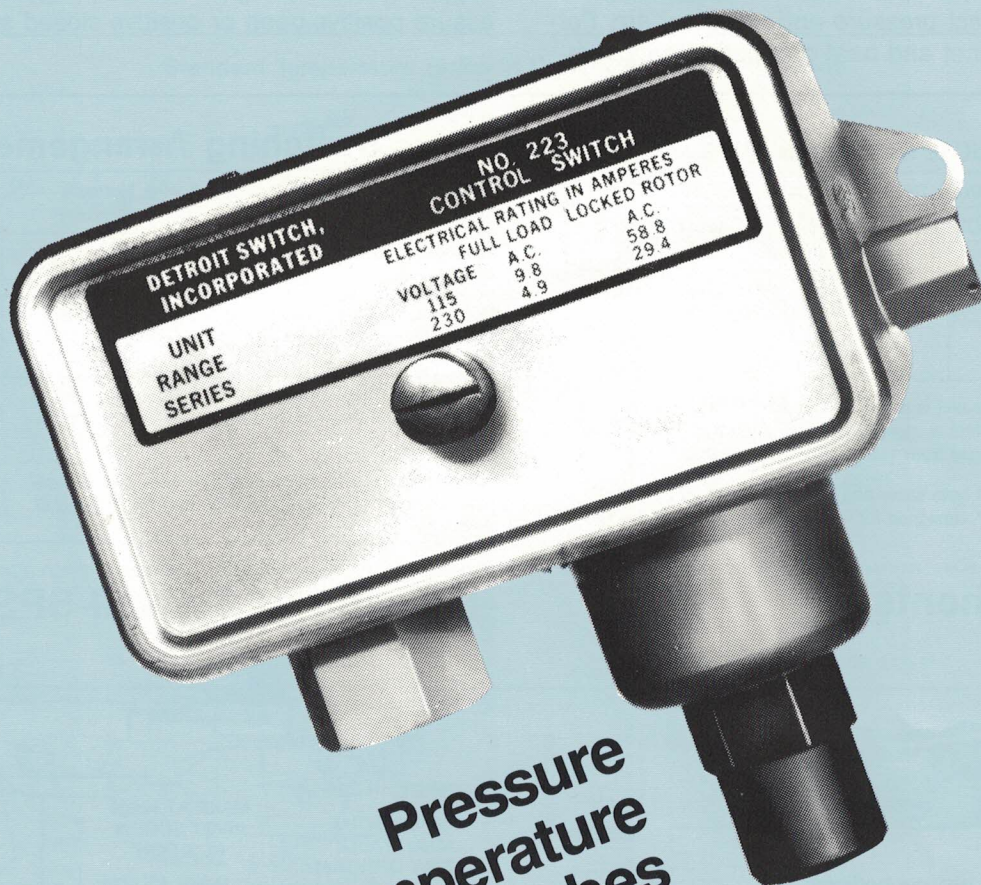


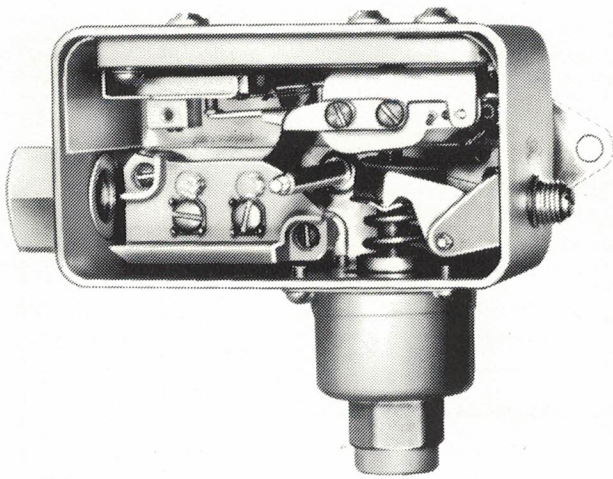
# DETROIT SWITCH, INC.



