

Commercial Pressure Switches Types F and G

Class 9013



CATALOG CONTENTS

Description	Page
Product Descriptions	3
Technical Overview	4
Specifications	5
Dimensions	6
Type FHG, Selections and Modifications	7
Type FSG, FYG, FRG, Selections and Modifications	8-9
Type G, Selections and Modifications	10-11



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	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

Type	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



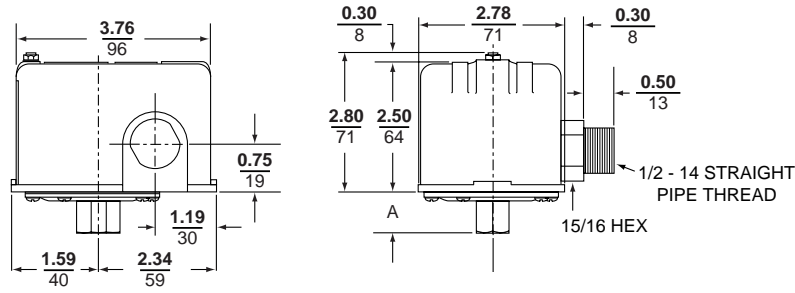
File LR 26817 Class 3218 05
For GHR and GSR



Commercial Pressure Switches

Class 9013, Type F and Type G – Dimensions

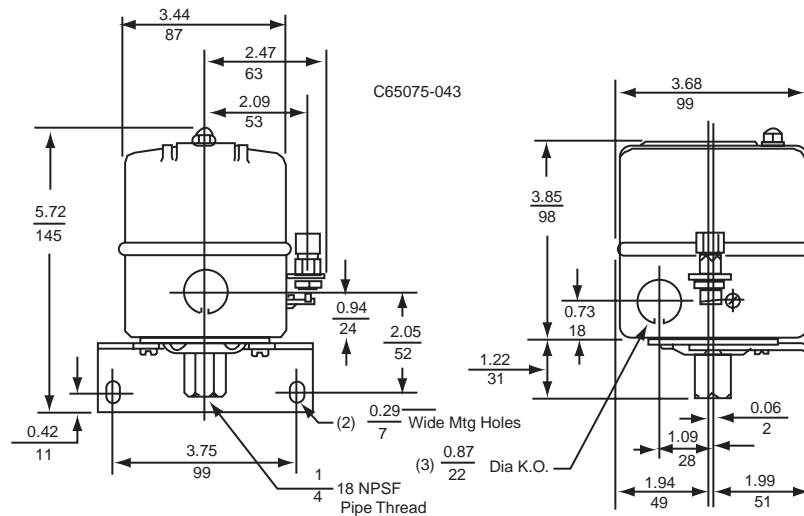
Type F – PUMPTROL® Compressor and Water Pump Pressure Switch Dimensions



Dual Dimensions $\frac{\text{inches}}{\text{mm}}$

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

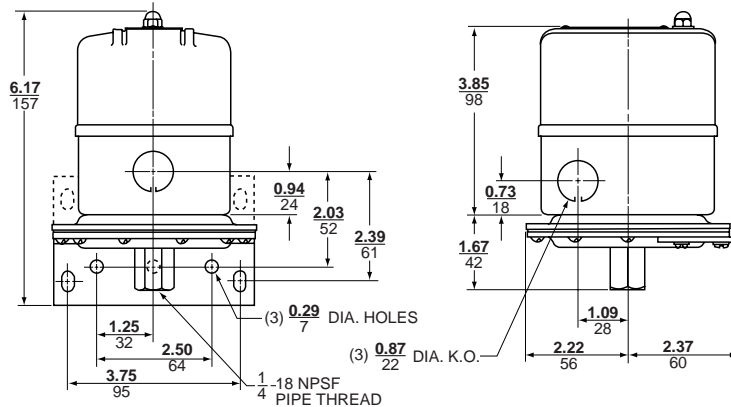
Type G – PUMPTROL® Commercial/Light Industrial Pressure Switch Dimensions



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

Types GHG, GSG
with or without Form X
Net Weight – 2 1/4 Pounds

Dual Dimensions $\frac{\text{inches}}{\text{mm}}$



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



Adjustable Cut-Out Range Increasing Pressure (PSIG)	Approximate Differential Non-Adjustable (PSIG)	Poles	Pressure Connection	Lower HP	Higher HP
				NEMA Type 1 Enclosure	NEMA Type 1 Enclosure
				Type	Type
40-100	20	2	1/4" NPSF (Internal)	FHG2	FHG22
			3/8" NPSF (Internal)	FHG3	-
			1/4" Four Way	FHG4	FHG24
			1/4" NPT (External)	FHG9	FHG29
70-150	30	2	1/4" NPSF (Internal)	FHG12	FHG32
			3/8" NPSF (Internal)	FHG13	FHG33
			1/4" Four Way	FHG14	FHG34
			1/4" NPT (External)	FHG19	FHG39
100-200	40	2	1/4" NPSF (Internal)	FHG42	FHG52
			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 Letter
Standard Pack of 20 Switches	C20
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	T
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

- Specify Class 9013 Type FHG.
- 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.
- 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.
- Place packaging code at end of sequence with other forms when ordering.

