Commercial Pressure Switches Types F and G

Class 9013



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Commercial Pressure Switches Class 9013, Type F and Type G-Description

The Class 9013 Type F line of pressure switches are UL Listed and CSA Certified as commercial control equipment. The Class 9013 Type G line of pressure switches are UL Listed and CSA Certified as commercial/light industrial control equipment.

The Type FHG - PUMPTROL® Compressor Pressure Switch is used to control electrically driven air compressors and is diaphragm actuated and has contacts that open on rising pressure.



Type FHG - PUMPTROL[®]
Compressor Pressure Switch

The Type FSG, FYG, FRG - PUMPTROL® Water Pump Pressure Switches are used to control electrically driven water pumps and have the following features:

- The Type FSG is the standard water pump switch, suitable for all types of pumps: jets, submersible, reciprocating, etc.
- The Type FYG is designed to meet higher horsepower and pressure requirements.
- The Type FRG is reverse acting: the contacts open on falling pressure.
- · All are diaphragm actuated.



Type FSG, FYG, FRG- PUMPTROL[®]
Water Pump Pressure Switch

The Type G - PUMPTROL® Commercial/Light Industrial Pressure Switch is used to control electrically driven water pumps and air compressors. It has higher electrical ratings for direct control of motors in pump and compressor applications. The Type G switch is diaphragm actuated and has contacts that open on rising pressure.



Type G - PUMPTROL[®]
Commercial/Light Industrial
Pressure Switch
shown with Form X-release valve

Commercial Pressure Switches Class 9013, Type F and Type G – Technical Overview

Operating Points (Settings)

Every pressure switch has two operating points; one on rising pressure and one of falling pressure. The operating point on rising pressure is referred to as the TRIP POINT or cut out for pumps and compressors and the operating point on falling pressure is referred to as the RESET POINT or cut in for pumps and compressors. These operating points are called the SETTINGS of the switch.

- TRIP POINT (rising pressure)
- RESET POINT (falling pressure)

Differential

The differential is the difference in pressure between the trip point (cut-out) and the reset point (cut-in). It can be adjustable or nonadjustable (fixed). Example: Cut-in 30 psi

Cut-out 50 psi

Differential 20 psi (50-30 psi)

Range

The range is the pressure limits within which the operating points (settings) can be adjusted. The range of the Class 9013 pressure switch is referenced to the operating point on rising pressure (trip point). The differential subtracts from the trip point setting.

During the normal operating cycle, system pressure should never exceed the upper limit of the range when using a diaphragm actuated switch. This will greatly reduce the life of the diaphragm.

Maximum Allowable Pressure

Maximum allowable pressure is the pressure to which a switch can be subjected without causing a change in operating characteristics, shift in settings, or damage to the device.

Pressure surges may occur in a system during the start up of a machine or from valve operation. Surges are not normally detrimental to the life of a switch if the surge is within the maximum allowable pressure rating of the switch. Diaphragm actuated switches should not be subjected to more than 10 surges per day. More frequent surges will greatly reduce the life of the diaphragm.



Commercial Pressure Switches Class 9013, Type F and Type G – Specifications

Electrical Ratings

Switch Type	Voltage	Single Phase AC (Hp)	Polyphase AC ▲ (Hp)	DC (Hp)	Control Circuit Rating
FHG2, 3, 4, 9, 12 13, 14, 19, 42, 44, 49 FSG, FSW	115 230 460/575	1 1/2 2 -	2 3 1	1/4■ 1/4■ –	A600
FHG22, 24, 29, 32, 33 34, 39, 52, 54, 59 FYG, FYW	115 230 460/575	2 3 -	3 5 1	1/2★ 1/2★ -	A600
FRG One Pole All Form H	32 115 230	_ 1 1	- - -	_ 1/4 1/4	A300
FRG Two Pole	32 115 230	_ 1 1	- 1 1	1/4 1/4 1/4	A300
All 9013G Form H	115 230 460/575	1 2 2	- - -	1/2 1/2 –	A600
All 9013G Except Form H	115 230 460/575	2 3 5	3 5 5	1 1 -	A600

- DC Rating does not apply to Form M4.
- ★ 600 volt DC rating does not apply.
- ▲ See 1993 NEC Article 430-84

