

# Electromechanical Level Control

Class 9036, 9037, and 9038  
and Class 9049 Accessories

Catalog  
9034CT9701R2/08

# 08



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## Electromechanical Level Control

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**Electromechanical Level Control**  
**Class 9036 Type D—Open Tank, General Purpose**

*Selection Guide*

**Type of Installation**

**Product features**

**Horsepower rated**

**2-pole switch, lever operated**

**Standard action—contacts close; reverse action—contacts open**



**Fluids Controlled**

Water, hydraulic oils, corrosive fluids

**Fluids Characteristics**

Fresh water, sea water, hydraulic oils, and corrosive fluids with a density  $\geq 0.8$

**Contact Arrangement**

**Standard:** 2 N.O. (DPST). **Form R:** 2 N.C. (DPST). **Form H:** 1 N.O. and 1 N.C. (SPDT).

**Degree of Protection**

NEMA Type 1

NEMA Type 4

NEMA Type 7 and 9

**Electrical Connection**

4 screw terminals, 1/2 in. NPT entry

**Ambient Temperature**

-22 to +220 °F (-30 to +105 °C)

**Catalog numbers**

**9036DG**

**9036DW**

**9036DR**

**Pages**

page 20

## Electromechanical Level Control

### Class 9049—Accessories for Class 9036 Type D and G

| Accessory Kits                          | Tapped-at-Top Floats (#304 SS) ★                                                  |          |            | Center-Hole Floats (#304 SS) ◆                                                     |          |            | Additional Tubing ▲                                                                 |           |           |
|-----------------------------------------|-----------------------------------------------------------------------------------|----------|------------|------------------------------------------------------------------------------------|----------|------------|-------------------------------------------------------------------------------------|-----------|-----------|
|                                         |  |          |            |  |          |            |  |           |           |
| Tubing (rods)                           | 5 ft brass                                                                        | 5 ft Al  | 5 ft SS    | 5 ft brass                                                                         | 5 ft Al  | 5 ft SS    | 2.5 ft brass                                                                        | 2.5 ft Al | 2.5 ft SS |
| Net buoyancy in water, 7 in. float ■    | 60                                                                                | 60       | 60         | 70                                                                                 | 70       | 70         | —                                                                                   | —         | —         |
| Total weight of stops, oz (g)           | 3 (85)                                                                            | 3 (85)   | 3 (85)     | 6 (170)                                                                            | 6 (170)  | 6 (170)    | —                                                                                   | —         | —         |
| Number of stops                         | 2                                                                                 | 2        | 2          | 4                                                                                  | 4        | 4          | —                                                                                   | —         | —         |
| Weight of the included 5 ft rod, oz (g) | 18.5 (524)                                                                        | 6 (170)  | 16.9 (479) | 18.5 (524)                                                                         | 6 (170)  | 16.9 (479) | —                                                                                   | —         | —         |
| Weight per ft of extra rod, oz (g)      | 3.7 (105)                                                                         | 1.2 (34) | 3.4 (96)   | 3.7 (105)                                                                          | 1.2 (34) | 3.4 (96)   | 3.7 (105)                                                                           | 1.2 (34)  | 3.4 (96)  |
| Catalog numbers                         | 9049A6                                                                            | 9049A6A  | 9049A6S    | 9049A6C                                                                            | 9049A6CA | 9049A6CS   | 9049T1                                                                              | 9049T1A   | 9049T1S   |
| Pages                                   | page 21                                                                           |          |            |                                                                                    |          |            |                                                                                     |           |           |

■ Net buoyancy calculated with the float 80% submerged, allowing for a 20% operating margin.

Buoyancy data calculated for use in water. Consult your local Square D® field office for buoyancy data in media having specific gravity different than water (1.0).

▲ Additional tubing kits add on to float accessory kits and include a connector.

★ Maximum recommended tubing length for tapped-at-top float: 12.5 ft (3810 mm).

◆ Maximum recommended tubing length for center-hole float: 30 ft (9144 mm).

When ordering float accessories, first specify the desired accessory kit, then as a second item, give the catalog number and the quantity of the additional tubing kits required. For example, for a 9049A6C kit with 15 ft of tubing, specify:

A. 9049A6C, quantity = 1 (includes 5 ft of tubing)

B. 9049T1, quantity = 4 (2.5 ft of tubing each, for a total of 10 additional ft)

#### Compensating Spring

Compensating springs are used to support the weight of long rods that cannot be supported by center-hole floats.

|                                                                         |           |
|-------------------------------------------------------------------------|-----------|
| <b>Calculation example</b>                                              |           |
| Measuring 15 ft of tank depth                                           |           |
| <i>System has 15 ft of brass rod, 4 stops, and a center hole float.</i> |           |
| Buoyancy is positive, so no compensating spring is required             |           |
| • <b>Float buoyancy</b>                                                 | 70.0 oz   |
| • <b>Total Weight</b>                                                   | (61.5 oz) |
| Weight of stops:                                                        | (6.0 oz)  |
| Weight of 5 ft of brass rod (included):                                 | (18.5 oz) |
| Weight of 10 ft of brass rod (separate):                                | (37.0 oz) |
| • <b>Buoyancy</b>                                                       | 8.5 oz    |

# Electromechanical Level Control

## Class 9036 Type G—Open Tank, Heavy Duty

Selection Guide

|                                                                                               |                                                                                   |                                      |                   |
|-----------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|--------------------------------------|-------------------|
| Type of Installation                                                                          | Horsepower rated                                                                  |                                      |                   |
| Product features                                                                              | 2-pole switch; standard action—contacts close; reverse action—contacts open       |                                      |                   |
| <div></div> |                                                                                   |                                      |                   |
| Fluids Controlled                                                                             | Water, hydraulic oils, corrosive fluids                                           |                                      |                   |
| Fluids 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). Form H: 1 N.O. and 1 N.C. (SPDT). |                                      |                   |
| Degree of Protection                                                                          | NEMA Type 1                                                                       | NEMA Type 4                          | NEMA Type 7 and 9 |
| Electrical Connection                                                                         | 4 screw terminals, 1/2 in. NPT entry                                              | 4 screw terminals, 3/4 in. NPT entry |                   |
| Ambient Temperature                                                                           | −22 to +220 °F (−30 to +105 °C)                                                   |                                      |                   |
| Catalog numbers                                                                               | 9036GG                                                                            | 9036GW                               | 9036GR            |
| Pages                                                                                         | page 20                                                                           |                                      |                   |

## Electromechanical Level Control

### Class 9049—Accessories for Class 9036 Type D and G

| Accessory Kits                          | Tapped-at-Top Floats (#304 SS) ★                                                  |         |            | Center-Hole Floats (#304 SS) ◆                                                     |          |            | Additional Tubing ▲                                                                 |           |           |
|-----------------------------------------|-----------------------------------------------------------------------------------|---------|------------|------------------------------------------------------------------------------------|----------|------------|-------------------------------------------------------------------------------------|-----------|-----------|
|                                         |  |         |            |  |          |            |  |           |           |
| Tubing (rods)                           | 5 ft brass                                                                        | 5 ft Al | 5 ft SS    | 5 ft brass                                                                         | 5 ft Al  | 5 ft SS    | 2.5 ft brass                                                                        | 2.5 ft Al | 2.5 ft SS |
| Net buoyancy in water, 7 in. float ■    | 60                                                                                | 60      | 60         | 70                                                                                 | 70       | 70         | —                                                                                   | —         | —         |
| Total weight of stops, oz (g)           | 3 (85)                                                                            | 3 (85)  | 3 (85)     | 6 (170)                                                                            | 6 (170)  | 6 (170)    | —                                                                                   | —         | —         |
| Number of stops                         | 2                                                                                 | 2       | 2          | 4                                                                                  | 4        | 4          | —                                                                                   | —         | —         |
| Weight of the included 5 ft rod, oz (g) | 18.5 (524)                                                                        | 6 (170) | 16.9 (479) | 18.5 (524)                                                                         | 6 (170)  | 16.9 (479) | —                                                                                   | —         | —         |
| Weight per ft of extra rod, oz (g)      | —                                                                                 | —       | —          | —                                                                                  | —        | —          | 3.7 (105)                                                                           | 1.2 (34)  | 3.4 (96)  |
| Catalog numbers                         | 9049A6                                                                            | 9049A6A | 9049A6S    | 9049A6C                                                                            | 9049A6CA | 9049A6CS   | 9049T1                                                                              | 9049T1A   | 9049T1S   |
| Pages                                   | page 21                                                                           |         |            |                                                                                    |          |            |                                                                                     |           |           |

■ Net buoyancy calculated with the float 80% submerged, allowing for a 20% operating margin.

Buoyancy data calculated for use in water. Consult your local Square D field office for buoyancy data in media having specific gravity different than water (1.0).

▲ Additional tubing kits add on to float accessory kits and include a connector.

★ Maximum recommended tubing length for tapped-at-top float: 12.5 ft (3810 mm).

◆ Maximum recommended tubing length for center-hole float: 30 ft (9144 mm).

When ordering float accessories, first specify the desired accessory kit, then as a second item, give the catalog number and the quantity of the additional tubing kits required. For example, for a 9049A6C kit with 15 ft of tubing, specify:

A. 9049A6C, quantity = 1 (includes 5 ft of tubing)

B. 9049T1, quantity = 4 (2.5 ft of tubing each, for a total of 10 additional ft)

#### Compensating Spring

Compensating springs are used to support the weight of long rods that cannot be supported by center-hole floats.

|                                                                         |           |
|-------------------------------------------------------------------------|-----------|
| <b>Calculation example</b>                                              |           |
| Measuring 15 ft of tank depth                                           |           |
| <i>System has 15 ft of brass rod, 4 stops, and a center hole float.</i> |           |
| Buoyancy is positive, so no compensating spring is required             |           |
| • <b>Float buoyancy</b>                                                 | 70.0 oz   |
| • <b>Total Weight</b>                                                   | (61.5 oz) |
| Weight of stops:                                                        | (6.0 oz)  |
| Weight of 5 ft of brass rod (included):                                 | (18.5 oz) |
| Weight of 10 ft of brass rod (separate):                                | (37.0 oz) |
| • <b>Buoyancy</b>                                                       | 8.5 oz    |

**Electromechanical Level Control**  
**Class 9036 Type FG—Open Tank, Pedestal Style**

*Selection Guide*

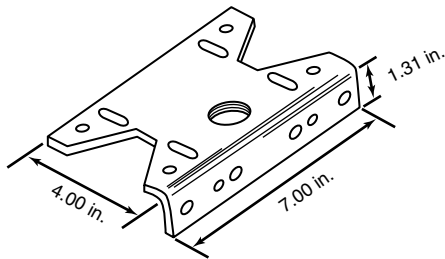
|                        |                                                                                                  |                                                                                    |                                                                                     |
|------------------------|--------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| Type of Installation   | Horsepower rated                                                                                 |                                                                                    |                                                                                     |
| Product features       | 2-pole switch, forward or reversing<br>Contacts open or close on liquid rise (field convertible) |                                                                                    |                                                                                     |
|                        |                 |  |  |
| Fluids Controlled      | Water, hydraulic oils, corrosive fluids                                                          |                                                                                    |                                                                                     |
| Fluids Characteristics | Fresh water, sea water, hydraulic oils, and corrosive fluids with a density $\geq 0.8$           |                                                                                    |                                                                                     |
| Contact Arrangement    | 2 N.O. or 2 N.C., DPST, depending on rod connection                                              |                                                                                    |                                                                                     |
| Degree of Protection   | NEMA Type 1                                                                                      |                                                                                    |                                                                                     |
| Electrical Connection  | 4 screw terminals, 1/2 in. NPT entry                                                             |                                                                                    |                                                                                     |
| Ambient Temperature    | -22 to +220 °F (-30 to +105 °C)                                                                  |                                                                                    |                                                                                     |
| Catalog numbers        | 9036FG                                                                                           | 9049A60                                                                            | 9049A61                                                                             |
| Description            | 2-pole, pedestal-style sump pump switch                                                          | Plastic, center-hole float                                                         | 33.75 in. aluminum rod, 2 float stop assemblies, and attaching hardware             |
| Pages                  | page 23                                                                                          |                                                                                    |                                                                                     |

|                  |                |
|------------------|----------------|
| Description      | Mounting plate |
| Product features | Pedestal mount |



|                     |                                             |
|---------------------|---------------------------------------------|
| Material            | Cold rolled steel                           |
| Finish              | Painted, powder coated                      |
| Mounting connection | Threaded to accept 1 in. diameter iron pipe |
| Catalog numbers     | 9049UMS1                                    |
| Pages               | page 38                                     |

Figure 1: 9049UMS1 Dimensions



**Electromechanical Level Control**  
**Class 9037 Type E—Closed Tank, Flange Mounted**

*Selection Guide*

**Type of Installation**  
**Product features**

**Horsepower rated**  
2-pole switch; standard action—contacts close on liquid rise; reverse action—contacts open on liquid rise



|                               |                                                                                        |               |                   |
|-------------------------------|----------------------------------------------------------------------------------------|---------------|-------------------|
| <b>Fluids Controlled</b>      | Water, hydraulic oils, corrosive fluids                                                |               |                   |
| <b>Fluids Characteristics</b> | Fresh water, sea water, hydraulic oils, and corrosive fluids with a density $\geq 0.8$ |               |                   |
| <b>Contact Arrangement</b>    | <b>Standard:</b> 2 N.O. (DPST). <b>Form R:</b> 2 N.C. (DPST).                          |               |                   |
| <b>Degree of Protection</b>   | NEMA Type 1                                                                            | NEMA Type 4   | NEMA Type 7 and 9 |
| <b>Electrical Connection</b>  | 4 screw terminals, 1/2 in. NPT entry                                                   |               |                   |
| <b>Ambient Temperature</b>    | -22 to +220 °F (-30 to +105 °C)                                                        |               |                   |
| <b>Catalog numbers</b>        | <b>9037EG</b>                                                                          | <b>9037EW</b> | <b>9037ER</b>     |
| <b>Pages</b>                  | page 24                                                                                |               |                   |

**NOTE:** For float and rod kits, refer to page 15.

**Electromechanical Level Control**  
**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                                                                   |             |                   |
| Fluids 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). <sup>(1)</sup>                                            |             |                   |
| Degree of Protection                                                               | NEMA Type 1                                                                                               | NEMA Type 4 | NEMA Type 7 and 9 |
| Electrical Connection                                                              | 4 screw terminals, 1/2 in. NPT entry                                                                      |             |                   |
| Ambient Temperature                                                                | -22 to +220 °F (-30 to +105 °C)                                                                           |             |                   |
| Catalog numbers                                                                    | 9037HG                                                                                                    | 9037HW      | 9037HR            |
| Pages                                                                              | page 28                                                                                                   |             |                   |

<sup>(1)</sup> 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.

