

From 2 to 6000 PSI (40 mbar to 400 bar), GEMS Pressure Switches Cover A Wide Range of Applications

- ▶ General, Vacuum, Specialty
- ▶ Field-Adjustable or Factory Set Switches
- ▶ High Proof Pressure
- ▶ Rugged and Dependable

GEMS offers a choice of pressure switches, from compact cylindrical models for OEM use, to larger, enclosed units for rugged process applications. These switches are ideal for the filtering process of coolants in the machine tool industry, use in transmissions of off-highway vehicles and as redundant systems with existing monitors such as transducers.

Unique Piston/Diaphragm Design

A piston/diaphragm design, incorporating the high proof pressure of piston technology allows these switches to operate with the sensitivity and accuracy of a diaphragm design. Repeatability ranges from 0.25 percent to 5 percent of the set point.

Many Materials To Choose From

Enclosures include aluminum, stainless steel, brass, reinforced plastic and zinc-plated steel. Wetted parts include a diaphragm available in Buna-n, Teflon® coated Kapton®, stainless steel, PTFE, EPDM or Viton® and a pressure port available in stainless steel, brass or zinc-plated steel.



Pressure Switch Option Descriptions

G: Gold contacts are usually required for low DC current loads (<12 VDC @ 12 mA) associated with TTL input devices. They provide decreased contact resistance, which results in more reliable switching especially in the presence of an oxidizing atmosphere.

OF: Wetted Materials are ultrasonically cleaned to remove oil and debris.

10A: 10A option is provided by a microswitch rated 10 Amperes at 250 VAC. This microswitch has a wide movement differential, which results in a larger deadband than listed in the standard catalog pages.

IP: Ingress Protection is provided by either an epoxy sealed cap (IP65) or silicon wire seals (IP66). On some models, this option is only available with FS option.

RB: Rubber Boot is designed to be cut out for the proper wire or cable size by the customer and sealed with an appropriate sealant in the field.

WF: Weatherpack female termination consists of the following Delphi P/N's: (12045793 Conn "C" Circuit), 12089188 Female Pins and 12015323 Wire Seals.

WM: Weatherpack male termination consists of the following Delphi P/N's: 12010973 Connector, (12010717 Conn "C" Circuit), 12089040 Male Pins and 12015323 Wire Seals.

DE: Deutsch male termination consists of the following Deutsch P/N's: DT04-2P Connector, (DT04-3P "C" Circuit) 1060-16-0122 Male Pins and W(2 or 3)P Wedgelok.

FS: Gems will preset switches to the indicated set point within repeatability limits listed on the specific product catalog page.

R: The restrictor option is recommended for hydraulic and pneumatic systems that need a small reduction in pressure pulsations to increase pressure switch life. It is a pressed in part that has an orifice size of 0.045" (1.4 mm)

SR: The spiral restrictor option heavily dampens pressure pulsations in any hydraulic system, which prevents false signaling and premature wear. It is not recommended for pressure settings below 1500 psig (103 bar) because it slows the response time of the pressure switch depending on fluid viscosity.

Selection Guide

	Pressure Range	Proof Pressure	Switch	Notes	Series	Page
Subminiature Pressure Switches	0.75 to 15 psi (52 to 1034 mbar)	150 psi (10 bar)	SPST, SPDT	—	PS11	I-3
	5 to 150 psi (0.35 to 10 bar)	500 psi (35 bar)	SPST	Kapton® Diaphragm	PS31	I-5
	5 to 100 psi (0.35 to 7 bar)	500 psi (35 bar)		Elastomer Diaphragm	PS32	I-7
	50 to 300 psi (3.45 to 20 bar)	500 psi (35 bar)	SPST	Kapton® Diaphragm	PS51	I-5
				Elastomer Diaphragm	PS52	I-7
	15 to 3000 psi (1.03 to 207 bar)	6000 psi (414 bar)	SPST	—	PS61	I-11
				PS62	I-13	
	5 to 6000 psi (0.35 to 414 bar)	7500 psi (517 bar)	SPST, SPDT, DPST, DPDT	—	PS75	I-19
Miniature Pressure Switches	3.5 to 100 psi (0.24 to 7 bar)	350 psi (24 bar)	SPST, SPDT	—	PS41	I-9
	10 to 5000 psi (0.7 to 344 bar)	6000 psi (414 bar)	SPST, SPDT	—	PS71	I-15
	10 to 750 psi (0.7 to 52 bar)	3000 psi (207 bar)	SPST, SPDT	—	PS72	I-17
	15 to 1750 psi (1 to 121 bar)	4500 psi (310 bar)	SPST, DPDT	—	PS76	I-21
Vacuum Switches	1.5" to 15" Hg (51 to 508 mbar)	150 psi (10 bar)	SPST, SPDT	—	PS81	I-23
	5" to 28" Hg (169 to 948 mbar)	350 psi (24 bar)	SPST, SPDT	—	PS82	I-25
Solid-State Switches	0 to 6000psi (0 to 400 bar)	See Specs	SPST, Relay or Transistor	Solid-State	PS98	I-27

Plastic Diaphragms*

Option K or Standard Teflon® Coated Kapton® (Polyimide) Diaphragm

Teflon® is compatible with almost every liquid and gaseous media. Kapton® has very stable physical properties over a wide temperature range. This results in pressure switches that exhibit very little set point shift due to temperature extremes. Kapton® possesses exceptional fatigue strength but is very stiff which results in wider but more stable deadbands than most elastomers.

Elastomer Diaphragms*

Elastomers offer incredible sensitivity coupled with extremely long life. This results in stable set points over the life of the pressure switch as well as tight deadbands. Their biggest weakness is the increase in modulus (stiffening) that occurs at lower temperatures. This results in pressure switch set points to shift higher and deadbands to increase with decreasing temperature. They also exhibit more hysteresis than Kapton® diaphragms.

