

# Section 22

## Pressure, Vacuum, and Float Switches



XMLG      Electronic Pressure Sensors  
XMLK      XMLR



9012G  
Industrial Pressure Switch



9012G Machine Tool  
Pressure Switch



XMLA Electromechanical  
Pressure Switch



9016G  
Vacuum Switch



9013F  
Water Pump Switch



9013G  
Air Compressor Switch



9036D  
Open Tank Float Switch



9037H  
Closed Tank Float Switch








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9012 Sensor Selections

Application	Electronic					Electromechanical Control	
							
Product Family	XMLG	XMLP	XMEP	XMLK	XMLR	XMLE, B, C, D	9012G
Type of Installation/ Application	Control circuits	Control circuits	Control circuits for mobile equipment	Control circuits Pumping applications	Control circuits	Control circuits	Control circuits
Fluids Controlled	Air, water, hydraulic oils, corrosive fluids	Air, fresh water, most hydraulic oils	Hydraulic oils, air, fresh water, gas	Air, fresh water, 0 to +80 °C (32 to 176 °F)	Air, water, hydraulic oils, corrosive fluids		
Type of Operation and Features	Pressure/vacuum transmitters Analog output 4–20 mA or 0–10 V	Pressure/vacuum transmitters Analog output 4–20 mA, 0–10 V, 0.5–4.5 V ratiometric	Pressure transmitters Analog output 4–20 mA, 0–10 V, 0.5–4.5 V ratiometric	Pressure transmitters Analog output, 4–20 mA or 0–10 V	Pressure/vacuum switches and transmitters Configurable units with digital display Analog output 4–20 mA, 0–10 V Regulation between 2 trip points (adjustable differential)	Pressure/vacuum switches Detection of single trip point (nonadjustable differential) Regulation between 2 trip points (adjustable differential)	Pressure switches Detection of single trip point (nonadjustable differential) Regulation between 2 trip points (adjustable differential) 2-stage
Size/Range	–14.5 to 5800 psi	–14.5 to 6000 psi	0–870 psi, 0–1450 psi, 0–3625 psi, 0–5800 psi, 0–8700 psi	0 to 25 bar or 0 to 300 psi, depending on the model	–14.5 to 8700 psi	–14.5 to 7250 psi	0.2 to 9000 psi
Type of Output	Analog, 4–20 mA or 0–10 V	Analog, 4–20 mA, 0–10 V, 0.5–4.5 V	Analog, 4–20 mA, 0–10 V or 0.5–4.5 V	Analog, 4–20 mA or 0–10 V	Analog, 4–20 mA, 0–10 V Digital, PNP or NPN,	Snap action contacts SPDT or DPDT 10 A continuous	Snap action contacts SPDT or DPDT 10 A continuous
Electrical Connection	M12 connector or integrated quick connection	M12, DIN 43650, Metri-Pack 150 connector, or 2 m PVC cable	M12 connector (4-pin), AMP Superseal 1.5 connector (3-pin), AMP Junior Power Timer connector (3-pin), Deutsch DT04-3P connector (3-pin)	M12, DIN 43650 A or Metri-Pack connector [1]	M12 connector SAE 7/8-16 UN2A	Cable entry for Pg 13 (DIN PG13.5) cable gland, ISO M20, 1/2" NPT, and 1/2" PF	1/2"-14 NPT Cable entry 20 mm
Fluid Connection	G 1/4" BSP internal, 1/4" NPT internal SAE 7/16"-20 UNF female	1/4 A male, 1/4"-18 NPT male, SAE 7/16-20 UNF-2A male, SAE 7/16-20 UNF-2B female	G 1/4 A DIN 3852-E male, 1/4"-18 NPT male	G 1/4 A (male) conforming to ISO7 or 1/4"-18 NPT male [1]	G 1/4" BSP internal, 1/4" NPT internal SAE 7/16"-20 UNF female	G 1/4" BSP internal, 1/4" NPT internal 1/4"-18 NPT external	1/4" - 18 NPTF internal 7/16"-20 UNF-2B internal G 1/4" BSP internal G 1/4"-19 BSP internal
Fluid Characteristics	Hydraulic oils, air, fresh water, sea water, corrosive fluids from –15 to +125 °C (+5 to +257 °F)	Fresh water (0 to +135 °C) Air, hydraulic oils, refrigeration fluids (–30 to +135 °C)	Hydraulic oils, air, fresh water, gas (–40 to +125 °C)	Air, fresh water, 0 to +80 °C (+32 to +176 °F)	Hydraulic oils, air, fresh water, sea water, corrosive fluids from –15 to +80 °C (+5 to +176 °F)	Hydraulic oils, air, fresh water, sea water, steam, corrosive fluids, viscous products, 0 to +160 °C (+32 to +320 °F) depending on the model	Hydraulic oils, air, fresh water, sea water, corrosive fluids from –26 to +120 °C (–15 to +250 °F) depending on the model
Enclosure Rating	IP66, IP67 conforming to IEC/EN 60529, NEMA 4	IP65 or IP67, IP69K (M12 connector), conforming to EN/IEC 60529	IP65, IP67, and IP69K conforming to EN/IEC 60529	IP65 conforming to IEC/EN60529, NEMA 4	IP67 conforming to IEC/EN 60529, NEMA 4/6/12/13	Screw terminal models: IP66 conforming to IEC 529, NEMA 4	NEMA Type 4, 4X, 7, 9, 13
Dimensions of Case, in. (mm) width x height x depth	dia. 0.90 x 2.76 (dia. 22.8 x 70.1 mm)	Ø 26 x 38 (M12) Ø 26 x 60.5 (DIN 43650) Ø 26 x 55 (Metri-Pack)	Ø 24 x 38.1, Ø 24 x 62.1, Ø 24 x 60.5, Ø 24 x 54, Ø 24 x 60	dia. 1.40 x 3.10 (dia. 36 x 79.5)	1.6 x 3.93 x 1.6 in. (41 x 100 x 42 mm)	4.45 x 1.38 x 2.95 in. (113 x 35 x 75 mm) NEMA 4: 3.50 x 3.60 x 2.63 in. (89 x 91 x 67 mm)	NEMA 1: 2.06 x 5.03 x 2.75 in. (52 x 128 x 70 mm) NEMA 4: 3.50 x 3.60 x 2.63 in. (89 x 91 x 67 mm)
Conforming to Standards	CE, IEC/EN 60947-1, IEC/EN 60947-5-1, EN 50081-1, EN 50082-2, EN 61000-6-2	CE, ROHS, EN/IEC 61326-2-3, NSF ANSI 61	CE, ROHS, EN/IEC 61326-2-3, ECE 10R-5, ISO 13766, ISO 14982, EN 13309	CE, IEC/EN 60947-1, IEC/EN 60947-5-1, EN 50081-1, EN 50082-2, EN 61000-6-2	CE, IEC/EN 60947-1, IEC/EN 60947-5-1, EN 50081, EN 50082, EN 61000-6-2, EN 61000-4-2/3/4/5/6/8/11	CE, IEC/EN 60947-5-1, VDE 0660-200, UL 508, CSA C22-2 No. 14	NEMA A600 UL508
Certifications	UL Listed, CSA Certified	cULus conforming to UL 61010-1 and CSA-C22.2 no. 61010-1, EAC, RCM	cULus conforming to UL 61010-1, E2 conforming to UNECE 10R-5 (pending)	UL: File E97729, CCN NKPZ CSA: File 240515, Class 3211-03	UL Listed, CSA Certified	UL B300 - R300 Listed, CSA B300 - R300, (BV, GL, RINA, LROS pending)	UL Listed, CSA Certified
Catalog Number	XMLG	XMLP	XMEP	XMLK	XMLR	XMLE, XMLB, XMLE, XMLD	9012GA, GB, GC, GD, GE, GF, GG, GH, GJ, GK, GL, GM, GN, GP, GQ, GR, GS, GT

[1] For other connections, consult the Sensor Competency Center.

**9013, 9036, 9037, 9038 Sensor Selections**

Application	Electromechanical Control	Electromechanical Pressure Switches	Electromechanical Float Switches	Electromechanical Float Switches	Electromechanical Float Switches	Electromechanical Float Switches	Electromechanical Float Switches
							
<b>Product Family</b>	9016G	9013F	9013G	9036D, 9036F	9036G	9037	9038
<b>Type of Installation/ Application</b>	Control/power circuits	Power circuits	Power circuits	Power circuits	Power circuits	Power circuits	Power circuits
<b>Fluids Controlled</b>	Air, water, hydraulic oils, corrosive fluids	Fresh water, air		Fresh or sea water, hydraulic oils; suitable for corrosive fluids except for cast iron bushing (shown above)			
<b>Type of Operation and Features</b>	Vacuum switches Regulation between 2 trip points (adjustable differential)	Pressure switches Detection of single trip point (fixed differential) Regulation between 2 trip points (adjustable differential)	Pressure switches Regulation between 2 trip points (adjustable differential)	Liquid level control in <b>Open</b> tanks—either pumping in or pumping out of tank	Liquid level control in <b>Open</b> tanks—either pumping in or pumping out of tank	Liquid level control in <b>Closed</b> tanks for condensate, return heating water, fuel oil, etc.	Liquid level control in <b>Open</b> or <b>Closed</b> tanks—two pumps alternate, and both pumps run in peak demand Non-alternating option also available
<b>Size/Range (psi)</b>	0 to 29 in. of Hg	6 to 200 psi	10 to 250 psi	Light duty	Medium duty	—	—
<b>Type of Output</b>	Snap action contacts SPDT 10 A continuous DPST horsepower rated	1-pole or 2-pole, snap action contacts HP rated	2-pole, snap action contacts HP rated	2-pole, snap action contacts HP rated	2-pole, snap action contacts HP rated	2-pole, snap action contacts HP rated	2 sets of 2-pole, snap action contacts HP rated
<b>Electrical Connection</b>	<b>9016G:</b> 1/2" -14 NPT Cable entry 20 mm 9016GVG <b>NEMA Type 1 and 3R:</b> 3 knockouts for 1/2 in. conduit <b>NEMA Type 7 and 9:</b> 2 conduit entries, 3/4"-14 NPT	2 open side entries, 0.88 in. diameter, with two flats, 0.84 in. (21.3 mm) across flat	<b>NEMA Type 1 and 3R:</b> 3 knockouts for 1/2 in. conduit <b>NEMA Type 7 and 9:</b> 2 conduit entries, 3/4"-14 NPT	4 screw terminals <b>NEMA Type 1:</b> 2 open side entries, 0.88 in. diameter, with two flats, 0.84 in. (21.3 mm) across <b>NEMA Type 4, 7, 9:</b> 2 cable entries, 3/4-14 conduit entry <b>9036FG:</b> 2 cable entries, 0.88 in. (22.4 mm) with 0.84 in. (21.3 mm) across flat	4 screw terminals <b>NEMA Type 1:</b> 3 knockouts for 1/2 in. conduit entry <b>NEMA Type 4, 7, 9:</b> 2 cable entries, 3/4-14 conduit entry	4 screw terminals <b>NEMA Type 1:</b> 2 open side entries, 0.88 in. diameter, with two flats, 0.84 in. (21.3 mm) across <b>NEMA Type 4, 7, 9:</b> 2 cable entries, 3/4-14 conduit entry	8 screw terminals <b>NEMA Type 1:</b> 8 knockouts for 1/2 or 3/4 in. conduit entry <b>NEMA Type 4, 7, 9:</b> 2 cable entries, 3/4-14 conduit entry
<b>Fluid Connection</b>	G 1/4" BSP internal, 1/4" NPT internal 1/4"-18 NPT external	1/4" NPSF internal, 1/4" NPT external, plus other options	1/4" NPSF internal, 1/4" NPT external	Open tank	Open tank	Closed tank	Open tank (9038A) Closed tank (9038C, D)
<b>Fluid Characteristics</b>	Hydraulic oils, air, fresh water, sea water, from -26 to +120 °C (-15 to +250 °F) depending on the model	Fresh water, air		Fresh water, sea water, hydraulic oils (and corrosive fluids, depending on the model) with a density ≥ 0.8			
<b>Enclosure Rating</b>	<b>9016G:</b> NEMA Type 4, 4X, 7, 9, 13 <b>9016GVG:</b> NEMA Type 1	NEMA Type 1 NEMA Type 3R IP20	NEMA Type 1, 3R, 7, 9 IP20	NEMA Type 1, 4, 7, 9	NEMA Type 1, 4, 7, 9	NEMA Type 1, 4, 7, 9	NEMA Type 1, 4, 7, 9
<b>Dimensions of Case width x height x depth in. (mm)</b>	Control circuit: same as 9012G Power circuit: same as 9013G	3.76 x 2.8 x 2.78 in. (95.5 x 71.12 x 70.6 mm)	3.68 x 3.85 x 3.44 in. (93.47 x 97.79 x 87.37 mm)	See page 22-28	See page 22-28	See page 22-30–page 22-31	See page 22-32
<b>Conforming to Standards</b>	NEMA A600 UL508	NEMA A600 UL508	NEMA A600 UL508	NEMA A600 UL508	NEMA A600 UL508	NEMA A600 UL508	NEMA A600 UL508
<b>Certifications</b>	UL Listed, CSA Certified	UL Listed, CSA Certified	UL Listed, CSA Certified	UL Listed, CSA Certified	UL Listed, CSA Certified	UL Listed, CSA Certified	UL Listed, CSA Certified
<b>Catalog Number</b>	9016GA, 9016GV	9013FS, 9013FR, 9013FH, 9013FT, 9013FY	9013GS, 9013GH, 9013GM	9036DG, 9036DW, 9036DR, 9036FG	9036GG, 9036GW, 9036GR	9037EG, 9037EW, 9037ER, 9037HG, 9037HW, 9037HR	9038AG, 9038AW, 9038AR, 9038CG, 9038CW, 9038CR, 9038DG, 9038DW, 9038DR



XMLG...D  
M12 Connector

XMLG...Q  
Quick Connect

**XMLG Pressure Transmitters**

XMLG pressure transmitters are characterized by their ceramic pressure-measuring cell. The deformation caused by the pressure is transmitted to the resistors of a Wheatstone bridge silk-screened on the ceramic. The change in resistance is then processed by the integrated electronics, providing an analog output signal.

**Table 22.1: Specifications**

Enclosure Rating	IP66, IP67 conforming to IEC/EN 60529, NEMA 4
Ambient Temperature (Operation)	-15 to +85 °C (+5 to +185 °F)
Media Temperature	-15 to +125 °C (+5 to +257 °F)
Precision (Linearity, Repeat Accuracy, Hysteresis)	Transmitters: <0.3%
Repeat Accuracy (PNP/NPN output)	0.1% of the measuring range
Current Consumption	Transmitters: < 20 mA
Maximum Load Current	Transmitters: < 20mA
Rated Voltage	12/24 V for transmitters
Voltage Limits	24 V for transmitters
Fluids Controlled	Hydraulic oils, air, fresh/sea water, corrosive fluids from -15 to +125 °C (+5 to +257 °F)
Materials in Contact with Fluid	Ceramic Al <sub>2</sub> O <sub>3</sub> , stainless steel type AISI 303, Viton® FPM, PPS (leakage protection for P> 40 bar)
Output Response Time	< 2 ms

**Table 22.2: Interpretation of the Catalog Number (example: XMLG100D23TQ)**

XMLG	100	D	2	3	TQ		
Units without Display, 22.8 mm diameter	Rated Pressure Range			Electrical Connection	Fluid Connection	Bulk Pack	
	Code	psi	bar				
	M01	-14.5 to 0	-1 to 0	D: M12	1: DC Analog, 4–20 mA, shunt calibration	1: G 1/4 A (BSP male)	
	001	0 to 14.5	0 to 1	Q: Integrated quick connect	2: Analog, 4–20 mA	3: 1/4" NPT male	
	006	0 to 87.0	0 to 6		7: Analog, 0–10 V (bulk packs only)	7: 7/16-20 UNF male	
	010	0 to 145	0 to 10		11: DC Analog, 0–10 V shunt calibration		
	016	0 to 232.1	0 to 16				
	025	0 to 362.5	0 to 25				
	100	0 to 1450	0 to 100				
	160	0 to 2329.6	0 to 160				
	250	0 to 3625	0 to 250				
	400	0 to 5800	0 to 400				

**NOTE:** Use this table only to interpret the catalog number. Some combinations are not available.

**Table 22.3: Selection**

Rated Pressure Range		Fluid Connection	Electrical Connection	Catalog Number <sup>[1][2]</sup>	
				Analog Output, 4–20 mA	Analog Output, 0–10 Vdc
-14.5 to 0 psi	-1 to 0 bar	1/4" NPT Male	M12	XMLGM01D23	XMLGM01D73
0 to 14.5 psi	0 to 1 bar			XMLG001D23	XMLG001D73
0 to 87 psi	0 to 6 bar			XMLG006D23	XMLG006D73
0 to 145 psi	0 to 10 bar			XMLG010D23	XMLG010D73
0 to 232 psi	0 to 16 bar			XMLG016D23	XMLG016D73
0 to 362.5 psi	0 to 25 bar			XMLG025D23	XMLG025D73
0 to 1450 psi	0 to 100 bar			XMLG100D23	XMLG100D73
0 to 2320 psi	0 to 160 bar			XMLG160D23	XMLG160D73
0 to 3625 psi	0 to 250 bar			XMLG250D23	XMLG250D73
0 to 5800 psi	0 to 400 bar			XMLG400D23	XMLG400D73

**NOTE:** For units with a solid-state output, the settings must be specified for each order.

**Table 22.4: Wiring Configurations (M12)**

Output	Pin 1	Pin 3	Pin 4
Analog, 4–20 mA	+ Power supply	Output	—
Analog, 0–10 Vdc	+ Power supply	Output	Ground
Solid State, NPN	+ Power supply	Ground	Output
Solid State, PNP	+ Power supply	Ground	Output



UL E164865  
CCN NKPZ



LR 44087  
Class 3211-03



For wiring diagrams, refer to page 22-5.

[1] For devices with a switch output or 0–10 Vdc analog output, contact the Sensor Competency Center at 1-800-435-2121.

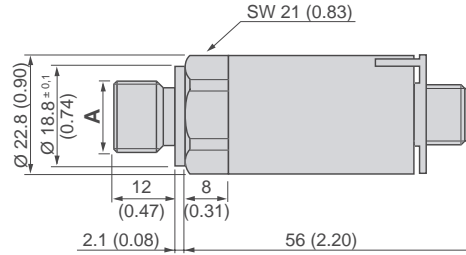
[2] For a bulk package (25 units), add TQ to the end of the catalog number. The minimum order quantity is 50 units (two bulk packs). When ordering, specify the individual number of units, NOT the number of bulk packs. Minimum order quantity for factory ordered individual items (non-stock) is 50 pieces.

