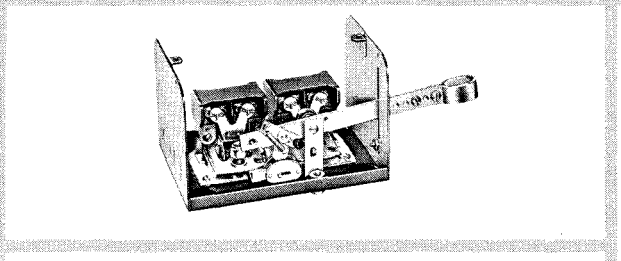
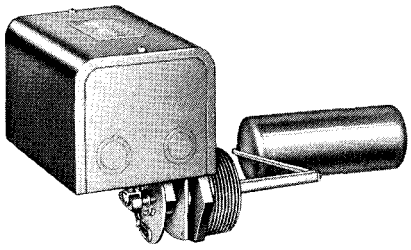
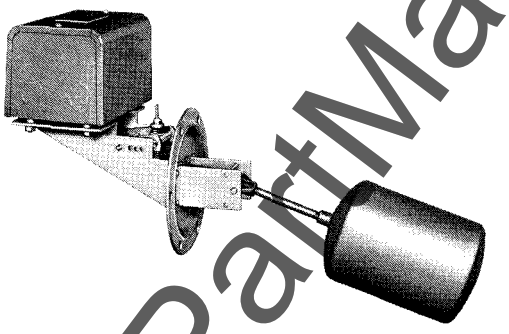






# Mechanical Alternators
## Float Operated

**CONTENTS**



SQUARE D COMPANY

CLASS 9038

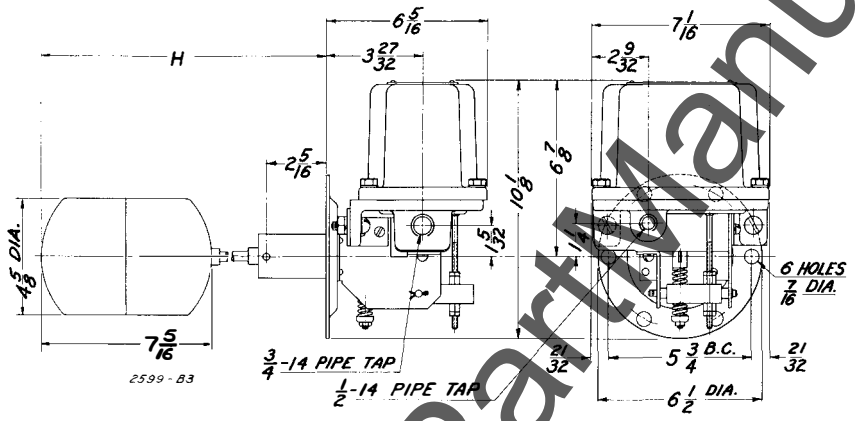
# MECHANICAL ALTERNATORS
## TYPES BG, BR, BW

### EXPLANATION OF FLOAT TRAVEL AND POSITION

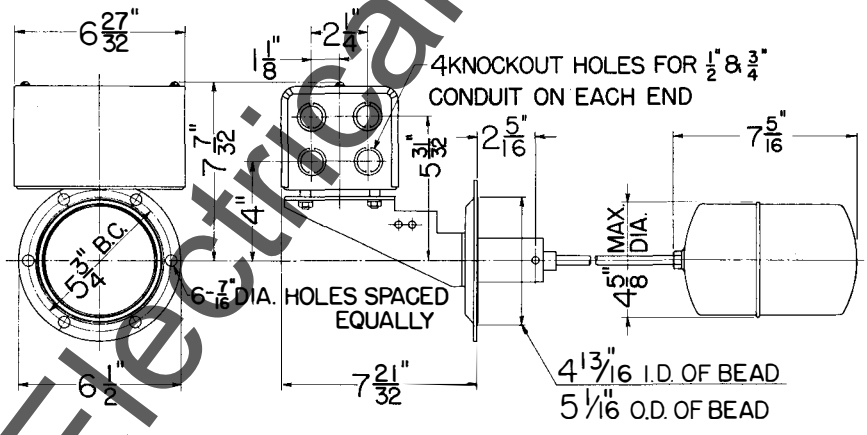
NORMAL OPERATION: Switches will cut in and cut out at the high point and low point of distance A plus B, given in the tables. Under normal conditions, as long as one pump alone is able to handle the incoming water, the pumps will alternate at this distance. With the water level continuing to rise, the second switch will cut in and start the second pump when the float reaches the top of distance D. Both pumps will continue to run until the float returns to the low point of distance D plus C, where one pump will cut out. The other pump will continue until the float reaches the low point of distance B.

REVERSE OPERATION (FORM R): Both pumps will be running with the float at the low point of distance B. With the float rising to the top of distance B plus A, one pump will stop and the other continue until the float reaches the high point of distance D. Both pumps will alternate between the distance C plus D.

POINT OF FLOAT TRAVEL: Figures 1 and 2, by reason of float rod casting shape, show position of float movement. In figure 1, float movement is equally divided above and below center line. In figure 2, the main part of movement is below center line. Figure 3 is designed for vertical mounting.




Types BR, BW
Net Weight 20 lbs.




Type BG
Net Weight 10 lbs.

### ORDERING INFORMATION REQUIRED:

1. Specify Class 9038 Type . . . . . (Basic Switch)
2. Specify Class 9049 Type . . . . . (Rod Kit)
3. Specify Class 9049 Type . . . . . (Float Kit)
4. To receive a complete packaged alternator, that is, the three above components packaged together in a single carton, add to the switch class and type, the suffix letters "BR" for Brass Rod **or** "SR" for S.S. Rod, and "F" for Float.

Example: To receive a 9038 BG-21, 9049 GBR-3 and 9049 BF-1, complete, in one carton, specify: **9038 BG-21 BR3 F1**.

# MECHANICAL ALTERNATORS
## TYPES CG, CW, CR

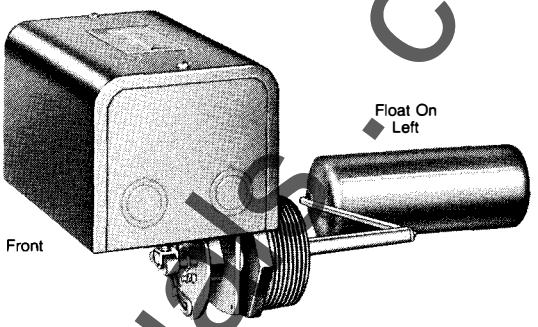
CLASS 9038

**SCREW-IN TYPE FOR LIQUID LEVEL CONTROL IN CLOSED TANKS.**

**UNITS INCLUDE FLOAT, ROD, SCREW-IN CONNECTOR.**

Buna N quad-ring seal packing is used between the float rod and sealing tube. Normal application is at atmospheric pressure, but where higher pressures are encountered the switch will withstand tank pressures up to 50 p.s.i. at temperatures up to 250°F. Occasional repacking may be necessary. A special Teflon® seal (Form Z10) for pressures up to 100 p.s.i. can be furnished if specified.

Float travel adjustments are external and an indicating scale is provided to facilitate settings. A pointer on the switch linkage indicates float position within the tank.



Type CG-2

Electrical Ratings — see page 11.

### SCREW IN ALTERNATORS

| CLASS 9038 TWO 2 POLE UNITS CONTACTS CLOSE ON LIQUID RISE | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| Float Position Viewed from Front of Switch Facing Indicator Scale | "R" | Approx. Water Level Change | | NEMA 1 | | NEMA 4 | | ★ NEMA 7, 9 | |
| | | Min | Max | Type | Price | Type | Price | Type | Price |
| Right | 7" | 6½" | 13" | CG-1 | **$154.** | CW-1 | **$425.** | CR-1 | **$419.** |
| Left | 7" | 6½" | 13" | CG-2 | **154.** | CW-2 | **425.** | CR-2 | **419.** |
| Right | 4¼" | 4" | 7¾" | CG-3 | **154.** | CW-3 | **425.** | CR-3 | **419.** |
| Left | 4¼" | 4" | 7¾" | CG-4 | **154.** | CW-4 | **425.** | CR-4 | **419.** |
| Right | 5" | 4¾" | 9¼" | CG-5 | **154.** | CW-5 | **425.** | CR-5 | **419.** |
| Left | 5" | 4¾" | 9¼" | CG-6 | **154.** | CW-6 | **425.** | CR-6 | **419.** |

★ Suitable for hazardous locations: Class 1, divisions 1 and 2, Groups C and D. Class 2, divisions 1 and 2, Groups E, F and G

### TABLE OF FLOAT TRAVEL ADJUSTMENTS FOR CLASS 9038 TYPE C

| | | Minimum | | | | | Maximum | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| "R" | "H" | A | B | C | D | F | A | B | C | D | F |
| 4¼" | 5½" | 2" | 3½" | 2½" | 3½" | 7" | 3½" | 4¾" | 3¾" | 4¾" | 9½" |
| 5" | 6¼" | 2¼" | 4" | 2¾" | 4" | 8" | 3¾" | 5¼" | 3" | 5¼" | 10½" |
| 7" | 8¼" | 2½" | 5" | 2" | 5" | 10" | 5" | 7" | 4" | 7" | 14" |

### EXPLANATION OF FLOAT TRAVEL AND POSITION

NORMAL OPERATION: Switches will cut in and cut out at the high point and low point of distance A plus B, given in the tables. Under normal conditions, as long as one pump alone is able to handle the incoming water, the pumps will alternate at this distance. With the water level continuing to rise, the second switch will cut in and start the second pump when the float reaches the top of distance D. Both pumps will continue to run until the float returns to the low point of distance D plus C, where one pump will cut out. The other pump will continue until the float reaches the low point of distance B.

REVERSE OPERATION (FORM R): Both pumps will be running with the float at the low point of distance B. With the float rising to the top of distance B plus A, one pump will stop and the other continue until the float reaches the high point of distance D. Both pumps will alternate between the distance C plus D.

### AVAILABLE MODIFICATIONS

NOTE: Standard materials are:
Float: #304 S.S.
Float rod: #316 S.S.
Sealing tube: Brass
2½" Bushing: Cast Iron
Packing: Buna N quad-ring

| | | | |
|---|---|---|---|
| Omit 2½" connecting bushing | Form F3 | deduct | **$ 3.** |
| Omit Float | Form L | deduct | **9.** |
| Manual transfer selector (see 9038A section for details) | Form N3 | add | **21.** |
| Two level non-alternating unit | Form N4 | add | **21.** |
| Addition of a third, high water alarm Circuit | Form N5 | add | **50.** |
| Reverse action (contacts open on Rise) | Form R | | N.C. |
| Sub. #316 S.S. Float and sealing tube, Teflon® Packing | Form Z9 | add | **165.** |
| Sub. Teflon® Packing | Form Z10 | add | **33.** |
| Sub. #316 S.S. Float, sealing tube, 2½" bushing, Teflon® Packing | Form Z14 | add | **271.** |
| Viton® packing (Diesel Fuel) | Form Z19 | | N.C. |

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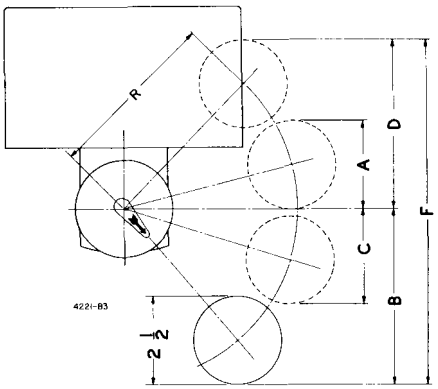
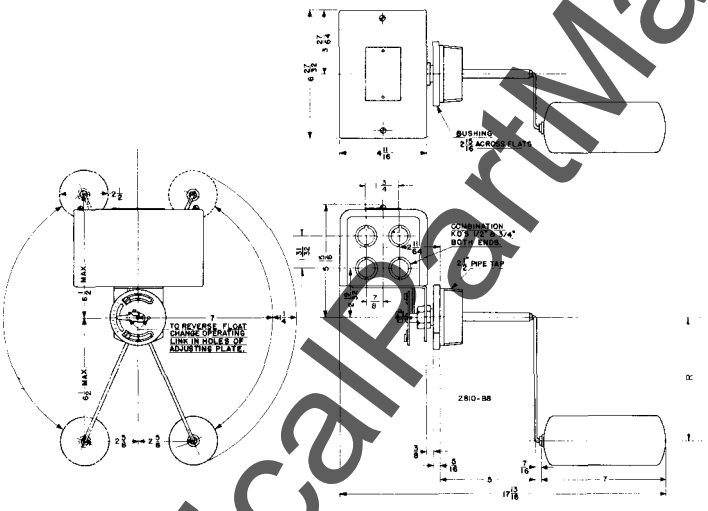
**ORDERING INFORMATION REQUIRED:** Specify Class, Type, Form.

