9038 Types AG, AW, CG, CW, DG, DW

The following float switches are UL Listed under file E12443, CCN NOWT:

- Class 9036 Types DR, GR
- Class 9037 Types ER, HR

Table 10: Control Duty Circuit Ratings (Form N5 or N25 only)

Contacts	AC—50 or 60 Hz						DC				AC or DC Continuous Carrying Amperes
	V	Inductive, 35% Power Factor		Resistive, 75% Power Factor		V	Inductive and Resistive		Continuous Carrying Amperes		
		Make	Break	Make and Break Amperes	Make and Break Amperes		Single Throw	Double Throw			
SPDT Form N5	120	60	7200	6	720	6	120	0.55	0.22	10	
	240	30	7200	3	720	3	250	0.27	0.11	10	
	480	15	7200	1.5	720	1.5	600	0.10	—	10	
	600	12	7200	1.2	720	1.2	—	—	—	—	
DPDT Form N25	120	60	7200	6	720	6	125	0.22	0.22	10	
	240	30	7200	3	720	3	250	0.11	0.11	10	
	480	15	7200	1.5	720	1.5	600	—	—	10	
	600	12	7200	1.2	720	1.2	—	—	—	—	

Commercial Pressure and Float Switches for Power Circuits

Float Switches—Class 9036, 9037, and 9038

Class 9037 Type H with Screw-in Bushing



9037HG35
Float on the Right

Table 19 contains ordering information for Class 9037 Type H float switches and factory installed modifications. Contact the Sensor Competency Center when using float switches in liquids with a different specific gravity than water (1.0).

When ordering factory installed modifications, add the Form number to the end of the float switch catalog number. For example, to select a 9037HG36 switch with reverse action, order 9037HG36R.

Table 19: Class 9037 Type H Float Switches

Specifications										
Application	Condensate pumps A 2.5 in. cast-iron bushing attaches the float switch to the tank									
Float movement	Transmitted through a nitrile rubber seal such as a Buna-N quad ring. Occasional replacement may be necessary.									
Tank Pressure	Up to 50 psi									
Temperature	Ambient	Up to 220 °F								
	Media	Buna-N seal: up to 215 °F. Viton® seal: media up to 250 °F.								
Contact Operation	Close on liquid rise (standard) Open on liquid rise (Form R)									
Float Travel	Determined by the float rod angle. An external pointer indicates the float position.									
Materials (Standard)	#304 SS float, #316 SS rod, 2.5 in. cast iron bushing, brass sealing connector, Buna-N quad ring packing.									
Catalog Numbers										
Float Rod Angle	45°				90° offset					
Water Level Change Minimum–Maximum, in. (mm)	2.00–5.00 (52–127)		2.50–5.00 (64–127)		3.75–7.00 (95–178)		4.25–8.25 (108–210)		6.00–11.50 (152–292)	
Float Position [1]	Left	Right	Left	Right	Left	Right	Left	Right	Left	Right
NEMA Type 1	9037HG34	9037HG33	9037HG36	9037HG35	9037HG38	9037HG37	9037HG30	9037HG39	9037HG32	9037HG31
NEMA Type 4	9037HW34	9037HW33	9037HW36	9037HW35	9037HW38	9037HW37	9037HW30	9037HW39	9037HW32	9037HW31
NEMA Type 7, 9	9037HR34	9037HR33	9037HR36	9037HR35	9037HR38	9037HR37	9037HR30	9037HR39	9037HR32	9037HR31
CL to CL in. (mm)	—		3 (76)		4.25 (108)		5 (127)		7 (178)	
Modifications										Form
Omit 2.5 in. bushing										F3
Omit float										L
Reverse action: contacts open on liquid rise										R [2]
Viton packing, 5 oz float (diesel fuel, Types HG, HW, HR30, 31, 32, 37, 38, 39 only)										Z19
Viton packing, for media temperature up to 250 °F										Z20
Viton packing, #316 SS float										Z21

¹ Viewed from the front of the switch, facing the indicator scale.

² Type HG is field modifiable. Type HR and HW **cannot** be modified in the field.

NOTE: For replacement floats, see “Class 9049 Accessories” on page 67.

Commercial Pressure and Float Switches for Power Circuits

Float Switches—Class 9036, 9037, and 9038

Table 20 lists the float travel distances for the screw-in float switches. Refer to Figure 13.

Figure 13: Travel Dimensions

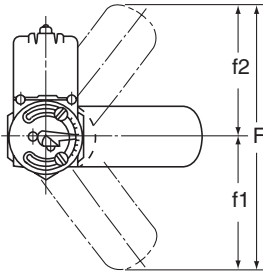


Table 20: Type H Float Travel Distances, in. (mm)

Float Rod Angle	R	H [1]	f1		f2		F	
			Minimum	Maximum	Minimum	Maximum	Minimum	Maximum
45°	—	6.22 (158)	2.25 (57)	4.50 (114)	2.00 (52)	4.50 (110)	4.25 (108)	9.00 (229)
90° offset	3.00 (76)	4.25 (108)	2.75 (70)	4.25 (108)	2.25 (57)	4.25 (108)	5.00 (127)	7.50 (191)
90° offset	4.25 (108)	5.50 (140)	3.50 (89)	5.50 (140)	2.75 (70)	4.00 (102)	6.25 (159)	9.50 (241)
90° offset	5.00 (127)	6.25 (159)	3.75 (95)	6.25 (159)	3.00 (76)	4.50 (110)	6.75 (171)	10.75 (273)
90° offset	7.00 (178)	8.25 (210)	4.75 (121)	8.25 (210)	3.75 (95)	5.75 (146)	8.50 (216)	14.00 (356)

¹ Clearance from centerline of hub to side of tank.