**Pressure  
and Temperature  
Control Switches**



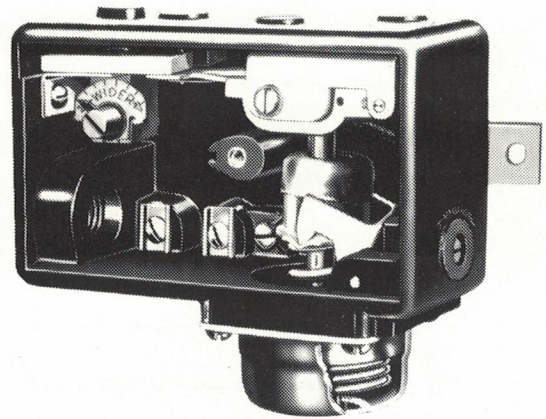
## Model 223



Cadmium plated steel cases are shock resistant, dust proof and meet NEMA 4 for extreme service conditions.

These controls have been proved under rigorous operating conditions — on stationary, mobile, marine and railroad installations. They meet the demanding speci-

## Model 250



Heavy duty Bakelite cases which can be adapted to meet NEMA 4 using a 2505244 Splash-Proof Kit.

fications of the Navy Department. Quality and performance requirements on these applications are standard characteristics of the complete line.

### SWITCH CONSTRUCTION

Design provides for positive make or break, total elimination of zero contact pressure and electrical arc. Permanent switch magnet and heat dissipating beryllium-

copper contact spring prohibit floating switch action and assure positive-open or positive-closed switch position.

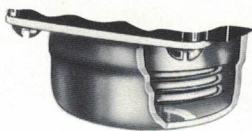
### ELECTRICAL RATINGS IN AMPS

SPST - SPDT* - DUAL SPST* - DUAL CONTACT DPST*				
VOLTAGE	INDUCTIVE		LOCKED ROTOR	
	A.C.	D.C.	A.C.	D.C.
115	16.0	9.6	96.0	96.0
230	8.0	4.8	48.0	48.0
440	4.0	2.5	25.0	25.0
550	3.2	2.0	20.0	20.0

\*223 Series: only lower contact is rated at 1 amp D.C. and 16 amps A.C. at 115 V., and upper contact is capable of direct control of motors up to 1 H.P. designed for voltages from 115 to 550 A.C. and D.C.

250 Series is capable, on both lower and upper contacts, of direct control of motors up to 1 h.p. designed for voltages from 115 to 550 A.C. and D.C.

### Power Elements

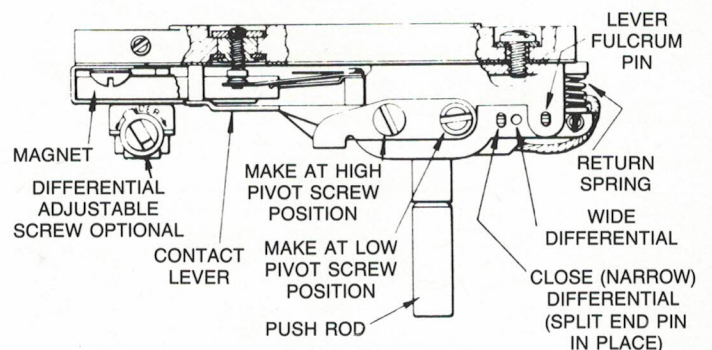


Seamless phosphor bronze bellows construction in all models provides life-long accurate repeatability at set point. Designed to accommodate severe overpressures.

### Switching Arrangements

Single Pole, Single Throw (SPST) 2 wire. Normally Open or Normally Closed.	
Single Pole, Double Throw (SPDT) 3 wire. One common wire.	
Dual Contact, Single Pole, Single Throw (DC, SPST) 3 wire. Normally Open or Normally Closed. One common wire.	
Double Pole, Single Throw (DPST) 4 wire. Two Circuit-Both Normally Open or Both Normally Closed (2 N.O. or 2 N.C.)	
Double Pole, Single Throw (DPST) 4 wire. Two Circuit-One Normally Open and One Normally Closed (1 N.O. and 1 N.C.)	

### Drawing of Typical SPST Switch



NOTE: All dimensions are for "roughing in" typical controls and are approximate.