# MECHANICAL ALTERNATORS
## TYPES CG, CW, CR

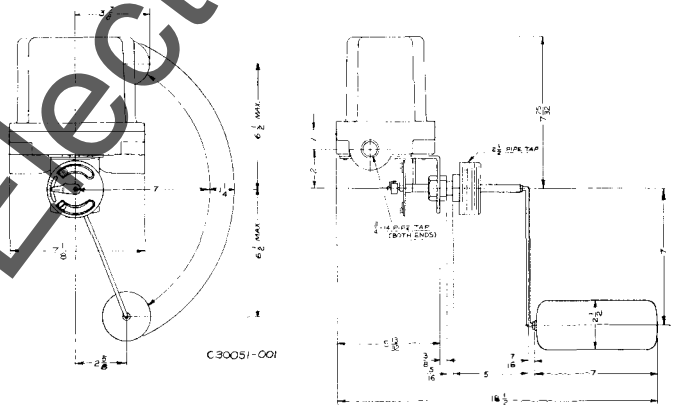



Type CG

### APPROXIMATE DIMENSIONS




**Type CG**
Net Weight — 7½ Pounds Approx.




**Type CR, CW**
Net Weight — 21 Pounds Approx.

# MECHANICAL ALTERNATORS

## TYPES DG, DW, DR

CLASS 9038

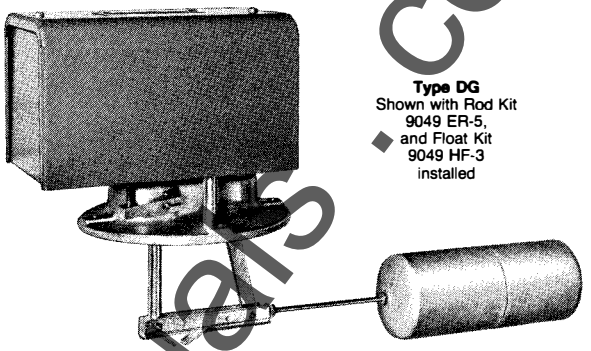
BUILD UP THE SWITCH TO MEET YOUR REQUIREMENTS FROM THE BASIC SWITCH, ROD AND FLOAT GROUPS BELOW.

### EXPLANATION OF FLOAT TRAVEL AND POSITION

NORMAL OPERATION: Switches will cut in and cut out at the high point and low point of distance A plus B, given in the tables. Under normal conditions, as long as one pump alone is able to handle the incoming water, the pumps will alternate at this distance. With the water level continuing to rise, the second switch will cut in and start the second pump when the float reaches the top of distance D. Both pumps will continue to run until the float returns to the low point of distance D plus C, where one pump will cut out. The other pump will continue until the float reaches the low point of distance B.

REVERSE OPERATION (FORM R): Both pumps will be running with the float at the low point of distance B. With the float rising to the top of distance B plus A, one pump will stop and the other continue until the float reaches the high point of distance D. Both pumps will alternate between the distance C plus D.

These devices use graphite coated asbestos packing and are limited to 50 P.S.I. tank pressure.



**Type DG**
Shown with Rod Kit 9049 ER-5, and Float Kit 9049 HF-3 installed

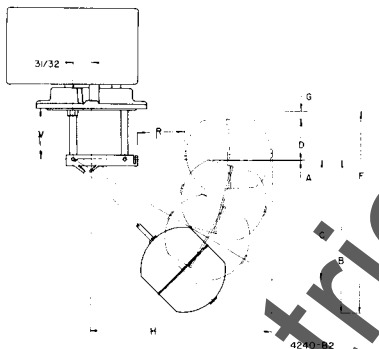
### FLANGE MOUNTED ALTERNATORS (BASIC SWITCHES)

**CLASS 9038** — **CONTACTS CLOSE ON LIQUID RISE** — **CONTROL OF LIQUID LEVEL WITHIN CLOSED TANKS**

| Poles | Water Level Change | Hinge Post Dimension "V" | NEMA 1 Type | NEMA 1 Price | NEMA 4 Type | NEMA 4 Price | NEMA 7 and 9 ★ Type | NEMA 7 and 9 ★ Price |
|---|---|---|---|---|---|---|---|---|
| Two 2 Pole Units | Min. | 2⅝" | DG-7 | **$167.** | DW-7 | **$438.** | DR-7 | **$432.** |
| | Max. | | DG-8 | **167.** | DW-8 | **438.** | DR-8 | **432.** |
| | Min. | 4 11/16" | DG-9 | **167.** | DW-9 | **438.** | DR-9 | **432.** |
| | Max. | | DG-10 | **167.** | DW-10 | **438.** | DR-10 | **432.** |

★ Suitable for hazardous locations: Class 1, divisions 1 and 2, Groups C and D; Class 2, divisions 1 and 2, Groups E, F and G.

### SELECT CLASS 9049 ROD KITS FROM THESE TABLES OF FLOAT TRAVEL ADJUSTMENTS




Type DG

**9038 TYPE DG-7, DR-7, DW-7 "V" = 2⅝" (MINIMUM LEVEL CHANGE)**

| Rod Kit Class 9049 | Minimum Travel "R" | Minimum Travel ● "H" | Min G | Min A | Min B | Min C | Min D | Min F | Maximum Travel G | Max A | Max B | Max C | Max D | Max F | Price |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Type ER-1 | 1¾" | 8¼" | 1" | ¾" | 5" | 4" | 1¾" | 6¾" | 1½" | ⅝" | 5" | 4¼" | 1½" | 6½" | **$5.** |
| Type ER-2 | 2½" | 9" | 1" | ⅝" | 5⅜" | 4¼" | 1¾" | 7⅛" | 1½" | ⅜" | 5¼" | 4½" | 1⅜" | 6⅝" | **5.** |
| Type ER-3 | 3¼" | 9½" | 1" | ½" | 5½" | 4⅜" | 1¾" | 7¼" | 1½" | ¼" | 5½" | 4⅝" | 1¼" | 6¾" | **5.** |
| Type ER-5 | 5¼" | 11¾" | 1" | ⅛" | 6⅜" | 5" | 1¾" | 8⅛" | 1¾" | 0 | 6¼" | 5⅛" | 1" | 7¼" | **5.** |
| Type ER-7 | 7¼" | 13¾" | 1" | ¼" | 7" | 5½" | 1¾" | 8¾" | 2" | ½" | 7" | 5¾" | ⅞" | 7⅞" | **5.** |
| Type ER-12 | 12¼" | 18¾" | 1" | ⅜" | 8⅝" | 6¾" | 1¾" | 10⅜" | 2½" | 1½" | 8¾" | 7¾" | ⅝" | 9⅜" | **5.** |

**9038 TYPE DG-8, DR-8, DW-8 "V" = 2⅝" (MAXIMUM LEVEL CHANGE)**

| Rod Kit Class 9049 | Minimum Travel "R" | Minimum Travel ● "H" | Min G | Min A | Min B | Min C | Min D | Min F | Maximum Travel G | Max A | Max B | Max C | Max D ✻ | Max F | Price |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Type ER-1 | 1¾" | 7½" | 1½" | 0 | 8" | 6½" | 2" | 10" | 2½" | 1¼" | 8" | 6½" | ½" | 8½" | **$5.** |
| Type ER-2 | 2½" | 8¼" | 1½" | ½" | 8¾" | 7" | 1¾" | 10½" | 2¾" | 1½" | 8¾" | 7" | ¼" | 9" | **5.** |
| Type ER-3 | 3¼" | 9" | 1¾" | 1" | 9½" | 7¾" | 1½" | 11" | 3" | 2" | 9½" | 7½" | 0 | 9½" | **5.** |
| Type ER-5 | 5¼" | 11" | 2" | 2" | 11½" | 9½" | 1¼" | 12¾" | 3¾" | 3" | 11½" | 9" | ¾" | 10¾" | **5.** |
| Type ER-7 | 7¼" | 13" | 2" | 3" | 13½" | 11" | ¾" | 14¼" | 4½" | 4" | 13½" | 10¾" | 1¾" | 11¾" | **5.** |
| Type ER-12 | 12¼" | 18" | 2¼" | 5½" | 18½" | 14¾" | ½" | 19" | 6¼" | 6½" | 18½" | 15" | 4¼" | 14¼" | **5.** |

**9038 TYPE DG-9, DR-9, DW-9 "V" = 4 11/16" (MINIMUM LEVEL CHANGE)**

| Rod Kit Class 9049 | Minimum Travel "R" | Minimum Travel ● "H" | Min G | Min A | Min B | Min C | Min D | Min F | Maximum Travel G | Max A | Max B | Max C | Max D | Max F | Price |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Type ER-1 | 1¾" | 8¼" | 3" | 1" | 5¼" | 4½" | 2" | 7¼" | 3⅞" | ½" | 5¼" | 4½" | 1½" | 6¾" | **$5.** |
| Type ER-2 | 2½" | 9" | 3" | 1" | 5¾" | 4¾" | 2" | 7¾" | 4" | ⅛" | 5⅝" | 4¾" | 1¼" | 6⅞" | **5.** |
| Type ER-3 | 3¼" | 9½" | 3" | ⅞" | 6" | 5" | 2" | 8" | 4" | 0 | 5⅞" | 5" | 1⅛" | 7" | **5.** |
| Type ER-5 | 5¼" | 11¾" | 3" | ⅝" | 7¼" | 5¾" | 2" | 9¼" | 4⅜" | ⅞" | 7⅛" | 5⅞" | ¾" | 7⅞" | **5.** |
| Type ER-7 | 7¼" | 13¾" | 3¼" | ¼" | 8¼" | 6½" | 1⅞" | 10⅛" | 4⅝" | 1⅝" | 8¼" | 6¾" | ½" | 8¾" | **5.** |
| Type ER-12 | 12¼" | 18¾" | 4" | ⅛" | 10¾" | 8⅜" | 1⅝" | 12⅜" | 5¾" | 2⅞" | 11" | 8½" | ½" | 11½" | **5.** |

**9038 TYPE DG-10, DR-10, DW-10 "V" = 4 11/16" (MAXIMUM LEVEL CHANGE)**

| Rod Kit Class 9049 | Minimum Travel "R" | Minimum Travel ● "H" | Min G | Min A | Min B | Min C | Min D | Min F | Maximum Travel G | Max A | Max B | Max C | Max D ✻ | Max F | Price |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Type ER-1 | 1¾" | 7½" | 3¼" | ½" | 8" | 7" | 1¾" | 8¾" | 4¾" | 1½" | 8" | 7" | ½" | 8½" | **$5.** |
| Type ER-2 | 2½" | 8¼" | 3½" | 1" | 8¾" | 7¾" | 1¾" | 10½" | 5" | 2" | 8¾" | 7½" | ¼" | 9" | **5.** |
| Type ER-3 | 3¼" | 9" | 3½" | 1½" | 9½" | 8¼" | 1½" | 11" | 5¼" | 2½" | 9½" | 8¼" | 0 | 9½" | **5.** |
| Type ER-5 | 5¼" | 11" | 3¾" | 2½" | 11½" | 10" | 1¼" | 12¾" | 6" | 4" | 11½" | 10" | 1" | 10½" | **5.** |
| Type ER-7 | 7¼" | 13" | 4" | 3¼" | 13½" | 11½" | 1" | 14½" | 6¾" | 5½" | 13½" | 12" | 1½" | 12" | **5.** |
| Type ER-12 | 12¼" | 18" | 4¾" | 6" | 18½" | 15½" | ½" | 19" | 8½" | 9¼" | 18½" | 17" | 2¾" | 15¾" | **5.** |