Figure 14: Type HG—45° Angle Dimensions

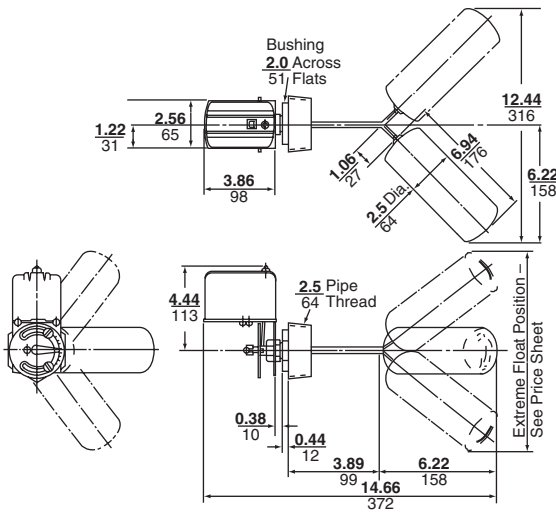


Figure 15: Type HG—90° Offset Dimensions

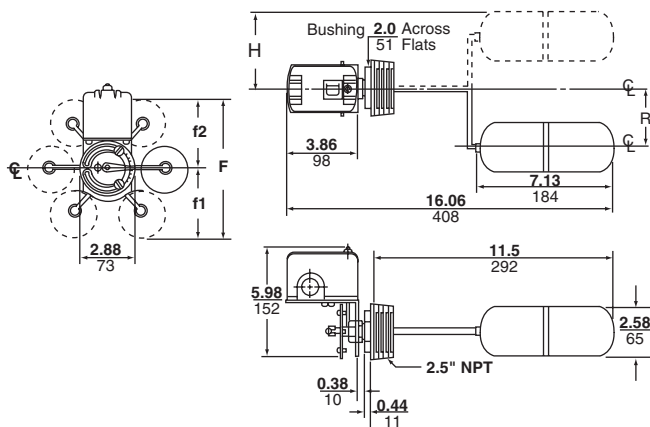


Figure 16: Type HR/HW—45° Angle Dimensions

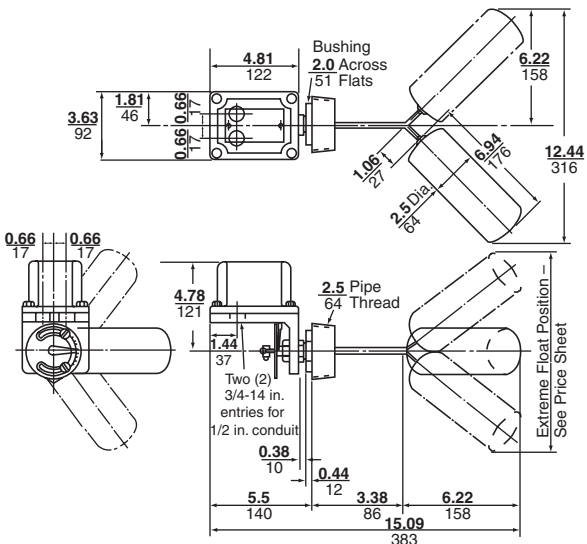
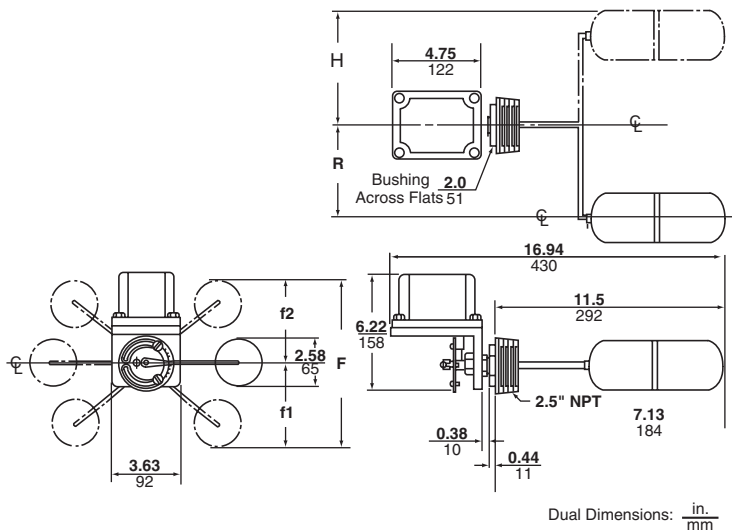


Figure 17: Type HR/HW—90° Offset Dimensions



Dual Dimensions: $\frac{\text{in.}}{\text{mm}}$