# Electromechanical Level Control

## Class 9038 Type A—Mechanical Alternator, Open Tank

Selection Guide

|                                                                                                                                                                                |                                                                                   |             |                   |
|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-------------|-------------------|
| Type of Installation                                                                                                                                                           | Horsepower rated                                                                  |             |                   |
| Product features                                                                                                                                                               | 4-pole switch; standard action—contacts close; reverse action—contacts open       |             |                   |
| <div></div> |                                                                                   |             |                   |
| Fluids Controlled                                                                                                                                                              | Water, hydraulic oils, corrosive fluids                                           |             |                   |
| Fluids Characteristics                                                                                                                                                         | Fresh water, sea water, hydraulic oils, and corrosive fluids with a density ≥ 0.8 |             |                   |
| Contact Arrangement                                                                                                                                                            | 4 N.O. (2 DPST)                                                                   |             |                   |
| Degree of Protection                                                                                                                                                           | NEMA Type 1                                                                       | NEMA Type 4 | NEMA Type 7 and 9 |
| Electrical Connection                                                                                                                                                          | 8 screw terminals, 1/2 in. or 3/4 in. NPT entry                                   |             |                   |
| Ambient Temperature                                                                                                                                                            | −22 to +220 °F (−30 to +105 °C)                                                   |             |                   |
| Catalog numbers                                                                                                                                                                | 9038AG                                                                            | 9038AW      | 9038AR            |
| Pages                                                                                                                                                                          | page 30                                                                           |             |                   |

|                                                                                    |                                                                                   |             |                   |
|------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-------------|-------------------|
| Type of Installation                                                               | Horsepower rated                                                                  |             |                   |
| Product features                                                                   | 4-pole switch; standard action—contacts close; reverse action—contacts open       |             |                   |
|  |                                                                                   |             |                   |
| Fluids Controlled                                                                  | Water, hydraulic oils, corrosive fluids                                           |             |                   |
| Fluids Characteristics                                                             | Fresh water, sea water, hydraulic oils, and corrosive fluids with a density ≥ 0.8 |             |                   |
| Contact Arrangement                                                                | 4 N.O. (2 DPST), alternating contacts                                             |             |                   |
| Degree of Protection                                                               | NEMA Type 1                                                                       | NEMA Type 4 | NEMA Type 7 and 9 |
| Electrical Connection                                                              | 8 screw terminals, 1/2 in. or 3/4 in. NPT entry                                   |             |                   |
| Ambient Temperature                                                                | −22 to +220 °F (−30 to +105 °C)                                                   |             |                   |
| Catalog numbers                                                                    | 9038CG                                                                            | 9038CW      | 9038CR            |
| Pages                                                                              | page 32                                                                           |             |                   |

# Electromechanical Level Control

## Class 9038 Type D—Mechanical Alternator, Closed Tank

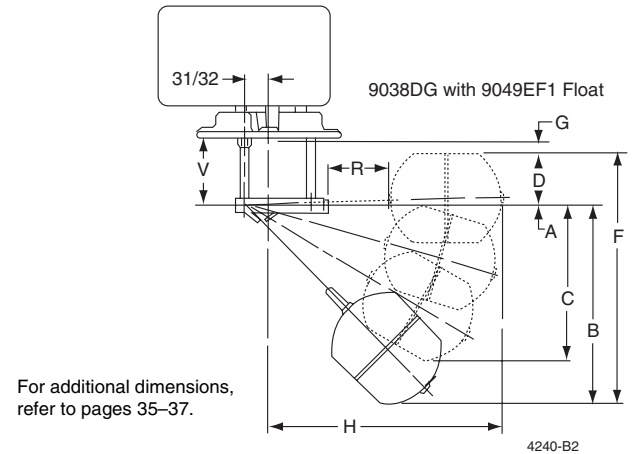
Selection Guide

|                                                                                   |                                                                                   |             |                   |
|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-------------|-------------------|
| Type of Installation                                                              | Horsepower rated                                                                  |             |                   |
| Product features                                                                  | 4-pole switch; standard action—contacts close; reverse action—contacts open       |             |                   |
|  |                                                                                   |             |                   |
| Fluids Controlled                                                                 | Water, hydraulic oils, corrosive fluids                                           |             |                   |
| Fluids Characteristics                                                            | Fresh water, sea water, hydraulic oils, and corrosive fluids with a density ≥ 0.8 |             |                   |
| Contact Arrangement                                                               | 4 N.O. (2 DPST)                                                                   |             |                   |
| Degree of Protection                                                              | NEMA Type 1                                                                       | NEMA Type 4 | NEMA Type 7 and 9 |
| Electrical Connection                                                             | 4 screw terminals, 1/2 in. or 3/4 in. NPT entry, 3/4 in. NPT                      |             |                   |
| Ambient Temperature                                                               | −22 to +220 °F (−30 to +105 °C)                                                   |             |                   |
| Catalog numbers                                                                   | 9038DG                                                                            | 9038DW      | 9038DR            |
| Pages                                                                             | page 34                                                                           |             |                   |

Electromechanical Level Control  
Class 9049 Kits for Class 9038 Type D and Class 9037 Type E

| Type of Installation Kit                  | Float Kits                                                                        |                           |                       |                       | Float Rod Kits                                                                     |            |            |             |             |             |
|-------------------------------------------|-----------------------------------------------------------------------------------|---------------------------|-----------------------|-----------------------|------------------------------------------------------------------------------------|------------|------------|-------------|-------------|-------------|
|                                           |  |                           |                       |                       |  |            |            |             |             |             |
| Material                                  | #304 SS                                                                           | #316 SS                   | #304 SS               | #316 SS               |                                                                                    |            |            |             |             |             |
| Dimensions, in. (mm)<br>Diameter x Length | 3.625 x 4.5<br>(92 x 114)                                                         | 3.625 x 4.5<br>(92 x 114) | 2.5 x 7<br>(64 x 178) | 2.5 x 7<br>(64 x 178) | —                                                                                  | —          | —          | —           | —           | —           |
| R Dimension, in. (mm)                     | —                                                                                 | —                         | —                     | —                     | 1.75 (44)                                                                          | 2.50 (64)  | 3.25 (83)  | 5.25 (133)  | 7.25 (184)  | 12.25 (311) |
| H Dimension, in. (mm)                     | —                                                                                 | —                         | —                     | —                     | 8.25 (210)                                                                         | 9.00 (229) | 9.50 (241) | 11.75 (298) | 13.75 (349) | 18.75 (476) |
| Catalog numbers                           | 9049EF1                                                                           | 9049EF2                   | 9049HF3               | 9049HF4               | 9049ER1                                                                            | 9049ER2    | 9049ER3    | 9049ER5     | 9049ER7     | 9049ER12    |
| Pages                                     | pages 24, 34, 38                                                                  |                           |                       |                       | pages 26–27, 35–38                                                                 |            |            |             |             |             |

Figure 2: Float and Rod Kits



## **Square D® Level Control Products**



9036DG2

Square D brand offers a wide range of electromechanical level control products. The current offering is described below:

- **Class 9036, Open Tank**
- **Class 9037, Closed Tank**
- **Class 9038, Mechanical Alternators**

**NOTE:** The Class 9039 Duplex Controller (electrical alternator) is also available but is not covered in this catalog.



9036GG

### **Class 9036 Open Tank**

#### **Type D and G**

The Class 9036 Type D and G float switches are lever operated and designed for open tank applications. These switches are floor mounted, or they can be pedestal mounted using mounting plate 9049UMS1. They are available in NEMA Type 1, NEMA Type 4, or NEMA Type 7 and 9 enclosures.

#### **Type FG**

The Class 9036 Type FG30 pedestal-style sump pump switch is designed for liquid level control with electric-motor operated pumps either directly or through a magnetic starter. It can also be used to activate alarms in liquid level control systems. The upward or downward movement of the lever arm of the float switch controls the On and Off positions corresponding to the water levels changes required to turn the pump or alarm on and off.

**NOTE:** The rod for this device is 33.75 in. long. It cannot be lengthened.

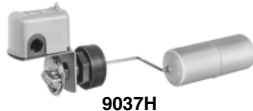


9036FG  
9049A60  
9049A61

**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**

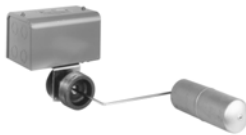
9037H

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.



9036DG2



9036GG2

## Selecting a Float Switch

Standard float switches have two contacts that close when the liquid rises above the designated level. This contact configuration is used for tank emptying applications. Float switches are also available with reverse (Form R) and double throw (Form H) contacts. Form R switches, used for tank filling applications, have two contacts that open when the liquid rises above the designated level. Form H switches, which can be used for both applications, have one normally open (N.O.) and one normally closed (N.C.) contact.

To select the proper Square D float switch, determine the following:

- Type and shape of tank (open, closed, sump, etc.)
- Enclosure requirements
  - **NEMA Type 1:** For general purpose applications intended for indoor use.
  - **NEMA Type 4:** For watertight and dusttight applications for either indoor or outdoor use.
  - **NEMA Type 7 and 9:** For explosion proof applications. Suitable for Class I, Division 1 and 2, Groups C and D and Class II, Division 1 and 2, Groups E, F, and G hazardous locations.
- Total level change required
- Mounting requirements (such flange mounting or screw-in bushing)
- Horsepower, phase, and voltage requirements
- Float material
  - Stainless steel (SS)
  - Plastic (available on 9036FG30 and as a Form for use with diesel fuel)
- Rod material
  - Brass
  - Stainless steel (SS)
  - Aluminum (Al)

In direct motor control applications, float switch ratings must be greater than or equal to the pump motor ratings.

**NOTE:** Consult your local Square D field office when using float switches in liquids with a specific gravity different than water (1.0).

The following information must be included for each float switch ordered:

- Basic switch: Class and Type
- Accessory kits: Class and Type

## Selecting Floats and Rods

Class 9036 and Class 9038 Type A float switches are actuated with the Class 9049 Type A line of accessories. Select the float and rod material according to the corrosiveness of the liquid used in the application. Two types of float kits are offered:

- Tapped-at-top float (Class 9049 Type A6, A6S, and A6A)
- Center-hole float (Class 9049 Type A6C, A6CS, and A6CA)

The tapped-at-top float is for applications requiring short lengths of tubing and small liquid level changes. The maximum tubing length is 12 ft (3.66 m). Adequate space must be available to allow for ceiling clearance when the level changes. The float must be buoyant enough to lift the tubing, stop collars, and switch lever. The rod has two stops, one above and one below the switch lever. The position of the stops determines the amount of water level change.

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 1: Temperature Limitations For All Float Switches**

|                |             |                 |
|----------------|-------------|-----------------|
| <b>Ambient</b> | <b>Min.</b> | –30 °C (–22 °F) |
|                | <b>Max.</b> | 105 °C (220 °F) |

### Electrical Ratings

**Table 2: 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



### Class 9038 Electrical Ratings

**Table 3: Control Duty Circuit Ratings (Form N5 or N25 only)**

| Contacts         | AC—50 or 60 Hz |                                |      |       |     |                                   | DC  |                         |                 | AC or DC                          |
|------------------|----------------|--------------------------------|------|-------|-----|-----------------------------------|-----|-------------------------|-----------------|-----------------------------------|
|                  | V              | Inductive,<br>35% Power Factor |      |       |     | Resistive,<br>75%<br>Power Factor | V   | Inductive and Resistive |                 | Continuous<br>Carrying<br>Amperes |
|                  |                | Make                           |      | Break |     |                                   |     | Make and Break Amperes  |                 |                                   |
|                  |                | A                              | VA   | A     | VA  | Make and Break<br>Amperes         |     | Single<br>Throw         | Double<br>Throw |                                   |
| SPDT<br>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<br>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                               | —   | —                       | —               | —                                 |

## Class 9036 Type D and G Open Tank Float Switches

Table 4 lists Class 9036 float switches and modifications.

- When ordering a **factory installed modification**, add the Form number to the end of the float switch catalog number. For example, to select a 9036DG2 switch with reverse action, order 9036DG2R.
- Field installed modifications**, when available, are ordered as kits.

**Table 4: Class 9036 Float Switches**

| Specifications    |                                                                                                             |                     |                                                                                                          |                     |
|-------------------|-------------------------------------------------------------------------------------------------------------|---------------------|----------------------------------------------------------------------------------------------------------|---------------------|
| Description       | 2-pole, single-lever operated float switches                                                                |                     |                                                                                                          |                     |
| Applications      | Open industrial tanks and sump applications                                                                 |                     |                                                                                                          |                     |
|                   | <b>General Purpose</b><br> |                     | <b>Heavy Duty</b><br> |                     |
|                   | Catalog Numbers                                                                                             |                     |                                                                                                          |                     |
| Contact Action    | Close on Liquid Rise                                                                                        | Open on Liquid Rise | Close on Liquid Rise                                                                                     | Open on Liquid Rise |
| NEMA Type 1 ■     | 9036DG2                                                                                                     | 9036DG2R            | 9036GG2                                                                                                  | 9036GG2R            |
| NEMA Type 4       | 9036DW31                                                                                                    | 9036DW31R           | 9036GW1 ▲                                                                                                | 9036GW1R ▲          |
| NEMA Type 7 and 9 | 9036DR31                                                                                                    | 9036DR31R           | 9036GR1 ▲                                                                                                | 9036GR1R ▲          |

■ Contact action can be converted in the field by installing the appropriate float rod lever.

▲ Compensating spring standard. Use center-hole float accessories.