● **Add 2½" to "H" if using 7" Long Floats, 9049 HF-3 or HF-4.**
✻ **"D" will be negative when the top of the float is below the horizontal centerline.**

### FLOAT KITS FOR USE WITH 9038D

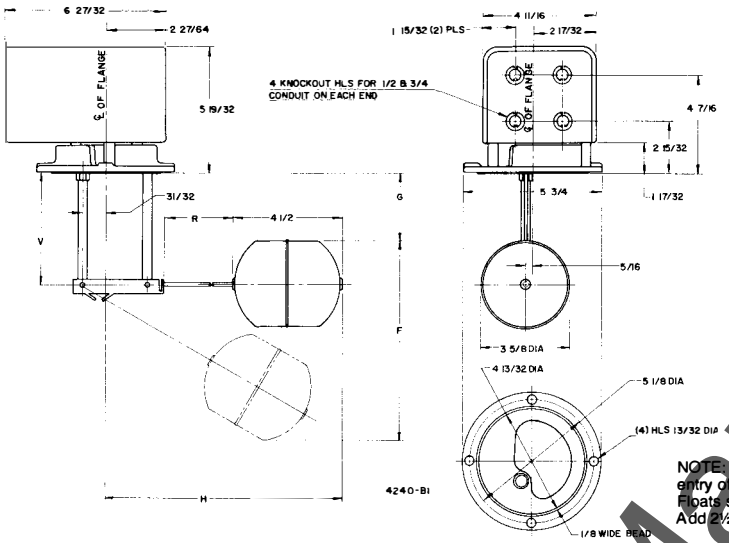
| Size and Material | Class and Type | Price |
|---|---|---|
| Diameter x Length | | |
| 3⅝" x 4½", #302 S.S. | Class 9049 Type EF-1 | **$12.** |
| 3⅝" x 4½", #316 S.S. | Class 9049 Type EF-2 | **27.** |
| 2½" x 7", #302 S.S. | Class 9049 Type HF-3 | **13.** |
| 2½" x 7", #316 S.S. | Class 9049 Type HF-4 | **41.** |

### AVAILABLE MODIFICATIONS

| | |
|---|---|
| Manual transfer selector switch ..... Form N3 add (see 9038 Type A for details) | **$21.** |
| Two level, non-alternating unit ..... Form N4 add | **21.** |
| Reverse action (contacts open on rise) ..... Form R | **N.C.** |

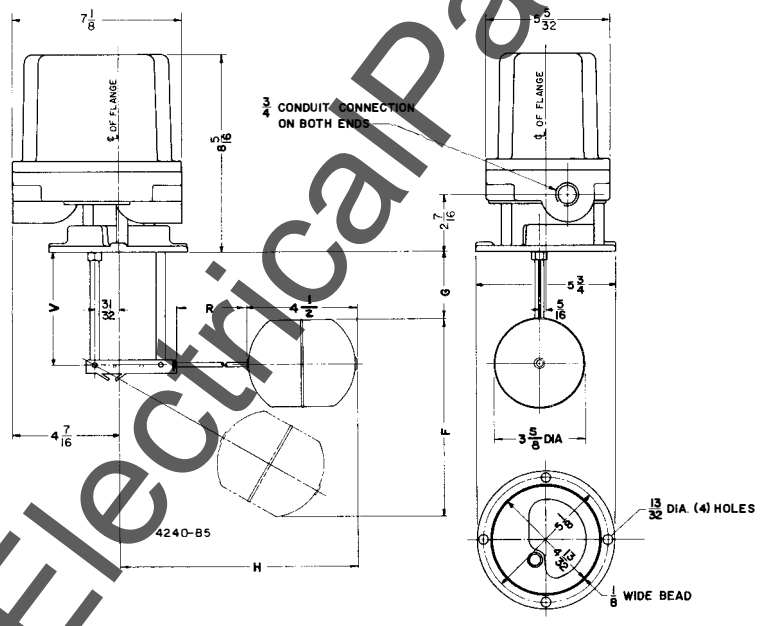
Electrical Ratings — see page 11.

# MECHANICAL ALTERNATORS
## TYPES DG, DW, DR




NOTE: The recommended size of hole in the tank for the entry of the float and mounting of the control is 4 3/16".
Floats shown are Type EF, 4½" long.
Add 2½" to "H" if using Type HF Floats which are 7" long.

**Type DG**
Net Weight — 7 Pounds Approx.
Showing Hole in tank pattern.




**Types DR, DW**
Net Weight — 21 Pounds Approx.

### ORDERING INFORMATION REQUIRED:

1. Specify Class 9038 Type . . . . . (Basic Switch)
2. Specify Class 9049 Type . . . . . (Rod Kit)
3. Specify Class 9049 Type . . . . . (Float Kit)
4. To receive a complete packaged alternator, that is, the three above components packaged together in a single carton, add to the switch class and type, the suffix letters "R" for Rod and "F" for Float.

Example: To receive a 9038 DG-7, 9049 ER-1 and 9049 EF-1, complete, in one carton, **specify: 9038 DG-7 R1 F1.**

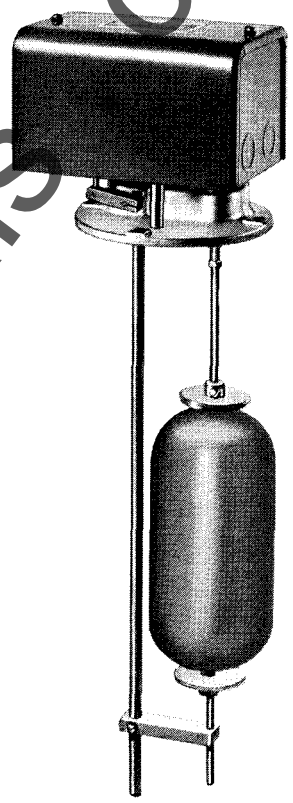
# MECHANICAL ALTERNATORS
## TYPES JG, JW, JR

CLASS 9038

Flange mounted vertical action. Units are complete including float.

For restricted tank space or when larger water level changes are required than can be normally provided on the conventional float switches.

These devices use graphite coated packing and are limited to 50 P.S.I. tank pressure.



Type JG-1

| CLASS 9038 | | | | | | | CONTACTS CLOSE ON LIQUID RISE |
|---|---|---|---|---|---|---|---|
| | Ground Link Length "A" Distance | NEMA 1 | | NEMA 4 | | NEMA 7 and 9 ★ | |
| | | Type | Price | Type | Price | Type | Price |
| Two 2-Pole Units | 17" | JG-1 | **$246.** | JW-1 | **$517.** | JR-1 | **$511.** |
| | 23" | JG-2 | **256.** | JW-2 | **527.** | JR-2 | **521.** |
| | 29" | JG-3 | **266.** | JW-3 | **537.** | JR-3 | **531.** |
| | 35" | JG-4 | **276.** | JW-4 | **547.** | JR-4 | **541.** |
| | 41" | JG-5 | **286.** | JW-5 | **557.** | JR-5 | **551.** |
| | 47" | JG-6 | **296.** | JW-6 | **567.** | JR-6 | **561.** |
| | 53" | JG-7 | **306.** | JW-7 | **577.** | JR-7 | **571.** |
| | 59" | JG-8 | **316.** | JW-8 | **587.** | JR-8 | **581.** |

★ Suitable for hazardous locations: Class 1, divisions 1 and 2, Groups C and D; Class 2, divisions 1 and 2, Groups E, F and G.

### OPERATION

Type J switches will cut in and cut out at the high point and low point of distance B (given in drawing at right). Under normal conditions with one pump able to handle incoming water, the pumps will alternate at this distance (solid line floats represent the normal alternating points). With water level continuing to rise, the second switch will cut in and start the second pump when the float reaches top of distance D. Both pumps will run until float returns to low point of distance D where leading pump will cut off first, with lagging pump continuing to run until float returns to low point of distance B.

NOTE 1: Travels listed in Table 1 also apply to explosion-proof (JR) and water-tight (JW) versions.

NOTE 2: The cut-in point of the leading pump cannot be adjusted to less than 4 7/16" from the top of the tank. The cut-in point of the lagging pump cannot be adjusted to less than 3¼" from the top of the tank.
The cut-out point of the leading pump cannot be less than 6⅞" plus the distance from the end of the guide rod to the bottom of the tank.
The cut-out point of the lagging pump cannot be less than 5½" plus the distance from the end of the guide rod to the bottom of the tank.

NOTE 3: After first pump cuts on, an additional increase in water level of 1 3/16" will bring the second pump on.

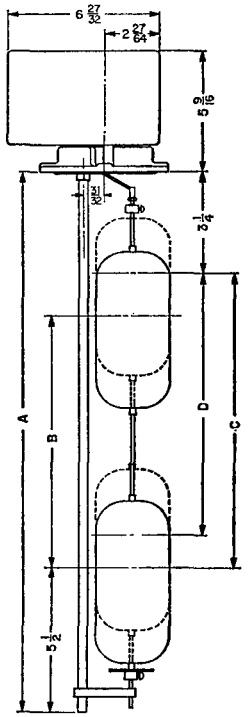
Dimensions on JW, JR types available on request. Portion of switch above tank would be same as Type DR, DW, preceding page.

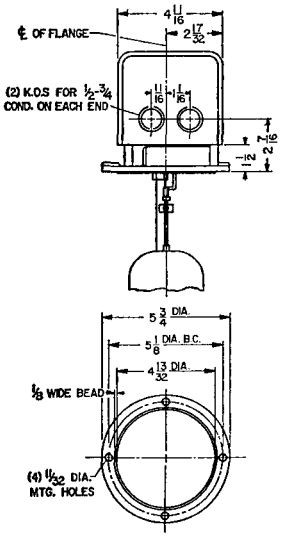
### AVAILABLE MODIFICATIONS

| | | | |
|---|---|---|---|
| Omit Float and rod accessories | Form L1 | deduct | **$28.** |
| Omit Rod accessories | Form L2 | deduct | **5.** |
| Manual transfer selector (see 9038 Type A for details) | Form N3 | add | **21.** |
| Two level, non-alternating Mechanism | Form N4 | add | **21.** |
| Reverse action (contacts open on Rise) | Form R | | N.C. |
| Sub. #316 S.S. Float and rod accessories | Form Z5 | | |
| | A = 17" | add | **106.** |
| | A = 23" | add | **112.** |
| | A = 29" | add | **118.** |
| | A = 35" | add | **124.** |
| | A = 41" | add | **130.** |
| | A = 47" | add | **136.** |
| | A = 53" | add | **142.** |
| | A = 59" | add | **148.** |

### TABLE 1 — ADJUSTMENT IN INCHES

| Type | "A" Link Length | "B" Water Level Change to Effect Normal Alternation of Two Pumps | |
|---|---|---|---|
| | | Minimum | Maximum |
| JG-1 | 17" | 4 7/16" | 7 1/16" |
| JG-2 | 23" | 4 7/16" | 13 1/16" |
| JG-3 | 29" | 4 7/16" | 19 1/16" |
| JG-4 | 35" | 4 7/16" | 25 1/16" |
| JG-5 | 41" | 4 7/16" | 31 1/16" |
| JG-6 | 47" | 4 7/16" | 37 1/16" |
| JG-7 | 53" | 4 7/16" | 43 1/16" |
| JG-8 | 59" | 4 7/16" | 49 1/16" |




4240-B6

### ELECTRICAL RATINGS

| Voltage | Single Phase AC | Polyphase AC | DC |
|---|---|---|---|
| 115 | 2 H.P. | 3 H.P. | ½ H.P. |
| 230 | 3 H.P. | 5 H.P. | ½ H.P. |
| 460/575 | | 1 H.P. | |
| 32 | | | ¼ H.P. |

Control Circuit Rating: NEMA 600A

SQUARE D COMPANY



10/83 CPG Printed in USA

# MECHANICAL ALTERNATORS

## OPEN TANK OR SUMP OPERATION *

**CLASS 9038** — **CONTACTS CLOSE ON LIQUID RISE** — **LEVER ACTUATED**

| Poles | "E" Distance | Float Rod Lever Figure No. | NEMA 1 General Purpose | | NEMA 4 Water Tight | | NEMA 7 and 9 Groups C-G Explosion Proof | |
|---|---|---|---|---|---|---|---|---|
| | | | Type | Price | Type | Price | Type | Price |
| Two 2 Pole Units | .... | .... | AG-1 | $ 43.60 | AW-1 | $ 101.50 | AR-1 | $ 98.50 |

*Float and rod accessories not furnished on "A" Types. Order from 9049 Price Sheet Page 1-2. A tapped at top float can be used if turbulence of the liquids is not severe. If a center hole float is used a compensating spring (Form C) must be added to support the weight of the rod Compensating springs are furnished as standard on the Class 9038 Type AW & AR switches.