**XMLG Pressure Transmitters and Switches**

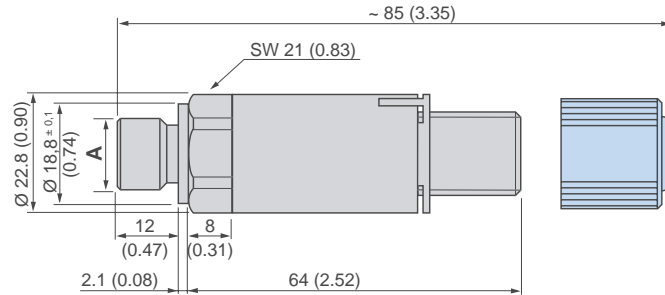
For connectors and cables, see [page 22-12](#).

Dimension A	
XMLG***D2**1	G 1/4 A (BSAP Male)
XMLG***D2**3	1/4" NPT Male
XMLG***D2**7	7/16-20 UNF Male

**Table 22.5: Dimensions, in. (mm)**  
XMLG\*\*\*D\*\*\*, M12 x 1 Connection



XMLG\*\*\*Q\*\*, Integrated Quick Connection



**Table 22.6: Connector Wiring**

Pressure Transmitters		Electronic Pressure Switches	
M12	Integrated Quick Connection	M12	Integrated Quick Connection
2-wire (4–20 mA)	2-wire (4–20 mA)	3-wire (PNP)	3-wire (PNP)
<p><b>3-wire (0–10 V)</b></p>	<p><b>3-wire (0–10 V)</b></p>	<p><b>3-wire (NPN)</b></p>	<p><b>3-wire (NPN)</b></p>

For wiring configurations, refer to [page 22-5](#).

**Compact Metal Body, 316L Stainless Steel Fluid Entry, with Analog Output**

Fluid Connection: 1/4"-18 NPT (male)



**Table 22.7: -14.5 to 0 psi (-1 to 0 bar)**

Maximum permissible accidental pressure: 44 psi, destruction pressure: 73 psi			
Analog output type	Electrical connection	Catalog Number	Weight, kg (lb)
4-20 mA	M12	XMLPM00RD23F [3]	0.078 (0.172)
	EN 175301-803-A	XMLPM00RC23F	0.094 (0.207)
	Packard Metri-Pack 150	XMLPM00RP23F	0.080 (0.176)
0-10 V	M12	XMLPM00RD73F [3]	0.078 (0.172)
	EN 175301-803-A	XMLPM00RC73F	0.094 (0.207)
	Packard Metri-Pack 150	XMLPM00RP73F	0.080 (0.176)
0.5-4.5 V ratiometric	M12	XMLPM00RD13F	0.078 (0.172)
	EN 175301-803-A	XMLPM00RC13F	0.094 (0.207)
	Packard Metri-Pack 150	XMLPM00RP13F	0.080 (0.176)

**Table 22.8: -14.5 to 15 psi (-1 to 1.03 bar)**

Maximum permissible accidental pressure: 44 psi, destruction pressure: 73 psi			
Analog output type	Electrical connection	Catalog Number	Weight, kg (lb)
4-20 mA	M12	XMLPM15RD23F [3]	0.078 (0.172)
	EN 175301-803-A	XMLPM15RC23F	0.094 (0.207)
	Packard Metri-Pack 150	XMLPM15RP23F [3]	0.080 (0.176)
0-10 V	M12	XMLPM15RD73F [3]	0.078 (0.172)

**Table 22.9: -14.5 to 60 psi (-1 to 4.14 bar)**

Maximum permissible accidental pressure: 260 psi, destruction pressure: 350 psi			
Analog output type	Electrical connection	Catalog Number	Weight, kg (lb)
4-20 mA	M12	XMLPM60RD23F [3]	0.078 (0.172)
	EN 175301-803-A	XMLPM60RC23F	0.094 (0.207)
	Packard Metri-Pack 150	XMLPM60RP23F	0.080 (0.176)
0-10 V	M12	XMLPM60RD73F [3]	0.078 (0.172)

**Table 22.10: 0 to 15 psi (0 to 1.03 bar)**

Maximum permissible accidental pressure: 44 psi, destruction pressure: 73 psi			
Analog output type	Electrical connection	Catalog Number	Weight, kg (lb)
4-20 mA	M12	XMLP015RD23F [4]	0.078 (0.172)
	EN 175301-803-A	XMLP015RC23F	0.094 (0.207)
	Packard Metri-Pack 150	XMLP015RP23F	0.080 (0.176)
0-10 V	M12	XMLP015RD73F [4]	0.078 (0.172)
	EN 175301-803-A	XMLP015RC73F	0.094 (0.207)
	Packard Metri-Pack 150	XMLP015RP73F	0.080 (0.176)

**Table 22.11: 0 to 30 psi (0 to 2.07 bar)**

Maximum permissible accidental pressure: 109 psi, destruction pressure: 145 psi			
Analog output type	Electrical connection	Catalog Number	Weight, kg (lb)
4-20 mA	M12	XMLP030RD23F [4]	0.078 (0.172)
	EN 175301-803-A	XMLP030RC23F	0.094 (0.207)
	Packard Metri-Pack 150	XMLP030RP23F	0.080 (0.176)
0-10 V	M12	XMLP030RD73F [4]	0.078 (0.172)
	EN 175301-803-A	XMLP030RC73F	0.094 (0.207)
	Packard Metri-Pack 150	XMLP030RP73F	0.080 (0.176)

**Table 22.12: 0 to 50 psi (0 to 3.45 bar)**

Maximum permissible accidental pressure: 174 psi, destruction pressure: 232 psi			
Analog output type	Electrical connection	Catalog Number	Weight, kg (lb)
4-20 mA	M12	XMLP050RD23F [4]	0.078 (0.172)
	EN 175301-803-A	XMLP050RC23F	0.094 (0.207)
	Packard Metri-Pack 150	XMLP050RP23F	0.080 (0.176)
0-10 V	M12	XMLP050RD73F [4]	0.078 (0.172)

**Table 22.13: 0 to 100 psi (0 to 6.9 bar)**

Maximum permissible accidental pressure: 260 psi, destruction pressure: 340 psi			
Analog output type	Electrical connection	Catalog Number	Weight, kg (lb)
4-20 mA	M12	XMLP100RD23F	0.078 (0.172)
0-10 V	M12	XMLP100RD73F	0.078 (0.172)
Maximum permissible accidental pressure: 300 psi, destruction pressure: 900 psi			
4-20 mA	M12	XMLP100PD230 [5]	0.088 (0.194)
	Packard Metri-Pack 150	XMLP100PD230 [5]	0.090 (0.198)
0-10 V	M12	XMLP100PD730	0.088 (0.194)
	Packard Metri-Pack 150	XMLP100PP730	0.090 (0.198)
0.5-4.5 V ratiometric	M12	XMLP100PD130	0.088 (0.194)
	Packard Metri-Pack 150	XMLP100PP130	0.090 (0.198)

[3] Available in lots of 25—add Q to the end of the selected catalog number. For example, XMLPM00RD23F becomes XMLPM00RD23FQ.  
 [4] Available in lots of 25—add Q to the end of the selected catalog number. For example, XMLP030RD73F becomes XMLP030RD73FQ.  
 [5] Available in lots of 25—add Q to the end of the selected catalog number. For example, XMLP100PD230 becomes XMLP100PD230Q.



XMLP•0PD•30



XMLP•0PP•30



XMLP•K0PD•30



XMLP•K0PP•30

**Table 22.14: 0 to 150 psi (0 to 10.3 bar)**

Maximum permissible accidental pressure: 450 psi, destruction pressure: 900 psi			
Analog output type	Electrical connection	Catalog Number	Weight, kg (lb)
4–20 mA	M12	XMLP150PD230 [6]	0.088 (0.194)
	Packard Metri-Pack 150	XMLP150PP230	0.090 (0.198)
0–10 V	M12	XMLP150PD730	0.088 (0.194)
	Packard Metri-Pack 150	XMLP150PP730	0.090 (0.198)
0.5–4.5 V ratiometric	M12	XMLP150PD130	0.088 (0.194)

**Table 22.15: 0 to 200 psi (0 to 13.8 bar)**

Maximum permissible accidental pressure: 600 psi, destruction pressure: 1400 psi			
Analog output type	Electrical connection	Catalog Number	Weight, kg (lb)
4–20 mA	M12	XMLP200PD230 [6]	0.088 (0.194)
	Packard Metri-Pack 150	XMLP200PP230	0.090 (0.198)
0–10 V	M12	XMLP200PD730	0.088 (0.194)
	Packard Metri-Pack 150	XMLP200PP730	0.090 (0.198)
0.5–4.5 V ratiometric	M12	XMLP200PD130	0.088 (0.194)

**Table 22.16: 0 to 300 psi (0 to 20.7 bar)**

Maximum permissible accidental pressure: 900 psi, destruction pressure: 2200 psi			
Analog output type	Electrical connection	Catalog Number	Weight, kg (lb)
4–20 mA	M12	XMLP300PD230 [7]	0.088 (0.194)
	Packard Metri-Pack 150	XMLP300PP230	0.090 (0.198)
0–10 V	M12	XMLP300PD730	0.088 (0.194)
	Packard Metri-Pack 150	XMLP300PP730	0.090 (0.198)
0.5–4.5 V ratiometric	M12	XMLP300PD130	0.088 (0.194)
	Packard Metri-Pack 150	XMLP300PP130	0.090 (0.198)

**Table 22.17: 0 to 600 psi (0 to 41.4 bar)**

Maximum permissible accidental pressure: 1800 psi, destruction pressure: 3600 psi			
Analog output type	Electrical connection	Catalog Number	Weight, kg (lb)
4–20 mA	M12	XMLP600PD230	0.088 (0.194)
	Packard Metri-Pack 150	XMLP600PP230 [7]	0.090 (0.198)
0–10 V	M12	XMLP600PD730	0.088 (0.194)
	Packard Metri-Pack 150	XMLP600PP730	0.090 (0.198)
0.5–4.5 V ratiometric	M12	XMLP600PD130	0.088 (0.194)
	Packard Metri-Pack 150	XMLP600PP130	0.090 (0.198)

**Table 22.18: 0 to 1000 psi (0 to 69 bar)**

Maximum permissible accidental pressure: 3000 psi, destruction pressure: 6000 psi			
Analog output type	Electrical connection	Catalog Number	Weight, kg (lb)
4–20 mA	M12	XMLP1K0PD230	0.088 (0.194)
	Packard Metri-Pack 150	XMLP1K0PP230	0.090 (0.198)
0–10 V	M12	XMLP1K0PD730	0.088 (0.19)
	Packard Metri-Pack 150	XMLP1K0PP730	0.090 (0.198)
0.5–4.5 V ratiometric	M12	XMLP1K0PD130	0.088 (0.194)

**Table 22.19: 0 to 2000 psi (0 to 138 bar)**

Maximum permissible accidental pressure: 6000 psi, destruction pressure: 12,000 psi			
Analog output type	Electrical connection	Catalog Number	Weight, kg (lb)
4–20 mA	M12	XMLP2K0PD230	0.092 (0.203)
0–10 V	M12	XMLP2K0PD730	0.092 (0.203)
0.5–4.5 V ratiometric	M12	XMLP2K0PD130	0.092 (0.203)

**Table 22.20: 0 to 3000 psi (0 to 207 bar)**

Maximum permissible accidental pressure: 9000 psi, destruction pressure: 18,000 psi			
Analog output type	Electrical connection	Catalog Number	Weight, kg (lb)
4–20 mA	M12	XMLP3K0PD230	0.092 (0.203)
	Packard Metri-Pack 150	XMLP3K0PP230	0.094 (0.207)
0–10 V	M12	XMLP3K0PD730 [8]	0.092 (0.203)
	Packard Metri-Pack 150	XMLP3K0PP730	0.094 (0.207)
0.5–4.5 V ratiometric	M12	XMLP3K0PD130	0.092 (0.203)

**Table 22.21: 0 to 6000 psi (0 to 414 bar)**

Maximum permissible accidental pressure: 18,000 psi, destruction pressure: 36,000 psi			
Analog output type	Electrical connection	Catalog Number	Weight, kg (lb)
4–20 mA	M12	XMLP6K0PD230	0.092 (0.203)
0–10 V	M12	XMLP6K0PD730	0.092 (0.203)
	Packard Metri-Pack 150	XMLP6K0PP730	0.094 (0.207)
0.5–4.5 V ratiometric	M12	XMLP6K0PD130	0.092 (0.203)
	Packard Metri-Pack 150	XMLP6K0PP130 [8]	0.094 (0.207)

[6] Available in lots of 25—add **Q** to the end of the selected catalog number. For example, XMLP100PD230 becomes XMLP100PD230Q.  
 [7] Available in lots of 25—add **Q** to the end of the selected catalog number. For example, XMLP600PP230 becomes XMLP600PP230Q.  
 [8] Available in lots of 25—add **Q** to the end of the selected catalog number. For example, XMLP6K0PP130 becomes XMLP6K0PP130Q.



**With Analog Output**

Fluid Connection: 1/4"-18 NPT (male)

**Table 22.22: 0 to 1000 psi (0 to 69 bar)**

Maximum permissible accidental pressure: 2200 psi, destruction pressure: 4400 psi			
Analog output type	Electrical connection	Catalog Number	Weight, kg (lb)
4–20 mA	Deutsch DT04-3P	XMEP1K0PT230	0.098 (0.22)
0–10 V	Deutsch DT04-3P	XMEP1K0PT730	0.098 (0.22)
0.5–4.5 V ratiometric	Deutsch DT04-3P	XMEP1K0PT130	0.098 (0.22)

**Table 22.23: 0 to 3000 psi (0 to 207 bar)**

Maximum permissible accidental pressure: 9000 psi, destruction pressure: 18,000 psi			
Analog output type	Electrical connection	Catalog Number	Weight, kg (lb)
4–20 mA	Deutsch DT04-3P	XMEP3K0PT230	0.098 (0.22)
0–10 V	Deutsch DT04-3P	XMEP3K0PT730	0.098 (0.22)
0.5–4.5 V ratiometric	Deutsch DT04-3P	XMEP3K0PT130	0.098 (0.22)

**Table 22.24: 0 to 5000 psi (0 to 345 bar)**

Maximum permissible accidental pressure: 15,000 psi, destruction pressure: 30,000 psi			
Analog output type	Electrical connection	Catalog Number	Weight, kg (lb)
4–20 mA	Deutsch DT04-3P	XMEP5K0PT230	0.098 (0.22)
0–10 V	Deutsch DT04-3P	XMEP5K0PT730	0.098 (0.22)
0.5–4.5 V ratiometric	Deutsch DT04-3P	XMEP5K0PT130	0.098 (0.22)

**Table 22.25: 0 to 7500 psi (0 to 517 bar)**

Maximum permissible accidental pressure: 18,750 psi, destruction pressure: 30,000 psi			
Analog output type	Electrical connection	Catalog Number	Weight, kg (lb)
4–20 mA	Deutsch DT04-3P	XMEP7K5PT230	0.098 (0.22)
0–10 V	Deutsch DT04-3P	XMEP7K5PT730	0.098 (0.22)
0.5–4.5 V ratiometric	Deutsch DT04-3P	XMEP7K5PT130	0.098 (0.22)





**XMLK Pressure Transmitters**

Type XMLK pressure transmitters are characterized by their ceramic pressure-measuring cell. The deformation caused by the pressure is transmitted to the resistors of a Wheatstone bridge silk-screened on the ceramic. The change in resistance is then processed by the integrated electronics to provide an analog output signal.

**Table 22.26: Environmental Specifications**

<b>Enclosure Rating</b>	IP65 conforming to IEC/EN 60529, NEMA 4
<b>Ambient Air Temperature</b>	<b>For Operation</b> 0 to +80 °C (32 to 176 °F) <b>For Storage</b> -25 to +85 °C (13 to 185 °F)
<b>Precision (Resolution)</b>	Combined sum of linearity, hysteresis, and repeat accuracy <math>\leq \pm 0.5\%</math> of the measuring range Setting tolerance of zero point and measuring range limit <math>\leq \pm 1\%</math> of the measuring range
<b>Repeat Accuracy</b>	$\pm 0.3\%$ of the measuring range
<b>Current Consumption</b>	4–20 mA: <math>< 20\text{ mA}</math> 0–10 V: <math>< 6\text{ mA}</math>
<b>Rated Supply Voltage</b>	24 Vdc
<b>Voltage Limits</b>	4–20 mA: 8–33 Vdc 0–10 V: 16.2–33 Vdc
<b>Fluids or Products Controlled</b>	Air, fresh water (0 to +80 °C / 32 to 176 °F)
<b>Materials in Contact with Fluid</b>	Steel, type AISI 303 (stainless steel) nitrile (NBR)
<b>Output Response Time</b>	<math>< 2\text{ ms}</math>

**Table 22.27: Interpretation of the Catalog Number**

Units Without Display	Rated Pressure			Unit of Pressure	O-Ring	Electrical Connection	Output	Fluid Connection	Bulk Pack
	Code	psi	bar						
36 mm (1.42 in.) diameter	<b>XMLK</b>	<b>100</b>		<b>P</b>	<b>2</b>	<b>D</b>	<b>2</b>	<b>3</b>	<b>TQ</b>
		006		0–6	B: bar	2: NBR (Nitrile)	C: DIN 43650A	2: Analog, 4–20 mA	1: G 1/4 A (male)
		010		0–10	P: psi		D: M12	7: Analog, 0–10 V	3: 1/4"-18 NPT (male)
		016		0–16			P: Metri-Pack		
		025		0–25					
		100	0–100						
		150	0–150						
		200	0–200						
		300	0–300						

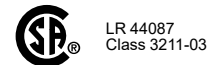
**NOTE:** Use this table only to interpret the catalog number. Some combinations are not available.