# 223 and 250 Controls

STANDARD FEATURES:				
		1. Slotted range adjustment	3. Mounting Bracket — Note ***	
		2. Adj. differential available on SPST only	4. 1/4" NPT Fem., 1/4" NPT Male 1/4" S.A.E. 7/16-20-UNF-2B	
MODEL	223 AND 250 RANGES INS. OF HG.V. — P.S.I.G.	DIFFERENTIAL SPST*		MAXIMUM PRESSURE
		MINIMUM	MAXIMUM	
C-1	1.6 oz. to 4.5 P.S.I.G.	.3 - .5	—	20
C-2	3" to 3 P.S.I.G.	.3 - .5	—	20
C-3	30" to 10"	.5 - 1.0	—	20
C-4	1.6 oz. to 8 P.S.I.G.	.5 - 1.0	—	20
C-5	6" ro 8 P.S.I.G.	.5 - 1.0	—	20
A-1	30" to 20 P.S.I.G.	3 - 9	4 - 14	80
B-1	3 to 50 P.S.I.G.	2 - 6	4 - 14	80
B-3	20" to 80 P.S.I.G.	9 - 15	14 - 30	216
B-4	5 to 75 P.S.I.G.	4 - 12	7 - 20	160
B-6	10 to 180 P.S.I.G.	9 - 15	14 - 30	216
B-7	60 to 350 P.S.I.G.	15 - 35	24 - 60	400
B-12	60 to 900 P.S.I.G.**	—	50 - 90	900

\* Note \* Differential for other than S.P.S.T. approx. 50% wider for 223 and 100% wider for 250.  
 \*\* 223 only  
 \*\*\* Mounting bracket standard on all 223 models, 250 models remote temperature models and 250 - 1/4 S.A.E. connected pressure models.  
 For further information; See Form 1853

Temperature switches with standard bellows will have differential characteristics at the high end of the range similar to those of a B-1 pressure switch (1°F = 1 PSI). Temperature differentials with non standard bellows often compare with a B-6 pressure switch. As a general rule, differentials at the low end of a temperature range are two and one half (2-1/2) times greater than at the high end of the range.

STANDARD FEATURES:					
		1. Slotted range adjustment	3. 10 ft. tubing		
		2. Adj. differential available on SPST only	4. Mounting Bracket***		
MODELS 223 AND 250 RANGES DEG. F.	MINIMUM DIFF. SPST*		MAXIMUM TEMPERATURE	BULB STYLE**	
	LOW END	HIGH END		REMOTE	DIRECT
-30 to +22	5	2	—	L - N	HI - 2
-10 to +60	5	2	—	L - N	HI - 2
25 to 90	5	2	120	L - N	HI - 2
60 to 130	5	2	157	L - N	HI - 2
70 to 140	5	2	167	L - N	HI - 2
90 to 165	5	2	195	L - N	HI - 2
140 to 215	5	2	245	L - N	HI - 2
185 to 250	5	2	276	L - N	HI - 2
220 to 290	5	2	317	L - N	—
255 to 330	5	2	355	L - N	—
280 to 360	5	2	385	L - N	—
300 to 400	5	2	437	L - N	—
375 to 480	5	2	500	L - N	—
400 to 580	On Application		625	L - N	—
350 to 650	On Application		800	L - N	—
560 to 750	On Application		800	L - N	—

REMOTE ONLY

\* Note \* Differential for other than S.P.S.T. approx. 50% wider for 223 and 100% wider for 250.  
 \*\* Cross Ambient bulbs available for application where control case is sometimes warmer and sometimes colder than the bulb.  
 \*\*\* Mounting bracket standard on all 223 models, 250 models remote temperature models.  
 For further information; See Form 1853.

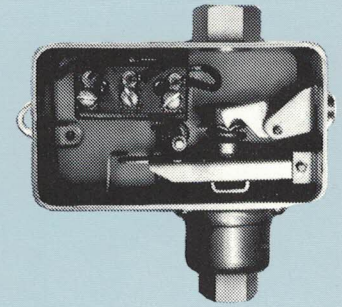


# 400 CONTROLS

## PRESSURE

RANGE — P.S.I. OR INCHES HG.	MAX. PRESS P.S.I.	APPROX. DIFF.*	
		NON-ADJ.	ADJ.
30" VAC. to 10" VAC.	20	.2	.5 to 1.5
30" VAC. to 20 P.S.I.G.	80	.5	2.5 to 6.0
20" VAC. to 100 P.S.I.G.	200	2.0	8.0 to 20.0
3" VAC. to 3 P.S.I.G.	20	.1	.2 to .7
1.6 to 4½ P.S.I.G.	20	.1	.2 to .7
1.6 to 8 P.S.I.G.	20	.2	.5 to 1.5
3 to 50 P.S.I.G.	80	.5	2.0 to 5.0
5 to 80 P.S.I.G.	160	.8	3.0 to 9.0
10 to 200 P.S.I.G.	200	1.6	8.0 to 20.0
25 to 350 P.S.I.G.	400	3.0	14.0 to 30.0
60 to 600 P.S.I.G.	900	6.0	18.0 to 36.0
300 to 2000 P.S.I.G.	3000	100 - 200	

\*Differentials will vary with non-standard snap switches. Differentials given on application.