A **compensating spring** supports the weight of long rods that cannot be supported by center-hole floats. A compensating spring is standard on Types GR and GW, and can be ordered as a modification (Form C) on other Class 9036 Type D and G float switches.

| Modifications                                                         | Factory Installed | Field Installed    |
|-----------------------------------------------------------------------|-------------------|--------------------|
|                                                                       | Class 9036 Form   | Kit Catalog Number |
| <b>For Type D (General Purpose)</b>                                   |                   |                    |
| Reverse action (Type DG)                                              | R                 | 9049A58            |
| Compensating spring (Type DG)                                         | C                 | 9049A19            |
| Compensating spring (Types DR and DW)                                 | C                 | 9049A20            |
| Compensating spring and reverse action (Types DG, DR, and DW)         | CR                | Not Available      |
| <b>For Type G (Heavy Duty)</b>                                        |                   |                    |
| Reverse action ★                                                      | R                 | Not Available      |
| Compensating spring (Type GG) ●                                       | C                 | 9049A13            |
| Compensating spring and reverse action (Type GG)                      | CR                | 9049A13            |
| 1 N.O.—1 N.C. contact configuration                                   | H                 | Not Available      |
| Compensating spring and 1 N.O.—1 N.C. contact configuration (Type GG) | CH                | Not Available      |

★ Type GG is field convertible without the use of a kit. Types GR and GW are not field convertible.

● Compensating spring standard on Types GR and GW.

Table 5 lists the trip forces and compensating spring requirements for Class 9036 Type D and G float switches. The trip force can be adjusted on the Type G switches by changing the lever length position.

**Table 5: Maximum Trip Forces for Class 9036 Float Switches**

| Class 9036 Type and Form      |                             | DG2 | DG2R | DW31 | DW31R | DR31 | DR31R | GG2   |      | GG2R  |      | GR1, GW1 |        |      |
|-------------------------------|-----------------------------|-----|------|------|-------|------|-------|-------|------|-------|------|----------|--------|------|
| Lever Length Position         |                             | —   | —    | —    | —     | —    | —     | Short | Long | Short | Long | Short    | Medium | Long |
| Force Up to Trip (oz)         |                             | 9   | 8    | 8    | 8     | 8    | 8     | 33    | 21   | 30    | 22   | 24       | 22     | 20   |
| Force Down to Trip (oz)       |                             | 8   | 8    | 8    | 8     | 8    | 8     | 39    | 27   | 24    | 16   | 31       | 29     | 27   |
| Maximum Supported Weight (oz) | Without Compensating Spring | 6   | 4    | 5    | 5     | 5    | 5     | 25    | 13   | 18    | 11   | 19       | 17     | 16   |
|                               | With Compensating Spring    | 60  | 60   | 66   | 66    | 66   | 66    | ■     | 100  | ■     | 150  | 80       | 72     | 64   |

■ The compensating spring is not effective in combination with Short lever length position.

**Figure 3: Lever Length**

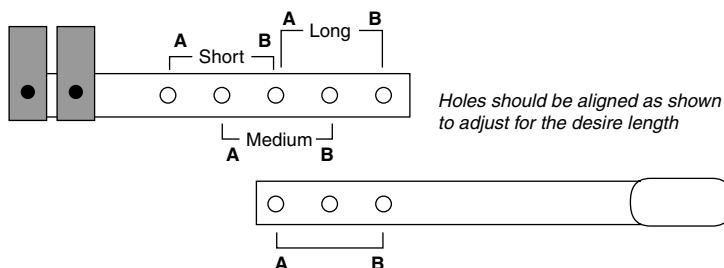


Table 6 lists Class 9049 accessory kits, which are ordered separately from the Class 9036 Type D and G float switches. A **float kit** is required; a tubing kit and replacement float do not provide all needed parts.

**Table 6: Class 9049 Accessories for Class 9036 Type D and G Float Switches (weight in oz)**

| Accessory Kits                        | Tapped-at-Top Floats (#304 SS) |         |         | Center-Hole Floats (#304 SS)★ |          |          | Additional Tubing (#303 SS)▲ |           |           |
|---------------------------------------|--------------------------------|---------|---------|-------------------------------|----------|----------|------------------------------|-----------|-----------|
| Used on Class 9036 Float Switch Types | All Except GW, GR, and Form C  |         |         | GW, GR, and Form C            |          |          | All                          |           |           |
| Catalog Number                        | 9049A6                         | 9049A6A | 9049A6S | 9049A6C                       | 9049A6CA | 9049A6CS | 9049T1                       | 9049T1A   | 9049T1S   |
| Tubing (rod)                          | 5 ft brass                     | 5 ft Al | 5 ft SS | 5 ft brass                    | 5 ft Al  | 5 ft SS  | 2.5 ft brass                 | 2.5 ft Al | 2.5 ft SS |
| Net buoyancy in water, 7 in. float ■  | 60                             | 60      | 60      | 70                            | 70       | 70       | —                            | —         | —         |
| Combined weight of stops              | 3                              | 3       | 3       | 6                             | 6        | 6        | —                            | —         | —         |
| Number of stops                       | 2                              | 2       | 2       | 4                             | 4        | 4        | —                            | —         | —         |
| Weight of 5 ft rod, included          | 18.5                           | 6       | 16.9    | 18.5                          | 6        | 16.9     | —                            | —         | —         |
| Weight per ft of extra rod            | 3.7                            | 1.2     | 3.4     | 3.7                           | 1.2      | 3.4      | 3.7                          | 1.2       | 3.4       |

■ Net buoyancy calculated with float 80% submerged, allowing for a 20% operating margin. Buoyancy data calculated for use in water. Consult your local Square D field office for buoyancy data in media having specific gravity different than water (1.0).

★ Require the use of the 9049A6, 9049A6A, or 9049A6S kit. The additional tubing only attaches to other lengths of tubing.

▲ Additional tubing kits add on to the float accessory kits and include a connector.

Maximum recommended tubing length: **Tapped-at-top** float: 12.5 ft (3810 mm); **Center-hole** float: 30 ft (9144 mm).

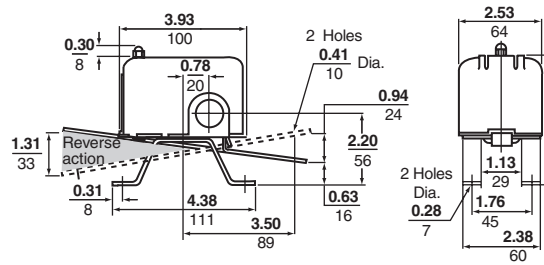
When ordering, first specify the desired accessory kit, then as a second item give the number of additional tubing kits required. For example, to get a 9049A6C kit with 15 ft of tubing, specify:

A. 9049A6C, quantity = 1 (includes 5 ft of tubing)

B. 9049T1, quantity = 4 (2.5 ft of tubing each, for a total of 10 additional ft)

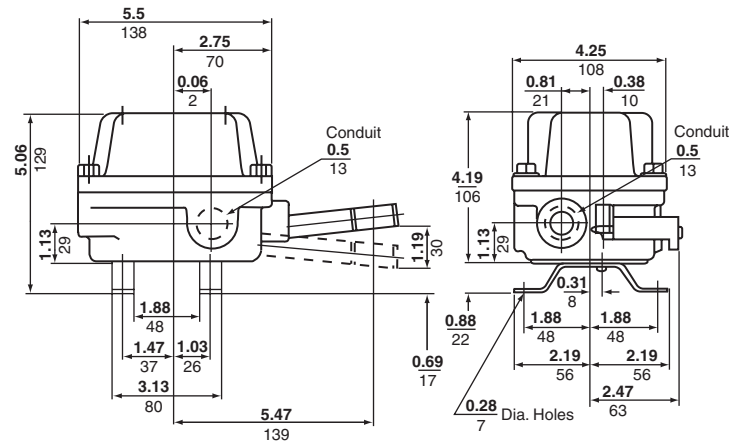
|                                                                                                                                                                                                               |                                          |           |
|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------|-----------|
| <b>Calculation example</b><br>Measuring 15 ft of tank depth<br><br><i>System has 15 ft of brass rod, 4 stops, and a center hole float.</i><br><br>Buoyancy is positive, so no compensating spring is required | • <b>Float buoyancy</b>                  | 70.0 oz   |
|                                                                                                                                                                                                               | • <b>Total Weight</b>                    | (61.5 oz) |
|                                                                                                                                                                                                               | Weight of stops:                         | (6.0 oz)  |
|                                                                                                                                                                                                               | Weight of 5 ft of brass rod (included):  | (18.5 oz) |
|                                                                                                                                                                                                               | Weight of 10 ft of brass rod (separate): | (37.0 oz) |
|                                                                                                                                                                                                               | • <b>Buoyancy</b>                        | 8.5 oz    |

**Figure 4: Type DG Dimensions**

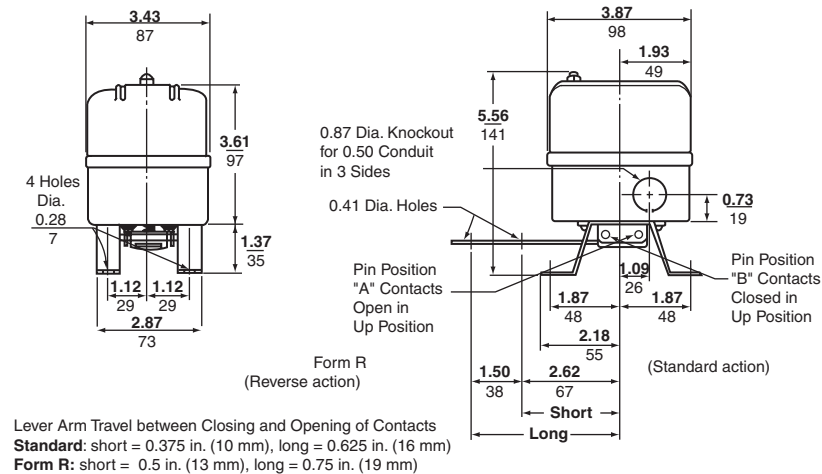


Dual Dimensions:  $\frac{\text{in.}}{\text{mm}}$

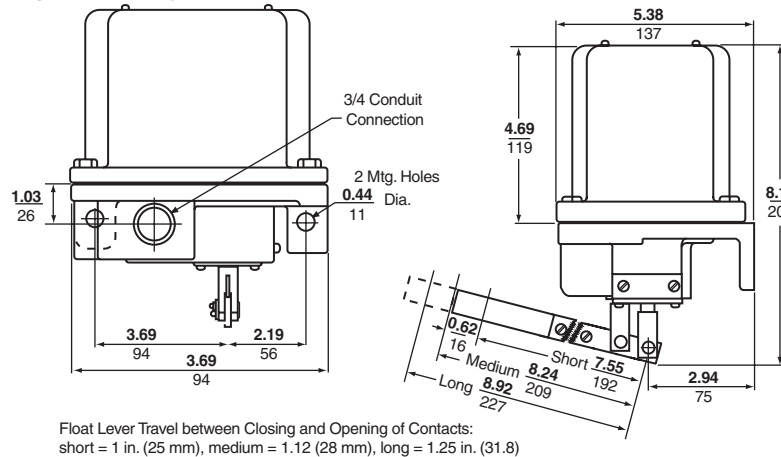
**Figure 5: Types DR/DW Dimensions**



**Figure 6: Type GG Dimensions**



**Figure 7: Types GR/GW Dimensions**



Class 9036 Type FG

Class 9036 Type FG30 pedestal-style sump pump switches provide:

- Liquid level control with pumps operated by an electric motor, either directly or through a magnetic starter
- Activation of alarms in liquid level control systems
- Forward or reverse action (field selectable)

The upward or downward movement of the lever arm controls the On and Off positions corresponding to the water level changes required to turn the pump or alarm on and off.

Table 7: Class 9036 Type FG30 Pedestal-Style Sump Pump Switch

|                   | Pedestal-Style Sump Pump Switch                                                    |                                  | Accessory Kits                                                                      |                                                                                      |
|-------------------|------------------------------------------------------------------------------------|----------------------------------|-------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------|
|                   |  |                                  |  |  |
| Catalog Number    | 9036FG30                                                                           |                                  | 9049A60                                                                             | 9049A61                                                                              |
| Description       | 2-pole, pedestal-style sump pump switch                                            |                                  | Plastic center hole float                                                           | 33.75 in. aluminum rod, 2 float stop assemblies, and attaching hardware              |
| Quantity Required | 1                                                                                  |                                  | 1                                                                                   | 1                                                                                    |
| NEMA Type         | NEMA Type 1                                                                        |                                  | —                                                                                   | —                                                                                    |
| Contact Action    | Contacts close on liquid rise                                                      |                                  | —                                                                                   | —                                                                                    |
| Rod Length        | —                                                                                  |                                  | —                                                                                   | 33.75 in. (cannot be lengthened)                                                     |
| Voltage           | 120/240 Vac                                                                        |                                  | —                                                                                   | —                                                                                    |
| Horsepower Rating | Single phase                                                                       | 2 hp @ 120 Vac    3 hp @ 240 Vac | —                                                                                   | —                                                                                    |
|                   | Polyphase                                                                          | 3 hp @ 120 Vac    5 hp @ 240 Vac | —                                                                                   | —                                                                                    |



9036FG  
9049A60  
9049A61

Class 9037

Class 9037 closed tank float switches are used primarily on condensate pumps but may also be installed on closed industrial and diesel fuel day tanks. There are two types of Class 9037 float switches:

- Type E (flange mounted)
- Type H (with screw-in bushing)

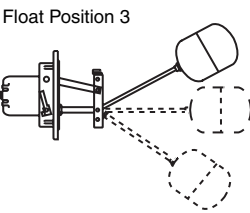
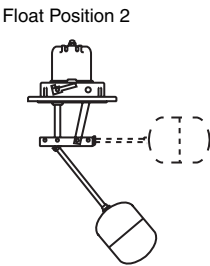
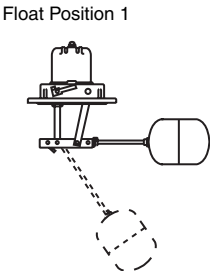
Class 9037 Type E, Flange Mounted

Table 8 contains ordering information for Class 9037 Type E float switches. Order the rod and float accessory kits separately. Consult your local Square D field office when using Class 9037 float switches in liquids with a different specific gravity than water (1.0).