**Table 22.28: Selection**

Rated Pressure Range	Catalog Number [9]					
	4–20 mA Analog Output			0–10 Vdc Analog Output		
	DIN	M12	Metri-Pack	DIN	M12	Metri-Pack
<b>Bar Version, G 1/4 A Male Fluid Connector</b>						
0–6 bar (0–87 psi)	XMLK006B2C21	XMLK006B2D21	—	XMLK006B2C71	XMLK006B2D71	—
0–10 bar (0–145 psi)	XMLK010B2C21	XMLK010B2D21	—	XMLK010B2C71	XMLK010B2D71	—
0–16 bar (0–232 psi)	XMLK016B2C21	XMLK016B2D21	—	XMLK016B2C71	XMLK016B2D71	—
0–25 bar (0–362.5 psi)	XMLK025B2C21	XMLK025B2D21	—	XMLK025B2C71	XMLK025B2D71	—
<b>PSI Version, 1/4"-18 NPT Male Fluid Connector</b>						
0–100 psi (0–6.9 bar)	XMLK100P2C23	XMLK100P2D23	XMLK100P2P23	XMLK100P2C73	XMLK100P2D73	XMLK100P2P73
0–150 psi (0–10.3 bar)	XMLK150P2C23	XMLK150P2D23	XMLK150P2P23	XMLK150P2C73	XMLK150P2D73	XMLK150P2P73
0–200 psi (0–13.8 bar)	XMLK200P2C23	XMLK200P2D23	XMLK200P2P23	XMLK200P2C73	XMLK200P2D73	XMLK200P2P73
0–300 psi (0–20.7 bar)	XMLK300P2C23	XMLK300P2D23	XMLK300P2P23	XMLK300P2C73	XMLK300P2D73	XMLK300P2P73

**Table 22.29: Wiring Configurations (M12)**

Output	Pin 1	Pin 3	Pin 4
Analog, 4–20 mA	+ Power supply	Output	—
Analog, 0–10 Vdc	+ Power supply	Output	Ground
Solid State, NPN	+ Power supply	Ground	Output
Solid State, PNP	+ Power supply	Ground	Output



For wiring diagrams, refer to page 22-5.

[9] For a bulk package (25 units), add TQ to the end of the catalog number. The minimum order quantity is 50 units (two bulk packs). When ordering, specify the individual number of units, not the number of bulk packs. Minimum order quantity for factory ordered individual items (non-stock) is 50 pieces.

**XMLK Dimensions**

For connectors and cables, see [XMLF Accessories](#), [Wiring Configurations](#), and [Electrical Connections](#), page 22-12.

**Table 22.30: Dimensions**

XMLK, DIN connector	
NPT	G 1/4 A (male)
<p>Dimensions = mm / in.</p>	
XMLK, M12 connector	
NPT	G 1/4 A (male)
XMLK, Metri-Pack connector	
NPT	G 1/4 A (male)

**Table 22.31: Connector Wiring**

DIN 43650A	M12	Metri-Pack



**XMLR and ZMLP Pressure Switches**

XMLR and ZMLP are user-friendly electronic pressure switches with an easy-to-read four digit display and finger-operated adjustment buttons for scrolling up and down through the menu functions. Burst pressure is six times the nominal pressure (up to 1,800 bar or 26,100 psi).

**Configurable functions:**  
**Display**

- Pressure unit of measurement ( bar, psi, kPa, or MPa).
- Display refresh time: fast (50 ms), normal (200 ms), slow (600 ms).
- 180° reversed display function.

**Analog output (4–20 mA or 0–10 V):**

- Offset compensation in the range of ±5% of the nominal pressure.
- Adjustment of analog end point between 75 and 125% of the nominal pressure.

**Solid-state output**

- NO or NC contact.
- Switching mode of outputs: Hysteresis (pumping) or Window (control).
- Time delay both on trip and on reset (adjustable from 0 to 50 s, in steps of 1 s).

**Diagnostic functions**

- Illumination of all the segments of the display on each power-up, enabling checking of their operation.
- Diagnostic function for checking correct operation of the sensor.
- Saving of min. and max. pressures measured by the sensor and their subsequent display.

Outputs change state when the pressure ranges outside the window settings.

**Table 22.32: Interpretation of the Catalog Number (example: XMLRM01G0T25)**

XMLR	M01	G	0	T	2	5
Pressure range						
-1 – +0	M01					
1	001					
2.5	002					
10	010					
16	016					
25	025					
40	040					
100	100					
160	160					
250	250					
400	400					
600	600					

**Pressure technology**

Gauge ceramic	G
Gauge metal	M

**Digital output**

No digital output	0
1 DC Digital output	1
2 DC Digital output	2

**Output / input type**

No digital output / Test input	T
PNP	P
NPN	N

**Analog output**

No analog output	0
DC analog 4 – 20 mA	2
DC analog 0 – 10 V	7

**Fluid entry**

G 1/4 (female) DIN 3852-E	5
1/4 in. – 18 NPT (female)	6
7/16 in. – 20 UNF-2B (female)	9

**NOTE:** Use this table only to interpret the catalog number. Some combinations are not available.

**Table 22.33: Specifications**

Enclosure Rating	IP67 NEMA 4, 6, 12, 13	
Ambient Air Temperature for Operation	DC Models: –25 to +80 °C (–13 to +176 °F) AC Models: –25 to +80 °C (–13 to +176 °F)	
Media Temperature	–15 to +80 °C (+5 to +176 °F)	
Precision	Analog Output	≤0.6% of the measurement range, output offset <200 mV
	Digital Output	≤0.6% of the measurement range
Repeat Accuracy (PNP/NPN output)	≤0.5% of the measurement range	
Maximum Load Current	<b>DC:</b> 200 mA for 17–33 Vdc; <b>AC:</b> 2.5A AC15 C300	

**Table 22.34: ZMLP Selection**

Output 1	Output 2	Switching Mode	Catalog Number
4–20 mA	PNP	Hysteresis	ZMLPA2PSH
		Windows	ZMLPA2PSW
	NPN	Hysteresis	ZMLPA2NSH
		Windows	ZMLPA2NSW
PNP	PNP	Hysteresis	ZMLPDPSSH
NPN	NPN	Hysteresis	ZMLPDNNSH

**Table 22.35: XMLR Selection**

Fluid entries	Outputs			Size							
	4–20 mA	PNP	NPN	–1 bar	1 bar	10 bar	16 bar	40 bar	250 bar	400 bar	
1/4"–18NPT	1	—	1	XMLRM01G1N26	XMLR001G1N26	XMLR010G1N26	XMLR016G1N26	XMLR040G1N26	XMLR250M1N26	XMLR400M1N26	
	—	—	2	XMLRM01G2N06	XMLR0012G2N06	XMLR010G2N06	XMLR016G2N06	XMLR040G2N06	XMLR250M2N06	XMLR400M2N06	
G1/4A	1	—	—	XMLRM01G0T25	XMLR001G0T25	XMLR010G0T25	XMLR016G0T25	XMLR040G0T25	XMLR250M0T25	XMLR400M0T25	
	—	1	—	XMLRM01G1P25	XMLR001G1P25	XMLR010G1P25	XMLR016G1P25	XMLR040G1P25	XMLR250M1P25	XMLR400M1P25	
	—	2	—	XMLRM01G2P05	XMLR001G2P05	XMLR010G2P05	XMLR016G2P05	XMLR040G2P05	XMLR250M2P05	XMLR400M2P05	

For more options for fluid entry, output, and size, visit [www.schneider-electric.com](http://www.schneider-electric.com).



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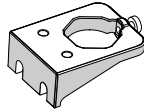


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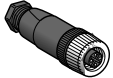




XMLZL009



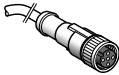
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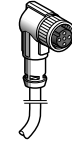
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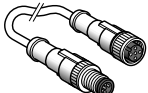
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XZCP1141L



XZCP1241L



XZCR15110



XZCR15120

XMLR Accessories, Wiring, and Electrical Connections

Table 22.36: Accessories

Description	For use with	Catalog Number	Weight kg (oz)
Cooler with G 1/4 A (male) connections Usage temperature: 150° C (302° F) max. for the fluid, 50° C (122° F) for the ambient air	XMLR.....5	XMLZL009	0.370 (13.051)
Fixing bracket aluminium	XMLR...	XMLZL017	0.029 (1.023)

Table 22.37: Connectors

Description	For use with	Type	Catalog Number	Weight kg (oz)
M12 female connector, 4-pin metal clamping ring	XMLR.....0T..	Straight	XZCC12FDM40B	0.020 (0.705)
	XMLR.....1P..			
	XMLR.....1N..			
	XMLR.....2P0p			
M12 female connector, 5-pin metal clamping ring	XMLR.....2N0.	Elbowed	XZCC12FCM40B	0.020 (0.705)
	XMLR.....2P2. XMLR.....2N2.	Straight	XZCC12FDM50B	0.020 (0.705)
	XMLR.....2P2. XMLR.....2N2.	Elbowed	XZCC12FCM50B	0.020 (0.705)

Table 22.38: Pre-wired connectors and jumper cables

Description	For use with	Type	Cable length m (ft)	Catalog Number	Weight kg (oz)
Pre-wired M12, 4-pin connectors Metal clamping ring PUR cable	XMLR.....0T.. XMLR.....1P.. XMLR.....1N.. XMLR.....2P0. XMLR.....2N0.	Straight	2 (6.56)	XZCP1141L2	0.090 (3.174)
			5 (16.40)	XZCP1141L5	0.190 (6.702)
			10 (32.81)	XZCP1141L10	0.370 (13.051)
		Elbowed	2 (6.56)	XZCP1241L2	0.090 (3.174)
			5 (16.40)	XZCP1241L5	0.190 (6.702)
			10 (32.81)	XZCP1241L10	0.370 (13.051)
Pre-wired M12, 5-pin connectors PVC cable	XMLR.....2P2. XMLR.....2N2.	Straight female connector	2 (6.56)	XZCPV11V12L2	0.100 (3.527)
			5 (16.40)	XZCPV11V12L5	0.200 (7.054)
		Elbowed female connector	10 (32.81)	XZCPV11V12L10	0.400 (14.109)
			2 (6.56)	XZCPV12V12L2	0.100 (3.527)
			10 (32.81)	XZCPV12V12L10	0.400 (14.109)
			Straight female connector	1 (3.28)	XZCR1511041C1
Elbowed female connector	2 (6.56)	XZCR1511041C2		0.100 (3.527)	
		1 (3.28)	XZCR1512041C1	0.100 (3.527)	
		2 (6.56)	XZCR1512041C2	0.100 (3.527)	
	M12-M12 5-pin jumper cables PUR cable	XMLR.....2P2. XMLR.....2N2.	Straight female connector	1 (3.28)	XZCR1511064D1
2 (6.56)				XZCR1511064D2	0.100 (3.527)
Elbowed female connector			1 (3.28)	XZCR1512064D1	0.100 (3.527)
			2 (6.56)	XZCR1512064D2	0.100 (3.527)



XMLB



XMLD

**XML Industrial Pressure Switches**

XML industrial pressure switches meet IEC, Cenelec, UL, and CSA standards. They are CE marked.

- Fixed differential (XMLA), adjustable differential single-pole (XMLB) or double-pole (XMLC), and dual stage (XMLD)
- Range listed is on increasing pressure (psi, bar, kPa)
- External pressure setting window available
- 1 N.O.–1 N.C. snap acting contacts standard
- Temperature range: –13 to +158 °F (–25 to +70 °C)
- Enclosure rating: IP65 with plug-in connector, IP66 with terminal connections
- Operating rate: up to 120 operations / min. for diaphragm and 60 / min. for piston
- Media connection: 1/4" NPT
- Conduit connection: 1/2" NPT

**Table 22.39: Specifications**

<b>Enclosure Rating</b>	Screw terminal models: IP66 conforming to IEC/EN 60529; Connector models: IP65 conforming to IEC/EN 60529	
<b>Ambient Temperature</b>	<b>Operation</b>	–25 to +70 °C (–13 to +158 °F)
	<b>Storage</b>	–40 to +70 °C (–40 to 158 °F)
<b>Repeat Accuracy</b>	< 2%	
<b>Fluids Controlled</b>	Hydraulic oils, air, fresh water, 32 to 320 °F (0 to +160 °C), depending on the model Steam, corrosive fluids, viscous products, 32 to 320 °F (0 to +160 °C), depending on the model	
<b>Operating Rate (operating cycles/minute)</b>	Piston version switches: up to 60 cycles/minute for temperatures above 32 °F (0 °C) Diaphragm version switches: up to 120 cycles/minute for temperatures above 32 °F (0 °C)	
<b>Operational Characteristics</b>	AC-15; B300 (Ue = 240 V, Ie = 1.5 A; Ue = 120 V, Ie = 3 A) DC-13; R300 (Ue = 250 V, Ie = 0.1) conforming to IEC 947-5-1 Appendix A, EN 60 947-5-1	
<b>Type of Contacts</b>	Silver tipped contacts XMLA & XMLB: 1 C/O single-pole contact (4 terminal), snap action XMLC: 2 C/O single-pole contacts (8 terminals), simultaneous snap action XMLD: 2 C/O single-pole contacts (8 terminals), staggered snap action	
<b>Resistance Across Terminals</b>	< 25 mW conforming to NF C 93-050 method A or IEC 255-7 category 3	
<b>Terminal Referencing</b>	Conforming to CENELEC EN 50013	
<b>Short-Circuit Protections</b>	10 A cartridge fuse type gG (gl) recommended	
<b>Connection</b>	Screw clamp terminals; Clamping capacity, min: 1 x 0.2 mm <sup>2</sup> , max: 2 x 2.5 mm <sup>2</sup>	

**Table 22.40: Component Materials in Contact with Fluid**

Pressure Switch Catalog Number	Zinc Alloy	Stainless Steel	Brass	Steel	Nitrile	PTFE	FPM, FKM	Aluminum
XMLAM01V**** / XMLM02V****	X	X [1]	—	—	X	—	—	—
XMLBM03S****	—	X [1]	—	—	—	X	—	—
XMLM05A****	X	X [1]	—	—	X	—	—	—
XMLBL05S****	—	X [2]	—	—	—	X	—	—
XMLL35R****	—	X [2]	—	X	—	—	X	—
XMLL35S**** / XML001S****	—	X [2]	—	—	—	X	—	—
XML002A****	X	—	—	—	X	—	—	—
XML002B****	—	—	—	X	—	—	X	—
XMLA004A**** / XMLB004A****	X	—	—	—	X	—	—	—
XML004B****	—	—	—	X	—	—	X	—
XML010A****	X	—	—	—	X	—	—	—
XML010B****	—	—	X	—	—	—	X	—
XML020A**** / XML035A****	X	—	—	—	X	—	—	X
XML020B**** / XML035B****	—	—	X	—	—	—	X	—
XML070D**** / XML160D**** / XML300D****	—	—	X	X	—	X	X	—
XML500D****	—	—	X1	X	—	X	X	—

**Table 22.41: Interpretation of the Catalog Number (example: XMLD070D1S13)**

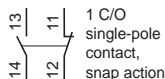
(XML) D	070	D	1	S	1	3	
Contacts	Rated Pressure	Actuator	Scale	Electrical Connection	Output	Fluid Connection	
A Fixed differential, single-pole contact	<b>Code</b>	<b>Diaphragm</b>	1 Without	S Without connector (not available on solid-state devices)	1 Contacts	<b>Fluid</b>	<b>Electrical</b>
	<b>L05</b> 0 to 0.725 0 to 0.05						
B Adjustable differential, single-pole contact	<b>M01</b> -14.5 to -4.06 -1 to -0.28	B Hydraulic oil, air, fresh water, sea water (0 to 160 °C)	With	C Square / DIN 43650 D M12 Micro connector	2 1/4 Gas	ISO M20	
	<b>M02</b> -14.5 to -2.03 -1 to -0.14	C Corrosive fluids					3 1/4 in. NPTF 1/2 in. NPT
C 2 adjustable differential, single-pole contacts, simultaneous	<b>M05</b> -7.25 to 72.5 -0.5 to 5	P Viscous fluids	3	4	PT 1/4 (JIS B0203)	1/2 in. PF (JIS B0202)	
	<b>001</b> 0 to 14.5 0 to 1	R Hydraulic oil, air (0 to 160 °C)					
D 2 fixed differential, single-pole contacts, staggered	<b>002</b> 0 to 36.25 0 to 2.5	S Fresh/sea water, corrosive fluids (0 to 160 °C)	4				
	<b>004</b> 0 to 58 0 to 4	<b>Vacuum</b>					
	<b>010</b> 0 to 145 0 to 10	V Hydraulic oil, air, fresh water, sea water (0 to 70 °C)					
	<b>020</b> 0 to 290 0 to 20	T Hydraulic oil, air, fresh water, sea water (0 to 160 °C)					
	<b>035</b> 0 to 507.5 0 to 35	<b>Piston</b>					
	<b>040</b> 0 to 580 0 to 40	D Hydraulic oil					
	<b>070</b> 0 to 1015 0 to 70	E Fresh / sea water					
	<b>160</b> 0 to 2320 0 to 160						
<b>300</b> 0 to 4350 0 to 300							
<b>500</b> 0 to 7250 0 to 500							

**NOTE:** Use this table only to interpret the catalog number. Some combinations are not available

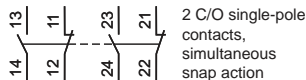
[1] X2GNiMo 17-12-2 (AISI 316L)  
[2] X8GNiS 18-09 (AISI 303)

Terminal Diagrams

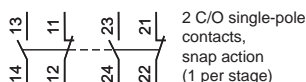
XMLA, XMLB



XMLC



XMLD



XML Catalog Numbers and Accessories

Table 22.42: Fixed Differential Catalog Numbers

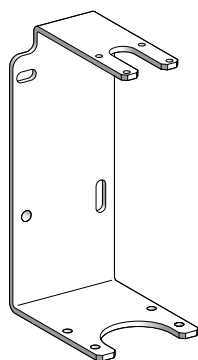
Range on Increasing Pressure (psi)	Approximate Differential Across Range	Maximum Allowable Pressure	Catalog Number
<b>Fixed, 1 Single-Pole Contact (XMLA)</b>			
-4.06 to -14.5	3.5	130.5	XMLAM01V2S13
0.435 to 14.5	0.29 low / 0.58 high	32.62	XMLA001S2S13
2.17 to 36.25	1.88	130.5	XMLA002A2S13
5.8 to 58	5.07	130.5	XMLA004A2S13
8.7 to 145	7.25	326.25	XMLA010A2S13
10.2 to 290	5.8 low / 14.5 high	652.5	XMLA020A2S13
21.75 to 507.5	18.12	1160	XMLA035A2S13
72.5 to 1015	43.5 low / 108.75 high	2320	XMLA070D2S13
145 to 2320	79.75 low / 261 high	5220	XMLA160D2S13
290 to 4350	239.25 low / 507.5 high	9787.5	XMLA300D2S13
435 to 7250	290 low / 652.5 high	16312.5	XMLA500D2S13
<b>Fixed, 2 Single-Pole Contacts, Staggered (XMLD)</b>			
0.84 to 5.07	0.44	32.62	XMLDL35S1S13
-1.74 to -14.5	1.45	130.5	XMLDM02V1S13
1.74 to 14.5	0.44 low / 1.02 high	32.62	XMLD001S1S13
4.93 to 36.25	2.03 low / 2.76 high	130.5	XMLD002B1S13
5.8 to 58	2.18 low / 2.76 high	130.5	XMLD004B1S13
17.4 to 145	6.53 low / 8.7 high	326.25	XMLD010B1S13
2.14 to 20	10.15 low / 18.85 high	652.5	XMLD020B1S13
63.8 to 507.5	21.75 low / 37.7 high	1160	XMLD035B1S13
136.3 to 1015	72.5 low / 137.75 high	2320	XMLD070D1S13
239.25 to 2320	127.6 low / 290 high	5220	XMLD160D1S13
522 to 4350	246.5 low / 609 high	9787.5	XMLD300D1S13
594.5 to 7250	304.5 low / 942.5 high	16312.5	XMLD500D1S13