Temperature Ratings ♦

Media	Ambient
Minimum -22 °F (-30 °C)	Minimum -22 °F (-30 °C)
Maximum +257 °F (+125 °C)	Maximum +158 °F (+70 °C)

[♦] FSG and FYG 32 °F (0 °C) minimum

Maximum Allowable Pressure

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

Type FHG - PUMPTROL® Compressor Pressure Switch



File E12158 CCN NKPZ



File LR 25490 Class 3211 06

Type FSG, FYG, FRG - PUMPTROL® Water Pump Pressure Switch



File E12158 CCN NKPZ



File LR 25490 Class 3211 06

Type G - PUMPTROL® Commercial/Light Industrial Pressure Switch



File E12158 CCN NKPZ Except GHR and GSR



File LR 25490 Class 3211 06 Except GHR and GSR



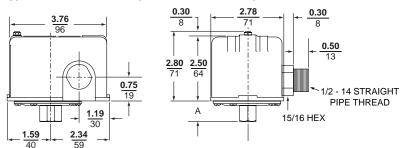
File E12443 CCN NOWT For GHR and GSR



File LR 26817 Class 3218 05 For GHR and GSR

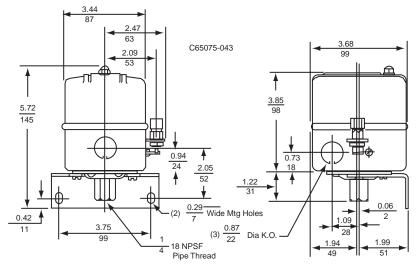
Commercial Pressure Switches Class 9013, Type F and Type G – Dimensions

Type $F-PUMPTROL^{\circledR}$ Compressor and Water Pump Pressure Switch Dimensions



Switch Type	A Dimension		
	Inches	mm	
FSG1, FYG1	1 1/32	26	
FHG2, 12, 22, 32, 42, 52, FRG2, FSG2, FYG2	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	

Type G – PUMPTROL® Commercial/Light Industrial Pressure Switch Dimensions

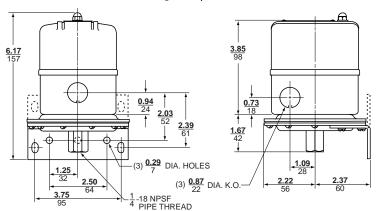


NOTE: Mounting Bracket shown is available as a Class 9049 Type A-52 Kit

Types GHG, GSG with or without Form X Net Weight – 2¹/₄ Pounds

Dual Dimensions inches mm

Dual Dimensions inches mm



NOTE: MOUNTING BRACKET SHOWN IS AVAILABLE AS A CLASS 9049 TYPE A-53 KIT.

Type GMG

Commercial Pressure Switches Class 9013, Type FHG – Selection and Modifications

Type FHG PUMPTROL® Compressor Pressure Switches



				Lower HP	Higher HP
Adjustable Cut-Out Range Increasing	Approximate Differential	Poles	Pressure Connection	NEMA Type 1 Enclosure	NEMA Type 1 Enclosure
Pressure (PSIG)	Non-Adjustable (PSIG)			Type	Туре
			1/4" NPSF (Internal)	FHG2	FHG22
40-100	20	2	3/8" NPSF (Internal)	FHG3	-
40-100	20	2	1/4" Four Way	FHG4	FHG24
			1/4" NPT (External)	FHG9	FHG29
		2	1/4" NPSF (Internal)	FHG12	FHG32
70-150			3/8" NPSF (Internal)	FHG13	FHG33
70-150	30		1/4" Four Way	FHG14	FHG34
			1/4" NPT (External)	FHG19	FHG39
	40	2	1/4" NPSF (Internal)	FHG42	FHG52
100-200			1/4" Four Way	FHG44	FHG54
			1/4" NPT (External)	FHG49	FHG59

Pressure Code (fixed differential)

Below is the pressure code table for fixed differential action devices. Existence of a code does not imply that the code is available for any or all devices.