Table 8: Class 9037 Type E Float Switches

| Specifications            |         |                                                                                     |         |            |          |
|---------------------------|---------|-------------------------------------------------------------------------------------|---------|------------|----------|
| Application               |         | Closed industrial tanks<br>Flange mounted                                           |         |            |          |
| Float movement            |         | Transmitted through a quad ring seal, which may need occasional replacement         |         |            |          |
| Tank Pressure             |         | Up to 50 psi                                                                        |         |            |          |
| Temperature               | Ambient | up to 220 °F                                                                        |         |            |          |
|                           | Media   | Buna-N seal: up to 215 °F. Viton seal: up to 250 °F.                                |         |            |          |
| Contact Operation         |         | Determined by the float and rod mounting position                                   |         |            |          |
| Float Travel              |         | Determined by the post length                                                       |         |            |          |
|                           |         |  |         |            |          |
| Catalog Numbers           |         |                                                                                     |         |            |          |
| Post Length (L), in. (mm) |         | 2.63 (67)                                                                           |         | 4.69 (119) |          |
| Water Level Change        |         | Minimum                                                                             | Maximum | Minimum    | Maximum  |
| NEMA 1                    |         | 9037EG8                                                                             | 9037EG9 | 9037EG10   | 9037EG13 |
| NEMA 4                    |         | 9037EW8                                                                             | 9037EW9 | 9037EW10   | 9037EW13 |
| NEMA 7 and 9              |         | 9037ER8                                                                             | 9037ER9 | 9037ER10   | 9037ER13 |
| Float Position            |         | 1                                                                                   | 1, 2, 3 | 1          | 1, 2, 3  |
| Float Kits                |         |                                                                                     |         |            |          |
| Material                  |         | Catalog Number                                                                      |         |            |          |
| #304 Stainless Steel      |         | 9049EF1                                                                             |         |            |          |
| #316 Stainless Steel      |         | 9049EF2                                                                             |         |            |          |

s For more information on float position, refer to pages 26–27.



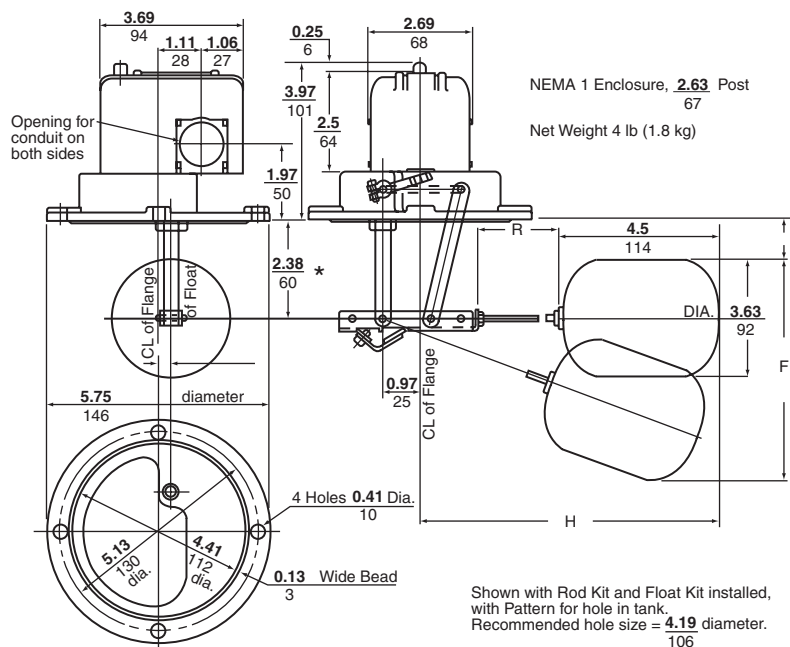
For rod kit catalog numbers, refer to pages 26–27.

To receive all components packaged in a single carton, specify:

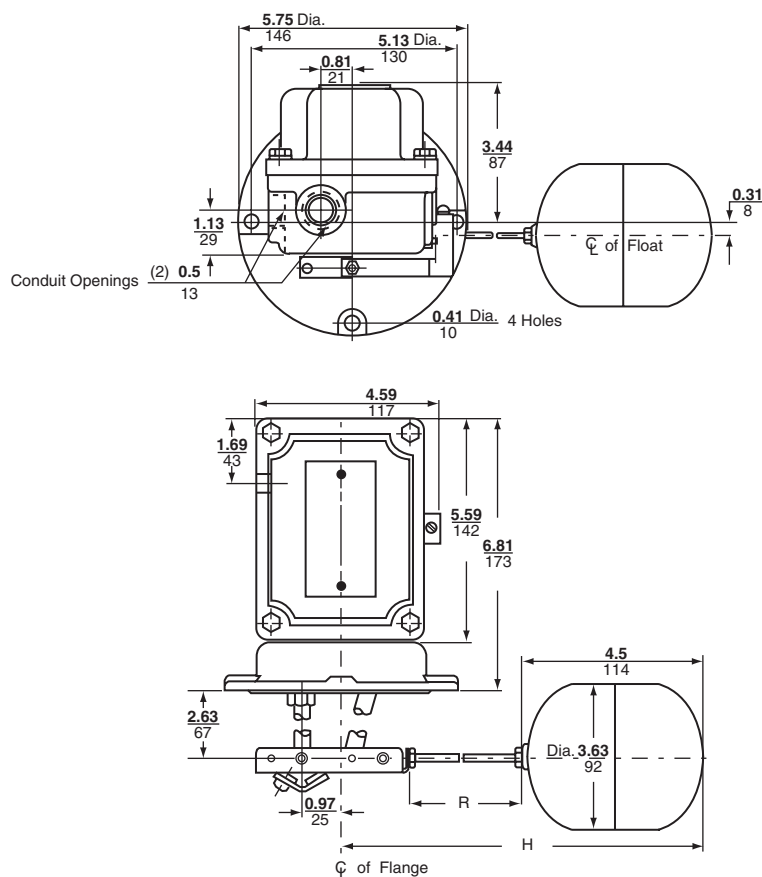
- Float switch Class, Type, and Form
- “R” and the rod number
- “F” and the float number

For example, to receive one each of 9037EG8, 9049ER1, and 9049EF1, specify **9037EG8R1F1**.

**Figure 8: Type EG Dimensions**



**Figure 9: Type ER/EW Dimensions**

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

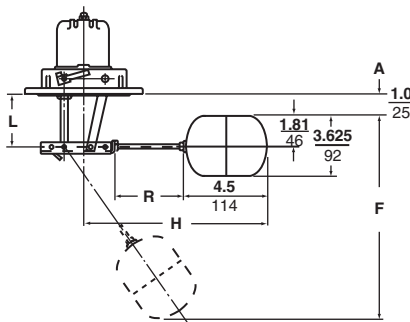
**Position 1 Operation**

In Position 1, the contacts **close** when the liquid rises. Select rod kits from Table 9.

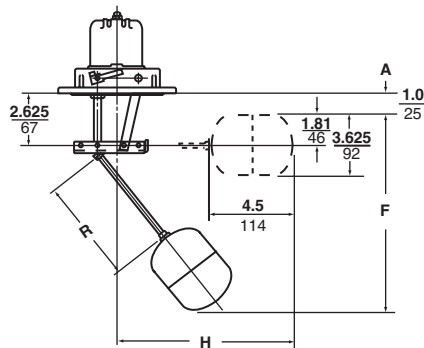
**Table 9: Class 9049 Rod Kits—Position 1 Operation (Contacts *Close* on Liquid Rise)**

| Catalog Numbers           |                                      |            |            |             |             |             |             |
|---------------------------|--------------------------------------|------------|------------|-------------|-------------|-------------|-------------|
| Dimension<br>in. (mm)     | For Use on Float Switch Types        | Rod Kits   |            |             |             |             |             |
|                           |                                      | 9049ER1    | 9049ER2    | 9049ER3     | 9049ER5     | 9049ER7     | 9049ER12    |
| <b>R</b>                  | EG8, EW8, ER8, EG10, EW10, ER10      | 1.75 (44)  | 2.5 (64)   | 3.25 (83)   | 5.25 (133)  | 7.25 (184)  | 12.25 (311) |
|                           | EG9, EW9, ER9, EG13, EW13, ER13      | 1.75 (44)  | 2.5 (64)   | 3.25 (83)   | 5.25 (133)  | 7.25 (184)  | 12.25 (311) |
| <b>H</b>                  | EG8, EW8, ER8, EG10, EW10, ER10      | 8.25 (210) | 9 (229)    | 9.5 (241)   | 11.75 (298) | 13.75 (349) | 18.75 (476) |
|                           | EG9, EW9, ER9, EG13, EW13, ER13      | 7.5 (191)  | 8.25 (210) | 9 (229)     | 11 (279)    | 12 (305)    | 18 (457)    |
| <b>A</b>                  | Min. EG8, EW8, ER8                   | 1 (25)     | 1 (25)     | 1 (25)      | 1 (25)      | 1 (25)      | 1 (25)      |
|                           | Min. EG9, EW9, ER9                   | 1 (25)     | 1 (25)     | 1 (25)      | 1 (25)      | 1 (25)      | 1 (25)      |
|                           | Min. EG10, EW10, ER10                | 3.06 (78)  | 3.06 (78)  | 3.06 (78)   | 3.06 (78)   | 3.06 (78)   | 3.06 (78)   |
|                           | Min. EG13, EW13, ER13                | 3.06 (78)  | 3.06 (78)  | 3.06 (78)   | 3.06 (78)   | 3.06 (78)   | 3.06 (78)   |
|                           | Max. EG8, EW8, ER8                   | 2 (51)     | 2 (51)     | 2 (51)      | 2.5 (64)    | 3 (76)      | 4.25 (108)  |
|                           | Max. EG9, EW9, ER9                   | 4 (102)    | 4.5 (114)  | 5 (127)     | 6 (152)     | 7.5 (191)   | 9.5 (241)   |
|                           | Max. EG10, EW10, ER10                | 4.06 (103) | 4.06 (103) | 4.06 (103)  | 4.56 (116)  | 5.06 (129)  | 6.31 (160)  |
|                           | Max. EG13, EW13, ER13                | 6.06 (154) | 6.56 (167) | 7.06 (179)  | 8.06 (205)  | 9.56 (243)  | 11.56 (294) |
| <b>F</b>                  | Min. EG8, EW8, ER8, EG10, EW10, ER10 | 4.75 (121) | 4.75 (121) | 4.75 (121)  | 4.75 (121)  | 5 (127)     | 5.75 (146)  |
|                           | Min. EG9, EW9, ER9, EG13, EW13, ER13 | 6 (152)    | 6.25 (159) | 6.25 (159)  | 6.5 (165)   | 6.5 (165)   | 9 (229)     |
|                           | Max. EG8, EW8, ER8, EG10, EW10, ER10 | 6 (152)    | 6.25 (159) | 6.5 (165)   | 6.75 (171)  | 7.25 (184)  | 9 (229)     |
|                           | Max. EG9, EW9, ER9, EG13, EW13, ER13 | 9 (229)    | 9.75 (248) | 10.25 (260) | 11.5 (292)  | 13 (330)    | 17.5 (445)  |
| <b>Water Level Change</b> | Min. EG8, EW8, ER8, EG10, EW10, ER10 | 1.75 (44)  | 1.75 (44)  | 1.75 (44)   | 1.75 (44)   | 2 (51)      | 2.75 (70)   |
|                           | Min. EG9, EW9, ER9, EG13, EW13, ER13 | 3 (76)     | 3.25 (83)  | 3.25 (83)   | 3.5 (89)    | 3.5 (89)    | 6 (152)     |
|                           | Max. EG8, EW8, ER8, EG10, EW10, ER10 | 3 (76)     | 3.25 (83)  | 3.5 (89)    | 3.75 (95)   | 4.25 (108)  | 6 (152)     |
|                           | Max. EG9, EW9, ER9, EG13, EW13, ER13 | 6 (152)    | 6.75 (171) | 7.25 (184)  | 8.5 (216)   | 10 (254)    | 14.5 (368)  |

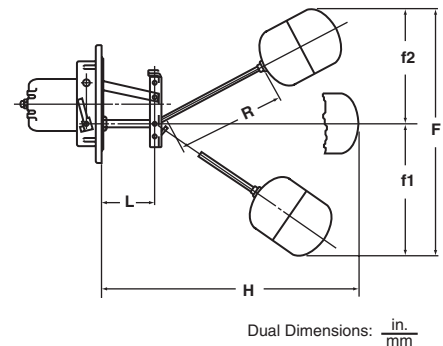
**Figure 10: Float Position 1**



**Figure 11: Float Position 2**



**Figure 12: Float Position 3**



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

### Position 2 Operation

In Position 2, the contacts **open** when the liquid rises. Select rod kits from Table 10.