Table 22.43: Adjustable Differential Catalog Numbers

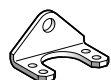
Range on Increasing Pressure (psi)	Approximate Differential Across Range	Maximum Allowable Pressure	Catalog Number
<b>Adjustable, 1 Single-Pole Contact (XMLB)</b>			
0.038 to 0.72	0.02 low / 0.06 high	1.63	XMLBL05S2S13
0.65 to 5.07	0.6 low / 0.72 high	32.62	XMLBL35R2S13
-2 to -14.5	1.9	130.5	XMLBM02V2S13
-0.29 to -2.9	0.26	29	XMLBM03S2S13
-7.25 to 72.5	7.25	163.12	XMLBM05A2S13
0.72 to 14.5	0.58 low / 0.87 high	32.62	XMLB001S2S13
4.35 to 36.25	2.32 low / 3.04 high	130.5	XMLB002A2S13
3.62 to 58	2.9 low / 3.62 high	130.5	XMLB004A2S13
10.15 to 145	8.26 low / 12.32 high	326.25	XMLB010A2S13
18.9 to 290	14.5 low / 23.2 high	652.5	XMLB020A2S13
50.75 to 507.5	24.65 low / 36.97 high	1160	XMLB035A2S13
101.5 to 1015	68.15 low / 127.6 high	2320	XMLB070D2S13
145 to 2320	134.85 low / 301.6 high	5220	XMLB160D2S13
319 to 4350	281.3 low / 536.5	9787.5	XMLB300D2S13
435 to 7250	333.5 low / 762.7 high	16312.5	XMLB500D2S13
<b>Adjustable, 2 Single-Pole Contacts, Simultaneous (XMLC)</b>			
0.65 to 5.07	0.29 low / 0.51 high	32.62	XMLCL35S2S13
-2 to -14.5	1.89 low / 2.03 high	130.5	XMLCM02V2S13
-7.97 to 72.5	6.52	163.12	XMLCM05S2S13
0.725 to 14.5	0.43 low / 0.58 high	32.62	XMLC001S2S13
4.35 to 36.25	1.89 low / 2.47 high	130.5	XMLC002B2S13
4.35 to 58	2.18 low / 2.47 high	130.5	XMLC004B2S13
10.15 to 145	6.53 low / 10.15 high	326.25	XMLC010B2S13
18.85 to 290	10.15 low / 14.5 high	652.5	XMLC020B2S13
50.75 to 507.5	14.5 low / 21.75 high	1160	XMLC035B2S13
101.5 to 1015	65.25 low / 129.05 high	2320	XMLC070D2S13
174 to 2320	130.5 low / 304.5 high	5220	XMLC160D2S13
319 to 4350	232 low / 507.5 high	9787.5	XMLC300D2S13
435 to 7250	275.5 low / 754 high	16312.5	XMLC500D2S13

Table 22.44: Accessories for XML Pressure and Vacuum Switches

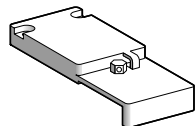
Description	For Use with Switches	Catalog Number
<b>Rear mounting bracket</b> For vibrations > 2 gn	XML-L35 XML-001	XMLZL006
<b>Additional top support bracket</b> For vibrations > 4 gn	XMLAM01 XML-M05 XMLA004 XML-010 ... XML-500	XMLZL002
<b>Lead sealable protective cover</b> To prevent unauthorized access to the adjustment screws and the switch cover mounting screw	XMLA XMLB	XMLZL001
<b>Lead sealable protective cover</b> To prevent unauthorized access to adjustment screws	All models	XMLZL011



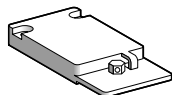
XMLZL006



XMLZL002



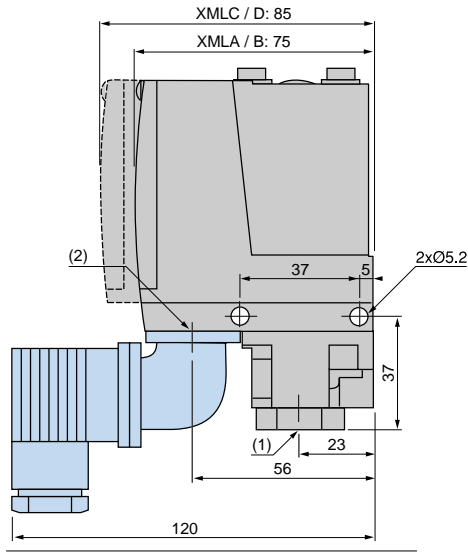
XMLZL001



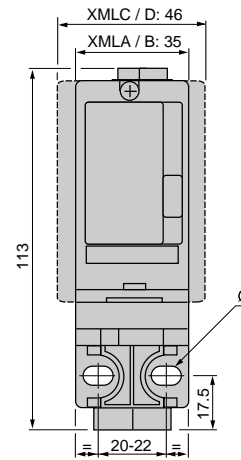
XMLZL011

**XML Dimensions**

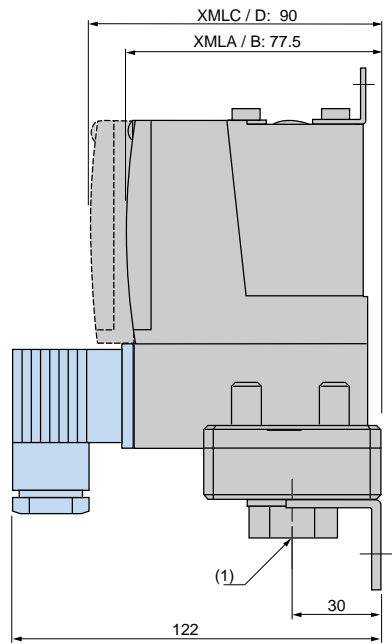
XMLAM01, XMLBM05, XMLCM05, XMLA004, X-ML010...500



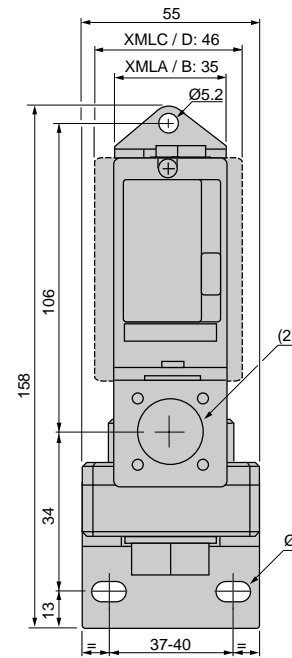
(1) 1 fluid entry, tapped G 1/4 (BSP female) or 1/4" NPT  
(2) 1 electrical connections entry, tapped M20 x 1.5 or Pg 13.5, or 1/2" NPT  
Ø: 2 elongated holes Ø 5.2 x 6.7



XML-M02, XML-002, XMLB004, XMLC004, XMLD004



(1) 1 fluid entry, tapped G 1/4 (BSP female) or 1/4" NPT  
(2) 1 electrical connections entry, tapped M20 x 1.5 or Pg 13.5, or 1/2" NPT  
Ø: 2 elongated holes Ø 10.2 x 5.2





NEMA 1



Open Type

Class 9012 Type G Pressure Switches

Table 22.45: Fixed Differential, Open Type or NEMA 1 Enclosure

Range On Decreasing Pressure psig	Approximate Differential at Mid-Range psig [3]	Maximum Allowable Pressure psig	Open Type	NEMA 1
			Catalog No.	Catalog No.
<b>Diaphragm Actuated—Nitrile (Buna-N) Diaphragm, Zinc Plated Steel Housing</b>				
0.2–10	0.4 ±0.1	100	9012GRO1	9012GRG1
1–40	1.2 ±0.3	100	9012GRO3	9012GRG3
1.5–75	2.2 ±0.4	240	9012GRO4	9012GRG4
3–150	4.2 ±1	475	9012GRO5	9012GRG5
5–250	7.4 ±2	750	9012GRO6	9012GRG6
13–425	13 ±3	850	—	9012GSG1
20–675	19 ±5	2000	—	9012GSG2
<b>Piston Actuated—#440 Stainless Steel Piston. #303 Stainless Steel Housing, Viton® Fluorocarbon Diaphragm and O-Ring, Teflon® Retaining Ring</b>				
20–1000	49 ±10	10000	—	9012GTG1
90–2900	141 ±15	15000	9012GTO2	9012GTG2
170–5600	200 ±40	20000	9012GTO3	9012GTG3
270–9000	350 ±45	25000	—	9012GTG4

Table 22.46: Adjustable Differential, Open Type or NEMA 1 Enclosure

Range On Decreasing Pressure psig	Approximate Mid-Range Differential Adds to Decreasing Set Point [3]	Maximum Allowable Pressure psig	Open Type	NEMA 1
			Catalog No.	Catalog No.
<b>Diaphragm Actuated—Nitrile (Buna-N) Diaphragm, Zinc Plated Steel Housing</b>				
0.2–10	0.4–0.9	100	9012GNO1	9012GNG1
1–40	1.2–3.6	100	9012GNO3	9012GNG3
1.5–75	2.2–6.6	240	9012GNO4	9012GNG4
3–150	4.2–13.2	475	9012GNO5	9012GNG5
5–250	7.4–33.6	750	9012GNO6	9012GNG6
13–425	13–37.2	850	9012GPO1	9012GPG1
20–675	19–58.8	2000	9012GPO2	9012GPG2
<b>Piston Actuated—#440 Stainless Steel Piston. #303 Stainless Steel Housing, Viton Fluorocarbon Diaphragm and O-Ring, Teflon Retaining Ring</b>				
20–1000	49–150	10000	—	9012GQG1
90–2900	141–455	15000	9012GQO2	9012GQG2
170–5600	200–950	20000	9012GQO3	9012GQG3
270–9000	350–1400	25000	—	9012GQG4

Table 22.47: Available Modifications [4]

Modification	Applies to	Form
Standard Nitrile (Buna-N) diaphragm in #316 stainless steel housing	<b>Not available</b> on GNG1, GNO1, GRG1, or GRO1. <b>Available</b> on all other GNG, GNO, GPG, GPO, GRG, GRO, GSG, and GSO switches.	Q1
Viton fluorocarbon diaphragm in #316 stainless steel housing	<b>Not available</b> on GNG1, GNO1, GRG1, or GRO1. <b>Available</b> on all other GNG, GNO, GPG, GPO, GRG, GRO, GSG, and GSO switches.	Q4
1/4–18 NPT external thread pressure connection	GNG, GNO, GRG, GRO	Z
1/2–14 NPT external thread, 1/4–18 NPTF internal thread pressure connection. Standard actuator only.	GNG, GNO, GRG, GRO	Z16
7/16–20 UNF-2B internal thread pressure connection	GNG, GNO, GPG, GPO, GQG, GQO, GRG, GRO, GSG, GSO, GTG, GTO	Z18

Table 22.48: Class 9049 Accessories for Class 9012 Pressure Switches

Description	Applies to Class	Catalog No.
Stainless steel surge reducer for use on oils, coolants, and hydraulic fluids (not recommended for air or water)	9012G	9049A26S

Acceptable Wire Sizes 12-22 AWG

Recommended Terminal Clamp Torque 7 lb-in

Electrical Rating page 22-19

Temperature Rating page 22-19

Renewal Parts Kits page 22-34



File E12158  
CCN NKPZ



File LR25490  
Class 3211-03



[3] Determines operating point on rising pressure.

[4] Some product configurations are not available—contact your Schneider Electric representative for details.



**Control Circuit Rated Type G Pressure Switches**

Class 9012 single stage pressure switches are control circuit rated devices used in pneumatic or hydraulic systems on a wide variety of machine and process applications to protect the equipment and control or monitor the system pressure.

- Type G machine tool switches are available with NEMA Type 4, 4X, and 13 (IEC IP66) enclosure ratings.
- The NEMA 7 and 9 devices are UL listed for use in the following hazardous locations: Class I, Divisions 1 and 2, Groups C and D; and Class II, Divisions 1 and 2, Groups E, F, and G.
- Enclosure materials are cast aluminum.
- To ensure repeatability and minimize setting drift, pressure settings should fall within the middle 80 percent of the pressure range.



9012GAW5  
NEMA 4, 4X, 13

**Table 22.49: Fixed Differential [5]**

**NEMA 4, 4X, 13 Enclosure**  
**UL Listed and CSA Certified As Industrial Control Equipment**

Range on Decreasing Pressure psig	[6] Approximate Differential at Mid-Range psig	Maximum Allowable Pressure psig	Single Pole Double Throw	Double Pole Double Throw
			Catalog No.	Catalog No.
<b>Diaphragm Actuated—Nitrile (Buna-N) Diaphragm, Zinc Plated Steel Housing</b>				
2-10	0.6 ±0.1	100	9012GDW1	9012GDW21
1-40	1.6 ±0.4	100	9012GDW2	9012GDW22
1.5-75	3.0 ±0.5	240	9012GDW4	9012GDW24
3-150	6.0 ±0.8	475	9012GDW5	9012GDW25
5-250	10.0 ±1.5	750	9012GDW6	9012GDW26
13-425	16 ±3.5	850	9012GEW1	9012GEW21
20-675	27 ±5	2000	9012GEW2	9012GEW22
<b>Piston Actuated—#440 Stainless Steel Piston, #303 Stainless Steel Housing, Viton® Fluorocarbon Diaphragm and O-ring, Teflon® Retaining Ring</b>				
20-1000	59 ±9	10000	9012GFW1	9012GFW21
90-2900	170 ±15	15000	9012GFW2	9012GFW22
170-5600	289 ±55	20000	9012GFW3	9012GFW23
270-9000	495 ±70	25000	9012GFW4	9012GFW24

**Table 22.50: Adjustable Differential [5]**

**NEMA 4, 4X, 13 Enclosure UL Listed and CSA Certified As Industrial Control Equipment**

Range on Decreasing Pressure psig	[6] Adjustable Differential Approximate at Mid-Range	Maximum Allowable Pressure psig	Single Pole Double Throw	Double Pole Double Throw
			Catalog No.	Catalog No.
<b>Diaphragm Actuated—Nitrile (Buna-N) Diaphragm, Zinc Plated Steel Housing</b>				
2-10	0.6-2	100	9012GAW1	9012GAW21
1-40	1.6-8	100	9012GAW2	9012GAW22
1.5-75	3.5-15	240	9012GAW4	9012GAW24
3-150	6.0-30	475	9012GAW5	9012GAW25
5-250	10.0-49	750	9012GAW6	9012GAW26
13-425	16-90	850	9012GBW1	9012GBW21
20-675	27-130	2000	9012GBW2	9012GBW22
<b>Piston Actuated—#440 Stainless Steel Piston, #303 Stainless Steel Housing, Viton Fluorocarbon Diaphragm and O-ring, Teflon® Retaining Ring</b>				
20-1000	59-200	10000	9012GCW1	9012GCW21
90-2900	170-560	15000	9012GCW2	9012GCW22
170-5600	289-1260	20000	9012GCW3	9012GCW23
270-9000	495-1900	25000	9012GCW4	9012GCW24

**Table 22.51: Fixed Differential**

**NEMA 7 & 9 Enclosure**  
**Class I & II, Division 1 & 2, Groups C, D, E, F, G**

Range on Decreasing Pressure psig	[6] Approximate Differential at Mid-Range psig	Maximum Allowable Pressure psig	Single Pole Double Throw	Double Pole Double Throw
			Catalog No.	Catalog No.
<b>Diaphragm Actuated—Nitrile (Buna-N) Diaphragm, Zinc Plated Steel Housing</b>				
0.2-10	1.0 ±0.1	100	9012GDR1	—
1-40	2.4 ±0.8	100	9012GDR2	9012GDR22
1.5-75	4.5 ±1	240	9012GDR4	9012GDR24
3-150	9 ±1.5	475	9012GDR5	9012GDR25
5-250	15 ±3	750	9012GDR6	9012GDR26
13-425	25 ±7	850	9012GER1	9012GER21
<b>Piston Actuated—#440 Stainless Steel Piston, #303 Stainless Steel Housing, Viton Fluorocarbon Diaphragm and O-ring, Teflon® Retaining Ring</b>				
20-1000	89 ±18	10000	9012GFR1	9012GFR21
90-2900	255 ±30	15000	9012GFR2	9012GFR22
170-5600	578 ±110	20000	9012GFR3	—

**Table 22.52: Adjustable Differential**

**NEMA 7 & 9 Enclosure**  
**Class I & II, Division 1 & 2, Groups C, D, E, F, G**

Range on Decreasing Pressure psig	[6] Adjustable Differential Approximate at Mid-Range	Maximum Allowable Pressure psig	Single Pole Double Throw	Double Pole Double Throw
			Catalog No.	Catalog No.
<b>Diaphragm Actuated—Nitrile (Buna-N) Diaphragm, Zinc Plated Steel Housing</b>				
0.2-10	1.0-2	100	9012GAR1	9012GAR21
1-40	2.4-8	100	9012GAR2	9012GAR22
1.5-75	4.5-15	240	9012GAR4	9012GAR24
3-150	9-35	475	9012GAR5	9012GAR25
5-250	15-49	750	9012GAR6	9012GAR26
13-425	25-90	850	9012GBR1	9012GBR21
20-675	41-130	2000	9012GBR2	9012GBR22
<b>Piston Actuated—#440 Stainless Steel Piston, #303 Stainless Steel Housing, Viton Fluorocarbon Diaphragm and O-ring, Teflon® Retaining Ring</b>				
20-1000	89-200	10000	9012GCR1	9012GCR21
90-2900	255-560	15000	9012GCR2	—
170-5600	578-1260	20000	9012GCR3	9012GCR23
270-9000	788-1900	25000	9012GCR4	—

**Acceptable Wire Sizes:** 12-22 AWG  
**Recommended Terminal Clamp Torque:** 7 lb-in  
Electrical Rating: see page 22-19  
Temperature Rating: see page 22-19  
Modifications: see page 22-21  
Accessories: see page 22-21  
Renewal Parts Kits: see page 22-34  
Dimensions: see page 22-20



File: E12443 Haz. Loc. CCN NOWT G•R  
File: E12158 CCN NKPZ G•O, G•G, G•W  
File: E12158 CCN NTHH Marine Use, G•W



File: LR25490 Class 3211-03 G•W, G•O, G•G  
File: LR26817 Class 3218-02 G•R



Complies with IEC 60957.5.1, 5C8.3.4 when protected with a Bussmann CCKTK-R-10 fuse.