## FLANGE MOUNTED ALTERNATORS (Bellows Seal)

**CLASS 9038** — **CONTACTS CLOSE ON LIQUID RISE** — **CONTROL OF LIQUID LEVEL WITHIN CLOSED TANK**

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| Two 2 Pole Units | 12" | 1 | BG-7 | $ 117. | BW-7 | $ 163. | BR-7 | $ 160. |
| | | 2 | BG-8 | 117. | BW-8 | 163. | BR-8 | 160. |
| | | 3 | BG-9 | 117. | BW-9 | 163. | BR-9 | 160. |
| | 14" | 1 | BG-10 | 117. | BW-10 | 163. | BR-10 | 160. |
| | | 2 | BG-11 | 117. | BW-11 | 163. | BR-11 | 160. |
| | | 3 | BG-12 | 117. | BW-12 | 163. | BR-12 | 160. |
| | 16" | 1 | BG-13 | 117. | BW-13 | 163. | BR-13 | 160. |
| | | 2 | BG-14 | 117. | BW-14 | 163. | BR-14 | 160. |
| | | 3 | BG-15 | 117. | BW-15 | 163. | BR-15 | 160. |

## SCREW IN ALTERNATORS

**CLASS 9038** — **CONTACTS CLOSE ON LIQUID RISE**

| Poles | Float Position | General Purpose | | Water Tight | | Explosion-Proof | |
|---|---|---|---|---|---|---|---|
| | | Type | Price | Type | Price | Type | Price |
| Two 2 Pole Units | Right | CG-1 | $ 70. | CW-1 | $ 206. | CR-1 | $ 203. |
| | Left | CG-2 | 70. | CW-2 | 206. | CR-2 | 203. |

## FLANGE MOUNTED ALTERNATORS

**CLASS 9038** — **CONTACTS CLOSE ON LIQUID RISE** — **CONTROL OF LIQUID LEVEL WITHIN CLOSED TANKS**

| Poles | "E" Distance | Hinge Post Dimension "H" | General Purpose Enclosure | | Water Tight | | Explosion-Proof | |
|---|---|---|---|---|---|---|---|---|
| | | | Type | Price | Type | Price | Type | Price |
| Two 2 Pole Units | 12" | 2⅝" See Table I Page 3 | DG-1 | $ 79.50 | DW-1 | $215.50 | DR-1 | $ 212.50 |
| | 14" | | DG-2 | 79.50 | DW-2 | 215.50 | DR-2 | 212.50 |
| | 16" | | DG-3 | 79.50 | DW-3 | 215.50 | DR-3 | 212.50 |
| | 12" | 4 1⅛" See Table II Page 3 | DG-4 | 79.50 | DW-4 | 215.50 | DR-4 | 212.50 |
| | 14" | | DG-5 | 79.50 | DW-5 | 215.50 | DR-5 | 212.50 |
| | 16" | | DG-6 | 79.50 | DW-6 | 215.50 | DR-6 | 212.50 |

| SPECIAL FEATURES AND ACCESSORIES • | Form Letter | Price |
|---|---|---|
| Monel Bellows (B Types only) | Form A | $ 17.80 |
| Compensating spring (Type AG) | Form C | 9.80 |
| Omit Float—Deduct (B Types only) | Form L | 9.80 |
| Omit Float—Deduct (CG and DG Types only) | Form L | 4.50 |
| Omit Rod—Deduct (B Types only) | Form L2 | .90 |
| Manual Transfer Selector | Form N3 | 4.85 |
| Two Level, Non Alternating Switch Mechanism | Form N4 | 4.85 |
| Reverse Action (Not Available on DW or DR Types) | Form R | Optional |
| Stainless Steel Float and Rod (B Types only)—Add | Form Z5 | 80.65 |
| Stainless Steel Float (D Types only)—Add | Form Z5 | 27.50 |
| Teflon Packing and Stainless Steel Float, Float Rod and Sealing Tube (C Types only) | Form Z9 | 76.25 |
| Teflon Packing (C Types only) | Form Z10 | 15.25 |
| E distance other than standard up to 16"—Add (B and DG Types only) | ..... | 2.50 |
| E distances, over 16" each foot or fraction in excess of 16"—Add (B and DG Types only) | ..... | 3.70 |

## • ORDERING INSTRUCTIONS

1—Specify Class 9038 Type.....

2—Specify the "F" distance for B, C, and D Types within the limits of the tables on Pages 2 and 3.

3—If special features are desired, add the appropriate Form ..... to the Class and Type. Arrange Form letters in alphabetical sequence when ordering more than one special feature.

### ELECTRICAL RATINGS

| Voltage | Single Phase AC | Polyphase AC | DC |
|---|---|---|---|
| 115 | ¾ H. P. | 2 H. P. | ½ H. P. |
| 230 | 2 H. P. | 3 H. P. | ½ H. P. |
| 440-550 | ..... | 1 H. P. | ..... |
| 32 | ..... | ..... | ¼ H. P. |

**SEPTEMBER, 1966**
Supersedes Price Sheet 9038, Page 2, dated September, 1960

# MECHANICAL ALTERNATORS

## TABLE OF OPERATING FORCES — TYPES AG, AR AND AW

| Type | Without Comp. Spring | | With Compensating Spring | | | Length of Rod Which Can Be Supported with Compensating Spring at Max Adjust. | | | |
|---|---|---|---|---|---|---|---|---|---|
| | Force Up | Force Down | Max. Wgt. of Rod & Stops | (To Trip Down) Minimum Flt. Wgt. | (To Trip Up) Minimum Flt. Buoy | ‡ Monel | ‡ Brass | ‡Stl. Steel | ‡ Alum. |
| AG-1 (Min. Lever Ext.) | 10 oz. | 14 oz. | 48 oz. | 21 oz. | 32 oz. | 6 ft. | 11 ft. | 12 ft. | 35 ft. |
| AG-1 (Max. Lever Ext.) | 8 | 12 | 40 | 15 | 20 | 5 | 9 | 10 | 28 |
| AG-1 Form R (Min. Lever Ext.) | 7 | 5 | 32 | 11 | 24 | 3 | 7 | 7 | 21 |
| AG-1 Form R (Max. Lever Ext.) | 6 | 4 | 28 | 10 | 20 | 3 | 5 | 6 | 18 |
| AR-1, AW-1 (Standard Lever) | 7 | 7 | 72 | 32 | 36 | 12 | 23 | 25 | 72 |
| AR-1 Form R, AW-1 Form R (Std. Lever) | 9 | 4 | 90 | 32 | 34 | 15 | 18 | 18 | 55 |

‡Rod length has been determined using weight of rod material furnished on Class 9049 accessories.

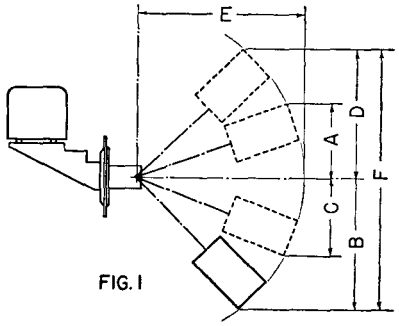


FIG. 1

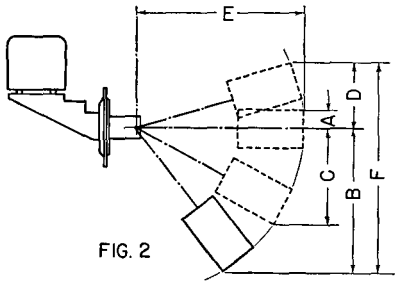


FIG. 2

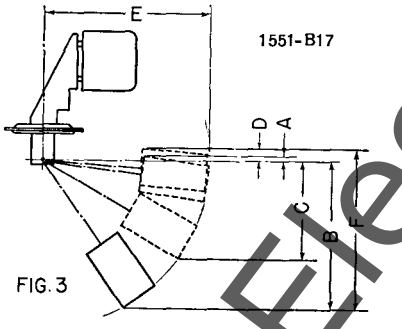


FIG. 3

## TABLES OF FLOAT TRAVEL ADJUSTMENTS
## FLANGE MOUNTED ALTERNATORS — TYPES BG, BR AND BW

### FIGURE I CASTING

| "E" Distance | MINIMUM TRAVEL | | | | | MAXIMUM TRAVEL | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | A | B | C | D | F | A | B | C | D | F |
| 12″ | 4⅛″ | 6⅛″ | 4⅛″ | 6⅛″ | 12¼″ | 7¾″ | 9½″ | 7⅜″ | 9½″ | 19″ |
| 14″ | 4½″ | 6¾″ | 4½″ | 6¾″ | 13½″ | 8¾″ | 10¾″ | 8⅛″ | 10¾″ | 21½″ |
| 16″ | 5″ | 7½″ | 5″ | 7½″ | 15″ | 9¾″ | 12″ | 9¼″ | 12″ | 24″ |

### FIGURE II CASTING

| "E" Distance | MINIMUM TRAVEL | | | | | MAXIMUM TRAVEL | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | A | B | C | D | F | A | B | C | D | F |
| 12″ | 1″ | 9½″ | 8⅜″ | 2⅝″ | 11 13/16″ | 1″ | 10½″ | 9½″ | 2⅝″ | 12 13/16″ |
| 14″ | ½″ | 11″ | 9½″ | 2⅝″ | 13 15/16″ | ½″ | 12⅛″ | 10¾″ | 2⅝″ | 14 7/16″ |
| 16″ | ⅛″ | 12 7/16″ | 10¾″ | 2⅝″ | 14¾″ | ½″ | 13 1/16″ | 12″ | 2⅝″ | 16″ |

### FIGURE III CASTING

| "E" Distance | MINIMUM TRAVEL | | | | | MAXIMUM TRAVEL | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | A | B | C | D | F | A | B | C | D | F |
| 12″ | ⅛″ | 10¾″ | 9¾″ | 1¼″ | 12″ | ⅛″ | 10¾″ | 9¾″ | 1¼″ | 12″ |
| 14″ | ⅝″ | 12⅜″ | 11⅛″ | ⅞″ | 13¼″ | ⅜″ | 13″ | 11¾″ | ⅞″ | 13⅞″ |
| 16″ | 1⅜″ | 13⅞″ | 12½″ | ⅝″ | 14½″ | 1¼″ | 15⅛″ | 13¾″ | ⅝″ | 15¾″ |

●NOTE: When F distance is not specified, switches will be furnished with minimum float travel.

## EXPLANATION OF FLOAT TRAVEL AND POSITION

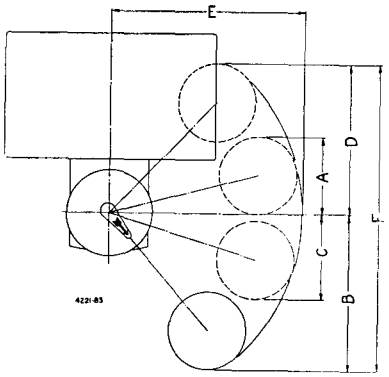
NORMAL OPERATION: Standard Type BG, CG and DG switches will cut in and cut out at the high point and low point of distance A plus B, given in tables above. Under normal conditions, as long as one pump alone is able to handle the incoming water, the pumps will alternate at this distance. With the water level continuing to rise, the second switch will cut in and start the second pump when the float reaches the top of distance D. Both pumps will continue to run until the float returns to the low point of distance D plus C, where one pump will cut out. The other pump will continue until the float reaches the low point of distance B.