**Table 10: Class 9049 Rod Kits—Position 2 Operation (Contacts *Open* on Liquid Rise)**

| Catalog Numbers           |                                 |                                 |            |            |             |             |             |
|---------------------------|---------------------------------|---------------------------------|------------|------------|-------------|-------------|-------------|
| Dimension<br>in. (mm)     | For Use on Float Switch Types   | Rod Kits                        |            |            |             |             |             |
|                           |                                 | 9049ER1                         | 9049ER2    | 9049ER3    | 9049ER5     | 9049ER7     | 9049ER12    |
| <b>R</b>                  | EG9, EW9, ER9, EG13, EW13, ER13 | 1.75 (44)                       | 2.50 (64)  | 3.25 (83)  | 5.25 (133)  | 7.25 (184)  | 12.25 (311) |
| <b>H</b>                  | EG9, EW9, ER9, EG13, EW13, ER13 | 7.50 (191)                      | 8.25 (210) | 9.00 (229) | 11.00 (279) | 13.00 (330) | 18.00 (457) |
| <b>A</b>                  | Min.                            | EG9, EW9, ER9                   | 1.00 (25)  | 1.00 (25)  | 1.00 (25)   | 1.00 (25)   | 1.00 (25)   |
|                           |                                 | EG13, EW13, ER13                | 3.06 (78)  | 3.06 (78)  | 3.06 (78)   | 3.06 (78)   | 3.06 (78)   |
|                           | Max.                            | EG9, EW9, ER9                   | 3.00 (76)  | 3.50 (89)  | 4.00 (102)  | 5.00 (127)  | 6.00 (152)  |
|                           |                                 | EG13, EW13, ER13                | 5.06 (129) | 5.56 (141) | 6.06 (154)  | 7.06 (179)  | 8.06 (205)  |
| <b>F</b>                  | Min.                            | EG9, EW9, ER9, EG13, EW13, ER13 | 5.25 (133) | 5.75 (146) | 6.00 (152)  | 6.75 (171)  | 7.75 (197)  |
|                           | Max.                            | EG9, EW9, ER9, EG13, EW13, ER13 | 7.25 (184) | 8.25 (210) | 9.00 (229)  | 10.75 (273) | 12.75 (324) |
| <b>Water Level Change</b> | Min.                            | EG9, EW9, ER9, EG13, EW13, ER13 | 2.75 (70)  | 2.75 (70)  | 3.00 (76)   | 3.75 (95)   | 4.75 (121)  |
|                           | Max.                            | EG9, EW9, ER9, EG13, EW13, ER13 | 4.25 (108) | 5.25 (133) | 6.00 (152)  | 7.75 (197)  | 9.00 (229)  |

### Position 3 Operation

In Position 3, the contacts can be set to open (standard) or close (sump) on liquid rise by turning the control switch 180° around its horizontal center line. Select rod kits from Table 11.

**Table 11: Class 9049 Rod Kits—Position 3 Operation (Contact Operation Adjustable)**

| Catalog Numbers           |                                 |                                 |             |             |             |             |             |
|---------------------------|---------------------------------|---------------------------------|-------------|-------------|-------------|-------------|-------------|
| Dimension<br>in. (mm)     | For Use on Float Switch Types   | Rod Kits                        |             |             |             |             |             |
|                           |                                 | 9049ER1                         | 9049ER2     | 9049ER3     | 9049ER5     | 9049ER7     | 9049ER12    |
| <b>R</b>                  | EG9, EW9, ER9, EG13, EW13, ER13 | 1.75 (44)                       | 2.50 (64)   | 3.25 (83)   | 5.25 (133)  | 7.25 (184)  | 12.25 (311) |
| <b>H</b>                  | EG9, EW9, ER9                   | 9.00 (229)                      | 9.75 (248)  | 10.50 (267) | 12.50 (318) | 14.50 (368) | 19.50 (495) |
|                           | EG13, EW13, ER13                | 11.00 (279)                     | 11.75 (298) | 12.50 (318) | 14.50 (368) | 16.50 (419) | 21.50 (546) |
| <b>f1 or f2</b>           | Min.                            | EG9, EW9, ER9, EG13, EW13, ER13 | 2.75 (70)   | 2.75 (70)   | 3.00 (76)   | 3.50 (89)   | 4.50 (114)  |
|                           | Max.                            | EG9, EW9, ER9, EG13, EW13, ER13 | 4.50 (114)  | 4.50 (114)  | 5.00 (127)  | 6.00 (152)  | 7.00 (178)  |
| <b>F</b>                  | Min.                            | EG9, EW9, ER9, EG13, EW13, ER13 | 5.50 (140)  | 5.50 (140)  | 6.00 (152)  | 7.00 (178)  | 7.50 (191)  |
|                           | Max.                            | EG9, EW9, ER9, EG13, EW13, ER13 | 9.00 (229)  | 9.00 (229)  | 10.00 (254) | 12.00 (305) | 14.00 (356) |
| <b>Water Level Change</b> | Min.                            | EG9, EW9, ER9, EG13, EW13, ER13 | 2.25 (57)   | 2.25 (57)   | 2.75 (70)   | 3.75 (95)   | 4.25 (108)  |
|                           | Max.                            | EG9, EW9, ER9, EG13, EW13, ER13 | 5.75 (146)  | 5.75 (146)  | 6.75 (171)  | 8.75 (222)  | 10.75 (273) |

**Class 9037 Type H, with Screw-in Bushing**



Table 12 contains ordering information for Class 9037 Type H float switches and factory installed modifications. Consult your local Square D field office 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 12: Class 9037 Type H Float Switches**

| Specifications                                                                       |         |                                                                                                                |          |                       |          |                       |          |                        |          |                         |          |
|--------------------------------------------------------------------------------------|---------|----------------------------------------------------------------------------------------------------------------|----------|-----------------------|----------|-----------------------|----------|------------------------|----------|-------------------------|----------|
| Application                                                                          |         | Condensate pumps<br>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)<br>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<br>Minimum–Maximum, in. (mm)                                      |         | 2.00–5.00<br>(52–127)                                                                                          |          | 2.50–5.00<br>(64–127) |          | 3.75–7.00<br>(95–178) |          | 4.25–8.25<br>(108–210) |          | 6.00–11.50<br>(152–292) |          |
| Float Position ▲                                                                     |         | 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 and 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                                                                 |         |                                                                                                                |          |                       |          |                       |          |                        |          | L1                      |          |
| Omit float                                                                           |         |                                                                                                                |          |                       |          |                       |          |                        |          | L2                      |          |
| Reverse action: contacts open on liquid rise                                         |         |                                                                                                                |          |                       |          |                       |          |                        |          | R ■                     |          |
| 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                     |          |

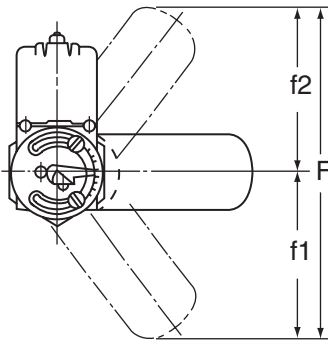
▲ Viewed from the front of the switch, facing the indicator scale.

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

For replacement floats, see “Class 9049 Accessories” on page 38.

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

**Figure 13: Travel Dimensions**

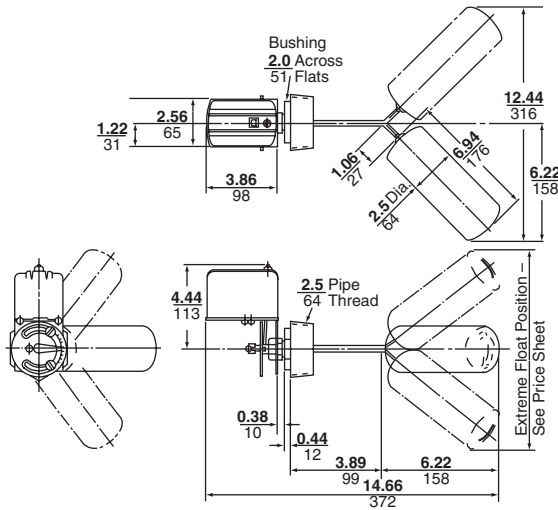


**Table 13: Type H Float Travel Distances**

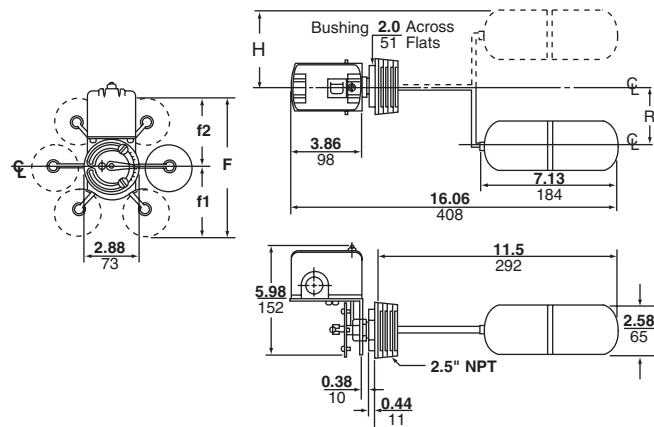
| Float Rod Angle | R<br>in. (mm) | H ▲<br>in. (mm) | f1<br>in. (mm) |            | f2<br>in. (mm) |            | F<br>in. (mm) |             |
|-----------------|---------------|-----------------|----------------|------------|----------------|------------|---------------|-------------|
|                 |               |                 | 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) |

▲ Clearance from centerline of hub to side of tank.

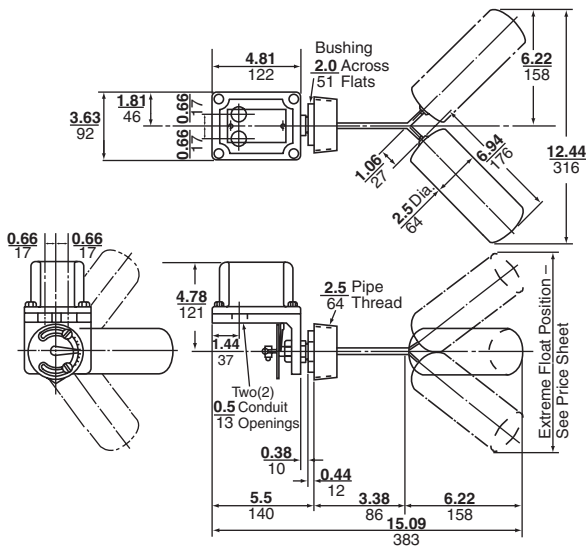
**Figure 14: Type HG—45° Angle Dimensions**



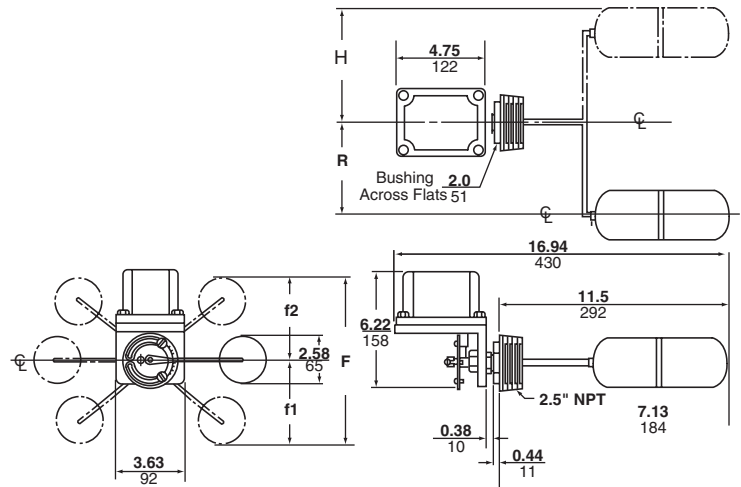
**Figure 15: Type HG—90° Offset Dimensions**



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



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



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

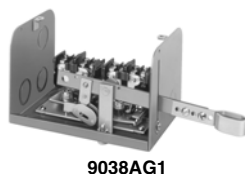
## Class 9038

Class 9038 mechanical alternators provide a simple, positive means of mechanically alternating two pumps or motors. These alternators are used on devices that are installed in a duplex system with a common tank. There are three types of Class 9038 mechanical alternators:

- Type A (open tank and sump)
- Type C (with bushing)
- Type D (flange mounted, vertical)

When liquid level rises to the first level, one pump turns on. Both pumps automatically turn on when a peak condition occurs and the liquid level continues to rise. If Form N5 or N25 is present, and the water level continues to rise, a high water alarm is activated.

Mechanical alternators can be ordered with a manual transfer selector switch (Form N3), which allows the operator to select which pump cuts in first. The second pump only operates under peak demand conditions or if the first pump fails. When the switch is disengaged, the alternator reverts to normal operation. Another option (Form N4) allows the alternator to be used as a two-level non-alternating unit.



### Class 9038 Type A, Open and Sump Tank Mechanical Alternators

Table 14 contains ordering information for Class 9038 Type A mechanical alternators, including factory installed modifications. Order float accessories separately. Consult your local Square D field office when using Class 9038 alternators in liquids with a different specific gravity than water (1.0).

When ordering a factory modification, add the Form number to the end of the mechanical alternator catalog number. For example, to select a 9038AG1 alternator with reverse action, order 9038AG1R.

**Table 14: Class 9038 Type A Mechanical Alternators**

| Specifications                                     |                                                                 |
|----------------------------------------------------|-----------------------------------------------------------------|
| <b>Application</b>                                 | Open and sump tanks using duplex pumps                          |
| <b>Float movement</b>                              | Float operated                                                  |
| <b>Ambient Temperature</b>                         | –22 to +200 °F                                                  |
| <b>Contact Operation</b>                           | Close on liquid rise (standard)<br>Open on liquid rise (Form R) |
| Catalog Numbers                                    |                                                                 |
| <b>NEMA 1</b>                                      | 9038AG1                                                         |
| <b>NEMA 4</b> (compensating spring standard)       | 9038AW1                                                         |
| <b>NEMA 7 and 9</b> (compensating spring standard) | 9038AR1                                                         |
| Modifications                                      | Form                                                            |
| Compensating spring (Type AG)                      | C                                                               |
| Manual transfer selector switch                    | N3                                                              |
| Two-level, non-alternating unit                    | N4                                                              |
| High water alarm circuit (single pole)             | N5                                                              |
| High water alarm circuit (two pole)                | N25                                                             |
| Reverse action: contacts open on liquid rise       | R                                                               |
| Accessories                                        | Catalog Number                                                  |
| Compensating spring (Type AG)                      | 9049A15                                                         |

Table 15 lists the operating forces for Class 9038 Type A alternators. Use this table when selecting additional tubing or when selecting floats and rods for accessories made by other manufacturers.