[5] For metric threads, add **M** after the **W** on all types (offered at an additional cost). To order a Pg13.5 electrical conduit entry and a 1/4"-19 BSP pressure connection, add M12 to the end of the catalog number, as well as adding "M" after "W" for metric threads. For example: 9012GAW1 = 1/2" NPT electrical conduit entry

9012GAWM1 = 20 x 1.5 mm electrical conduit entry  
9012GAWM1M12 = Pg13.5 electrical conduit entry and 1/4-19 BSP pressure connection.

[6] The differential adds to the range setting and determines the operating point on rising pressure.



9012GGW1

### Differential/Dual Stage, Type G

#### Differential-Pressure Operation

Pressure switches for differential-pressure operation monitor the change in the difference between two pressures. Type G differential-pressure switches are used in applications to signal that a predetermined pressure difference has been reached as a result of a widening or increasing difference between the two pressures. They can also signal that a predetermined pressure difference has been reached as a result of a narrowing or decreasing difference between the two pressures.

Table 22.53: Differential-Pressure Switches

NEMA 4, 4X, 13 Enclosures

UL Listed and CSA Certified As Industrial Control Equipment [7]

Working Pressure Range on Decreasing X (upper) Actuator	Adjustable Difference on Decreasing Pressure (adds to working pressure) Y (lower) Actuator	Adjustable Differential Actuates on Increasing Pressure (adds to adjustable difference)	Maximum Allowable Pressure psi	Single Pole Double Throw	Double Pole Double Throw
				Cat. No.	Cat. No.
<b>Diaphragm Actuated—Nitrile (Buna-N) Diaphragm, Zinc Plated Steel Housing</b>					
0-75	0.25-10	0.8-2	100	GGW1	GGW21
0-175	0.5-36	5-15	240	GGW4	GGW24
0-500	3-175	22-90	850	GHW1	GHW21
<b>Piston Actuated—#440 Stainless Steel Piston. #303 Stainless Steel Housing, Viton® Fluorocarbon Diaphragm and O-ring, Teflon® Retaining Ring</b>					
0-5000	15-825	80-200	7500	GJW1	GJW21

#### Dual-Stage Operation

Type G dual stage pressure switches are designed for use in applications where two separate pressure operations must be controlled by a single pressure monitoring device. These controls are most commonly used where dual functions are required or in sequencing applications such as alarm, followed by shutdown.

Table 22.54: Dual-Stage Pressure Switch

NEMA 4, 4X, 13 Enclosure

UL Listed and CSA Certified As Industrial Control Equipment [8]

Range Setting Limits of Pressure Between Which Stage 1 Can Be Adjusted to Operate on Decreasing Pressure	Add Adjustable Spread to Range Setting to Obtain Decreasing Operating Point of Stage 2	Fixed Differential—Add to Low (Decreasing) Operating Point to Obtain Approximate High (Rising) Operating Point of Each Stage		Maximum Allowable Pressure psi	SPDT Each Stage
		Stage 1	Stage 2		Catalog No.
<b>Diaphragm Actuated—Nitrile (Buna-N) Diaphragm, Zinc Plated Steel Housing</b>					
2-10	1-5	1.0 ±0.2	1.5 ±0.4	100	9012GKW1
1-40	4-20	4.0 ±1.0	6.0 ±1.5	100	9012GKW2
1.5-75	6-30	5.0 ±1.5	8.0 ±2.0	240	9012GKW4
3-150	12-75	8.0 ±2.0	12 ±3	475	9012GKW5
5-250	22-110	14 ±3	21 ±5	750	9012GKW6
13-425	40-180	20 ±4	30 ±7.5	850	9012GLW1
20-675	45-250	30 ±6	45 ±11	2000	9012GLW2
<b>Piston Actuated—#400 Stainless Steel Piston. #303 Stainless Steel Housing, Viton® Fluorocarbon Diaphragm and O-ring, Teflon® Retaining Ring</b>					
20-1000	50-300	50 ±10	75 ±19	10000	9012GMW1
90-2900	140-800	140 ±30	210 ±52	15000	9012GMW2
170-5600	300-1700	275 ±60	400 ±100	20000	9012GMW3
270-9000	500-2500	400 ±80	800 ±150	25000	9012GMW4



9012GKW1

#### Ordering Dual-Stage Pressure Switches

- Specify Class 9012 Type..., and indicate the high or low operating point for each stage within the limits shown in the above table.

**Example:**

Class 9012 Type GKW4

Set: Stage 1 at 30 psi decreasing pressure

Stage 2 at 50 psi decreasing pressure

(20 psi spread)

Differential of each stage will be approximately as shown in the table above.

- For available modifications see page 22-21. If one or more of these modifications are desired, add the appropriate Form to the Class and Type. Arrange form letters in alphabetical order when ordering more than one modification.

Acceptable Wire Sizes 12-22 AWG  
Recommended Terminal Clamp Torque 7 lb-in  
Electrical Rating page 22-19  
Temperature Rating page 22-19  
Modifications page 22-21  
Accessories page 22-21  
Renewal Parts Kits page 22-34  
Dimensions page 22-20



File E12158 CCN NKPZ  
File E12158 CCN NTHT - Marine Use



File LR25490 Class 3211-03



[7] UL Marine Listed for use on vessels greater than 65 feet long where ignition protection is not required.

[8] UL Marine Listed for use on vessels greater than 65 feet long where ignition protection is not required.

**Electrical Ratings**

**Table 22.55: Control Duty Circuit Ratings**

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

**Table 22.56: Type G Machine Tool and Vacuum (except GVG)**

Type	Contact Arrangement	Contact Symbol
Single Pole Double Throw	1 N.O.—1 N.C.	

**NOTE:** Snap switch contains two double-break contact elements (1 N. O. and 1 N.C.) that must be used on circuits of same polarity.

**Table 22.57: Type G Industrial**

Contact Arrangement	Contact Symbol
1 N.O. — 1 N.C. (600 Vdc rating does not apply)	

**NOTE:** Contacts are single pole, double throw—one circuit normally open and one circuit normally closed. These circuits are not electrically separate and can not be used on opposite polarities.

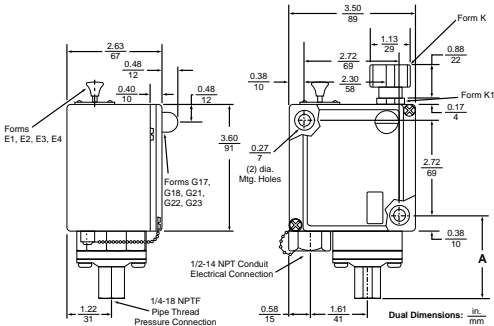
Type	Contact Arrangement	Contact Symbol
Double Pole Double Throw	2 N.O.—2 N.C.	

**NOTE:** Snap switch contains two electrically separated sets of contact elements allowing use on circuits of opposite polarity. Each set contains two double break contact elements (1 N.O. and 1 N.C.) that must be used on circuits of the same polarity.

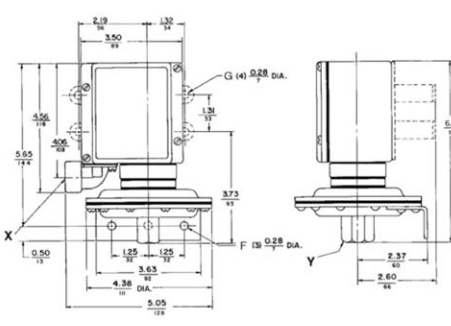
**Table 22.58: Temperature Ratings**

	Actuator	Minimum	Maximum
Ambient	All	-23 °C (-10 °F)	+85 °C (+185 °F)
	Diaphragm	-40 °C (-40 °F)	
Media	Piston	-26 °C (-15 °F)	+120 °C (+250 °F)
	All with Forms Q4 and Q14	-26 °C (-15 °F)	

**Types GAW, GBW, GCW, GDW, GEW, GFW, GKW, GLW, and GMW Machine Tool Switches (except 1, 21)**



**Types GAW, GDW, GKW 1, 21**



**X:** Conduit connection: G-W = 1/2-14 NPT; G-WM = 20MMBGS4568, Form M12 = Pg13.5; DIN40430.

**Y:** Pressure connection: G-W = 1/4-18 NPTF; G-WM = 8; Form M14 = G 1/4 BS 2779; RP1/4 ISO 711; R 1/4 DIN 2999; GJ 1/4 UN1339.

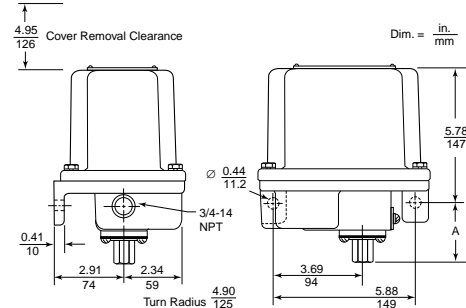
**Table 22.59: Dimension A for G•W Switches**

Type	Dimension A, in. (mm)
GAW, GDW, GKW 2, 4, 5, 6, 22, 24, 25, 26, 52, 54, 55, 56	2.33 (59)
GBW, GEW, GLW 1, 2, 21, 22, 51, 52	2.23 (57)
GCW, GFW, GMW 1, 2, 3, 4, 21, 22, 23, 24, 51, 52, 53, 54	3.15 (80)

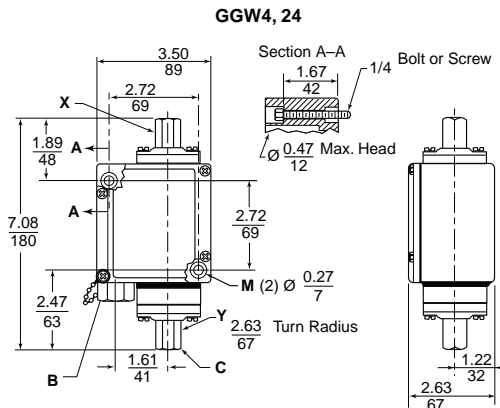
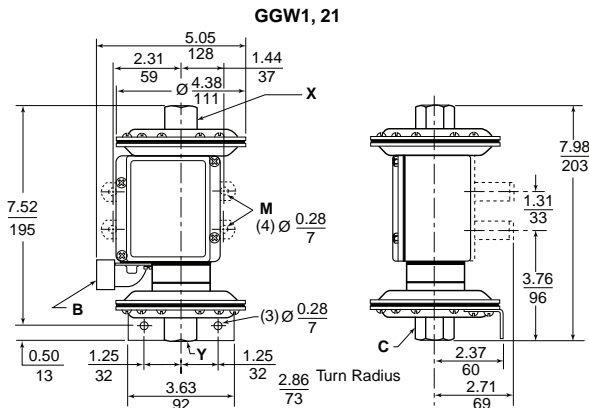
**Table 22.60: Dimension A for G•R, Switches**

Type / Tipo / Type	Dimension A, in. (mm)
GAR1, 2, 21, 22	2.02 (51.3)
GAR4, 5, 6, 24, 25, 26	1.42 (36.1)
GBR1, 2, 21, 22; GCR1, 21	1.32 (33.5)
GCR2, 3, 4, 22, 23, 24	2.24 (56.9)
GDR1, 2, 21, 22	2.02 (51.3)
GDR4, 5, 6, 24, 25, 26	1.42 (36.1)
GER1, 2, 21, 22; GFR1, 21	1.32 (33.5)
GFR2, 3, 4, 22, 23, 24	2.24 (56.9)

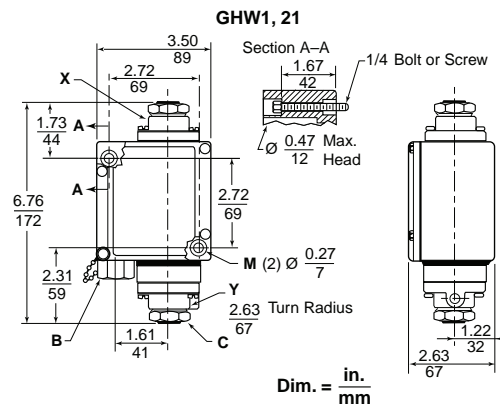
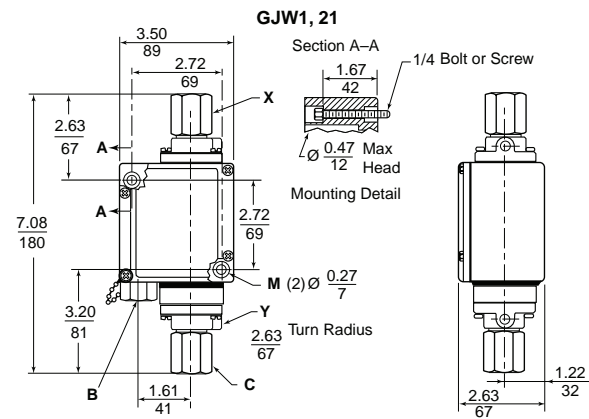
**Types GAR, GBR, GCR, GDR, GER, and GFR**



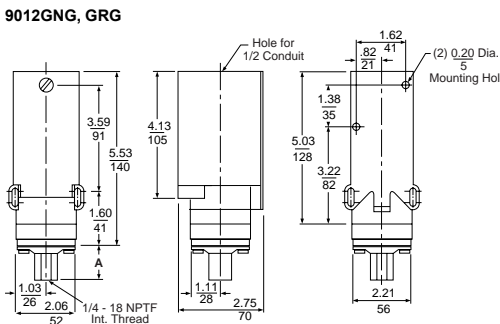
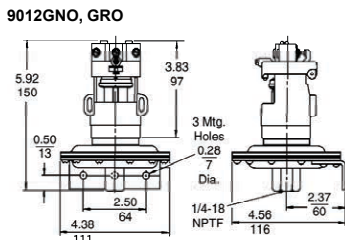
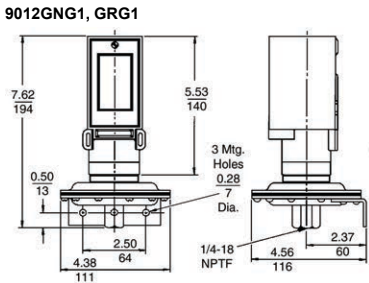
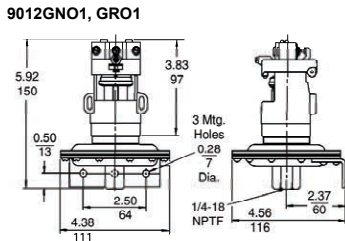
Dimensions  
9012G Dimensions, in. (mm)



B = Conduit  
Standard = 1/2-14 NPT  
Options = Pg 13.5, 20 mm  
C = Fluid Connection  
Standard = 1/4-18 NPTF  
Options = G 1/4  
X = Lower pressure source  
Y = Higher pressure source



Dim. = in.  
mm



Type	Dimension A, in. (mm)
GNO, GRO 3, 4, 5, 6	1.41 (35.8)
GPO, GSO 1, 2, 3	1.31 (33.3)
GQO, GTO 1, 2, 3, 4	2.24 (56.9)

Type	Dimension A, in. (mm)
GNG, GRG 3, 4, 5, 6	1.41 (35.8)
GPG, GSG 1, 2, 3	1.31 (33.3)
GQG, GTG 1, 2, 3, 4	2.24 (56.9)

**Factory Modifications and Accessories**

**Table 22.61: Factory Modifications for Class 9012 Pressure Switches**

Modification	Applies to Pressure Switch Type	Form
Lock on rising pressure, manual reset only	Available on GDW, GDWM, GEW, GEWM, GFW, GFWM only	E3
120 Vac or Vdc neon pilot light	Available on all GAW–GMW, GAWM–GFWM	with clear lens G17 with red lens G18
24 Vdc only LED	For pilot light conversion kits: See 9998 PC-306–308. Complete Class and Type information required	with clear lens G21 with red lens G22
24 Vdc LED pilot light with green lens	Class 9012 GAW–GMW and GAWM–GFWM, or Class 9016 GAW and Class 9025G	G23
SPDT snap switch rated 1.1 A at 125 Vdc (minimum differential doubles)	Available on GAR–GFR, GAW–GJW, GAWM–GFWM	H3
Prewired 5-pin Brad Harrison male receptacle #41310 or interchangeable Crouse-Hinds receptacle. For use with Brad Harrison female portable plug #41306, 41307, 41308, or equivalent.	Available on GAW–GJW single pole devices only	H10 or H11
Micro connector, 4-pin, for 24 Vdc pilot light	G–W (single pole only), except GAW2 and Form B2.	H17
External range adjustment (includes knob and range scale window)	GAW–GFW, GAWM–GFWM, GKW–GMW	K
External range adjustment slotted for screwdriver (includes range scale window)	GAW–GFW, GAWM–GFWM, GKW–GMW	K1
Pg 13.5 conduit thread and 1/4–19 BSP pressure connection	G–WM only	M12
Standard Nitrile (Buna-N) diaphragm in #316 stainless steel flange	<b>Not available</b> on Types 1 and 21. <b>Available</b> on all other GAR, GAW, GBR, GBW, GDR, GDW, GER, GEW, GAWM, GBWM, GDWM, GEWM, GGW, GHW, GKW, and GLW switches.	Q1
Viton® fluorocarbon diaphragm in #316 stainless steel flange	<b>Not available</b> on Types 1 and 21. <b>Available</b> on all other GAR, GAW, GBR, GBW, GDR, GDW, GER, GEW, GAWM, GBWM, GDWM, GEWM, GGW, GHW, GKW, and GLW switches.	Q4
Range scale window (standard with Forms K and K1)	GAW–GMW, GAWM–GFWM	V1
Special setting specified (if indicating only a fixed differential setting, specify whether this setting is on increasing or decreasing pressure.)	All 9012G	Y1
1/4"–18 NPT external thread pressure connection	GAR, GAW, GDR, GDW, GGW, GKW Not available in combination with Forms Q1, Q3, Q4.	Z
1/2"–14 NPT external thread, 1/4"–18 NPTF internal thread pressure connection	GAR, GAW, GDR, GDW, GGW, GKW Not available in combination with Forms Q1, Q3, Q4.	Z16
7/16"–20 UNF–2B internal thread pressure connection	GAR–GFR; GAW–GMW Not available in combination with Forms Q1, Q3, Q4.	Z18

**Table 22.62: Factory Modifications for Renewal Parts Kits for Class 9012 Pressure Switches**

Suffixes for renewal parts kits, see page 22-34

Modification	Applies to Parts Kit Type	Form
SPDT snap switch rated 1.1 A at 125 Vdc (minimum differential doubles)	9998PC313	H3
Standard Nitrile (Buna-N) diaphragm in #316 stainless steel flange	9998PC177–179, 268, 269 9998PC265–267	Q1
Viton® fluorocarbon diaphragm in #316 stainless steel flange	9998PC177–178, 268, 269 9998PC265–267	Q4
1/4"–18 NPT external thread pressure connection	9998PC265–269	Z
1/2"–14 NPT external thread, 1/4"–18 NPTF internal thread pressure connection	9998PC265–269	Z16
7/16"–20 UNF–2B internal thread pressure connection	9998PC177, 178, 265–273	Z18

**Table 22.63: Class 9049 Accessories for Class 9012 Pressure Switches**

Description	Applies to Class	Type
Stainless steel surge reducer for use on oils, coolants, and hydraulic fluids (not recommended for air or water)	9012G	9049A26S



**Type GAW—Sensitive Control Applications**

9016GAW vacuum switches are provided with double throw contacts; normally open and normally closed circuits allow these controls to be used for standard or reverse action applications.