REVERSE OPERATION (FORM R): Both pumps will be running with the float at the low point of distance B. With the float rising to the top of distance B plus A, one pump will stop and the other continue until the float reaches the high point of distance D. Both pumps will alternate between the distance C plus D.

POSITION OF FLOAT TRAVEL: Figures 1 and 2, by reason of float rod casting shape, show position of float movement. In figure 1, float movement is equally divided above and below center line. In figure 2, the main part of float movement is below center line. Figure 3 is designed for vertical mounting.

# MECHANICAL ALTERNATORS

## TABLES OF FLOAT TRAVEL ADJUSTMENTS‡
## SCREW-IN ALTERNATORS — TYPE CG

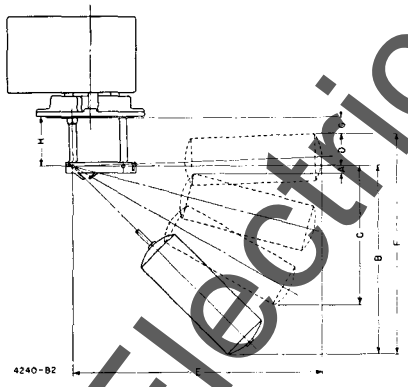



Class 9038
Type CG

**TYPE CG SCREW-IN ALTERNATORS**

| "E" Distance | MINIMUM TRAVEL | | | | | MAXIMUM TRAVEL | | | | | APPROX. WATER LEVEL CHANGE | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | A | B | C | D | F | A | B | C | D | F | Min. | Max. |
| 8¼″ | 2½″ | 4⅝″ | 2¾″ | 4⅝″ | 9″ | 6″ | 7″ | 6¼″ | 7″ | 14″ | 6½″ | 13″ |

## FLANGE MOUNTED ALTERNATORS — TYPE DG
## APPROXIMATE DIMENSIONS




Class 9038
Type DG

**•TABLE I (2⅝″ "H" DIMENSION)**

| "E" Distance | MINIMUM TRAVEL | | | | | | MAXIMUM TRAVEL | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | A | B | C | D | F | G | A | B | C | D | F | G |
| 12″ | .. | 5⅝″ | 4⅞″ | ⅞″ | 6½″ | 1⅞″ | *¾″ | 5⅝″ | 4⅞″ | 1¾″ | 7⅜″ | 1 3/16″ |
| 14″ | ⅜″ | 6½″ | 5½″ | ½″ | 7″ | 2⅛″ | *½″ | 6½″ | 5¾″ | 1¾″ | 8¼″ | 1 3/16″ |
| 16″ | ⅝″ | 7⅛″ | 5⅞″ | ⅝″ | 7¾″ | 2⅛″ | *½″ | 7⅛″ | 5⅞″ | 1¾″ | 8⅞″ | 1 3/16″ |

*Float projects above centerline at maximum travel adjustment.
NOTE: "F" indicates actual float travel, "G" is distance from flange to highest point of float. "F" plus "G" must not exceed maximum "F" + 1 3/16″. When "G" and "F" are not specified on orders, switches will be furnished with Min. "G" and Min. "F".

**TABLE II (4 11/16″ "H" DIMENSION)**

| "E" Distance | MINIMUM TRAVEL | | | | | | MAXIMUM TRAVEL | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | A | B | C | D | F | G | A | B | C | D | F | G |
| 12″ | .. | 6¼″ | 5⅜″ | ¾″ | 7″ | 3⅛″ | *¾″ | 6¼″ | 5⅜″ | 1⅞″ | 8⅛″ | 4″ |
| 14″ | ½″ | 7¼″ | 6⅛″ | ⅜″ | 7⅝″ | 3⅛″ | *½″ | 7¼″ | 6⅛″ | 1¾″ | 9 ″ | 4⅜″ |
| 16″ | 1¼″ | 8¼″ | 6⅞″ | .. | 8¼″ | 3⅛″ | *⅛″ | 8¼″ | 6⅞″ | 1 1/16″ | 9¾″ | 4¾″ |

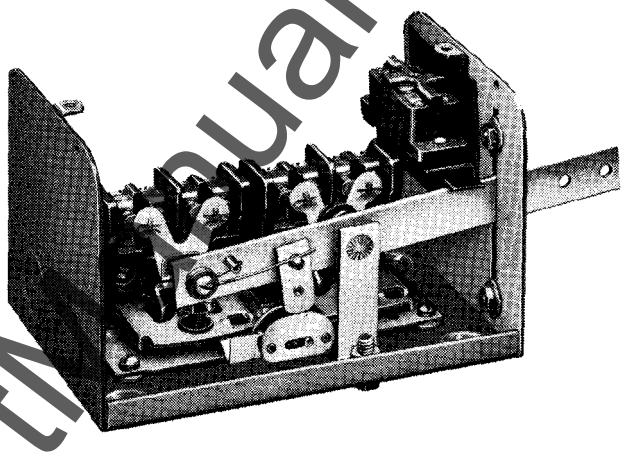
*Float projects above centerline at maximum travel adjustment.
NOTE: "F" indicates actual float travel, "G" is distance from flange to highest point of float. "F" plus "G" must not exceed maximum "F" + 3⅛″. When "G" and "F" are not specified on orders, switches will be furnished with Min. "G" and Min. "F".

‡See Page 2 for explanation of float travel and position.

# TYPE AG-1 MECHANICAL ALTERNATOR with FORM N5 HIGH WATER ALARM modification

The Class 9038 AG-1 mechanically alternates the operation of two sump pumps in a duplex system having a common tank. By alternating the cycles of operation, even wear of the two pumping units is insured and the evils of long stand-by for one of the two pumps is eliminated. In addition, the AG-1 starts the second pump when extra capacity under peak conditions is required.

If for any reason both pumps together are unable to control the rising of liquid in the tank, the *Form N5* snap switch mechanism is tripped energizing the high water alarm circuit.



Class 9038 Type AG-1 Form N5

### Float and Rod Accessories

The Class 9049 Type A-6 float and rod accessories listed on Class 9049 Price Sheet Page 1 are recommended for use with the 9038 AG-1. Specifications for these accessories appear on Class 9049 Price Sheet Page 2.

A *tapped at top* float can be used if turbulence of the liquid is not severe. The buoyancy of the float must be greater than the weight of the rod plus the weight of the stops plus the force to trip the switch up.

If a center hole float is used, a compensating spring (Form C) must be added to support the weight of the rod. The switch then supports the weight of the rod and stops and the buoyancy of the float need be enough only to trip the switch up.

**ELECTRICAL RATINGS**

| Voltage | Single Phase AC | Poly Phase AC | DC |
|---|---|---|---|
| 115 | 1½ H.P. | 2 H.P. | ½ H.P. |
| 230 | 2 H.P. | 3 H.P. | ½ H.P. |
| 440-550 | — | 1 H.P. | — |
| 32 | — | — | ¼ H.P. |

| CLASS 9038 | CONTACTS CLOSE ON LIQUID RISE | | LEVER ACTUATED |
|---|---|---|---|
| Type | Poles | Enclosure | Price |
| AG-1 Form N5 | Two 2 Pole Units | NEMA 1 | **$66.10** |
| AG-1 Form CN5 | Two 2 Pole Units | NEMA 1 | **75.90** |

**OPERATING FORCES**

| Lever Extension Position (See 9038 Dimension Sheet Page 1) | 9038 AG-1 Form N5 Without Compensating Spring | | 9038 AG-1 Form CN5 With Compensating Spring | | | Class 9049 A6 Accessories — Length of Rod Which Can Be Supported With Compensating Spring at Maximum | | | |
|---|---|---|---|---|---|---|---|---|---|
| | Force to Trip Up | Force to Trip Down | Max. Wgt. of Rod and Stops | Min. Wgt. of Float to Trip Down | Min. Buoyancy of Float to Trip Up | Monel | Brass | Stainless Steel | Aluminum |
| Minimum Lever Ext. | 12 oz. | 14 oz. | 48 oz. | 21 oz. | 34 oz. | 6 ft. | 11 ft. | 12 ft. | 35 ft. |
| Maximum Lever Ext. | 10 oz. | 12 oz. | 40 oz. | 15 oz. | 22 oz. | 5 ft. | 9 ft. | 10 ft. | 28 ft. |

**Note: For Outline Dimensions See 9038 AG-1 on 9038 Dimension Sheet Page 1**

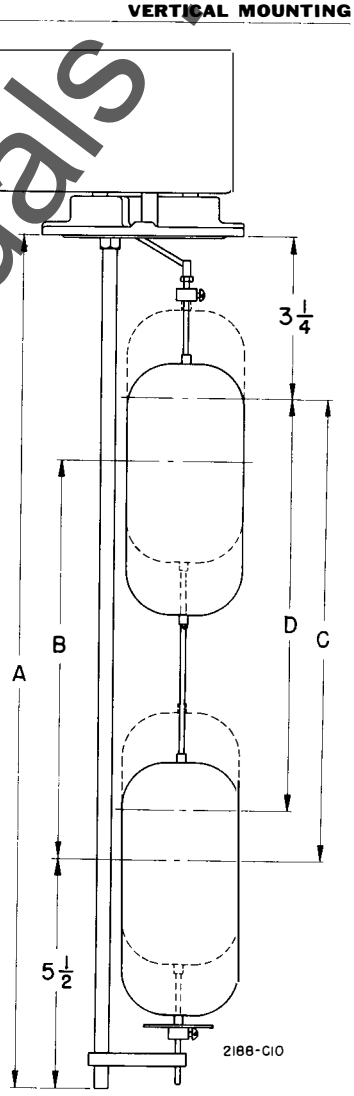
# MECHANICAL ALTERNATORS — FLANGE MOUNTED

## VERTICAL ACTION

## AUTOMATIC CONTROL OF LIQUID LEVEL WITHIN CLOSED TANKS

**CLASS 9038** **CONTACTS CLOSE ON LIQUID RISE** **VERTICAL MOUNTING**

| | Ground Link Length "A" Distance | General Purpose Enclosure | | Water-tight Enclosure | | Explosion-proof Enclosure | |
|---|---|---|---|---|---|---|---|
| | | Type | Price | Type | Price | Type | Price |
| Two 2-Pole Units | 17″ | JG-1 | **$ 114.** | JW-1 | **$ 250.** | JR-1 | **$ 247.** |
| | 23″ | JG-2 | **118.** | JW-2 | **254.** | JR-2 | **251.** |
| | 29″ | JG-3 | **122.** | JW-3 | **258.** | JR-3 | **255.** |
| | 35″ | JG-4 | **126.** | JW-4 | **262.** | JR-4 | **259.** |
| | 41″ | JG-5 | **130.** | JW-5 | **266.** | JR-5 | **263.** |
| | 47″ | JG-6 | **134.** | JW-6 | **270.** | JR-6 | **267.** |
| | 53″ | JG-7 | **138.** | JW-7 | **274.** | JR-7 | **271.** |
| | 59″ | JG-8 | **142.** | JW-8 | **278.** | JR-8 | **275.** |




### TABLE 1 — ADJUSTMENT IN INCHES

| Type | "A" Link Length | "B" Water Level Change to Effect Normal Alternation of Two Pumps | |
|---|---|---|---|
| | | Minimum | Maximum |
| JG-1 | 17″ | 4 7/16″ | 7 1/16″ |
| JG-2 | 23″ | 4 7/16″ | 13 1/16″ |
| JG-3 | 29″ | 4 7/16″ | 19 1/16″ |
| JG-4 | 35″ | 4 7/16″ | 25 1/16″ |
| JG-5 | 41″ | 4 7/16″ | 31 1/16″ |
| JG-6 | 47″ | 4 7/16″ | 37 1/16″ |
| JG-7 | 53″ | 4 7/16″ | 43 1/16″ |
| JG-8 | 59″ | 4 7/16″ | 49 1/16″ |

### OPERATION

Type J switches will cut in and cut out at the high point and low point of distance B (given in drawing at right). Under normal conditions with one pump able to handle incoming water, the pumps will alternate at this distance (solid line floats represent the normal alternating points). With water level continuing to rise, the second switch will cut in and start the second pump when the float reaches top of distance D. Both pumps will run until float returns to low point of distance D where leading pump will cut off first, with lagging pump continuing to run until float returns to low point of distance C.