**Table 15: Class 9038 Type A Operating Forces**

| Catalog Number                                                               | 9038AG1         |           | 9038AG1R  |           | 9038AR1/9038AW1 | 9038AR1R/9038AW1R |
|------------------------------------------------------------------------------|-----------------|-----------|-----------|-----------|-----------------|-------------------|
| Lever Length Position                                                        | Minimum         | Maximum   | Minimum   | Maximum   | Standard        | Standard          |
| Force Up to Trip ▲ (oz), without Form C                                      | 18              | 16        | 14        | 11        | —               | —                 |
| Force Down to Trip ▲ (oz), without Form C                                    | 20              | 17        | 16        | 12        | —               | —                 |
| Maximum Rod Length Supported by the Compensating Spring ■<br>ft (m)          | Brass           | 10 (3.05) | 8 (2.44)  | 7 (2.13)  | 6 (1.83)        | 16 (4.88)         |
|                                                                              | Stainless Steel | 12 (3.66) | 10 (3.05) | 8 (2.44)  | 7 (2.13)        | 20 (6.1)          |
|                                                                              | Aluminum        | 25 (7.62) | 21 (6.4)  | 17 (5.18) | 15 (4.57)       | 41 (12.5)         |
| Maximum Weight of Tubing and Stops Supported by the Compensating Spring (oz) | 47              | 41        | 33        | 30        | 74              | 85                |

▲ Add 2 oz for high water alarm (Form N5 or N25).

■ Rod length determined using Class 9049 rod material (0.38 in. / 10 mm O.D. tubing). Other types of rod must be weighed and compared to the "Weight of Tubing and Stops" row above.

### Accessory Kits

Table 16 lists the Class 9049 accessory kits for Class 9038 Type A alternators. The accessories are ordered separately from the alternators. Order tapped-at-top floats for Type AG1 (except form C) and center-hole floats for Types AG1C, AW1, and AR1.

**Table 16: Class 9049 Accessories for Class 9038 Type A Float Switches (weight in oz)**

| Accessory Kits<br>Catalog Numbers    | Tapped-at-Top Floats (#304 SS) |         |         | Center-Hole Floats (#304 SS) |          |          | Additional Tubing ▲ |           |           |
|--------------------------------------|--------------------------------|---------|---------|------------------------------|----------|----------|---------------------|-----------|-----------|
|                                      | 9049A6                         | 9049A6A | 9049A6S | 9049A6C                      | 9049A6CA | 9049A6CS | 9049T1              | 9049T1A   | 9049T1S   |
| Tubing                               | 5 ft brass                     | 5 ft Al | 5 ft SS | 5 ft brass                   | 5 ft Al  | 5 ft SS  | 2.5 ft brass        | 2.5 ft Al | 2.5 ft SS |
| Net buoyancy in water, 7 in. float ■ | 60                             | 60      | 60      | 70                           | 70       | 70       | —                   | —         | —         |
| Total weight of stops                | 3                              | 3       | 3       | 6                            | 6        | 6        | —                   | —         | —         |
| Number of stops                      | 2                              | 2       | 2       | 4                            | 4        | 4        | —                   | —         | —         |
| Weight of 5 ft rod, included         | 18.5                           | 6       | 16.9    | 18.5                         | 6        | 16.9     | —                   | —         | —         |
| Weight per ft of extra rod           | —                              | —       | —       | —                            | —        | —        | 3.7                 | 1.2       | 3.4       |

■ Net buoyancy calculated with float 80% submerged, allowing for a 20% operating margin.

Buoyancy data calculated for use in water. Consult your local Square D field office for buoyancy data in media having specific gravity different than water (1.0).

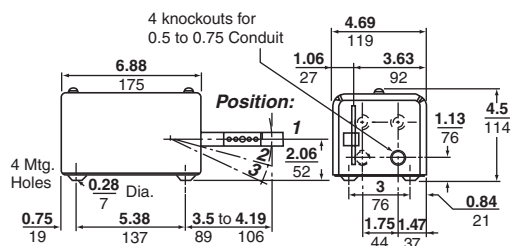
▲ Additional tubing kits add on to the float accessory kits and include a connector.

Maximum recommended tubing length for tapped-at-top float: 12.5 ft (3810 mm).

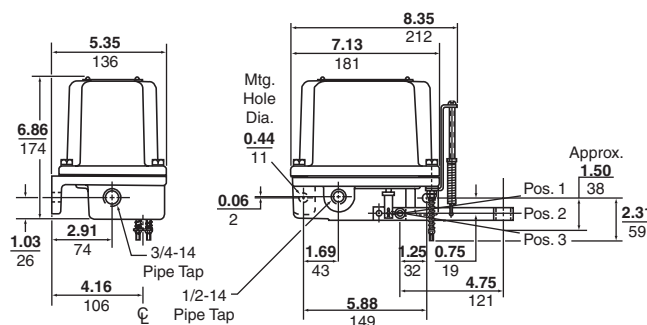
When ordering float accessories, first specify the desired accessory kit, then as a second item, give the catalog number and the quantity of the additional tubing kits required. For example, for a 9049A6C kit with 15 ft of tubing, specify:

- A. 9049A6C, quantity = 1 (includes 5 ft of tubing)
- B. 9049T1, quantity = 4 (2.5 ft of tubing each, for a total of 10 additional ft)

**Figure 18: Type AG1 Dimensions**



**Figure 19: Type AR1/AW1 Dimensions**

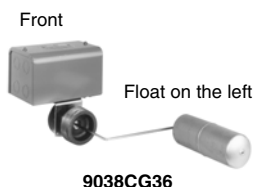


## Class 9038 Type C, Closed Tank Mechanical Alternators with Bushing

Table 17 contains ordering information for Class 9038 Type C mechanical alternators. Consult your local Square D field office when using Class 9038 alternators in liquids with a different specific gravity than water (1.0).

When ordering a factory modification, add the Form number to the end of the alternator catalog number. For example, to select a 9038CG36 alternator with reverse action, select 9038CG36R.

**Table 17: Class 9038 Type C Mechanical Alternators**



| Specifications                                                                     |          |                                                                                                                                                                                         |                  |                     |                  |                  |                     |
|------------------------------------------------------------------------------------|----------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------|---------------------|------------------|------------------|---------------------|
| Application                                                                        |          | Closed tanks using duplex, condensate pumps<br>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.<br>Occasional seal replacement may be necessary.                                                                  |                  |                     |                  |                  |                     |
| Tank Pressure                                                                      |          | Up to 50 psi                                                                                                                                                                            |                  |                     |                  |                  |                     |
| Ambient Temperature                                                                |          | −22 to +200 °F                                                                                                                                                                          |                  |                     |                  |                  |                     |
| Media Temperature (Minimum)                                                        |          | Solidification point of the medium in the tank, down to −22 °F                                                                                                                          |                  |                     |                  |                  |                     |
| Contact Operation                                                                  |          | Close on liquid rise (standard)<br>Open on liquid rise (Form R)                                                                                                                         |                  |                     |                  |                  |                     |
| Float Travel                                                                       |          | Float travel is determined by the rod length.<br>An external pointer indicates the float position.<br>For more information on float travel and position, see “Float Travel” on page 35. |                  |                     |                  |                  |                     |
| 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 Position ▲                                                                   |          | Left                                                                                                                                                                                    |                  |                     | Right            |                  |                     |
| Water Level Change, Minimum–Maximum                                                | in. (mm) | 6.5–13 (165–330)                                                                                                                                                                        | 4–7.75 (102–197) | 4.75–9.25 (121–235) | 6.5–13 (165–330) | 4–7.75 (102–197) | 4.75–9.25 (121–235) |
| NEMA 1                                                                             |          | 9038CG32                                                                                                                                                                                | 9038CG34         | 9038CG36            | 9038CG31         | 9038CG33         | 9038CG35            |
| NEMA 4                                                                             |          | 9038CW32                                                                                                                                                                                | 9038CW34         | 9038CW36            | 9038CW31         | 9038CW33         | 9038CW35            |
| NEMA 7 and 9                                                                       |          | 9038CR32                                                                                                                                                                                | 9038CR34         | 9038CW36            | 9038CR31         | 9038CR33         | 9038CW35            |
| Modifications                                                                      |          |                                                                                                                                                                                         |                  |                     | Form             |                  |                     |
| Omit 2.5 in. cast iron bushing                                                     |          |                                                                                                                                                                                         |                  |                     | F3               |                  |                     |
| Omit float                                                                         |          |                                                                                                                                                                                         |                  |                     | L                |                  |                     |
| Manual transfer selector switch                                                    |          |                                                                                                                                                                                         |                  |                     | N3               |                  |                     |
| Two-level, non-alternating unit                                                    |          |                                                                                                                                                                                         |                  |                     | N4               |                  |                     |
| High water alarm circuit, single pole (Type CG <b>only</b> )                       |          |                                                                                                                                                                                         |                  |                     | N5               |                  |                     |
| High water alarm circuit, two pole (Type CG <b>only</b> )                          |          |                                                                                                                                                                                         |                  |                     | N25              |                  |                     |
| Reverse action: contacts open on liquid rise                                       |          |                                                                                                                                                                                         |                  |                     | R                |                  |                     |
| Fluorocarbon polymer such as Viton packing, 5 oz float (diesel fuel, Type CG only) |          |                                                                                                                                                                                         |                  |                     | Z19              |                  |                     |
| Fluorocarbon polymer such as Viton packing, for media temperature up to 250 °F     |          |                                                                                                                                                                                         |                  |                     | Z20              |                  |                     |
| Fluorocarbon polymer such as Viton packing, #316 SS float                          |          |                                                                                                                                                                                         |                  |                     | Z21              |                  |                     |

▲ Viewed from front of alternator, facing indicator scale.

For replacement floats, refer to page 38.

## Electromechanical Level Control

### Class 9038 Type C—Mechanical Alternators with Bushing

Table 18 lists the float travel distances for the screw-in float switches. Refer to Figure 20.

**Table 18: Type C Float Travel Adjustments**

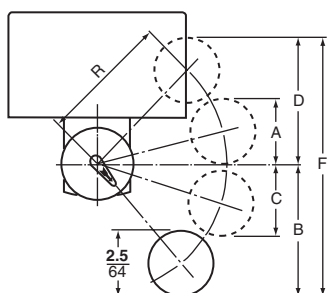
| R<br>in. (mm) | A<br>in. (mm) |           | B<br>in. (mm) |            | C<br>in. (mm) |           | D<br>in. (mm) |            | F<br>in. (mm) |            |
|---------------|---------------|-----------|---------------|------------|---------------|-----------|---------------|------------|---------------|------------|
|               | Min.          | Max.      | Min.          | Max.       | Min.          | Max.      | Min.          | Max.       | Min.          | Max.       |
| 4.25 (108) ▲  | 2 (51)        | 3.5 (89)  | 3.5 (89)      | 4.75 (121) | 2.5 (64)      | 3.75 (95) | 3.5 (89)      | 4.75 (121) | 7 (178)       | 9.5 (241)  |
| 5 (127) ■     | 2.25 (57)     | 3.75 (95) | 4 (102)       | 5.25 (133) | 2.75 (70)     | 3 (76)    | 4 (102)       | 5.25 (133) | 8 (203)       | 10.5 (267) |
| 7 (178) ●     | 2.5 (64)      | 5 (127)   | 5 (127)       | 7 (178)    | 2 (51)        | 4 (102)   | 5 (152)       | 7 (178)    | 10 (254)      | 14 (495)   |

▲ CG33, CG34, CW33, CW34, CR33, CR34

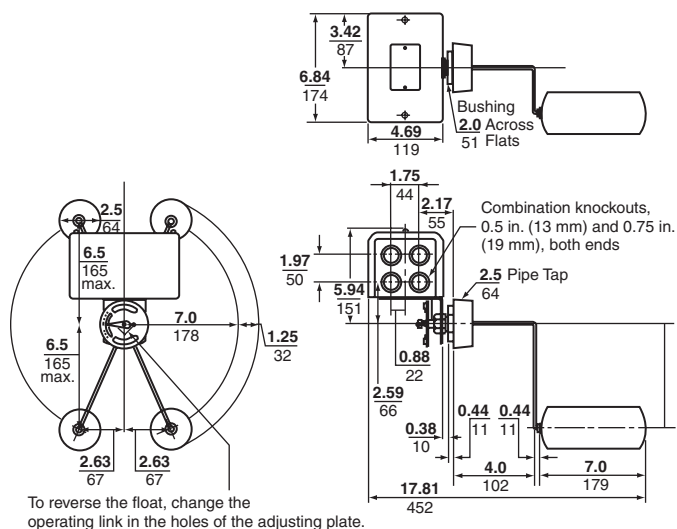
■ CG35, CG36, CW35, CW36, CR35, CR36

- CG31, CG32, CW31, CW32, CR31, CR32

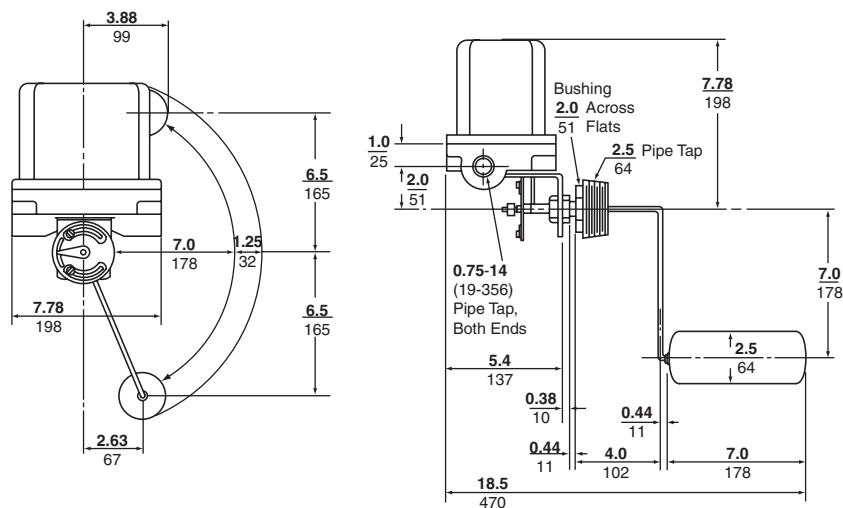
### Figure 20: Travel Dimensions



**Figure 21: Type CG Dimensions**



**Figure 22: Type CR/CW Dimensions**



## Class 9038 Type D, Closed Tank Mechanical Alternators

### Flange Mounted



9038DG  
9049ER5  
9049EF1

Table 19 contains ordering information for Class 9038 Type D alternators, factory modifications, and float kits. Order rod and float accessory kits separately. Consult your local Square D field office when using Class 9038 alternators in liquids with a different specific gravity than water (1.0).