Standard devices can be mounted from the front with the bracket provided. Two mounting screws are required for a firm attachment to any smooth, flat surface. Allowance must be made for flange projection. Controls with Form F modification include two mounting feet with 9/32" mounting holes on 3-3/4" centers. Range and Differential adjustments are internal and exposed by removal of the front cover.

Maximum allowable positive pressure: 100 psig.  
Diaphragms are oil resistant, nitrile butadiene (Buna N) rubber.  
Electrical Ratings and Temperature Limitations—See page 22-17 for Type G machine tool.  
Dimensions—See page 22-20.

**Table 22.64: Class 9016, Diaphragm Actuated**

Range on Decreasing Vacuum (In. of Hg)	Adjustable Differential Adds to Range <sup>[1]</sup> (In. of Hg)	Contact Arrangement	Pipe Tap (NPTF)	Enclosure	
				NEMA 4, 4X & 13	NEMA 7 & 9 <sup>[2]</sup>
				Catalog No.	Catalog No.
0–28.7	At Minimum Range: 0.8–9 At Mid-Range: 1.3–7.4	1 N.O., 1 N.C.	1/4"-18	9016GAW1	9016GAR1
0–25	5–20	1 N.O., 1 N.C.	1/4"-18	9016GAW2	N/A
0–28.3	At Minimum Range: 1–9 At Mid-Range: 1.7–7.4	2 N.O., 2 N.C.	1/4"-18	9016GAW21	9016GAR21
0–25	5–20	2 N.O., 2 N.C.	1/4"-18	9016GAW22	N/A

**Table 22.65: Available Modifications**

Description	Form
Range scale window	V1
1/4"-18 NPT external thread pressure connection	Z
1/2"-14 NPT external thread, 1/4"-18 NPTF internal thread pressure connection (standard actuator only)	Z16



File E12443 Haz Loc  
File E12158  
File E12158

CCN NOWT G-R  
CCN NKPZ G-W  
CCN NTHT Marine Use, G+W



File LR25490 Type GAW only  
File LR26817 Type GAR only  
(NEMA 7 and 9 Haz Loc)



**Type GVG—Power Circuit Applications**

The 9016GVG1 vacuum switch is a companion to the 9036GG and 9037GG float switches commonly used on vacuum heating pumps. Electrical ratings of float and vacuum switch types are equal.



Class 9016 Type GVG1  
Forms E, F

**Table 22.66: Class 9016, Contacts Open on Increasing Vacuum**

Cut-out Range (In. of Hg)	Approximate Adjustable Differential (In. of Hg)	Cut-in Range (In. of Hg)	Poles	Pressure Connection	NEMA 1 Enclosure
					Catalog No.
5–25	5–10	0–20	2	1/4"-18 NPSF	9016GVG1

**NOTE:** Maximum allowable positive pressure: 150 psig.  
In. of Hg = inches of mercury.

**Table 22.67: Available Modifications**

Description	Form
3-way lever—nameplate marked: Float only—Vacuum and Float—Continuous (factory modification only)	E
Mounting bracket (for retrofit, order 9049A53 bracket kit)	F
Reverse action—normally open contacts	R
1/4" male pipe connection (1/4"-18 NPT, external thread) (for retrofit, use 1/4" pipe nipple)	Z

**Table 22.68: Electrical Ratings—9016GVG**

Voltage	AC		DC
	Single Phase	Polyphase	
110 V	2 hp	3 hp	1 hp
220 V	3 hp	5 hp	1 hp
440–550 V	5 hp	5 hp	—
32 V	—	—	1/2 hp

**NOTE:** Control Circuit Rating: A600

**Table 22.69: Vacuum Codes**

Settings (In. of Hg)	Code
3–8	J09
16.5–25	J10
17–22	J11
18–23	J12
20–25	J13
Specify other setting (minimum order quantity is 4 pieces)	J99

**Ordering Information:** Specify Class 9016 Type G. Give vacuum settings within the limits of the listings above.

**For Setting Codes,** see the table entitled Vacuum Codes above. If special features are desired, add the appropriate Form letter to the Class and Type. Arrange the Form letters in alphabetical order when ordering more than one special feature.



File E12158  
CCN NKPZ

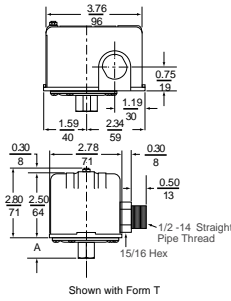


File LR25490

Dimensions page 22-19

[1] Add Differential to Range to obtain the operating point on increasing vacuum (within vacuum limitations). The differential increases linearly over its range.

[2] The minimum differential doubles with NEMA 7 & 9 enclosures.



**Table 22.71: Special Features and Modifications for Type FHG<sup>[1]</sup>**

Description	Form
Bulk pack	[2]
Addition of a second ground screw	G4[3]
Maintained manual cut-out lever (Auto-Off)	M1
Pulsation plug—factory order only (available only on 1/4-inch fittings, not to include 4-way)	P
Slip-on connectors (load side terminals only)	U
Slip-on connectors (line and load terminals)	U2
Two-way pressure release valve	X
Quick connect two-way pressure release valve (for use with Polyflow® tubing)	X1
Black cover	Z22

**Table 22.73: Pressure Code (fixed differential)<sup>[1]</sup>**

Off at...	Code A
80 psi	J43
100 psi	J27
110 psi	J37
115 psi	J38
120 psi	J69
125 psi	J52
135 psi	J39
140 psi	J68
155 psi	J40
150 psi	J55
175 psi	J59
Specify other pressure (minimum order quantity is 4 pieces)	J99

**NOTE:** The existence of a code does not imply that the code is available for any or all devices.



File E12158  
CCN NKPZ



File LR25490

**NOTE:** If conduit or pressure line is rigid, UL; if both are flexible, UR.

**FHG Pressure Switch Selection and Features**

Class 9013 Type FHG pressure switches are designed for the control of small electrically driven air compressors.

- Contacts open on pressure rise.
- Diaphragm actuated.
- For application data, see page 22-19.
- For repair parts kits, see page 22-34.

**Table 22.70: Dimensions, Type F (Net Weight, 1-1/8 lb)**

Switch Type	A	
	in.	mm
FHG2, 12, 22, 32, 42, 52 / FRG2, FSG2, FYG2	2-29/32	23
FHG3, 13, 33 / FRG3, FSG3, FYG3	1-9/32	33
FHG9, 19, 29, 39, 49, 59 / FSG9, FYG9	1-3/32	28

**Table 22.72: Selection Table**

Adjustable Cut-out Range Increasing Pressure (psig)	Approximate-Differential Fixed (psig)	Poles	PressureConnec-tion	NEMA 1 Enclosure	
				Lower hp	Higher hp
				Catalog No.	Catalog No.
40-100	20	2	1/4" NPSF internal	9013FHG2	9013FHG22
			3/8" NPSF internal	9013FHG3	—
			1/4" four way	9013FHG4	9013FHG24
70-150	30	2	1/4" NPT external	9013FHG9	9013FHG29
			1/4" NPSF internal	9013FHG12	9013FHG32
			3/8" NPSF internal	9013FHG13	9013FHG33
			1/4" four way	9013FHG14	9013FHG34
100-200	40	2	1/4" NPT external	9013FHG19	9013FHG39
			1/4" NPSF internal	9013FHG42	9013FHG52
			1/4" four way	9013FHG44	9013FHG54
			1/4" NPT external	9013FHG49	9013FHG59

**Table 22.74: Electrical Ratings For All 9013 Switches**

Switch Type	Voltage	Single Phase AC	Polyphase AC <sup>[4]</sup>	DC	Control Circuit Rating
FHG2, 9, 12, 13, 14, 19, 42, 43, 44, 49 FSG, FSW	115	1-1/2 hp	2 hp	1/4 hp <sup>[5]</sup>	A600
	230	2 hp	3 hp	1/4 hp <sup>[5]</sup>	
	460/575	—	1 hp	—	
FHG22, 29, 32, 33, 34, 39, 52, 54, 59 FYG, FYW	115	2 hp	3 hp	1/2 hp <sup>[6]</sup>	A600
	230	3 hp	5 hp	1/2 hp <sup>[6]</sup>	
	460/575	—	1 hp	—	
FRG One Pole (All Form H)	32	—	—	—	A300
	115	1 hp	—	1/4 hp	
	230	1 hp	—	1/4 hp	
FRG Two Pole	32	—	—	1/4 hp	A300
	115	1 hp	1 hp	1/4 hp	
	230	1 hp	1 hp	1/4 hp	
All 9013G Form H	115	1 hp	—	1/2 hp	A600
	230	2 hp	—	1/2 hp	
	460/575	2 hp	—	—	
All 9013G, except Form H	115	2 hp	3 hp	1 hp	A600
	230	3 hp	5 hp	1 hp	
	460/575	1 hp	1 hp	—	

**Ordering Information**

- Specify Class 9013 Type FHG.
- Select pressure code from the table entitled Pressure Code (fixed differential) on the left side of the page, and add the code designation to end of the Type number. Ensure that the pressure rating of the code falls within the limits of the device as shown in Table 22.72, page 22-23.
- To order special features as shown in Table 22.71, add the appropriate Form designation to the Class and Type. Arrange Forms in alphabetical order when specifying more than one feature or modification. Accessories: page 22-26

[1] Some product configurations are not available—contact your Schneider Electric representative for details.  
 [2] For bulk package quantities and Form numbers, see on page 22-24. If a Form is not specified, devices will be shipped individually packaged.  
 [3] Can be field installed. Nameplate should then be marked with the Form letter and maintenance and ordering records corrected.  
 [4] See 1993 NEC Article 430-84  
 [5] DC rating does not apply to Form M4.  
 [6] 1/4 hp with Form M1.



Table 22.75: Pressure Codes [7]

Standard Action Devices		Reverse Action Devices	
Settings	Code	Settings	Code
5–21 psi	J15	10–5 psi	J36
8–20 psi	J16	22–12 psi	J22
20–40 psi	J20	22–16 psi	J19
20–50 psi	J18	35–20 psi	J70
30–50 psi	J21	40–20 psi	J23
40–60 psi	J24	50–30 psi	J35
50–70 psi	J33	150–120 psi	J64[8]
60–80 psi	J25		
Specify other pressure	J99[8]	Specify other pressure	J99[8]

Table 22.77: Maximum Allowable Pressure for All 9013 Switches

Type	Pressure
FHG, FSG, FYG, FSW, FYW, FRG	220 psig
GHB, GHG, GSB, GSG	300 psig
GMG, GSR, GSW	100 psig
GHR, GHW	250 psig

Table 22.78: Temperature Limitations for All 9013 Switches

Operation (Media)	Storage
–36 to +125 °C (–33 °F to +257 °F)	–36 to +125 °C (–33 to +257 °F)

Ordering Information

- Specify Class 9013 Type F.
- Select the pressure code from Table 22.75, and add the code designation to the end of the Type number. Ensure that the pressure rating of the code falls within the limits of the device as shown in Table 22.76 and Table 22.79.
- To order special features from Table 22.80, add the appropriate Form letter to the Class and Type. Arrange the Form letters in alphabetical order when ordering more than one special feature.

See also:

- Electrical Ratings For All 9013 Switches, page 22-23
- Dimensions, Type F, page 22-23
- Renewal Parts for Class 9012–9038 Devices, page 22-34

Type F Pressure Switch Selection and Features

- Designed for the control of electrically driven water pumps. Diaphragm actuated.
- Type FSG is the standard water pump switch, suitable for all types of pumps: jets, submersible, reciprocating, etc.
- Type FYG is designed to meet higher horsepower and pressure requirements.
- Type FRG is reverse acting: contacts open on falling pressure.

Table 22.76: Standard Action: Contacts Open On Rising Pressure

Cut-out Range (psig)	Approximate Adjustable Differential (psig)	Cut-in Range (psig)	Pressure Connection	2 Pole	
				NEMA 1 Catalog No.	NEMA 3R[9]
20–65	15–30	5–45	1/4" NPSF internal	9013FSG2	9013FSW2
			1/4" NPT external	9013FSG9	9013FSW9
			1/4" bayonet (barbed)	9013FSG10	9013FSW10
20–50	10–30	10–30	1/4" NPSF internal	9013FSG22	9013FSW22
20–60	10–30	10–45	1/4" NPT external	9013FSG29	9013FSW29
9–30	6–20	3–10	1/4" NPSF internal	9013FSG42	9013FSW42
9–30	6–20	3–10	1/4" NPT external	9013FSG49	9013FSW49
25–80	20–30	5–60	1/4" NPSF internal	9013FSG52	—
			1/4" NPT external	9013FSG59	—
34–65	15–30	19–45	(FSG1 through 20 with Form M4 is only available in this range)		
25–80	20–30	5–60	1/4" NPSF internal	9013FYG2	9013FYW2
			1/4" NPT external	9013FYG9	9013FYW9
			1/4" bayonet (barbed)	9013FYG10	9013FYW10
39–80	20–30	19–60	(FYG1 through 20 with Form M4 is only available in this range)		
20–50	10–30	10–30	1/4" NPSF internal	9013FYG22	9013FYW22
20–60	10–30	10–45	1/4" NPT external	9013FYG29	9013FYW29
9–40	6–30	3–10	1/4" NPSF internal	9013FYG42	9013FYW42
9–40	6–30	3–10	1/4" NPT external	9013FYG49	9013FYW49

Table 22.79: Reverse Action: Contacts Open On Falling Pressure

Cut-in Range (psig)	Approximate Adjustable Differential (psig)	Cut-out Range (psig)	Pressure Connection	Catalog Number	
				1-Pole	2-Pole
23–65	15–30	8–45	1/4" NPSF internal	9013FRG12	9013FRG2
			3/8" NPSF internal	9013FRG13	9013FRG3
			1/4" NPT external	9013FRG19	9013FRG9
10–45	6–20	4–25	1/4" NPSF internal	9013FRG32	9013FRG22
			3/8" NPSF internal	9013FRG33	9013FRG23
			1/4" NPT external	9013FRG39	9013FRG29
6–14	5, Fixed	1–9	1/4" NPSF internal	9013FRG52	9013FRG42
			3/8" NPSF internal	9013FRG53	9013FRG43
			1/4" NPT external	9013FRG59	9013FRG49
40–100	20–30	20–80	1/4" NPSF internal	9013FRG72	9013FRG62
			3/8" NPSF internal	9013FRG73	9013FRG63
			1/4" NPSF internal	9013FRG92	9013FRG82
65–150	30–45	35–120	3/8" NPSF internal	9013FRG93	9013FRG83
			1/4" NPT external	9013FRG99	9013FRG89

[7] Existence of a code does not imply that the code is available for any or all devices.

[8] Minimum order quantity is 4 pieces.

[9] Must be mounted in vertical position to maintain enclosure rating.





File E12158 CCN NKPZ



File LR25490

**NOTE:** Products on this page are UL Listed, however type numbers ending in 8, 10 or 20 (non rigid pressure lines) must have Form T or TI—otherwise these are UL component recognized.

**Table 22.80: Special Features and Modifications for Type FSG, FYG & FRG Devices**

[10]

Description	Applies to Types	Form
Bulk package	All Type F	[11]
One normally open—one normally closed contact	FRG 2-Pole only	H
Maintained manual cut-out lever (Auto-Off)	FSG, FYG	M1
Momentary manual cut-in lever (Auto-Start)	FRG2-59 only	M3
Low pressure cut-off (Auto-Start-Off) – Operates at approximately 10 psig below cut-in and will turn off the pump	FSG, FYG	M4
Maintained manual cut-in lever (Auto-On)	FRG2-59 only	M5
Pulsation plug (Type 2 & 9 only)	FRG, FSG, FYG	P [12]
Plastic flange (max. temp. 120 °F) (max. pressure 80 psi) Available only on Types FSG2, FYG2, FRG2, FSG•2, FYG•2, FRG•2	FSG•, FYG•, FRG• 1/4" NPSF internal only	Q8
1/2" conduit bushing, 1/2" long thread—on left	All Type F	T
Slip-on connectors (load side terminals <i>only</i> )	FSG, FYG	U
Slip-on connectors (line <i>and</i> load terminals)	FSG, FYG	U2
Black cover	FSG, FYG	Z22

**Table 22.81: Bulk Package Form Numbers for 9013F Pressure Switches**

Description	Bulk Package Quantity					
	16	20	40	50	400	500
Product without Forms M1, M3, M4, M5, T, X1	9013FHG (without 1/4" four-way)	—	C20	—	C50	—
	9013FHG4, 14, 24, 34, 44, 54 (with 1/4" four-way)	—	C20	—	C50	C400
	9013FRG	—	C20	—	C50	—
	9013FSG	—	C20	—	C50	—
	9013FYG	—	C20	—	C50	—
Product with Forms M1, M3, M4, M5	9013FHG (without 1/4" four-way)	—	C20	C40	—	—
	9013FHG4, 14, 24, 34, 44, 54 (with 1/4" four-way)	—	C20	C40	—	—
	9013FRG	—	C20	C40	—	—
	9013FSG	—	C20	C40	—	—
	9013FYG	—	C20	C40	—	—
Product with Forms T, X1	9013FHG (without 1/4" four-way)	C16	—	C40	—	—
	9013FHG4, 14, 24, 34, 44, 54 (with 1/4" four-way)	C16	—	C40	—	—
	9013FRG	C16	—	C40	—	—
	9013FSG	C16	—	C40	—	—
	9013FYG	C16	—	C40	—	—
9013FHG9 Special with Extended Flange	C16	—	—	—	—	C500

[10] Some product configurations are not available—contact your Schneider Electric representative for details.