NOTE 1: Travels listed in Table 1 also apply to explosion-proof (JR) and water-tight (JW) versions.

NOTE 2: The cut-in point of the leading pump cannot be adjusted to less than 4 7/16″ from the top of the tank. The cut-in point of the lagging pump cannot be adjusted to less than 3 1/4″ from the top of the tank.

The cut-out point of the leading pump cannot be less than 6 7/8″ plus the distance from the end of the guide rod to the bottom of the tank.

The cut-out point of the lagging pump cannot be less than 5 1/2″ plus the distance from the end of the guide rod to the bottom of the tank.

| SPECIAL FEATURES AND ACCESSORIES | Form Letter | Price |
|---|---|---|
| Stainless Steel Float and Rods | Form Z5 | **$ 50.** |

### ELECTRICAL RATINGS

| Voltage | Single Phase AC | Polyphase AC | DC |
|---|---|---|---|
| 115 | 1½ HP | 2 HP | ½ HP |
| 230 | 2 HP | 3 HP | ½ HP |
| 440-550 | | 1 HP | |
| 32 | | | ¼ HP |

### ORDERING INSTRUCTIONS

1—Specify Class 9038 Type . . . . .

2—If special features are desired, add the appropriate Form . . . . . to the Class and Type. Arrange Form letters in alphabetical sequence when ordering more than one special feature.

# MECHANICAL ALTERNATOR

## APPLICATION

Class 9038 Mechanical Alternators are designed to provide a simple positive means of mechanically alternating the operation of two pumps installed in a duplex system with a common tank. The function of these controls is to provide alternate cycles of operation to insure even wear of the pumping units. They thus eliminate the evils of long stand-by for one of the two pumps. These alternators further provide the additional function of starting the second pump in cases where extra capacity under peak conditions is required.

**Poles** — Mechanical Alternators consist of two 2 pole units with double break silver to silver contacts.

**Electrical Ratings** — Ratings indicated on List Price Sheet.

**Enclosures** — General Purpose Enclosures are of heavy gauge sheet steel finished in blue-gray enamel. The modern styled slip-on cover can easily be removed to allow access to the switch interior.

Type AR, BR, CR and DR enclosures are designed for operation where Class I Group D hazardous locations are encountered. This housing meets the latest requirements for applications in vapor air mixtures of duco, lacquers, thinners, ethyl alcohol, methyl alcohol, acetone and petroleum products.

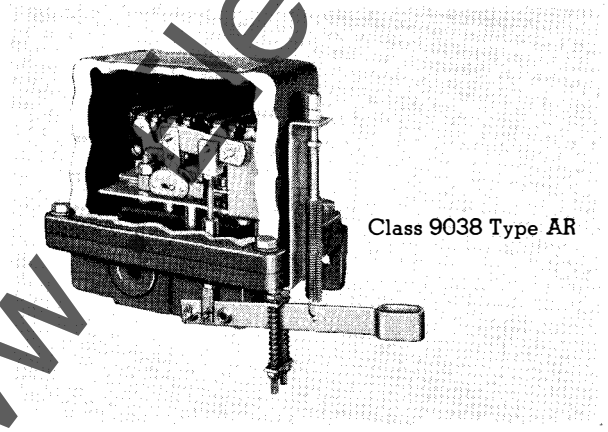
Water-tight enclosures have the same general construction features as the Type AR, BR, CR and DR enclosures with the addition of a gasket to provide a water-tight seal.

## Operation

The heart of the Class 9038 is a unique, yet simple, linkage which causes alternate operation of two pumping units on successive cycles. As long as a single pump can handle the pumping demand, this alternation of units continues. However, under peak condition, when the liquid level continues to rise or fall more rapidly than can be handled by one pump, both pumping units are automatically placed in operation. Both units will continue to operate until such time as a single pump can again handle the load. Alternate cycling is then automatically resumed. When the pump fails or becomes inoperative for some reason other than line voltage failure, the alternator will continue to function and will assure operation of the remaining pump.

Alternators can be furnished in standard (contacts close on liquid rise) or reverse (contacts open on liquid rise) action. The changeover from Standard to Reverse operation should never be attempted in the field.

All types can be furnished with a lead-lag selector. This manually engaged selector voids alternation. . . . . The Pump selected to lead always comes on first, with the second (lag) pump operating only under peak demand conditions, or when first pump fails. With selector disengaged, the unit reverts to normal alternation. Form N3 cannot be added to existing units in the field.



Class 9038 Type AR

## AG Types

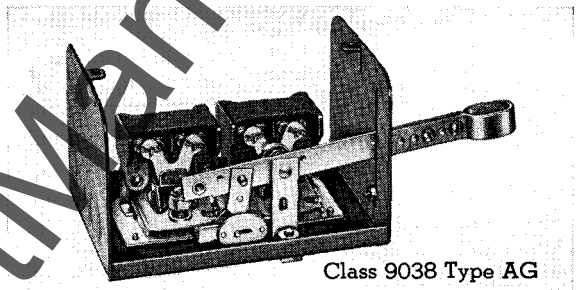
The AG Types are for use with open tank or sump pumps.

The contact blocks are of heavy non carbonizing melamine with contacts of laminated bronze and silver.

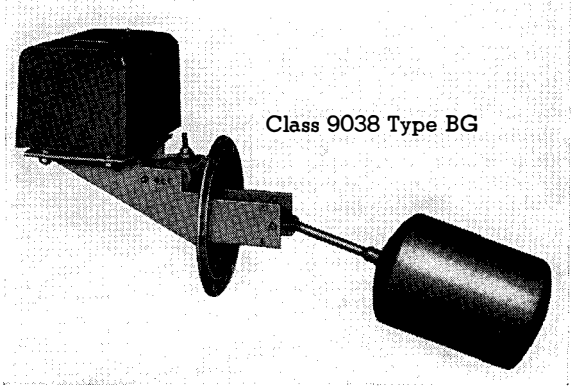
Three concentric knock-outs for ½″ or ¾″ conduit are provided. Operating lever is extendable from 3½″ to 4 3/16″. Contacts close at high liquid level on standard controls.

## BG Types

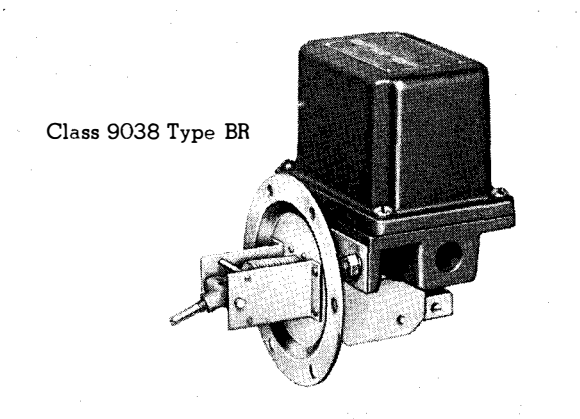
The BG Switch Mechanism is essentially the same as on AG Types. This assembly is flange mounted and includes a float travel adjustment, bellows seal, float, rod and an operating lever which transmits float motion to the switch.



Class 9038 Type AG
For sump or open tank use.



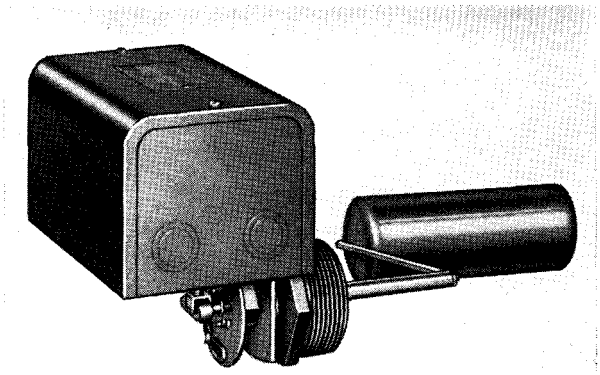
Class 9038 Type BG



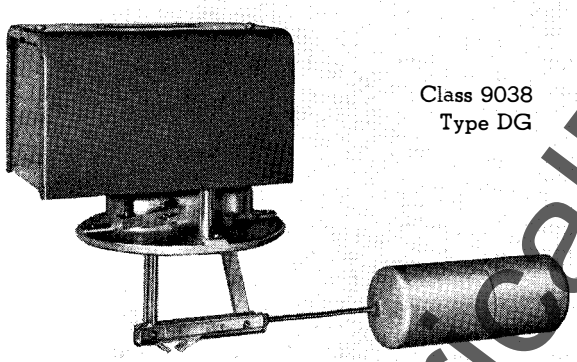
Class 9038 Type BR

# MECHANICAL ALTERNATOR

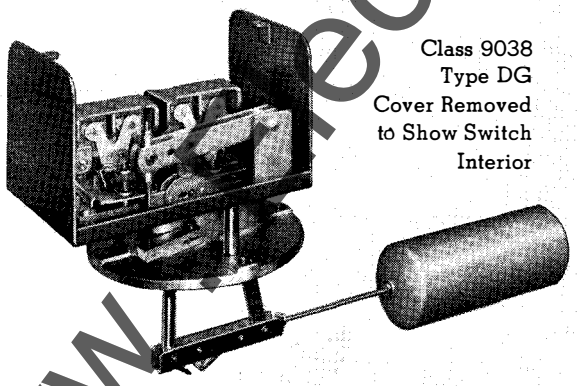
MAY, 1960



Class 9038
Type CG



Class 9038
Type DG



Class 9038
Type DG
Cover Removed
to Show Switch
Interior

For higher tank pressures (to 100 P.S.I. at 275° F.) a Monel bellows (Form A) can be furnished. Specify Form Z5 if a stainless steel float and rod are desired.

Three types of operation are available. Figure 1 provides for an equal amount of float movement on either side of the switch centerline. Figure 2 operation limits most of the float movement to below the centerline. Figure 3 provides for vertical mounting. (See list price sheet for float travels.) Standard operation provides for closed contacts at high liquid level.

## CG Types

Complete units in themselves these controls consist of the switch mechanism proper, copper coated float, linkage to transmit float movement to the switch and a 2½-inch screw-in connection.

Graphite coated asbestos packing is used between the float rod and sealing tube. The controls are available with a stainless steel float, rod and sealing tube for use with corrosive liquids. Specify Form Z9.

Normal application is at atmospheric pressure, but where higher pressures are encountered the switch will withstand tank pressures up to 50 P.S.I. at temperatures up to 250° F. Occasional re-packing may be required. A special Teflon seal (Form Z10) for pressures up to 100 P.S.I. can be furnished if specified.

Float travel adjustments are external and an indicating scale is provided to facilitate settings. A pointer on the switch linkage indicates float position within the tank when the unit is mounted.

For polyphase service these switches may be used, to advantage, in the control circuit of the proper motor starter.

Four concentric knock-outs for ½" or ¾" conduit are provided.

Standard operation provides for closed contacts at high liquid level. Reverse action (Form R) can also be supplied. Switch action can be reversed easily in the field simply by locating link piece in opposite hole of adjusting plate and the corresponding slot in baseplate of switch mechanism.

## DG Types

The Class 9038 Type DG flange mounted mechanical alternators are designed for applications where mounting is to be made at the top of a closed tank. The unit is completely self-contained and consists of an alternator mechanism, mounting flange, linkage to transmit float movement to switch, float rod and a cylindrical float.

The mounting flange is a brass forging. Parts to be immersed in liquid are brass or stainless steel. Float is composed of copper coated steel, and all interior parts of switch mechanisms are plated for corrosion resistance. A stainless steel float (Form Z5) is available for use with corrosive liquids.

Graphite coated asbestos is used in stuffing box which transmits motion of float. This insures a water-tight seal.

Switches are mounted by fastening the flange to the tank by means of supporting bolts. See the dimension drawings for bolt centers.

Four concentric knock-outs for ½" or ¾" conduit are provided.

Adjustment of float travel in field within moderate limits is possible without removing unit from tank.

## APPLICATION

The Class 9038 Types JG, JW, and JR flange mounted, vertical action alternators are especially suitable for applications involving restricted tank space, or when larger water level changes are required than can be normally provided on the conventional angular movement type of float switches.