## TEMPERATURE

RANGE — °F.	MAX. TEMP.	APPROX. DIFF.*					
		NON-ADJ.		ADJ.		BULB STYLE	
		HIGH END	LOW END	HIGH END	LOW END	REMOTE	DIRECT
-30 to +22	—	.5	1.5	3-7	7-15	L - N	HI - 2
-10 to +60	—	.5	1.5	3-7	7-15	L - N	HI - 2
20 to 90	120	.5	1.5	3-7	7-15	L - N	HI - 2
60 to 130	157	.5	1.5	3-7	7-15	L - N	HI - 2
70 to 140	167	.5	1.5	3-7	7-15	L - N	HI - 2
90 to 165	195	.5	1.5	3-6	7-15	L - N	HI - 2
140 to 215	245	.5	1.5	3-7	7-15	L - N	HI - 2
185 to 250	276	.5	1.5	3-7	7-15	L - N	HI - 2
220 to 290	317	.5	1.5	3-7	7-15	L - N	—
255 to 330	355	.5	1.5	3-7	7-15	L - N	—
300 to 400	437	.7	1.5	4-8	9-18	L - N	—
375 to 480	500	1.0	2.0	4-8	9-18	L - N	—
400 to 580	625		On Application			L - N	—
560 to 750	800		On Application			L - N	—

\*Differentials will vary with non-standard snap switches. Differentials given on application.

For further information: See Form 19-44D.

### Standard Features

1. Cadmium plated steel case with mounting brackets.
2. Cadmium plated steel gasketed cover.
3. One S.P.D.T. snap switch with coded terminal block, 15 amp - 125/250 VAC.
4. 10 feet of capillary tube for remote temperature models.
5. External slotted range adjustment screw.
6. Two snap switches for dual or sequence operations are furnished with coded lead wires and wire nuts.

# 450 CONTROLS

## PRESSURE

*RANGE — P.S.I. OR INCHES HG.	MAX. PRESS. P.S.I.	APPROX. DIFF.
		NON-ADJ.
20" V. to 40 lbs.	80	2
20" V. to 80 lbs.	216	7
0 to 3½	20	.35
3 to 70	160	3.5
5 to 160	216	7
60 to 350	400	8
60 to 550	900	12

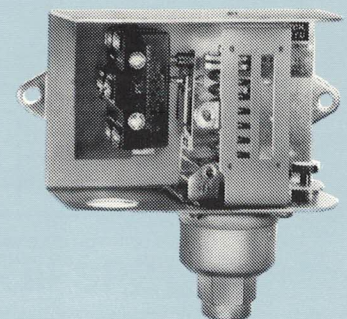
\*Additional Ranges Available.

## TEMPERATURE

*RANGE DEGREES F.	MAX TEMP.	APPROX. DIFF.		BULB STYLE	
		NON-ADJ.		REMOTE	DIRECT
		HIGH	LOW		
-40 to +22	—	3	6	L - N	HI - 2
-20 to +65	122	3	6	L - N	HI - 2
10 to 100	120	3	6	L - N	HI - 2
60 to 130	157	3	6	L - N	HI - 2
70 to 140	167	3	6	L - N	HI - 2
90 to 165	195	3	6	L - N	HI - 2
135 to 215	245	3	6	L - N	HI - 2
215 to 290	317	3	6	L - N	HI - 2

\*Additional Ranges Available.

For further information: See Form 19-24F.



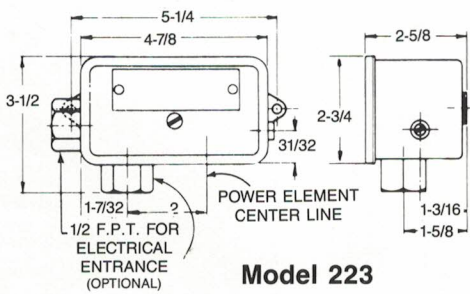
### Standard Features

1. Cadmium plated steel case with mounting bracket and cadmium plated cover.
2. One S.P.D.T. snap switch, 15 amp - 125/250 VAC.
3. 10 feet of capillary tube for remote temperature models.
4. Internal knurled knob range adjustment.