[11] For bulk package quantities and Form numbers, see on page 22-24. If a Form is not specified, devices will be shipped individually packaged.

[12] Nylon pulsation plug can be field installed on types having 1/4" NPSF internal connector. Part number 1530S6G1 is one bag of 50 plugs.



Shown with Form X



File E12158  
CCN NKPZ  
File E12443 Haz Loc  
CCN NOWT



File 25490  
File 26817  
Haz. Loc.

Table 22.82: Pressure Codes

Code	Pressure Setting (Close-Open), psi
J20	20–40
J21	30–50
J23	40–20 (reverse action)
J24	40–60
J25	60–80
J26	70–90
J28	70–100
J29	75–100
J30	80–100
J31	90–120
J50	135–175
J51	100–80 (reverse action)
J53	100–125
J54	110–125
J56	110–150
J57	120–150
J58	125–150
J60	125–175
J61	130–175
J62	140–175
J63	145–175
J64	150–120 (reverse action)
J65	215–250
J99	Specify the required setting

Table 22.83: Special Features and Modifications

Description	Form
3-Way Lever (On-Auto-Off)	E
One Normally Open / One Normally Closed Contact	H
Pulsation Plug	P
Reverse Action	R
Slip-On Connectors (Load Side Terminals Only)	U
Slip-On Connectors (Line and Load Terminals)	U2
Two-Way Pressure Release Valve	X
1/4" Male Pipe Thread on Pressure Connection	Z
1/2"-14 NPT External, 1/4"-18 NPT Internal	Z16

Type G Pressure Switch Selection and Features

Class 9013 Type G Pumptrol pressure switches are designed to control electrically driven water pumps and air compressors. These devices cover higher electrical ratings for directly controlling motors in pump and compressor applications.

- Contacts open on pressure rise.
- Diaphragm actuated.
- For electrical ratings, see Table 22.74.
- For repair parts kits, see page 22-34.

Table 22.84: Selection Tables

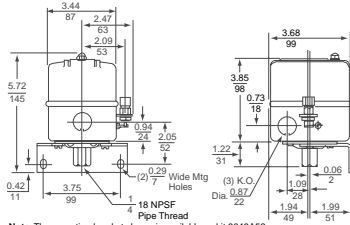
Cut-out Range (psig)	Approximate Adjustable Differential (psig)	Cut-in Range (psig)	Enclosure	Poles	NPSF Internal Pressure Connection	Catalog No.
10–35	4–8	5.5–30.5	NEMA 1 (General Purpose)	2	1/4	9013GMG2
20–80	15–30	5–60	NEMA 3R [13] (Rainproof)	2	1/4	9013GSB2
20–80	15–30	5–60	NEMA 1 (General Purpose)	2	1/8	9013GSG1
					1/4	9013GSG2
					3/8	9013GSG3
					1/8	9013GSR1
20–80	20–40	5–50	NEMA 7 & 9 (Hazardous Locations)	2	1/4	9013GSR2
					3/8	9013GSR3
					1/8	9013GSW1
			NEMA 4 (Watertight)		1/4	9013GSW2
					3/8	9013GSW3
					1/8	9013GHB2
65–200	20–40	40–170	NEMA 3R [13] (Rainproof)	2	1/4	9013GHB2
65–200	20–40	40–170	NEMA 1 (General Purpose)	2	1/8	9013GHG1
					1/4	9013GHG2
					3/8	9013GHG3
					1/8	9013GHR1
65–200	30–50	35–150	NEMA 7 & 9 (Hazardous Locations)	2	1/4	9013GHR2
					3/8	9013GHR3
					1/8	9013GHW1
			NEMA 4 (Watertight)		1/4	9013GHW2
					3/8	9013GHW3
					1/8	9013GHB5
80–250	25–45	32–215	NEMA 3R [13] (Rainproof)	2	1/4	9013GHB5
80–250	24–45	32–215	NEMA 1 (General Purpose)	2	1/8	9013GHG4
					1/4	9013GHG5
					3/8	9013GHG6
80–250	40–60	30–190	NEMA 7 & 9 (Hazardous Locations)	2	1/8	9013GHR4
					1/4	9013GHR5
					3/8	9013GHR6
			NEMA 4 (Watertight)		1/8	9013GHW4
					1/4	9013GHW5
					3/8	9013GHW6

NOTE: Some product configurations are not available. Contact your Schneider Electric representative for details.

Ordering Information

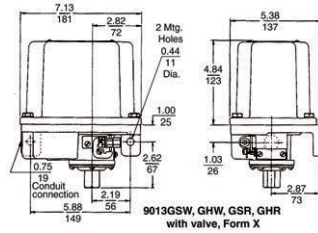
- Specify Class 9013 Type G.
- Select the pressure code from Table 22.82, and add the code to the end of the Type number. Ensure that the pressure rating of the code falls within the limits of the device. See Table 22.84.
- To order special features, add the appropriate Form letter to the Class and Type. Arrange Form letters in alphabetical order when ordering more than one special feature.

[13] Must be mounted in vertical position to maintain enclosure rating.



Note: The mounting bracket shown is available as kit 9049A52.

**9013GHG, GSG - with or without Form X**



**9013GSW, GHW, GSR, GSW with valve, Form X**

**Table 22.85: Special Features and Modifications for Type G Devices [14]**

Description	Applies to	Form
Standard pack of 10 switches [15]	All Type G	C10
3-way lever (On-Auto-Off) (not compatible with Form X)	GHG, GMG, GSG	E
1 N.O., 1 N.C. contact	All Type G	H
Pulsation plug (not field replaceable.)	All Type G	P
Reverse action (Select pressure code from Table 22.79)	All Type G	R
Slip-on connectors (load side terminals only)	All Type G	U
Slip-on connectors (line and load terminals)	All Type G	U2
Two-way pressure release valve (Not compatible with Form E)	GHB, GMG, GSB, GHG, GSG	X
1/4" male pipe thread on pressure connection	GHR, GHW, GSR, GSW	X
1/2"-14 NPT external	All Type G	Z
1/4"-18 NPT internal [16]	All Type G	Z16

**Table 22.86: Class 9049 Accessories for Class 9013 Pressure Switches**

Description	Applies to Class	Catalog No.
Two-way pressure release valve, replacement only. Cannot be added to switch that originally had no valve.	9013GHG, GSG, Form X only	9049A12
Mtg. bracket—replacing obsolete 9013A with 9013G	9013GHG, GSG	9049A52
Mtg. bracket—replacing obsolete 9013A with 9013G, or for current 9016GVG	9013GMG, 9016GVG	9049A53
Two-way pressure release valve. Replacement only. Cannot be added to switch that originally had no valve.	9013FHG, Form X only	9049A56

[14] Some product configurations are not available—contact your Schneider Electric representative for details.

[15] Available on GHB, GHG, GSB, and GSG.

If Form C10 is not specified, devices will be shipped individually packaged

[16] UL Listed industrial control equipment.



Type DG2



File No. E12158  
File No. E12443  
Haz Loc



Type GG



File LR25490  
File LR26817  
Haz Loc

**Open Tank or Sump Applications**

Ambient temperature ratings: Min. -30 °C (-22 °F); Max. +105 °C (+220 °F).

For accessories, refer to [page 22-34](#).

**Table 22.87: Class 9036, 2-Pole, Single Lever Operated**

Contact Operation	NEMA 1	NEMA 4	NEMA 7, 9
	Catalog No.	Catalog No.	Catalog No.
Close on liquid rise	9036DG2	9036DW31	9036DR31
Open on liquid rise	9036DG2R	9036DW31R	9036DR31R
Close on liquid rise	9036GG2	9036GW1	9036GR1
Open on liquid rise	9036GG2R	9036GW1R	9036GR1R

Order the universal mounting bracket and float accessory kits separately from the Class 9049 Accessories section on [page 22-34](#). Types GW and GR use a center-hole float. Devices with Form C use a center-hole float. All others use a tapped-at-top float.

**Table 22.88: Modifications [1]**

Description	Factory Installed	Field Installed
	Form	Class 9049 Kit
<b>Types DG, DW, DR</b>		
Reverse action (Type DG)	R	9049A58
Compensating spring (Type DG)	C	9049A19
Compensating spring (Type DR, DW)	C	9049A20
Compensating spring and reverse action	CR	Not available
<b>Types GG, GW, GR</b>		
Compensating spring for Type GG2	C	9049A13
Combination of compensating spring and reverse action (Type GG2)	CR	9049A13
1 N.O., 1 N.C. contact configuration	H	Not available
Combination of comp. spring & 1 N.O., 1 N.C. contact for Type GG2	CH	Not available
Reverse action (Type GR, GW)	R	Not available

**Table 22.89: Class 9049 Float Accessory Specifications (oz)**

Item	Type A6	Type A6S	Type A6C	Type A6CS	Type A6A	Type A6CA
Net buoyancy [2] (in water) 7" float	60 [3]	60 [3]	70 [3]	70 [3]	60 [3]	70 [3]
Weight of 5 ft rod	18.5	16.9	18.5	16.9	6	6
Weight of extra ft of rod (per ft)	3.7	3.4	3.7	3.4	1.2	1.2
Total weight of stops	3 (2 stops)	3 (2 stops)	6 (4 stops)	6 (4 stops)	3 (2 stops)	6 (4 stops)

[1] Some product configurations are not available—contact your Schneider Electric representative for details.

[2] Buoyancy data is calculated for use in water. Consult factory for buoyancy data in media with a different specific gravity than water.

**When ordering float accessories**, first specify the desired float accessory package, such as 9049A6 or 9049A6CS, then as a second item give the number of additional rod kits required.

For example, for a 9049A6 with 15 ft of rod, order as follows:

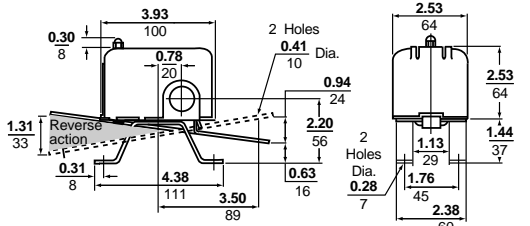
Item A = 9049A6, quantity = 1; Item B = 9049T1, quantity = 4.

[3] Net buoyancy of float has been calculated with float 80% submerged, thus allowing 20% factor of safety.

**Table 22.90: Maximum Forces at Which Switches Are Tested (oz)**

Type	Force Up To Trip	Force Down To Trip	Weight Supported with Compensating Spring	Type (with or without Form H)	Lever Length Position	Force Up to Trip	Force Down to Trip	Weight Supported with Compensating Spring at Max. Adjustment (oz)
DG2	9	8	60	GG2	Short	33	39	[4]
DG2 Form R	8	8	60	GG2	Long	21	27	100
DW31	8	8	66	GG2 Form R	Short	30	24	[4]
DW31 Form R	8	8	66	GG2 Form R	Long	22	16	150
DR31	8	8	66	GR1, GW1	Short	24	31	80
DR31 Form R	8	8	66	GR1, GW1	Medium	22	29	72
				GR1, GW1	Long	20	27	64

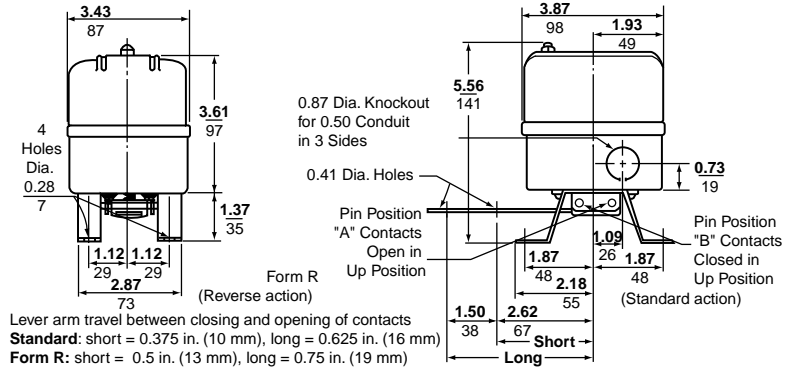
**Type DG Dimensions**



Float lever travel between closing and opening of contacts: short = 1 in. (25 mm), medium = 1.12 (28 mm), long = 1.25 in. (31.8)

For Type DR/DW dimensions, see catalog 9034CT9701.

**Type GG Dimensions**



Lever arm travel between closing and opening of contacts  
**Standard:** short = 0.375 in. (10 mm), long = 0.625 in. (16 mm)  
**Form R:** short = 0.5 in. (13 mm), long = 0.75 in. (19 mm)  
 For Type GR/GW dimensions, see catalog 9034CT9701.

**Table 22.91: Electrical Ratings for All Float Switches**

Applies to Class and Type	Control Circuit	Single Phase AC			Polyphase AC [5]			DC		
		115 V	230 V	460/ 575 V	115 V	230 V	460/ 575 V	32 V	115 V	230 V
9036DG, DR, DW (2-pole), FG	A600	2 hp	3 hp	—	3 hp	5 hp	1 hp	1/4 hp	1/2 hp	1/2 hp
9036GG, GR, GW (2-pole)	A600	2 hp	3 hp	5 hp	3 hp	5 hp	5 hp	1/2 hp	1 hp	1 hp
9036G Form H (1 N.O., 1 N.C.)	A300	1 hp	2 hp	2 hp	—	—	—	—	1/2 hp	1/2 hp
9037EG, ER, EW; HG, HR, HW (2-pole)	A600	2 hp	3 hp	—	3 hp	5 hp	1 hp	1/4 hp	1/2 hp	1/2 hp
9038 All Devices (2-pole)	A600	2 hp	3 hp	—	3 hp	5 hp	1 hp	1/4 hp	1/2 hp	1/2 hp

**Open Tank or Sump Applications, Float Switch, Class 9036 Type FG**

The Class 9036 Type FG30 pedestal style float 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 Class 9036 Type FG30 float switch controls the On and Off positions corresponding to the water level changes required to turn the pump or alarm on and off.

Ambient temperature ratings: Min. -30 °C (-22 °F); Max. +105 °C (+220 °F)



9036FG, 9049A60, and 9049A61

**Table 22.92: Type FG Float Switch and Accessories**

Description	Catalog Number
2-pole, NEMA 1, contacts close on liquid rise	9036FG30
Plastic center hole float (1 required)	9049A60
33.75 inch aluminum rod, 2 float stop assemblies and attaching hardware (1 required)	9049A61

[4] Compensating spring not effective in combination with Short lever length position.  
 [5] See 1993 NEC Article 430-84



9037EG with 9049ER3 Rod Kit and 9049EF1 Float

**Closed Tank, Class 9037 Type E**

Type E switches are flange mounted and float movement is transmitted through a Quad-Ring® seal.

Build up the switch to meet your exact requirements from the **basic switch, float rod, and float** groups below. Switch may be assembled in the field to give contacts that open on liquid rise or close on liquid rise. Consult Schneider Electric for use in media with a different specific gravity than water.

Ambient temperature ratings: Min. -30 °C (-22 °F); Max. +105 °C (+220 °F)

**Table 22.93: Class 9037 Type E**

Application	Post Length L (in.)	NEMA 1	NEMA 4	NEMA 7 & 9
		Catalog No.	Catalog No.	Catalog No.
For minimum water level change	2-5/8	9037EG8	9037EW8	9037ER8
	4-11/16	9037EG10	—	—
For maximum water level change	2-5/8	9037EG9	9037EW9	9037ER9
	4-11/16	9037EG13	9037EW13	—

**Table 22.94: Class 9049 Floats for Type E Switches**

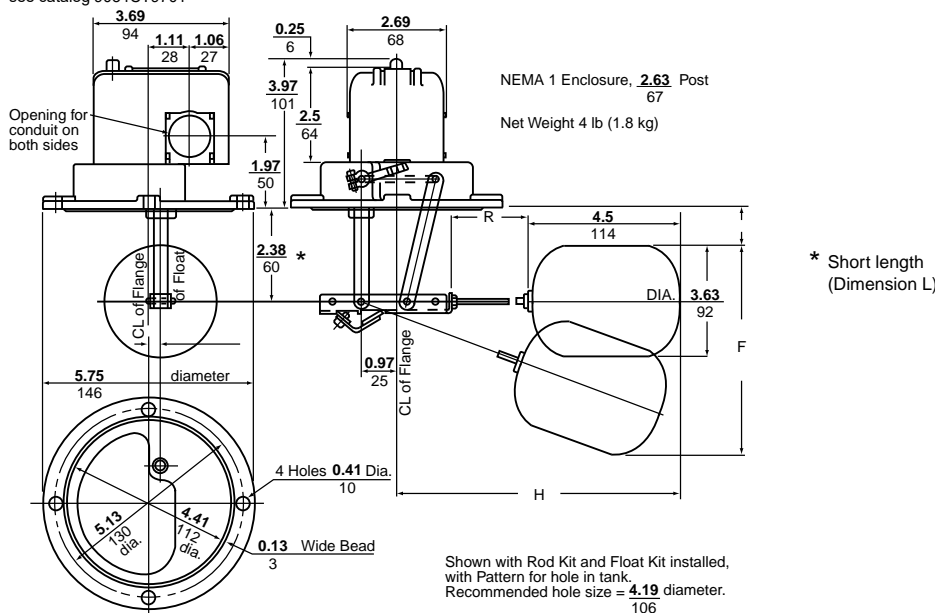
Description	Catalog No.
#304 stainless steel	9049EF1
#316 stainless steel	9049EF2

**Table 22.95: Class 9049 Float Rod Kits**

Catalog No.	A (in.)	F (in.)	R (in.)	H (in.)
9049ER1	1.00	4.75	1.75	8.25
9049ER2	1.00	4.75	2.5	9.00
9049ER3	1.00	4.75	3.50	9.50
9049ER5	1.00	4.75	5.25	11.75
9049ER7	1.00	5.00	7.25	13.75
9049ER12	1.00	5.75	12.25	18.75

UL File No. E12158 and E12443 Haz Loc  
 SF File 25490 except Types ER8, ER9

**Type EG Dimensions, in. (mm)**  
 For 9037ER/EW dimensions and rod positions, see catalog 9034CT9701



**Type H Switches**

Type H switches are attached to the tank by means of a 2-1/2 in. screw-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 Buna N Quad-Ring® seal is used between the float rod and sealing connector. Normal application is at atmospheric pressure, but where higher pressures are encountered, the switch will withstand tank pressures up to 50 psi at temperatures up to +220 °F. Occasional replacement of the Quad-Ring seal may be necessary. Ambient temperature ratings: Min. -30 °C (-22 °F); Max. +105 °C (+220 °F)



Type HG35  
Float on Right, 90° Offset Rod



File No. E12158 and  
E12443 Haz Loc



File LR25490,  
File LR26817 Haz Loc

**Table 22.96: Class 9037 Type H Contacts Close On Liquid Rise**

Float Position (viewed from front of switch, facing indicator scale)	Float Rod Angle	Approximate Water Level Change (Field Adjustable)		NEMA 1	NEMA 4	NEMA 7 & 9
		Min. (in.)	Max. (in.)	Catalog No.	Catalog No.	Catalog No.
Right	45°	2	5	9037HG33	9037HW33	9037HR33
			5	9037HG35	9037HW35	9037HR35
	90° Offset	2	7	9037HG37	9037HW37	9037HR37
			8-1/4	9037HG39	9037HW39	—
Left	45°	2	5	9037HG34	9037HW34	9037HR34
			5	9037HG36	9037HW36	9037HR36
	90° Offset	2	7	9037HG38	—	9037HR38
			8-1/4	9037HG30	9037HW30	9037HR30
			11-1/2	9037HG32	9037HW32	9037HR32

**NOTE:** For replacement floats, see Class 9049 Type H on page 22-34. Types shaded in gray are available with Form Z19; see Table 22.98 on page 22-31. See Accessories and Renewal Parts on page 22-34.