Settings	Code
Off at 100 PSI	J27
Off at 110 PSI	J37
Off at 115 PSI	J38
Off at 120 PSI	J69
Off at 125 PSI	J52
Off at 135 PSI	J39
Off at 140 PSI	J68
Off at 150 PSI	J55
Off at 155 PSI	J40
Off at 175 PSI	J59
Specify other pressure	J99

Special Features And Modifications For Type FHG

Description	Form		
Description	Letter		
Standard Pack of 20 Switches	C2O		
Addition of a Second Ground Screw	G4★		
Maintained Manual Cut-Out Lever (AUTO-OFF)	M1		
Pulsation Plug	P		
1/2" Conduit Bushing – 1/2" Long Thread - On Left	Т		
1/2" Conduit Bushing – 1/2" Long Thread - on Right	T1		
Slip-On Connectors (Load Side Terminals Only)	U		
Slip-On Connectors (Line and Load Terminals)	U2		
Factory Sealed Range Stud	W		
Two-Way Pressure Release Valve	X		
Quick Connect Two-Way Pressure Release Valve (for use with Polyflow Tubing)	X1		
Black Cover	Z22		

[★] Can be field installed. Nameplate should then be marked with the Form letter and maintenance and ordering records corrected.

Ordering Information

- 1. Specify Class 9013 Type FHG.
- 2. Select pressure code from Pressure Code Table and add code designation to end of type number. Be sure that pressure code falls within the limits of the device as shown in the device listings.
- 3. If special features are desired, add the appropriate Form letter to the Class and Type. Arrange Form letters in alphabetical sequence when ordering more than one special feature.
- 4. Place packaging code at end of sequence with other forms when ordering.

Example: 9013FHG19J52MIXC20

NOTE: If no packaging code is indicated, devices will be shipped individually packaged.



Commercial Pressure Switches Class 9013, Types FSG, FYG, FRG – Selection and Modifications

Types FSG, FYG PUMPTROL® Water Pump Pressure Switches

Standard Action: Contacts Open On Rising Pressure



C., t O., t	Approximate	Approximate Cost in Bounce	2	2 Pole	
Cut-Out Range (PSIG)	Adjustable	Cut-in Range (PSIG)	Pressure Connection	NEMA	NEMA
italige (i 5i6)	Differential (PSIG)	(1 313)	Connection	Type 1	Type 3R■
			1/8" NPSF Internal	FSG1	FSW1
			1/4" NPSF Internal	FSG2	FSW2
20-65	15-30	5-45	1/4" NPT External	FSG9	FSW9
			1/4" Bayonet (barbed)	FSG10	FSW10
			90° Elbow 1/4" Bayonet	FSG20	FSW20
20-50	10-30	10-30	1/4" NPSF Internal	FSG22	FSW22
20-60	10-30	10-45	1/4" NPT External	FSG29	FSW29
9-30	6-20	3-10	1/4" NPSF Internal	FSG42	FSW42
9-30	6-20	3-10	1/4" NPT External	FSG49	FSW49
34-65	15-30	19-45	(FSG1-20 WITH FORM M4)		
			1/8" NPSF Internal	FYG1	FYW1
			1/4" NPSF Internal	FYG2	FYW2
25-80	20-30	5-60	1/4" NPT External	FYG9	FYW9
			1/4" Bayonet (barbed)	FYG10	FYW10
			90° Elbow 1/4" Bayonet	FYG20	FYW20
39-80	20-30	19-60 (FYG1-20 WITH FORM M4)			
20-50	10-30	10-30	1/4" NPSF Internal	FYG22	FYW22
20-60	10-30	10-45	1/4" NPT External	FYG29	FYW29
9-40	6-20	3-10	1/4" NPSF Internal	FYG42	FYW42
9-40	6-20	3-10	1/4" NPT External	FYG49	FYW49

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

Pressure Codes

Below is the pressure code table for standard action devices. Existence of a code does not imply that the code is available for any or all devices.

Settings	Code
5-21 PSI	J15
8-20 PSI	J16
20-40 PSI	J20
20-50 PSI	J18
30-50 PSI	J21
40-60 PSI	J24
50-70 PSI	J33
55-85 PSI	J34
60-80 PSI	J25
Specify other pressure	J99

Ordering Information

- 1. Specify Class 9013 Type FSG, FYG, or FYG.
- 2. Select pressure code from Pressure Code Table and add code designation to end of type number. Be sure that pressure code falls within the limits of the device as shown in the device listings.
- 3. If special features are desired, add the appropriate Form letter to the Class and Type. Arrange Form letters in alphabetical sequence when ordering more than one special feature.
- 4. Place packaging code at end of sequence with other forms when ordering.