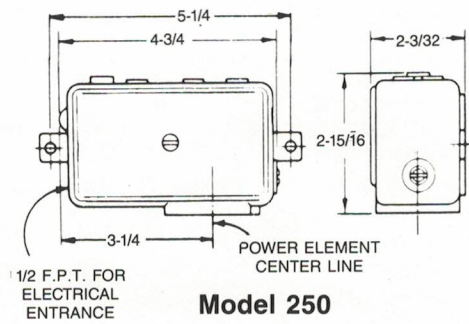
# Sensing Element and Switch Dimensions

## PRESSURE ELEMENTS



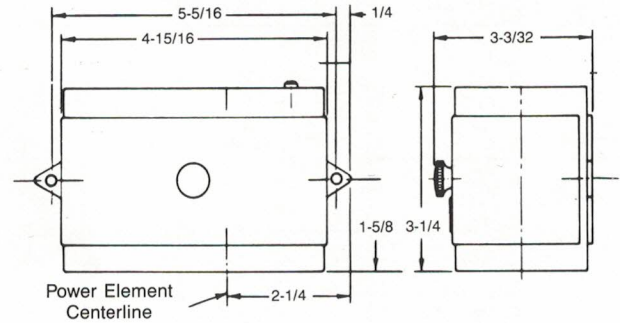
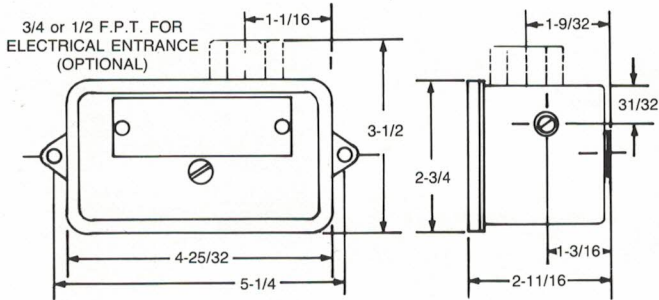
**Model 223**