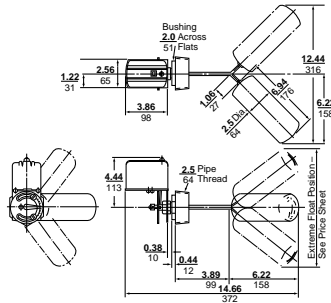
**Table 22.97: Type H Float Travel Distances**

Float Rod Angle	R in. (mm)	H (f) in. (mm)	f1 in. (mm)		f2 in. (mm)		F 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)
	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)
	5.00 (127)	6.25 (159)	3.75 (95)	6.25 (159)	3.00 (76)	4.50 (110)	6.75 (171)	10.75 (273)
	7.00 (178)	8.25 (210)	4.75 (121)	8.25 (210)	3.75 (95)	5.75 (146)	8.50 (216)	14.00 (356)

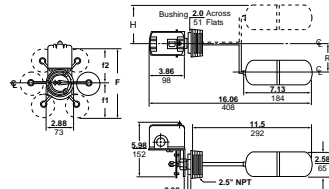
**Table 22.98: Available Modifications For Class 9037 Type H [7]**

Description	Form
Omit 2-1/2" tank connecting bushing	F3
Omit float	L
Reverse action, contacts open on rise	R
Viton® packing: 5 oz. float (diesel fuel) for Types shaded in gray in Table 22.96 above.	Z19
Viton packing (suitable for applications up to +250 °F)	Z20
#316 stainless steel float and Viton packing	Z21

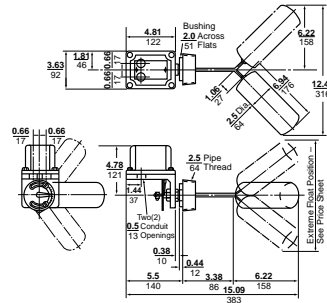
**Type HG—45° Angle Dimensions**



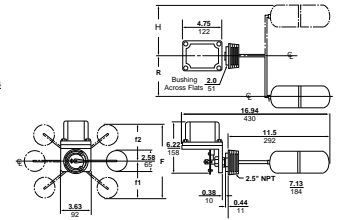
**Type HG—90° Offset Dimensions**



**Type HR/HW—45° Angle Dimensions**



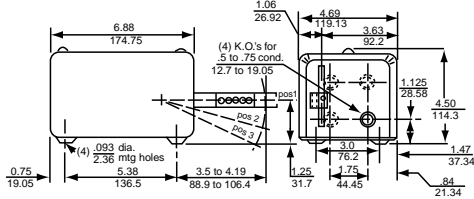
**Type HR/HW—90° Offset Dimensions**



[6] Clearance from the centerline of the hub to the side of the tank.  
[7] Some product configurations are not available—contact your Schneider Electric representative for details.



Type AG1 Mechanical Alternator, Float Operated



Type A Dimensions, in. (mm)



File No. E12158  
excludes NEMA 7 & 9 products  
(9038AR, CR, and DR)



File LR25490  
excludes NEMA 7 & 9 products  
(9038AR, CR, and DR)

### Type A, Open Tank

Alternators are designed to provide motor alternation in the operation of two motors.

Table 22.99: Class 9038 Type A

Application	Description	NEMA 1 Catalog No.	NEMA 4 Catalog No.	NEMA 7 and 9 Catalog No.
For open tank or sump systems using duplex pumps	Mechanical alternator float operated	9038AG1	9038AW1	9038AR1

**NOTE:** For use with Class 9049 float accessories listed on page 22-34. Type AW and AR alternators **must** use center hole floats.

Table 22.100: Operating Forces—Types AG, AR and AW

Type	Without Compensating Spring (No Form C)		With Compensating Spring (Form C)			
	Force Up [8]	Force Down	Maximum Weight of Rod and Stops Supported		Length of Rod Supported at the Maximum Adjustment	
			Note: AW1 and AR1 have compensating spring standard.	Brass [9]	Stainless Steel [9]	Aluminum [9]
AG1 (min. lever ext.)	18 oz	20 oz	47 oz.	10 ft	12 ft	25 ft
AG1 (max. lever ext.)	16	17	41	8	10	21
AG1 Form R (min. lever ext.)	14	16	33	7	8	17
AG1 Form R (max. lever ext.)	11	12	30	6	7	15
AR1, AW1 (standard lever)	—	—	74	16	20	41
AR1, Form R, AW1 Form R (std. lever)	—	—	85	19	23	47

### Type C, Closed Tank, with Bushing

Flange mounted with bushing for control of liquid level within a closed tank. Build up the switch to meet your requirements from the basic switch, rod kit, and float kit groups below.

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



Type CG36 Float on left

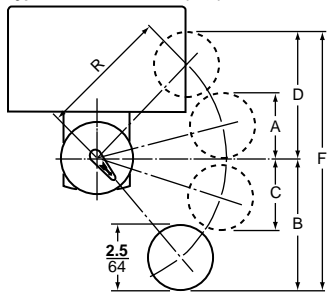
Table 22.101: Class 9038 Type C

Float Position Viewed from Front of Switch Facing Indicator Scale	R in. (mm)	Approx. Water Level Change		NEMA Type 1	NEMA Type 4	NEMA Type 7, 9
		Min. (in.)	Max. (in.)	Catalog No.	Catalog No.	Catalog No.
Right	7 (178)	6.5 (165)	13 (330)	9038CG31	9038CW31	9038CR31
Left	7 (178)	6.5 (165)	13 (330)	9038CG32	9038CW32	9038CR32
Right	4.25 (108)	4 (102)	7.75 (197)	9038CG33	9038CW33	9038CR33
Left	4.25 (108)	4 (102)	7.75 (197)	9038CG34	9038CW34	9038CR34
Right	5 (127)	4.75 (121)	9.25 (235)	9038CG35	—	—
Left	5 (127)	4.75 (121)	9.25 (235)	9038CG36	9038CW36	9038CR36

Table 22.102: Type C Float Travel Adjustments

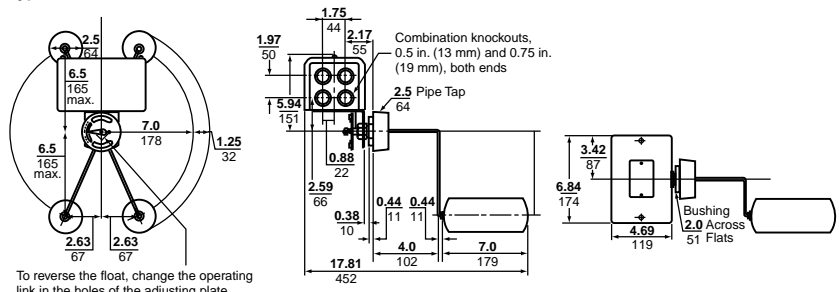
R in. (mm)	A in. (mm)		B in. (mm)		C in. (mm)		D in. (mm)		F in. (mm)	
	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.
7 (178) [10]	2.5 (64)	5 (127)	5 (127)	7 (178)	2 (51)	4 (102)	5 (152)	7 (178)	10 (254)	14 (495)
5 (127) [11]	2.25 (57)	3.75 (95)	4 (102)	5.25 (133)	2.75 (70)	3 (76)	4 (102)	5.25 (133)	8 (203)	10.5 (267)
4.25 (108) [12]	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)

Type A Dimensions, in. (mm)



Replacement Float: 9049HF page 22-28

Type CG Dimensions



To reverse the float, change the operating link in the holes of the adjusting plate.

[8] Add 2 oz for Form N5 High Water alarm.

[9] Rod length has been determined using the weight of the rod material furnished on Class 9049 accessories (3/8" O.D. tubing). Other types of rod should be weighed and compared to the Maximum Weight of Rod column in Table 22.100.

[10] CG31, CG32, CW31, CW32, CR31, CR32

[11] CG35, CG36, CW35, CW36, CR35, CR36

[12] CG33, CG34, CW33, CW34, CR33, CR34





Type DG Shown with Rod Kit 9049ER5 and Float Kit 9049HF3 Installed.



File No. E12158,  
excludes NEMA 7 & 9 products  
(9038AR, CR, and DR)



File LR25490,  
excludes NEMA 7 & 9 products  
(9038AR, CR, and DR)

**Type D, Closed Tank, Top Mounted**

Designed for applications where mounting is to be made at the top of a closed tank.

**Table 22.103: Class 9038 Type D Contacts Close On Liquid Rise**

Water Level Change	Hinge Post Dimension "V" (in.)	NEMA 1	NEMA 4	NEMA 7 and 9
		Cat. No.	Cat. No.	Catalog No.
Min.	2-5/8	9038DG7	9038DW7	—
Max.		9038DG8	9038DW8	9038DR8
Min.	4-11/16	9038DG9	—	—
Max.		9038DG10	—	—

**Float Kits, For Use with Type D Switches**

Size and Material Diameter x Length (in.)	Catalog No.
3.625 x 4.50, #304 stainless steel	9049EF1
3.625 x 4.50, #316 stainless steel	9049EF2
2.50 x 7, #304 stainless steel	9049HF3
2.50 x 7, #316 stainless steel	9049HF4

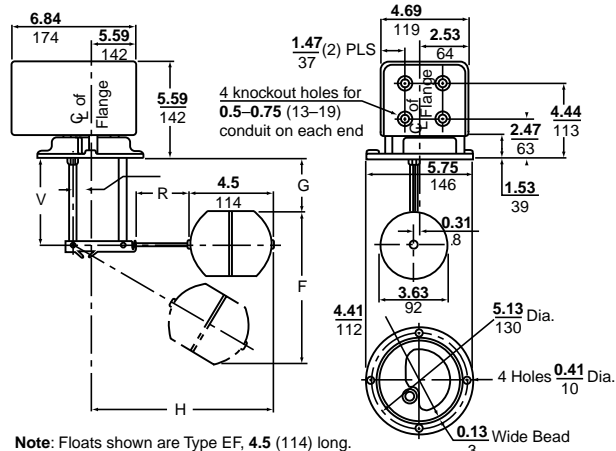
**Float Rod Kit, Class 9049**

Catalog No.	R (in.)	H (in.)	G (in.)	F (in.)
9049ER1	1.75	8.25	3.25	8.75
9049ER2	2.50	9.00	3.50	10.50
9049ER3	3.25	9.50	3.50	11.00
9049ER5	5.25	11.75	3.75	12.75
9049ER7	7.25	13.75	4.00	14.50
9049ER12	12.25	18.75	4.75	19.00

**Table 22.104: Available Modifications for All Mechanical Alternators [13]**

Description	Form
Compensating spring (Type AG)	C
Omit 2-1/2 in. connecting bushing (Type CG, CR, CW)	F3
Omit float (Type CG, CR, CW)	L
Two-level non-alternating unit	N4
Addition of a third, high-water alarm circuit (Type AG, AR, AW, CG, DG only)	N5
High-water alarm circuit, 2-pole (Type CG only)	N25
Reverse action (contacts open on Rise)	R
Viton® packing, 5 oz. float (diesel fuel) (Type CG)	Z19
Viton packing (Type CG, CR, CW)	Z20
#316 stainless steel float and Viton packing (Type CG, CR, CW)	Z21

**Type DG Dimensions, in. (mm)**



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

**Table 22.105: Temperature Ratings for Class 9038**

Description	Rating	
Ambient Temperature	-22 to 200 °F (-30 to 93 °C)	
Media	Buna-N Seal	Up to 215 °F (102 °C)
	Viton® Seal	Up to 250 °F (121 °C)

[13] Some product configurations are not available—contact your Schneider Electric representative for details.

Accessories for Float Switches

Table 22.106: Class 9049 Accessories for Float Switches

Description		Applies to Class	Catalog Number
Compensating Spring		9036GG	9049A13
		9038AG	9049A15
		9036DR, DW	9049A20
Float	Dia. 3.62 in. (92 mm), length 4.5 in. (114 mm)	#304 stainless steel	9037E, 9038D
		#316 stainless steel	9037E, 9038D
	Dia. 2.5 in. (64 mm), length 7 in. (178 mm)	#304 stainless steel	9037H, 9038C
		#316 stainless steel	9037H, 9038C
Float Kit	7 in. tapped-at-top #304 stainless steel float, 5 ft rod, 2 stops	Brass rod	All 9036, 9038A
		Aluminum rod	All 9036, 9038A
	7 in. center-hole #304 stainless steel float, 5 ft rod, 4 stops	Brass rod	All 9036, 9038A
		Aluminum rod	All 9036, 9038A
	7 in. center-hole #316 stainless steel float, 5 ft stainless steel rod, 4 stainless steel stops	All 9036, 9038A	9049A6CA
	7 in. tapped-at-top #316 stainless steel float, 5 ft stainless steel rod, 2 stainless steel stops	All 9036, 9038A	9049A6S
Replacement float—7 in. round center-hole #304 stainless steel	9049A6C, A6CA	9049AF1	
Lever	Form R	9036DG	9049A58
	Replacing obsolete 9036A with 9036G	9036GG	9049A54
Mounting Bracket	Replacing 9036A (S or F1) with 9036G	9036GG	9049A55
	Universal	All 9036, 9038AG, AR, AW	9049JMS1
Rod	Stainless steel	1-3/4 in. long	9037E, 9038D
		2-1/2 in. long	9037E, 9038D
		3-1/4 in. long	9037E, 9038D
		5-1/4 in. long	9037E, 9038D
		7-1/4 in. long	9037E, 9038D
		12-1/4 in. long	9037E, 9038D
Rod Kit	Additional 2-1/2 ft section with connector	Brass rod	9049A6, A6C
		Aluminum rod	9049A6A, A6CA
		Stainless steel rod	9049A6S, A6CS

Renewal Parts for Class 9012–9038 Devices

Renewal parts are generally available for Pump Control Products with a numerical date code—for example, 172 (first quarter, 1972)—or a current date code. Parts are no longer available for devices manufactured before 1965.

Table 22.107: Class 9998 Renewal Parts Kits for Class 9012–9038 Devices

Description / Equipment To Be Serviced	Catalog Number
Actuator Assembly	9012GA, GD, GG, GK, GN, GR 5, 25, 55 Series C only
	9012GA, GD, GG, GK, GN, GR 6, 26, 36, 46, 56 Series C only
	9012GB, GE, GH1, 21, 31, 41, 51; GL, GP, GS1
	9012GB, GE, GH2, 22, 32, 42, 52; GL, GP, GS2
Contact Kit (2-Pole Contacts)	9013FHG2, 29, 32, 39, 52, 59; 9013 FYG; 9036DG, DR, DW; 9037EG, ER, EW, HG, HR, HW30–39; 9038 All Types (2 Kits Required); obsolete 9013HHGY, HSGY; HSWY; 9037HEG, HSG3, 4; 9035DG10, DW10 (This kit also contains a replacement diaphragm for pressure switches. The diaphragm fits pressure switch only.)
	9013GHG, GSG, GHR, GSR, GMG; 9036GG, GR, GW; 9037GG Series C All except Forms H & R; 9016GVG, Form R
	9013GHG, GSG, GSR, GMG; 9036GG, GR, GW; 9037GG, GR, GW Series C Form H only; 9016GVG, Form H
	9013GHG, GSG, GHR, GSR, GMG; 9036GR, GW: Series C Form R only; 9016GVG
Contact Replacement Kit	9013FHG2 thru 19, 42 thru 49, all FSG (Complete contact replacement kit—includes new diaphragm)
	9012GA, GD, GN, GR1, 21 Series C only
Diaphragm Assembly	9012GA, GD, GG, GK, GN, GR 2, 3, 22, 52 Series C only
	9012GA, GD, GG, GK, GN, GR4, 24, 54 Series C only
	Convolute diaphragm assembly for 9013GHG, GSG: Series C
	9013GHW, GSW; and GSW, GHR: Series C
Gasket Kit	9016 GAW-1, 21
Pilot Light, 24 Vdc	Contains all replaceable gaskets for all 9012 open, NEMA 1, 4, 4X, 13 devices
Piston Assembly	9012GA, GD, GN, GR1, 21 Series C only
	9012GC, GF, GJ, GQ, GT1, 21, 31, 41, 51 Series C only
	9012GC, GF, GJ, GQ, GT2, 22, 32, 42, 52 Series C only
Seal Kit	9012GC, GF, GQ, GT4, 24, 34, 44, 54 Series C only
	Buna N, for Series A devices: 9037HG/HW/HR30–39; 9038CG/CW/CR31–36
	Fluorocarbon, for Series A devices with Form Z19 or Z20: 9037HG/HW/HR30–39; 9038CG/CW/CR31–36
Seal Tube Kit	Fluorocarbon, for 9037E and 9038D
	Buna N Quad-Ring®, for Series C devices: 9037HG/HW/HR3–12; 9038CG/CW/CR1–6
Snap Switch	Fluorocarbon Quad-Ring, for Series C devices: 9 037HG/HW/HR3–12; 9038CG/CW/CR1–6
	SPDT, for 9012GA, GB, GC, GD, GE, GF, GG, GH, GJ single pole; except Forms E2, E3, E4, H3: Series C only
Switch Mechanism	DPDT, for 9012GA, GB, GC, GD, GE, GF, GG, GH, GJ double pole; except Forms E2, E3, H6, H7: Series C only
	9036DR1, DW1 Series B

[1] If one of these Form designations appears on the pressure switch nameplate, complete the 9998 PC number by adding that same Form suffix from page 22-21, and add the Form price to the kit price.