Example: 9013FSG2J21MPU2C20

NOTE: If no packaging code is indicated, devices will be shipped individually packaged.



Commercial Pressure Switches Class 9013, Types FSG, FYG, FRG – Selection and Modifications

Type FRG PUMPTROL® Water Pump Pressure Switches

Reverse Action: Contacts Open On Falling Pressure



Cut-in	Approximate	Cut-Out Range	Pressure	1 Pole	2 Pole
Range (PSIG)	Adjustable Differential (PSIG)	(PSIG)	Connection	Туре	Туре
			1/4" NPSF Internal	FRG12	FRG2
23-65	15-30	8-45	3/8" NPSF Internal	FRG13	FRG3
23-03	15-30	0-40	1/4" Flare	FRG18	FRG8
			1/4" NPT External	FRG19	FRG9
			1/4" NPSF Internal	FRG32	FRG22
10-45	6-20	4-25	3/8" NPSF Internal	FRG33	FRG23
10-45	10-45 6-20	4-25	1/4" Flare	FRG38	FRG28
			1/4" NPT External	FRG39	FRG29
	CAA ENGLAND		1/4" NPSF Internal	FRG52	FRG42
6-14		1-11	3/8" NPSF Internal	FRG53	FRG43
0-14	5 Non-Adjustable		1/4" Flare	FRG58	FRG48
			1/4" NPT External	FRG59	FRG49
			1/4" NPSF Internal	FRG72	FRG62
40-100	20-30	20-75	3/8" NPSF Internal	FRG73	FRG63
			1/4" Flare	FRG78	FRG68
			1/4" NPSF Internal	FRG92	FRG82
65-150	30-45	25 120	3/8" NPSF Internal	FRG93	FRG83
05-150	30-45	35-120	1/4" Flare	FRG98	FRG88
			1/4" NPT External	FRG99	FRG89

Pressure Codes (Reverse action)

Below is the pressure code table for reverse action devices. Existence of a code does not imply that the code is available for any or all devices.

Settings	Code
8.5-5.5 PSI	J17
10-5 PSI	J36
22-12 PSI	J22
22-16 PSI	J19
35-20 PSI	J70
40-20 PSI	J23
50-30 PSI	J35
80-60 PSI	J32
100-80 PSI	J51
150-120 PSI	J64
Specify other pressure	J99

Special Features And Modifications For Type FSG, FYG & FRG Devices

Description	Applies to	Form Letter	
Standard Pack of 20 Devices per box	All Type F	C2O	
Pilot Light - Indicates Switch Contacts Closed	FSG, FYG	G5★	
One Normally Open-One Normally Closed Contact	FRG 2 Pole Only	Н	
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	FSG, FYG	M4	
turn off the pump	(Types 1-20 only)		
Maintained Manual Cut-in Lever (AUTO-ON)	FRG2-59 Only	M5	
Pulsation Plug (Standard on FSG-4 and FYG-4)	FRG, FSG, FYG	P♦	
Salt Water Flange (1/4 NPSF Internal Only)	All Type F	Q	
DL (' El	FRG, FSG, FYG	Q8	
Plastic Flange (max. temp. 120°F) (max. pressure 80 psi)	1/4" NPSF Internal Only		
1/2" Conduit Bushing - 1/2" Long Thread - on Left	All Type F	Т	
1/2" Conduit Bushing - 1/2" Long Thread - on Right	All Type F	T1	
Slip-On Connectors (Load Side Terminals Only)	FSG, FYG	U	
Slip-On Connectors (Line and Load Terminals)	FSG, FYG	U2	
Black Cover	FSG, FYG	Z22	

- ★ Can be field installed. Nameplate should then be marked with the Form letter and maintenance and ordering records corrected.
- Nylon pulsation plug can be field installed on types having 1/4" NPSF Internal connector. Part number 1530-S6-G1 is one bag of 50 plugs



Commercial Pressure Switches Class 9013, Type G – Selection and Modifications

Type G PUMPTROL® Commercial/Light Industrial Pressure Switch.