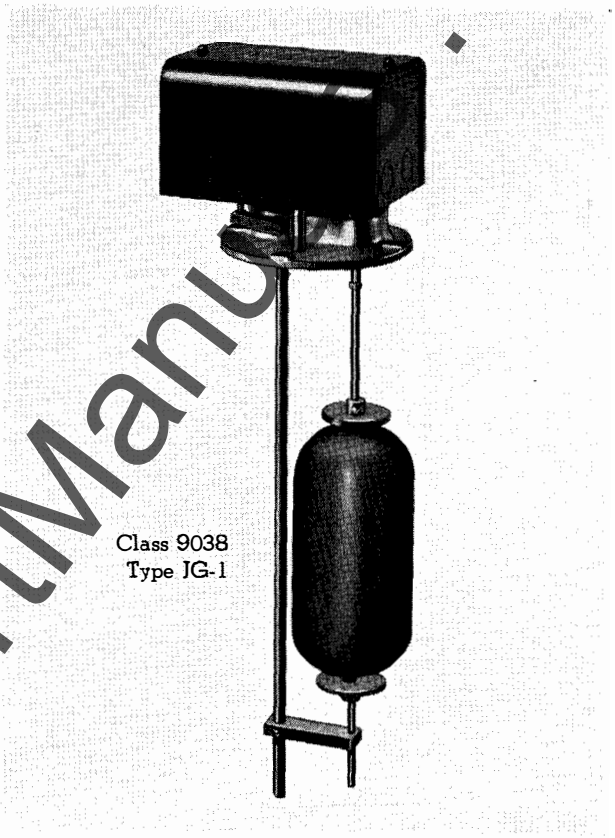
**Poles** — Mechanical Alternators consist of two 2 pole units with double break silver to silver contacts.

**Electrical Ratings** — Ratings indicated on List Price Sheet.

**Enclosures** — General Purpose Enclosures are of heavy gauge sheet steel finished in blue-gray enamel. The modern styled slip-on cover can easily be removed to allow access to the switch interior.

Type JR enclosures are designed for operation where Class I Group D hazardous locations are encountered. This housing meets the latest requirements for applications in vapor air mixtures of duco, lacquers, thinners, ethyl alcohol, methyl alcohol, acetone and petroleum products.

Water-tight enclosures have the same general construction features as the Type JR with the addition of a gasket to provide a water-tight seal.



Class 9038
Type JG-1

## FEATURES

The 9038 JG, JW, and JR controls are completely self-contained units composed of switch mechanism, mounting flange, linkage to transmit float movement to switch, center hole float and float rod.

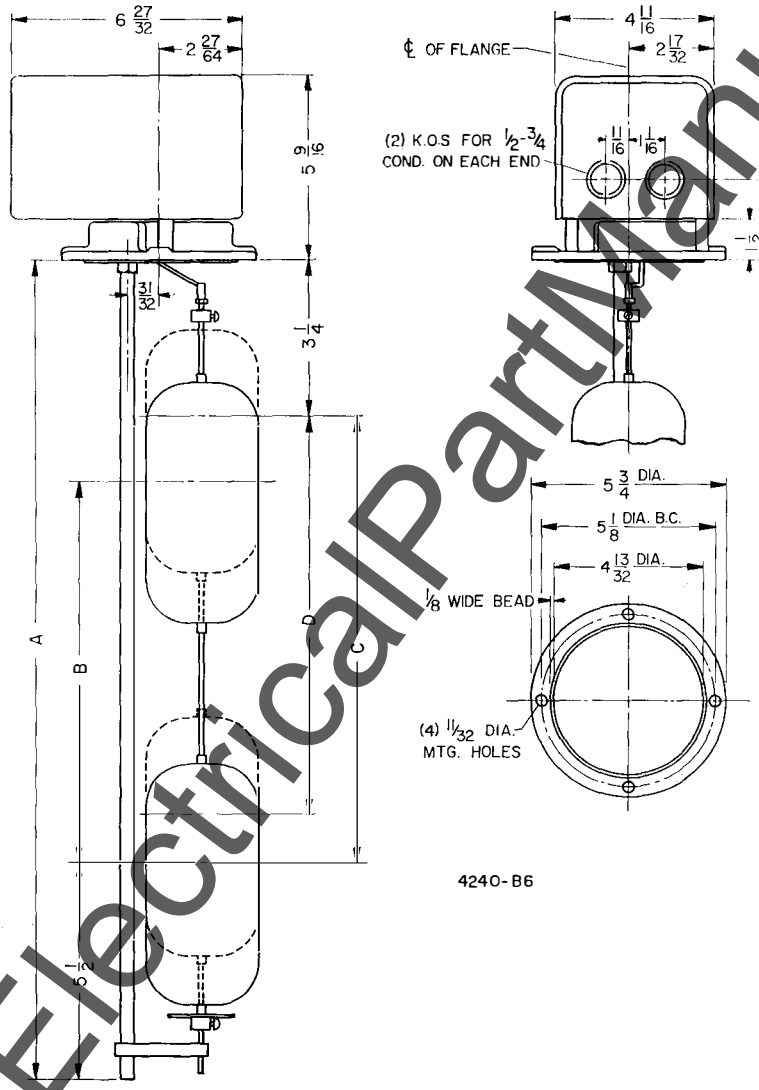
The mounting flange is a brass forging. Parts to be immersed in liquid are brass or stainless steel. Float is composed of copper coated steel, and all interior parts of switch mechanism are plated for corrosion resistance. Specify Form Z5 to obtain stainless steel float, float rod, ground link and guide for corrosive applications.

Graphite coated asbestos is used in stuffing box which transmits motion of float. This insures a water-tight seal.

Switches are mounted by fastening the flange to the tank by means of supporting bolts. See the dimension drawings for bolt centers.

Adjustment of float travel can be made by increasing or decreasing the distance between the stop collars. Limits of float travel are indicated on the list Price Sheet, Page 5.