**400 controls**



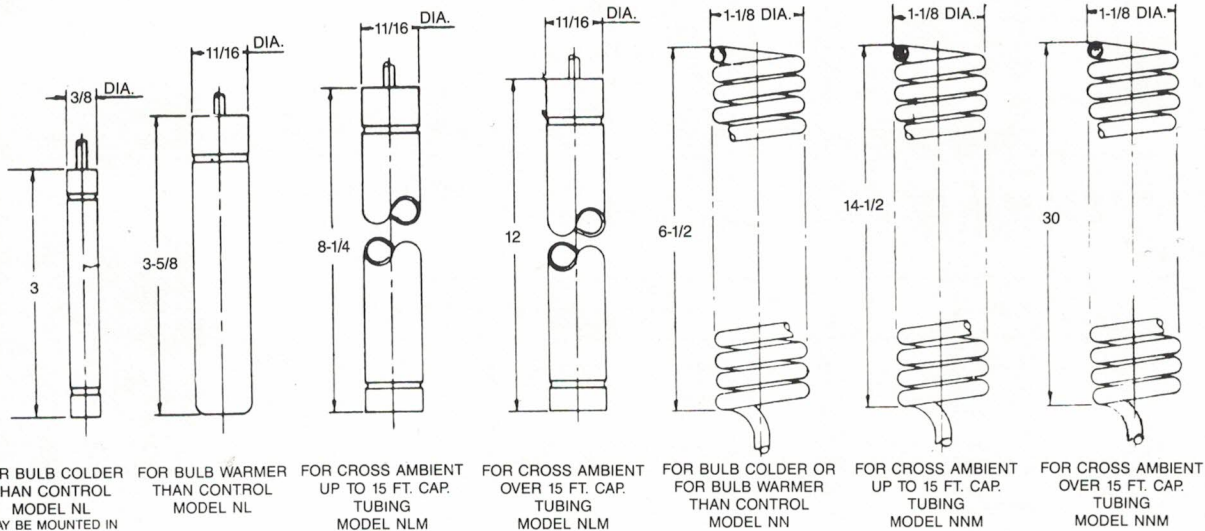
**Model 250**

**450 controls**



### Standard Temperature Bulbs in Correct Mounting Positions

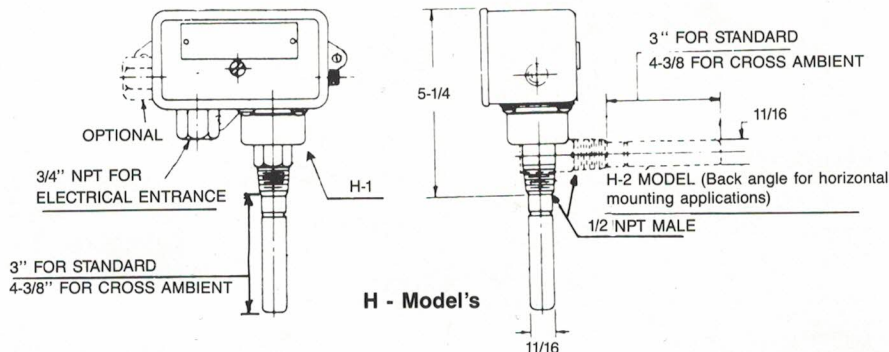
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L MODEL FOR LIQUIDS

N MODEL FOR GASES

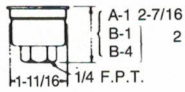
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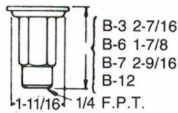
**H - Model's**

Special bulbs are available for non-standard mounting positions and non-standard differentials.

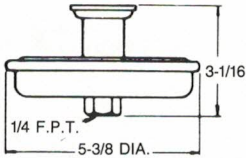
**PRESSURE OPERATED**



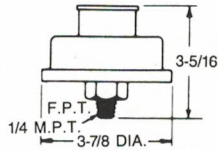
**Fig. 1 - Models A-1, B-1 and B-4**



**Fig. 2 - Models B-3, B-6, B-7 and B-12**



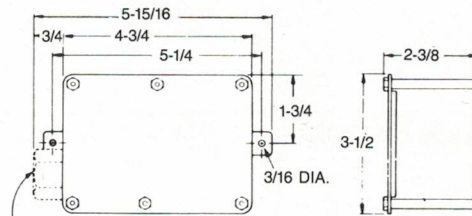
**Fig. 3 - Models C-1 and C-2**



**Fig. 4 - Models C-3 and C-4**

**Splash-proof Kit for 250 Model**

Unit No. 2505244



3/4 F.P.T. FITTING SUPPLIED FOR ELECTRICAL ENTRANCE

**TABLE OF UNIONS AND WELLS**

DESCRIPTION	UNIT NUMBER	ILLUSTRATION
Dem. Union (Brass)—1 1/16—12 Male x 1 1/8—24 Fem., for 11/16" Bulb Dem. Union (Brass)—7/8—14 Male x 1 1/8—24 Fem., for 3/8" Bulb	2221743 2221767	
Dem. Union and Well (Brass)—1 1/16—12 Male x 1 1/8—24 Fem., for 11/16" Bulb	2221744	
Non-Dem. Attached Union (Brass)—1 5/16—12 Male, for Model NN 1"—11 1/2 N.P.T. Male		
Dem. Union (Brass)—3/8" M.P.T. x 1 1/8—24 Fem., for 3/8" Bulb Dem. Union (Brass)—1/2" M.P.T. x 1 1/8—24 Fem., for 3/8" Bulb Dem. Union (Brass)—3/4" M.P.T. x 1 1/8—24 Fem., for 11/16" Bulb	2501987 2501988 566267	
Dem. Union and Well (Brass)—3/4" M.P.T. x 1 1/8—24 Fem., for 11/16" Bulb	2502003	
3 3/8" Well (Brass)—3/4" M.P.T. x 1 1/8—24 Fem., for 11/16" Bulb 3 3/8" Well (Brass)—3/4" M.P.T. x 3/4" F.P.T., for 11/16" Bulb	222102 2501981	
4 3/4" Well (Monel)—1 1/8—24 Fem., for 11/16" Bulb	2221917	
3" Well (Brass)—3/4" M.P.T. x 1/2" F.P.T., for H-1 and H-2	223242	
4 3/8" Well (Brass)—3/4" M.P.T. x 1/2" F.P.T., for H-1 and H-2 Cross-Ambient	223253	
3 5/8" Well (Brass)—13/16—28 Male, for 11/16" Bulb 3 5/8" Well (Steel) —13/16—28 Male, for 11/16" Bulb	2501794 2501795	
3 5/8" Perforated Sleeve (Brass)—13/16—28 Male, for 11/16" Bulb	2501782	

Additional Unions and Wells available in Brass, Stainless Steel and Monel

**DETROIT SWITCH, INC.**

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