Cut-Out Range (PSIG)	Approximate Adjustable Differential (PSIG)	Cut-In Range (PSIG)	Enclosure	Poles	NPSF Internal Pressure Connection	Туре
10-35	4-8	51/2 - 301/2	NEMA Type 1 General Purpose	2	1/4	GMG2
20-80	15-30	5-60	NEMA Type 3R ■ Rainproof	2	1/4	GSB2
			5-60 NEMA Type 1 General Purpose		1/8	GSG1
20-80	15-30	5-60		2	1/4	GSG2
					3/8	GSG3
			NEMA Type 7 & 9		1/8	GSR1
			Hazardous		1/4	GSR2
20-80	20-40	5-50	Locations	_ 2	3/8	GSR3
20 00	20 40		NEMA Type 4		1/8	GSW1
			Watertight		1/4	GSW2
					3/8	GSW3
65-200	20-40	40-170	NEMA Type 3R ■ Rainproof	2	1/4	GHB2
			40-170 NEMA Type 1 General Purpose	2	1/8	GHG1
65-200	20-40	40-170			1/4	GHG2
			Contrain airpood		3/8	GHG3
		NEMA Type 4 Watertight	1 [1/8	GHR1	
	30-50		Locations NEMA Type 4 Watertight		1/4	GHR2
65-200				2	3/8	GHR3
00 200				-	1/8	GHW1
					1/4	GHW2
					3/8	GHW3
80-250	25-45	32-215	NEMA Type 3R ■ Rainproof	2	1/4	GHB5
			NEMA Type 1 General Purpose	2	1/8	GHG4
80-250	24-45	32-215			1/4	GHG5
					3/8	GHG6
			NEMA Time 7.9.0		1/8	GHR4
	40-60		NEMA Type 7 & 9 Hazardous Locations		1/4	GHR5
80-250		30-190		2	3/8	GHR6
00-250	40-60	30-190	NEMA Type 4 Watertight		1/8	GHW4
					1/4	GHW5
					3/8	GHW6

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

Pressure Code Table

Pressure Setting (Close-Open)	Code	
20-40 PSI	J20	
30-50 PSI	J21	
40-20 PSI	J23	
40-60 PSI	J24	
60-80 PSI	J25	
70-90 PSI	J26	
70-100 PSI	J28	
75-100 PSI	J29	
80-100 PSI	J30	
90-120 PSI	J31	
100-80 PSI	J51	
100-125 PSI	J53	
110-125 PSI	J54	
110-150 PSI	J56	
120-150 PSI	J57	
125-150 PSI	J58	
125-175 PSI	J60	
130-175 PSI	J61	
140-175 PSI	J62	
145-175 PSI	J63	
150-120 PSI	J64	
215-250 PSI	J65	
140-170 PSI	J66	
150-175 PSI	J67	
Specify Setting Required	J99	

Commercial Pressure Switches Class 9013, Type G – Selection and Modifications

Special Features And Modifications For Type G Devices

Description	Applies to	Form Letter	
Standard Pack of 10 Devices per box	All Type G	C10	
3-Way Lever (On-Auto-Off) (Not compatible with Form X)	GHG, GMG, GSG	E	
One Normally Open-One Normally Closed Contact	All Type G	Н	
Pulsation Plug	All Type G	P	
Reverse Action	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	GHB, GMG, GSB, GHG, GSG	Х	
(Not compatible with Form E)	GHR, GHW, GSR, GSW	X	
1/4" Male Pipe Thread on Pressure Connection	All Type G	Z	
1/ ₂ ".14 NPT External 1/ ₄ "-18 NPT Internal	All Type G	Z16	
3/8" Male Pipe Thread on Pressure Connection	All Type G	Z23	

Ordering Information

- 1. Specify Class 9013 Type G.
- 2. Select pressure code from Pressure Code Table and add code designation to end of type number. Be sure that pressure code falls within the limits of the device as shown in the device listings below.
- 3. If special features are desired, add the appropriate Form letter to the Class and Type. Arrange Form letters in alphabetical sequence when ordering more than one special feature.

NOTE: If no packaging code is indicated, devices will be shipped individually packaged