## Approximate Dimensions

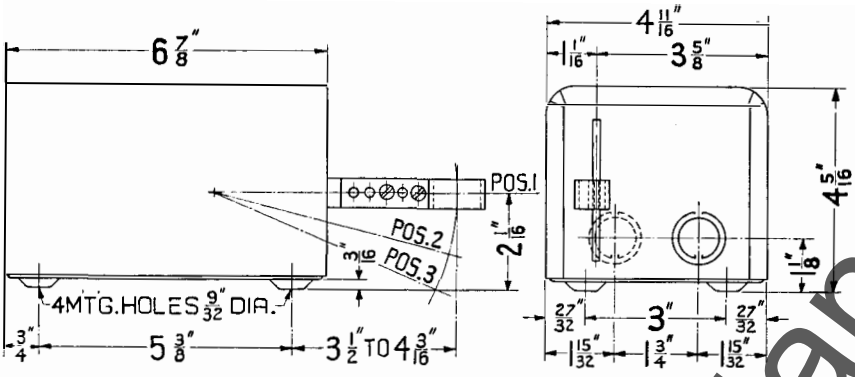



Class 9038 Type JG

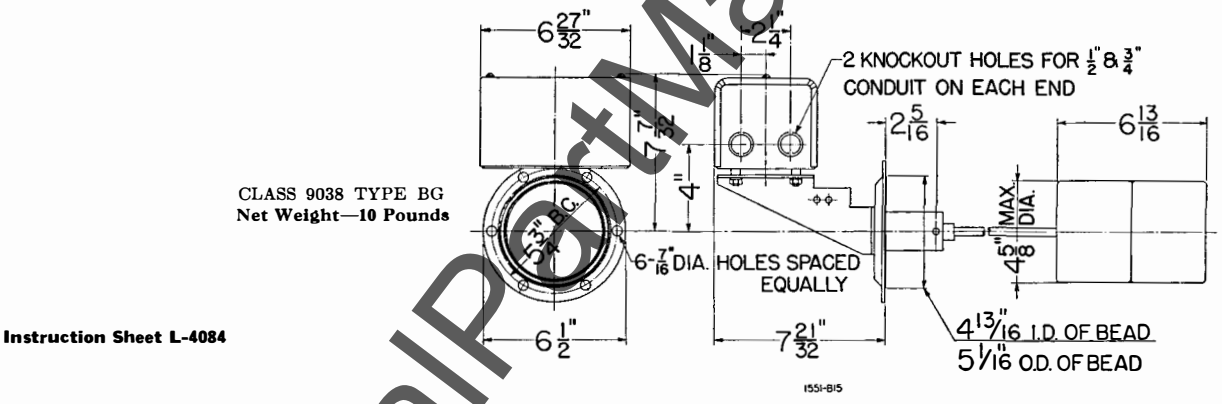
DECEMBER, 1955

# MECHANICAL ALTERNATOR

## Approximate Dimensions

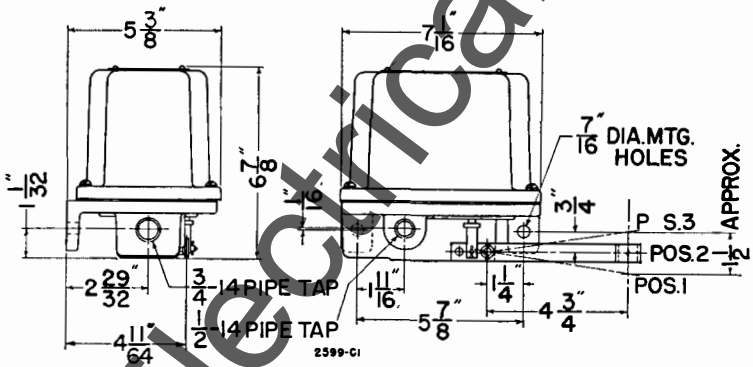



CLASS 9038 TYPE AG-1
**Net Weight—4¼ Pounds**

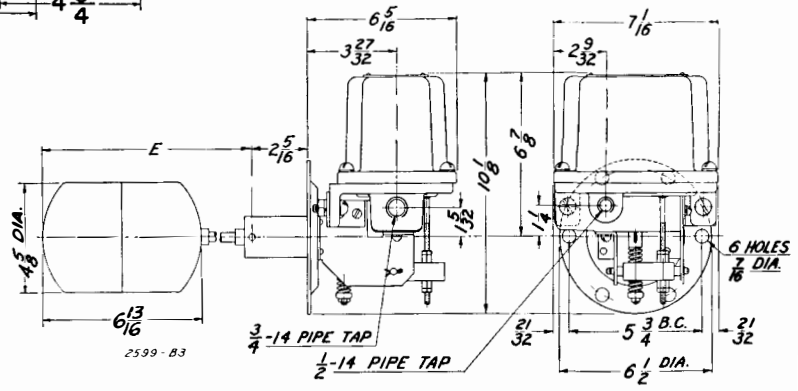



CLASS 9038 TYPE BG
**Net Weight—10 Pounds**

**Instruction Sheet L-4084**




CLASS 9038 TYPES AR-1, AW-1
**Net Weight 16 pounds approx.**

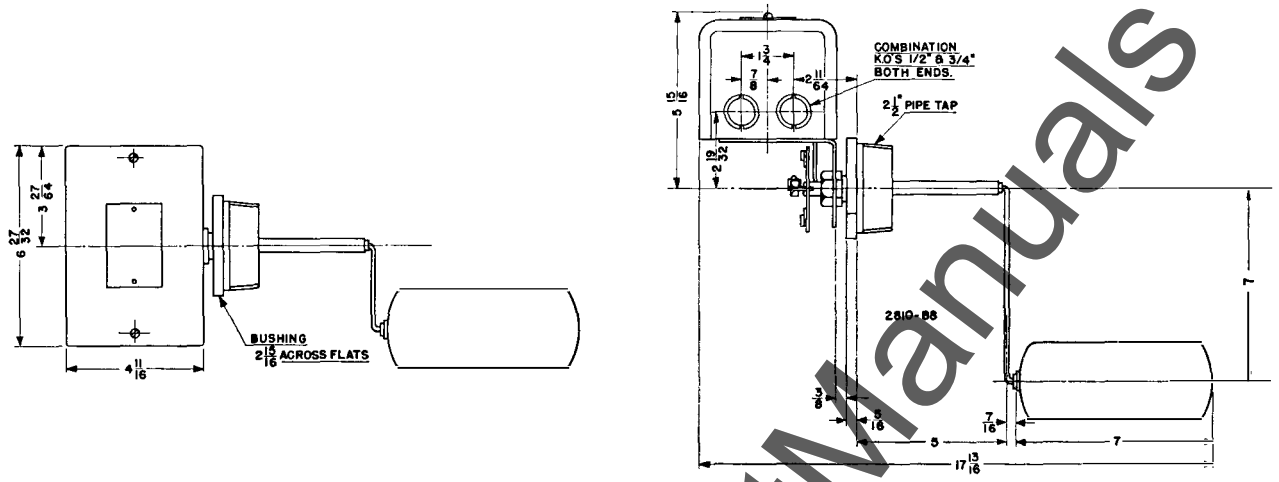



CLASS 9038 TYPES BR, BW
**Net Weight 20 pounds approx**

**Instruction Sheet L-4163**

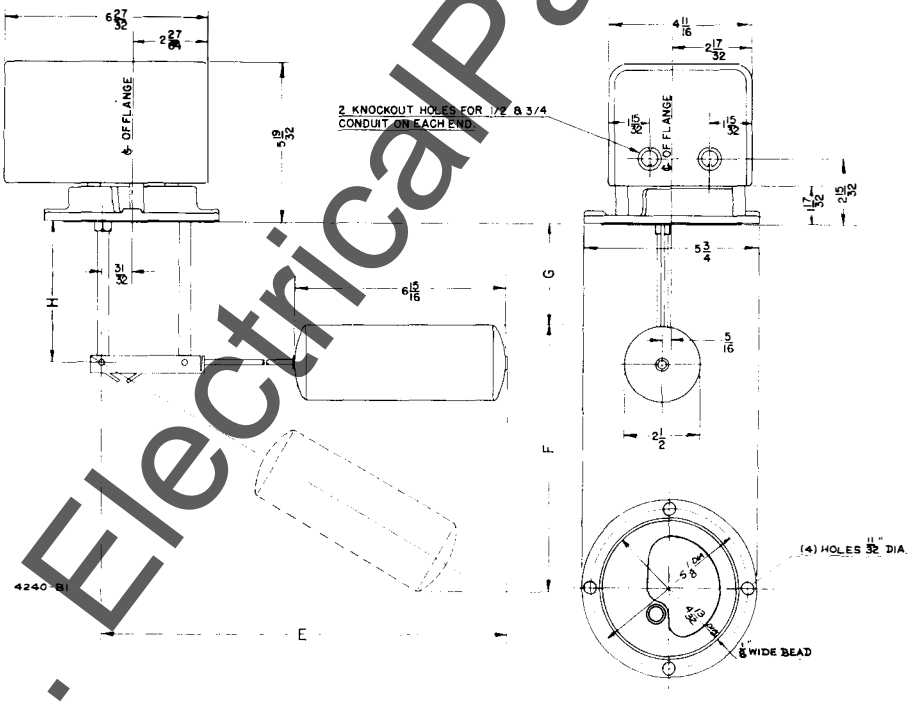
# MECHANICAL ALTERNATOR — DECEMBER, 1955

## Approximate Dimensions




CLASS 9038 TYPE CG
**Net Weight 7½ pounds approx.**

**Instruction Sheet L-4176**

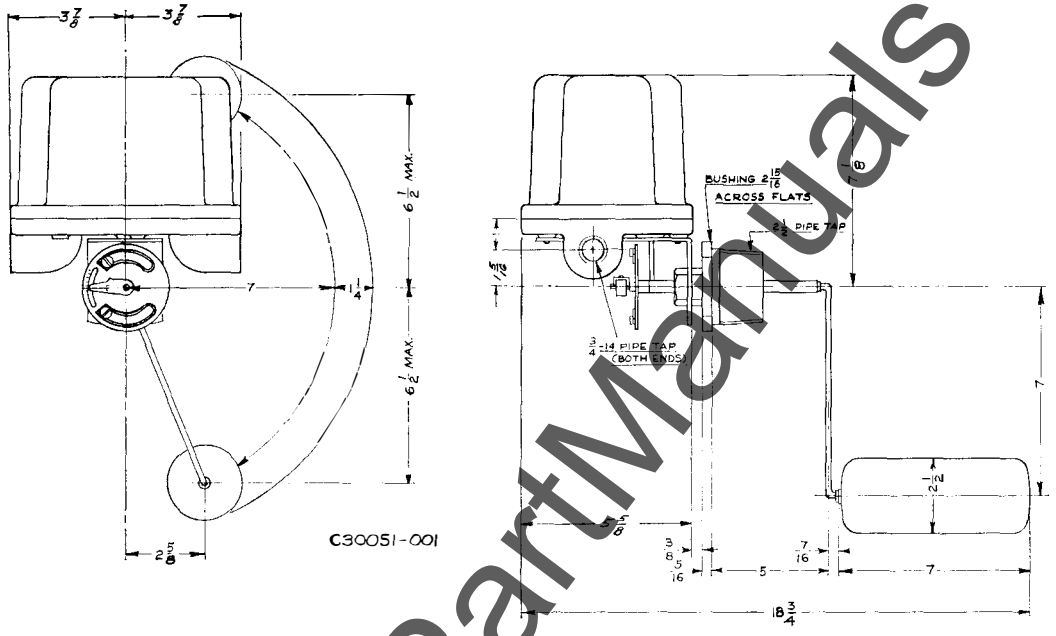



NOTE: The recommended size of hole in the tank for the entry of the float and mounting of the control is 4 5/16".

CLASS 9038 TYPE DG
**Net Weight 7 pounds approx.**

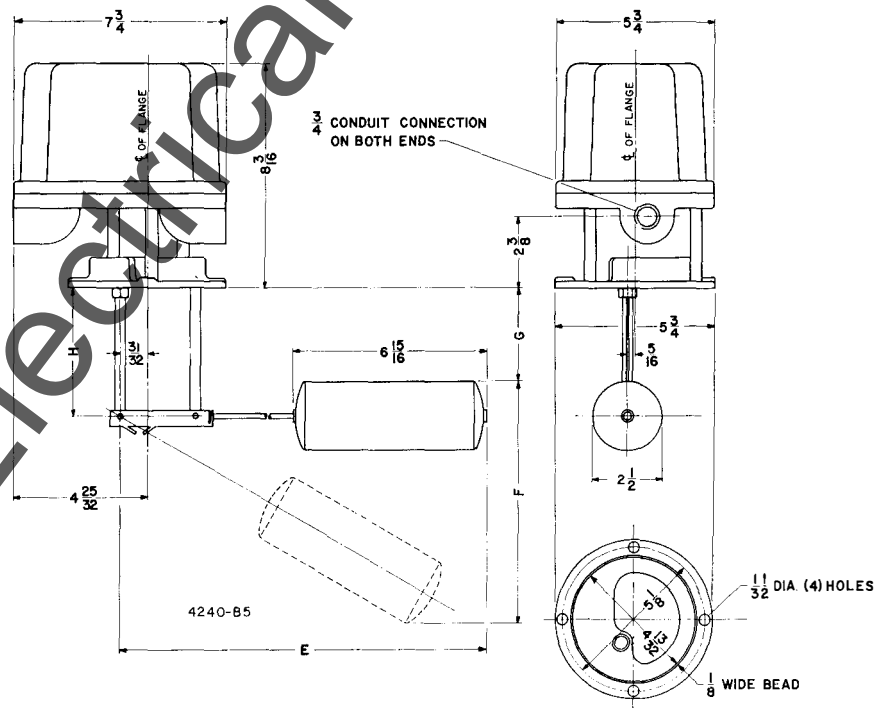
● **Instruction Sheet L-4183**—**(Refer to Class 9038 Price Sheet Page 1-2 for further information on DRWG. 4240-B1)**
● Revised

## Approximate Dimensions




CLASS 9038 TYPE CR
**Net Weight — 21 Pounds Approx.**

**Instruction Sheet L-4214**




CLASS 9038 TYPES DR
**Net Weight — 21 Pounds Approx.**

**Instruction Sheet L-4215**

# SPECIAL PUMP CONTROL EQUIPMENT



Class 9038 pressure switches having "S" numbers following the Type number are listed below. Only the special nature of the switch is described. All other features are the same as the standard switch, with or without Forms.

| TYPE | FORM | DESCRIPTION | ORIGINAL CUSTOMER | REMARKS | LIST PRICE |
|---|---|---|---|---|---|
| AG-1 S1 | – | Swivel operating lever, special bracket and backplate | C.A. Dunham | | **$ 96.70** |
| AG-1 S2 | – | Swivel operating lever, spl. bracket and spacing of knockouts, less cover. Nameplate mounted on inside of backplate | C.A. Dunham | | **$ 94.58** |
| AG-1 S3 | – | Obsolete | | Recommend 9038-AG-1 | |
| AG-1 S4 | – | Spl. case & links for mounting on cast iron flange | Nash Engr | | **$ 96.70** |
| AG-1 S5 | – | Obsolete | Federal Pump, Roy E. Roth | 9038-AG-1 S6 | |
| AG-1 S6 | – | Spl. setting 9 oz. must operate one unit added another 6 oz. to operate second unit | Federal Pump, Roy E. Roth | | **$ 93.50** |
| AG-1 S7 | – | Outer hole in lever arm 9/32" and less float rod guide | Nash Engr. | | **$ 93.50** |
| AG-1 S8 | – | Obsolete | Duellman | 9038 AG-1 Form N25 | |
| AR-1 S1 | – | 1" conduit opening | | | **$269.48** |
| AR-1 S3 | – | Stainless steel nameplate | Graybar Philadelphia | | **$245.40** |
| AW-1 S1 | – | Obsolete | Petersmith Corp. | 9038 AW-1 Form N4 | |
| AW-1 S2 | – | Stainless steel nameplate | Graybar Columbus | | **$251.40** |
| BG | – | All types 1 thru 15 are obsolete | | See Product Data A-37 | |
| BG-23 S1 | – | Float rod casting reversed | Sterling | | **$251.90** |
| BR | – | All types 1 thru 15 are obsolete | | See Product Data A-37 | |
| BW | – | All types 1 thru 15 are obsolete | | See Product Data A-37 | |
| CG-1 S1 | – | Obsolete | | 9038 CG-3 | |
| CG-1 S2 | – | Obsolete | | 9038 CG-5 | |
| CG-1 S3 | – | Obsolete | | 9038 CG-2 | |
| CG-2 S1 | – | Obsolete | | 9038 CG-6 | |
| CG-2 S2 | – | Obsolete | | 9038 CG-2 Form F3 | |
| CG-2 S3 | – | Obsolete | | 9038 CG-2 | |
| CG-2 S4 | – | Obsolete | | 9038 CG-4 | |
| CG-3 S1 | – | Spl. Rod 2½" longer at float end | Simplex | | **$156.20** |
| CR-1 S1 | – | Obsolete | | 9038 CR-3 | |
| CR-2 S1 | – | Obsolete | | 9038 CR-6 | |
| CW-1 S1 | – | Obsolete | | 9038 CW-3 | |
| CW-1 S2 | – | Obsolete | | No replacement | |
| CW-2 S1 | – | Obsolete | | 9038 CW-6 | |
| DG | – | All types 1 thru 6 are obsolete | | See Product Data A39 | |
| DG-11 S1 | – | Shorter tie line, spl. flange with holes 13/32", spl. float | Weil Pump | | **$201.00** |
| DR | – | All types 1 thru 6 are obsolete | | See Product Data A-39 | |
| DR-11 S1 | – | Shorter tie link, spl. flange with holes 13/32" spl. float | Weil Pump | | **$488.00** |
| DW | – | All types 1 thru 6 are obsolete | | See Product Data A39 | |
| DW-11 S1 | – | Shorter tie link, spl. flange with holes 13/32" spl. float | Weil Pump | | **$495.00** |
| JG-1 S1 | – | Less float rod and ground rod | Weil Pump | | **$239.74** |

* Device must be ordered with these Forms. Price **includes** price of Forms listed.