For standard pack of 20 devices per box C20

For individual packaged devices leave blank

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



Cut-Out Range (PSIG)	Approximate Adjustable Differential (PSIG)	Cut-in Range (PSIG)	Pressure Connection	2 Pole	
				NEMA Type 1	NEMA Type 3R■
20-65	15-30	5-45	1/8" NPSF Internal	FSG1	FSW1
			1/4" NPSF Internal	FSG2	FSW2
			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)		
25-80	20-30	5-60	1/8" NPSF Internal	FYG1	FYW1
			1/4" NPSF Internal	FYG2	FYW2
			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

- Specify Class 9013 Type FSG, FYG, or FYG.
- 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.
- 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.
- Place packaging code at end of sequence with other forms when ordering.

For standard pack of 20 devices per box C20

For individual packaged devices leave blank

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 Range (PSIG)	Approximate Adjustable Differential (PSIG)	Cut-Out Range (PSIG)	Pressure Connection	1 Pole	2 Pole
				Type	Type
23-65	15-30	8-45	1/4" NPSF Internal	FRG12	FRG2
			3/8" NPSF Internal	FRG13	FRG3
			1/4" Flare	FRG18	FRG8
			1/4" NPT External	FRG19	FRG9
10-45	6-20	4-25	1/4" NPSF Internal	FRG32	FRG22
			3/8" NPSF Internal	FRG33	FRG23
			1/4" Flare	FRG38	FRG28
6-14	5 Non-Adjustable	1-11	1/4" NPT External	FRG39	FRG29
			1/4" NPSF Internal	FRG52	FRG42
			3/8" NPSF Internal	FRG53	FRG43
			1/4" Flare	FRG58	FRG48
40-100	20-30	20-75	1/4" NPT External	FRG59	FRG49
			1/4" NPSF Internal	FRG72	FRG62
			3/8" NPSF Internal	FRG73	FRG63
65-150	30-45	35-120	1/4" Flare	FRG78	FRG68
			1/4" NPSF Internal	FRG92	FRG82
			3/8" NPSF Internal	FRG93	FRG83
			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	C20
Pilot Light - Indicates Switch Contacts Closed	FSG, FYG	G5★
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 (Types 1-20 only)	M4
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
Plastic Flange (max. temp. 120° F) (max. pressure 80 psi)	FRG, FSG, FYG 1/4" NPSF Internal Only	Q8
1/2" Conduit Bushing - 1/2" Long Thread - on Left	All Type F	T
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	Type
10-35	4-8	5 1/2 - 30 1/2	NEMA Type 1 General Purpose	2	1/4	GMG2
20-80	15-30	5-60	NEMA Type 3R ■ Rainproof	2	1/4	GSB2
20-80	15-30	5-60	NEMA Type 1 General Purpose	2	1/8	GSG1
					1/4	GSG2
					3/8	GSG3
20-80	20-40	5-50	NEMA Type 7 & 9 Hazardous Locations	2	1/8	GSR1
					1/4	GSR2
					3/8	GSR3
			NEMA Type 4 Watertight		1/8	GSW1
					1/4	GSW2
					3/8	GSW3
65-200	20-40	40-170	NEMA Type 3R ■ Rainproof	2	1/4	GHB2
65-200	20-40	40-170	NEMA Type 1 General Purpose	2	1/8	GHG1
					1/4	GHG2
					3/8	GHG3
65-200	30-50	35-150	NEMA Type 7 & 9 Hazardous Locations	2	1/8	GHR1
					1/4	GHR2
					3/8	GHR3
			NEMA Type 4 Watertight		1/8	GHW1
					1/4	GHW2
					3/8	GHW3
80-250	25-45	32-215	NEMA Type 3R ■ Rainproof	2	1/4	GHB5
80-250	24-45	32-215	NEMA Type 1 General Purpose	2	1/8	GHG4
					1/4	GHG5
					3/8	GHG6
80-250	40-60	30-190	NEMA Type 7 & 9 Hazardous Locations	2	1/8	GHR4
					1/4	GHR5
					3/8	GHR6
			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	H
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 (Not compatible with Form E)	GHB, GMG, GSB, GHG, GSG GHR, GHW, GSR, GSW	X X
1/4" Male Pipe Thread on Pressure Connection	All Type G	Z
1/2"-14 NPT External	All Type G	Z16
1/4"-18 NPT Internal		
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.
4. Place packaging code at end of sequence with other forms when ordering.
 For standard pack of 10 devices per box: C10
 (Available on GHB, GHG, GSB, and GSG)
 For individual packaged devices:leave blank

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



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