When ordering a factory modification, add the Form number to the end of the alternator Type number. For example, to select a 9038DG7 alternator with manual transfer, order 9038DG7N3.

**Table 19: Class 9038 Type D Mechanical Alternators**

| Specifications                                                                                                                                                                                                                                                                                  |                                                                                                                                                                   |                    |                |          |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------|----------------|----------|
| Application                                                                                                                                                                                                                                                                                     | Industrial closed tanks using duplex, condensate pumps<br>Top or side mounted                                                                                     |                    |                |          |
| Float movement                                                                                                                                                                                                                                                                                  | Transmitted through a quad ring seal (occasional replacement may be necessary)                                                                                    |                    |                |          |
| Tank Pressure                                                                                                                                                                                                                                                                                   | Up to 50 psi                                                                                                                                                      |                    |                |          |
| Media Temperature                                                                                                                                                                                                                                                                               | Viton seal: up to 250 °F                                                                                                                                          |                    |                |          |
| Contact Operation                                                                                                                                                                                                                                                                               | Close on liquid rise or open on liquid rise (field reversible)                                                                                                    |                    |                |          |
| Float Travel                                                                                                                                                                                                                                                                                    | Determined by the length of the hinge post and rod and by the float position<br>For more information on float travel and position, see “Float Travel” on page 35. |                    |                |          |
| Catalog Numbers                                                                                                                                                                                                                                                                                 |                                                                                                                                                                   |                    |                |          |
| Hinge Post Length (V), in. (mm)                                                                                                                                                                                                                                                                 | 2.63 (67)                                                                                                                                                         |                    | 4.69 (119)     |          |
| Water Level Change                                                                                                                                                                                                                                                                              | Minimum                                                                                                                                                           | Maximum            | Minimum        | Maximum  |
| NEMA 1                                                                                                                                                                                                                                                                                          | 9038DG7                                                                                                                                                           | 9038DG8            | 9038DG9        | 9038DG10 |
| NEMA 4                                                                                                                                                                                                                                                                                          | 9038DW7                                                                                                                                                           | 9038DW8            | 9038DW9        | 9038DW10 |
| NEMA 7 and 9                                                                                                                                                                                                                                                                                    | 9038DR7                                                                                                                                                           | 9038DR8            | 9038DR9        | 9038DR10 |
| Modifications                                                                                                                                                                                                                                                                                   |                                                                                                                                                                   |                    | Form           |          |
| Manual transfer selector switch                                                                                                                                                                                                                                                                 |                                                                                                                                                                   |                    | N3             |          |
| Two-level, non-alternating unit                                                                                                                                                                                                                                                                 |                                                                                                                                                                   |                    | N4             |          |
| High water alarm circuit (Type DG only)                                                                                                                                                                                                                                                         |                                                                                                                                                                   |                    | N5             |          |
| Float Kits                                                                                                                                                                                                                                                                                      |                                                                                                                                                                   |                    |                |          |
| Material                                                                                                                                                                                                                                                                                        | Diameter<br>in. (mm)                                                                                                                                              | Length<br>in. (mm) | Catalog Number |          |
| #304 stainless steel                                                                                                                                                                                                                                                                            | 3.62 (92)                                                                                                                                                         | 4.5 (114)          | 9049EF1        |          |
| #316 stainless steel                                                                                                                                                                                                                                                                            | 3.62 (92)                                                                                                                                                         | 4.5 (114)          | 9049EF2        |          |
| The following float kits are available but are not recommended for use with 9038D mechanical alternators. The float travel dimensions shown in this catalog for 9038D devices do not apply when using these floats. A correction factor appears in the footnote of Tables 20–23 on pages 35–37. |                                                                                                                                                                   |                    |                |          |
| #304 stainless steel                                                                                                                                                                                                                                                                            | 2.5 (64)                                                                                                                                                          | 7 (178)            | 9049HF3        |          |
| #316 stainless steel                                                                                                                                                                                                                                                                            | 2.5 (64)                                                                                                                                                          | 7 (178)            | 9049HF4        |          |

### Float Travel

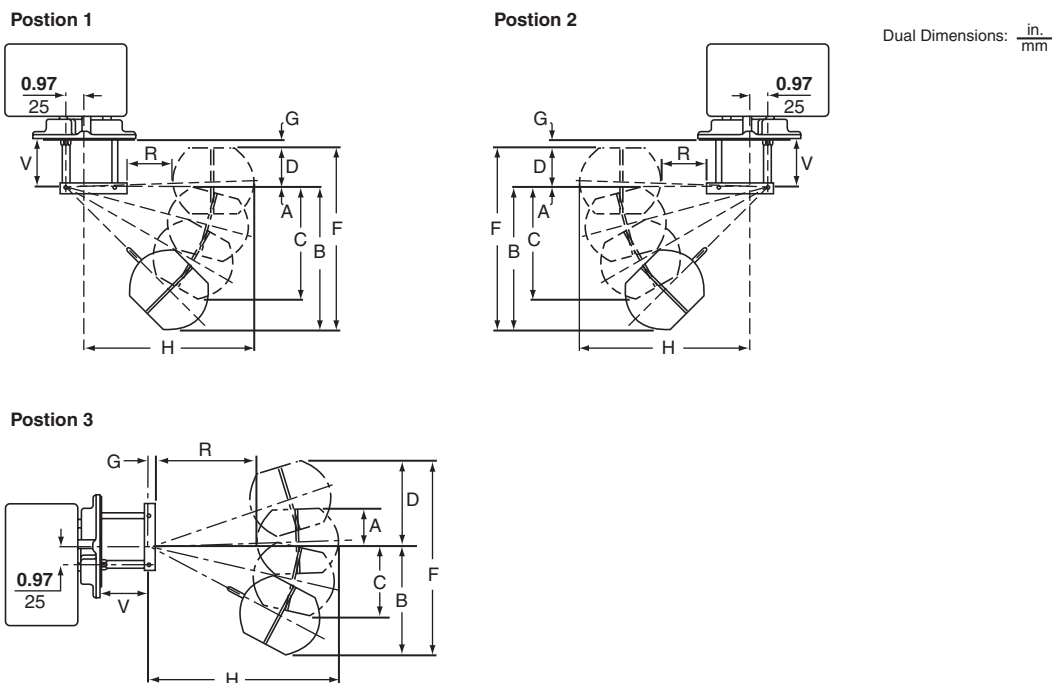
Float travel is determined by the length of the hinge post and rod and by the float position. The float may be operated in three different positions. In Position 1, the contacts close when the liquid rises. In the Position 2, the contacts open when the liquid rises. In Position 3, the contacts can be set to either open or close on liquid rise by turning the control switch 180° around its horizontal center line. Use Table 20 to select the appropriate rod kit when ordering Class 9038 Types DG7, DW7, or DR7 alternators.

**Table 20: Class 9049 Rod Kits for Class 9038 Type DG7, DW7, and DR7 Alternators**

| Float Travel for Class 9038 Types DG7, DW7, and DR7 Alternators<br>Minimum Water Level Change (V=2.63 in. / 67 mm) |             |            |            |             |             |             |
|--------------------------------------------------------------------------------------------------------------------|-------------|------------|------------|-------------|-------------|-------------|
| Dimensions<br>in. (mm)                                                                                             | 9049ER1     | 9049ER2    | 9049ER3    | 9049ER5     | 9049ER7     | 9049ER12    |
| <b>R</b>                                                                                                           | 1.75 (44)   | 2.5 (64)   | 3.25 (83)  | 5.25 (133)  | 7.25 (184)  | 12.25 (311) |
| <b>H ▲</b>                                                                                                         | 8.25 (210)  | 9 (229)    | 9.5 (241)  | 11.75 (298) | 13.75 (349) | 18.75 (476) |
| <b>A</b>                                                                                                           | <b>Min.</b> | 0.75 (19)  | 0.63 (16)  | 0.5 (13)    | 0.13 (3)    | 0.38 (10)   |
|                                                                                                                    | <b>Max.</b> | 0.63 (16)  | 0.38 (10)  | 0.25 (6)    | 0.0 (0)     | 1.5 (38)    |
| <b>B</b>                                                                                                           | <b>Min.</b> | 5 (127)    | 5.38 (137) | 5.5 (140)   | 6.38 (162)  | 7 (178)     |
|                                                                                                                    | <b>Max.</b> | 5 (127)    | 5.25 (133) | 5.5 (140)   | 6.25 (159)  | 7 (178)     |
| <b>C</b>                                                                                                           | <b>Min.</b> | 4 (102)    | 4.25 (108) | 4.38 (111)  | 5 (127)     | 5.5 (140)   |
|                                                                                                                    | <b>Max.</b> | 4.25 (108) | 4.5 (114)  | 4.63 (118)  | 5.13 (130)  | 5.75 (146)  |
| <b>D</b>                                                                                                           | <b>Min.</b> | 1.75 (44)  | 1.75 (44)  | 1.75 (44)   | 1.75 (44)   | 1.75 (44)   |
|                                                                                                                    | <b>Max.</b> | 1.5 (38)   | 1.38 (35)  | 1.25 (32)   | 1 (25)      | 0.88 (22)   |
| <b>F</b>                                                                                                           | <b>Min.</b> | 6.75 (171) | 7.13 (181) | 7.25 (184)  | 8.13 (207)  | 8.75 (222)  |
|                                                                                                                    | <b>Max.</b> | 6.5 (165)  | 6.63 (168) | 6.75 (171)  | 7.25 (184)  | 7.88 (200)  |
| <b>G</b>                                                                                                           | <b>Min.</b> | 1 (25)     | 1 (25)     | 1 (25)      | 1 (25)      | 1 (25)      |
|                                                                                                                    | <b>Max.</b> | 1.5 (38)   | 1.5 (38)   | 1.5 (38)    | 1.75 (44)   | 2 (51)      |

▲ Add 2.5 in. (64 mm) to H when using HF3 or HF4 floats.

**Figure 23: Travel Dimensions**



Use the following table to select the appropriate rod kit when ordering Class 9038 Types DG8, DW8, or DR8 alternators.

**Table 21: Class 9049 Rod Kits for Use on Class 9038 Types DG8, DW8, and DR8 Alternators**

| Float Travel for Class 9038 Types DG8, DW8, and DR8 Alternators<br>Minimum Water Level Change (V=2.63 in. / 67 mm) |           |            |            |            |             |             |
|--------------------------------------------------------------------------------------------------------------------|-----------|------------|------------|------------|-------------|-------------|
| Dimensions<br>in. (mm)                                                                                             | 9049ER1   | 9049ER2    | 9049ER3    | 9049ER5    | 9049ER7     | 9049ER12    |
| R                                                                                                                  | 1.75 (44) | 2.5 (64)   | 3.25 (83)  | 5.25 (133) | 7.25 (184)  | 12.25 (311) |
| H ▲                                                                                                                | 7.5 (191) | 8.25 (210) | 9 (229)    | 11 (279)   | 13 (330)    | 18 (457)    |
| A                                                                                                                  | Min.      | 0.0 (0)    | 0.5 (13)   | 1 (25)     | 2 (51)      | 3 (76)      |
|                                                                                                                    | Max.      | 1.25 (32)  | 1.5 (38)   | 2 (51)     | 3 (76)      | 4 (102)     |
| B                                                                                                                  | Min.      | 8 (203)    | 8.75 (222) | 9.5 (241)  | 11.5 (292)  | 13.5 (343)  |
| C                                                                                                                  | Min.      | 6.5 (165)  | 7 (178)    | 7.75 (197) | 9.5 (241)   | 11 (279)    |
|                                                                                                                    | Max.      | 6.5 (165)  | 7 (178)    | 7.5 (1910) | 9 (229)     | 10.75 (273) |
| D ■                                                                                                                | Min.      | 2 (51)     | 1.75 (44)  | 1.5 (38)   | 1.25 (32)   | 0.75 (19)   |
|                                                                                                                    | Max.      | 0.5 (13)   | 0.25 (6)   | 0.0 (0)    | 0.75 (19)   | 1.75 (44)   |
| F                                                                                                                  | Min.      | 10 (254)   | 10.5 (267) | 11 (279)   | 12.75 (324) | 14.25 (362) |
|                                                                                                                    | Max.      | 8.5 (216)  | 9 (229)    | 9.5 (241)  | 10.75 (273) | 11.75 (298) |
| G                                                                                                                  | Min.      | 1.5 (38)   | 1.5 (38)   | 1.75 (44)  | 2 (51)      | 2.25 (57)   |
|                                                                                                                    | Max.      | 2.5 (64)   | 2.75 (70)  | 3 (76)     | 3.75 (95)   | 4.5 (114)   |

▲ Add 2.5 in. (64 mm) to H when using HF3 or HF4 floats.

■ D is negative when the top of the float is below the horizontal centerline.

Use the following table to select the appropriate rod kit when ordering Class 9038 Types DG9, DW9, or DR9 alternators.

**Table 22: Class 9049 Rod Kits for Class 9038 Type DG9, DW9, and DR9 Alternators**

| Float Travel for Class 9038 Types DG9, DW9, and DR9 Alternators<br>Minimum Water Level Change (V=4.69 in. / 119 mm) |            |            |            |             |             |             |
|---------------------------------------------------------------------------------------------------------------------|------------|------------|------------|-------------|-------------|-------------|
| Dimensions<br>in. (mm)                                                                                              | 9049ER1    | 9049ER2    | 9049ER3    | 9049ER5     | 9049ER7     | 9049ER12    |
| R                                                                                                                   | 1.75 (44)  | 2.5 (64)   | 3.25 (83)  | 5.25 (133)  | 7.25 (184)  | 12.25 (311) |
| H ▲                                                                                                                 | 8.25 (210) | 9 (229)    | 9.5 (241)  | 11.75 (298) | 13.75 (349) | 18.75 (476) |
| A                                                                                                                   | Min.       | 1 (25)     | 1 (25)     | 0.88 (22)   | 0.63 (16)   | 0.25 (6)    |
|                                                                                                                     | Max.       | 0.5 (13)   | 0.13 (3)   | 0.0 (0)     | 0.88 (22)   | 1.63 (41)   |
| B                                                                                                                   | Min.       | 5.25 (133) | 5.75 (146) | 6 (152)     | 7.25 (184)  | 8.25 (210)  |
|                                                                                                                     | Max.       | 5.25 (133) | 5.63 (143) | 5.88 (149)  | 7.13 (181)  | 8.25 (210)  |
| C                                                                                                                   | Min.       | 4.5 (114)  | 4.75 (121) | 5 (127)     | 5.75 (146)  | 6.5 (165)   |
|                                                                                                                     | Max.       | 4.5 (114)  | 4.75 (121) | 5 (127)     | 5.88 (149)  | 6.75 (171)  |
| D                                                                                                                   | Min.       | 2 (51)     | 2 (51)     | 2 (51)      | 1.88 (48)   | 1.63 (41)   |
|                                                                                                                     | Max.       | 1.5 (38)   | 1.25 (32)  | 1.13 (29)   | 0.75 (19)   | 0.5 (13)    |
| F                                                                                                                   | Min.       | 7.25 (184) | 7.75 (197) | 8 (203)     | 9.25 (235)  | 10.13 (257) |
|                                                                                                                     | Max.       | 6.75 (171) | 6.88 (175) | 7 (178)     | 7.88 (200)  | 8.75 (222)  |
| G                                                                                                                   | Min.       | 3 (76)     | 3 (76)     | 3 (76)      | 3.25 (83)   | 4 (102)     |
|                                                                                                                     | Max.       | 3.75 (95)  | 4 (102)    | 4 (102)     | 4.38 (111)  | 4.63 (117)  |

▲ Add 2.5 in. (64 mm) to H when using HF3 or HF4 floats

## Electromechanical Level Control

### Class 9038 Type D—Flange Mounted Mechanical Alternators

Use the following table to select the appropriate rod kit when ordering Class 9038 Type DG10, DW10, or DR10 alternators.

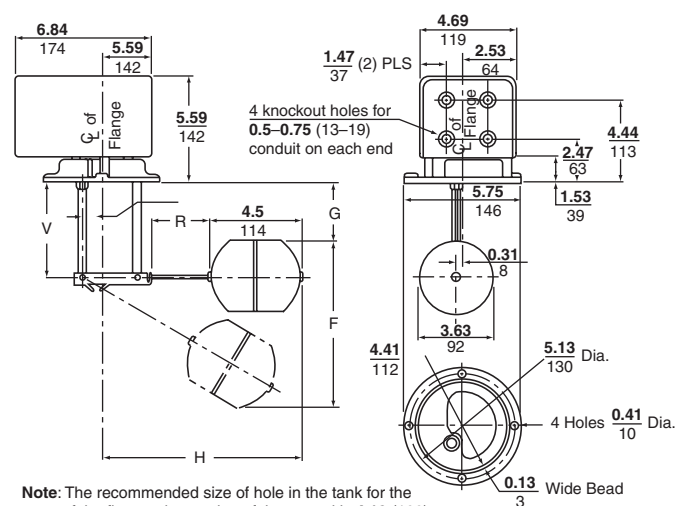
**Table 23: Class 9049 Rod Kits for Class 9038 Type DG10, DW10, and DR10 Alternators**

| Float Travel for Class 9038 Types DG10, DW10, and DR10 Alternators<br>Minimum Water Level Change (V=4.69 in. / 119 mm) |      |            |            |            |             |            |             |
|------------------------------------------------------------------------------------------------------------------------|------|------------|------------|------------|-------------|------------|-------------|
| Dimensions<br>in. (mm)                                                                                                 |      | 9049ER1    | 9049ER2    | 9049ER3    | 9049ER5     | 9049ER7    | 9049ER12    |
| R                                                                                                                      |      | 1.75 (44)  | 2.5 (64)   | 3.25 (83)  | 5.25 (133)  | 7.25 (184) | 12.25 (311) |
| H ▲                                                                                                                    |      | 7.5 (191)  | 8.25 (210) | 9 (229)    | 11 (279)    | 13 (330)   | 18 (457)    |
| A                                                                                                                      | Min. | 0.5 (13)   | 1 (25)     | 1.5 (38)   | 2.5 (64)    | 3.25 (83)  | 6 (152)     |
|                                                                                                                        | Max. | 1.5 (38)   | 2 (51)     | 2.5 (64)   | 4 (102)     | 5.5 (140)  | 9.25 (235)  |
| B                                                                                                                      | Min. | 8 (203)    | 8.75 (222) | 9.5 (241)  | 11.5 (292)  | 13.5 (343) | 18.5 (470)  |
| C                                                                                                                      | Min. | 7 (178)    | 7.75 (194) | 8.25 (210) | 10 (254)    | 11.5 (292) | 15.5 (394)  |
|                                                                                                                        | Max. | 7 (178)    | 7.5 (191)  | 8.25 (210) | 10 (254)    | 12 (305)   | 17 (432)    |
| D                                                                                                                      | Min. | 1.75 (44)  | 1.75 (44)  | 1.5 (38)   | 1.25 (32)   | 1 (25)     | 0.5 (13)    |
|                                                                                                                        | Max. | 0.5 (13)   | 0.25 (6)   | 0.0 (0)    | 1 (25)      | 1.5 (38)   | 2.75 (70)   |
| F                                                                                                                      | Min. | 8.75 (222) | 10.5 (267) | 11 (279)   | 12.75 (324) | 14.5 (368) | 19 (483)    |
|                                                                                                                        | Max. | 8.5 (216)  | 9 (229)    | 9.5 (241)  | 10.5 (267)  | 12 (305)   | 15.75 (400) |
| G                                                                                                                      | Min. | 3.25 (83)  | 3.5 (89)   | 3.5 (89)   | 3.75 (95)   | 4 (102)    | 4.75 (121)  |
|                                                                                                                        | Max. | 4.75 (121) | 5 (127)    | 5.25 (133) | 6 (152)     | 6.75 (171) | 8.5 (216)   |

▲ Add 2.5 in. (64 mm) to H when using HF3 or HF4 floats.

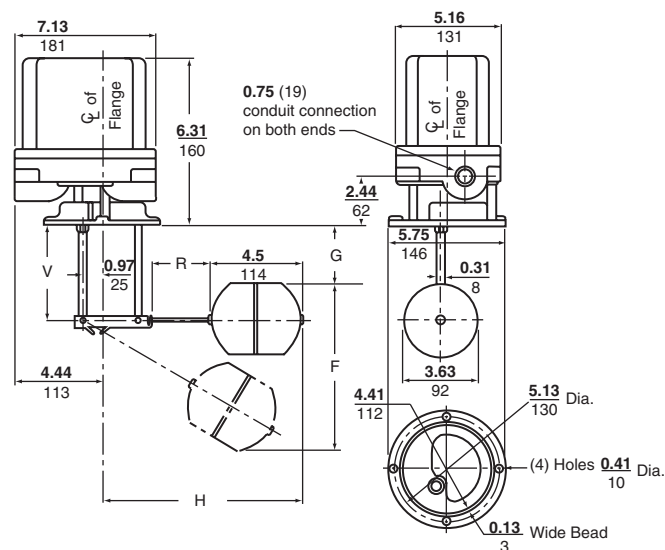
- D is negative when the top of the float is below the horizontal centerline.

**Figure 24: Type DG Dimensions**



**Note:** The recommended size of hole in the tank for the entry of the float and mounting of the control is **4.19** (106). Floats shown are Type EF, **4.5** (114) long. Add **2.5** (64) to "H" if using Type HF Floats, which are **7.0** (178) long.

### Figure 25: Type DR/DW Dimensions



## Accessories

**Table 24: Class 9049 Accessories**

| Catalog Number | Description                                                                                       | Equipment To Be Serviced |
|----------------|---------------------------------------------------------------------------------------------------|--------------------------|
| 9049A6         | 7 in. Tapped at Top #304 Stainless Steel Float, 5 ft Brass rod, 2 stops                           | All 9036, 9038A          |
| 9049A6A        | 7 in. Tapped at Top #304 Stainless Steel Float, 5 ft Aluminum rod, 2 stops                        | All 9036, 9038A          |
| 9049A6C        | 7 in. Center Hole #304 Stainless Steel Float, 5 ft Brass rod, 4 stops                             | All 9036, 9038A          |
| 9049A6CA       | 7 in. Center Hole #304 Stainless Steel Float, 5 ft Aluminum rod, 4 stops                          | All 9036, 9038A          |
| 9049A6CS       | 7 in. Center Hole #316 Stainless Steel Float, 5 ft Stainless Steel rod, 4 Stainless Steel stops   | All 9036, 9038A          |
| 9049A6S        | 7 in. Tapped at top #316 Stainless Steel Float, 5 ft Stainless Steel rod, 2 Stainless Steel stops | All 9036, 9038A          |
| 9049AF1        | 7 in. Round Center Hole #304 Stainless Steel Replacement Float ( <i>do not remove ballast</i> )   | 9049A6C, A6CA, DRA31     |
| 9049AF2        | 7 in. Round Center Hole #316 Stainless Steel Replacement Float ( <i>do not remove ballast</i> )   | 9049A6CS, DRA32          |
| 9049AF3        | 7 in. Round Tapped at top #304 Stainless Steel Replacement Float ( <i>do not remove ballast</i> ) | 9049A6, A6A, DCA1, DCA3  |
| 9049AF4        | 7 in. Round Tapped at top #316 Stainless Steel Replacement Float ( <i>do not remove ballast</i> ) | 9049A6S, DCA2, DCA4      |
| 9049A13        | Compensating Spring                                                                               | 9036GG                   |
| 9049A15        | Compensating Spring                                                                               | 9038AG                   |
| 9049A19        | Compensating Spring                                                                               | 9036DG                   |
| 9049A20        | Compensating Spring                                                                               | 9036DR, DW               |
| 9049A54        | Mounting Bracket—Replacing obsolete 9036A with 9036G                                              | 9036GG                   |
| 9049A55        | Mounting Bracket—Replacing 9036A (S or F1) with 9036G                                             | 9036GG                   |
| 9049A58        | Form R lever                                                                                      | 9036DG                   |
| 9049EF1        | #304 Stainless Steel Float ( <i>do not remove ballast</i> )                                       | 9037E, 9038D             |
| 9049EF2        | #316 Stainless Steel Float ( <i>do not remove ballast</i> )                                       | 9037E, 9038D             |
| 9049ER1        | 1-3/4 in. Stainless Steel Rod                                                                     | 9037E, 9038D             |
| 9049ER2        | 2-1/2 in. Stainless Steel Rod                                                                     | 9037E, 9038D             |
| 9049ER3        | 3-1/4 in. Stainless Steel Rod                                                                     | 9037E, 9038D             |
| 9049ER5        | 5-1/4 in. Stainless Steel Rod                                                                     | 9037E, 9038D             |
| 9049ER7        | 7-1/4 in. Stainless Steel Rod                                                                     | 9037E, 9038D             |
| 9049ER12       | 12-1/4 in. Stainless Steel Rod                                                                    | 9037E, 9038D             |
| 9049GF1        | #304 Stainless Steel Float ( <i>do not remove ballast</i> )                                       | 9037G                    |
| 9049GF2        | #316 Stainless Steel Float ( <i>do not remove ballast</i> )                                       | 9037G                    |
| 9049HF3        | #304 Stainless Steel Float ( <i>do not remove ballast</i> )                                       | 9037H, 9038C, D ▲        |
| 9049HF4        | #316 Stainless Steel Float ( <i>do not remove ballast</i> )                                       | 9037H, 9038C, D ▲        |
| 9049T1         | Additional Rod Kit: One 2-1/2 ft section of Brass rod, connector                                  | 9049A6, A6C              |
| 9049T1A        | Additional Rod Kit: One 2-1/2 ft section of Aluminum rod, connector                               | 9049A6A, A6CA            |
| 9049T1S        | Additional Rod Kit: One 2-1/2 ft section of Stainless Steel rod, connector                        | 9049A6S, A6CS            |
| 9049UMS1       | Universal Mounting Bracket                                                                        | All 9036; 9038AG, AR, AW |

▲ Not recommended for 9038D mechanical alternators. 9049EF1 (#304 SS) and 9049EF2 (#316 SS) are recommended instead.

## Renewal Parts Kits

Renewal parts are generally available for Pump Control products with a current date code or with a numerical date code (such as 172, which corresponds to the first quarter of 1972). Parts are no longer available for devices manufactured before 1965.

**Table 25: Class 9998 Renewal Parts Kits for Class 9036–9038 Devices**

| Catalog Number | Description                                                 | Equipment To Be Serviced                       |
|----------------|-------------------------------------------------------------|------------------------------------------------|
| 9998AO1        | Replacement High-Level Alarm, Single-Pole Snap Switch, SPDT | Form <b>N5</b>                                 |
| 9998CO3        | Replacement High-Level Alarm, Double-Pole Snap Switch, DPDT | Form <b>N25</b>                                |
| 9998PC213      | Replacement Switch Mechanism                                | 9036GR, GW, Series C (All Except Form H and R) |
| 9998PC214      | Replacement Switch Mechanism                                | 9036GR, GW, Series C (Form <b>R</b> Only)      |
| 9998PC215      | Replacement Switch Mechanism                                | 9036GR, GW, Series C (Form <b>H</b> Only)      |
| 9998PC216      | Cover Gasket                                                | 9036, 9037 GW Only                             |
| 9998PC286      | Replacement Switch Mechanism                                | 9036DR1, DW1, Series B, Form <b>C</b>          |
| 9998PC287      | Replacement Switch Mechanism                                | 9036DR1, DW1, Series B, Form <b>R</b>          |
| 9998PC319      | Replacement Switch Mechanism                                | 9035DG11                                       |
| 9998PC334      | Replacement Switch Mechanism                                | 9035DR10, DW10, DR30, DW30                     |
| 9998PC335      | Replacement Switch Mechanism                                | 9035DR11, DW11, DR31, DW31                     |



**Schneider Electric USA**

8001 Knightdale Blvd.  
Knightdale, NC 27545  
1-888-Square D  
1-888-778-2733  
[www.us.SquareD.com](http://www.us.SquareD.com)

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**05/2008**