Standard: Nitrile (Buna-N).

Typically specified on water and petroleum based hydraulic oils.

Option V: Viton®

(Fluoroelastomer) Diaphragm. Typically used with alcohols, diesters, solvents, acids and synthetic oils. Also used for high vacuum service.

Option E: EPDM (Ethylene

Propylene) Diaphragm. Typically used with phosphate ester based hydraulic fluids, brake fluids, ketones, steam and hot water.

Option N: Neoprene

(Chloroprene) Diaphragm. Typically specified for refrigerant systems.

* See individual product data sheets for temperature ranges.

PS11 – Ultra-Long Life OEM Pressure Switches

- ▶ 0.75 to 15 psi (52 to 1034 mbar)
- ▶ Factory Set or Adjustable Set Points

For low pressure applications, the longevity of our PS11 Series is hard to beat. Their snap-action microswitch resets automatically and meets or exceeds industry standards. The brass housing offers chemical resistance at an affordable price.

Specifications

Switch*	5 Amp @ 24 VDC and 250 VAC 1.0 Amp resistive 0.5 Amp inductive @ 24 VDC (-G option)
Repeatability	See Table 1
Wetted Parts	
Diaphragm	Nitrile (optional Viton®, EPDM or Kapton®)
Fitting	Brass
Housing	Brass
O-Ring	Nitrile (optional Viton® or EPDM)
Ingress Protection**	DIN 43650A IP00; Terminals IP00; Flying Leads IP00
Proof Pressure	0 psia to 150 psi (-1 bar to 10.3 bar)
Burst Pressure	300 psi (20.7 bar)
Approvals	CE, UL Approved units available
Weight, Approximate	0.31 lbs. (0.14 kg)

* Gold contacts (option G) may be required for less than 12 VDC and 20 mA.
** Plastic housing is vented to atmosphere. Consult factory for non-vented version, IP-rated version.

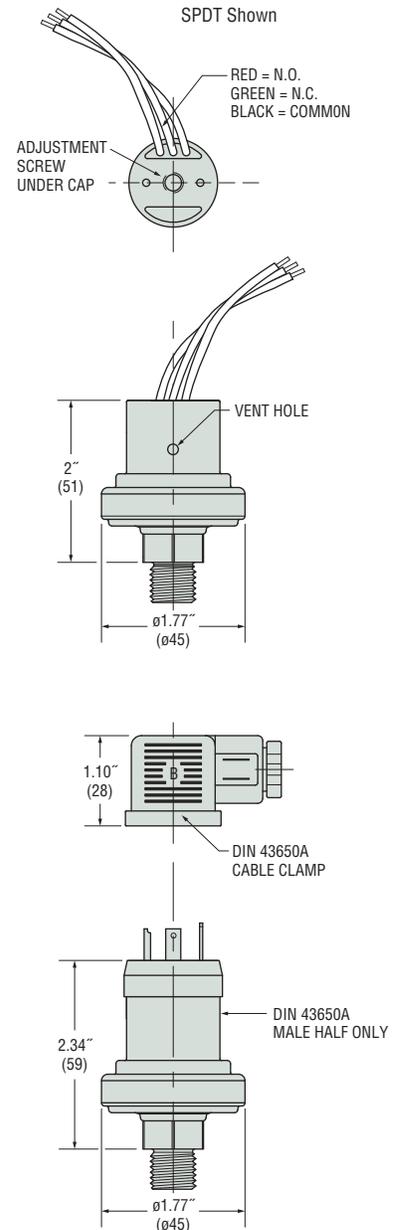
Recommended Operating Temperature Limits

Diaphragm Material	Range
Nitrile	15°F to 250°F (-9°C to +121°C)
Viton®	0°F to 250°F (-18°C to +121°C)
EPDM	-20°F to +250°F (-29°C to +121°C)
Kapton®	-40°F to +250°F (-40°C to +121°C)

Note: Switches may function below the cold temperature limit but the set point and deadband will increase. Consult factory for details.

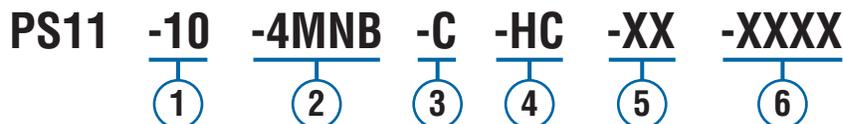


Dimensions



How To Order

Use the **Bold** characters from the chart below to construct a product code. Please reference Notes.



1 Pressure Range Code

Insert Pressure Range Code from Table 1, below.

2 Pressure Fitting¹

- 2MNB = 1/8" NPTM Brass
- 4MNB = 1/4" NPTM Brass
- 4MGB = 1/4" BSPM Brass (G type)
- 4MSB = 7/16"-20 SAE Male, Brass

3 Circuit

- A = SPST/N.O.
- B = SPST/N.C.
- C = SPDT

4 Electrical Termination²

- FLXX = Flying Leads³
- ELXX = 1/2" Male NPT Conduit w/Flying Leads³
- H = DIN 43650A Male Half Only
- HC = DIN 43650A 9mm Cable Clamp
- HN = DIN 43650A 1/2" NPT Female Conduit

5 Options

- V = Viton® Diaphragm
- E = EPDM Diaphragm
- K = Kapton® Diaphragm
- G = Gold Contacts
(for loads less than 12 mA @ 12 VDC)
- OF = Oil Free Cleaned
- WF = Weather Pack Connector, Female
- WM = Weather Pack Connector, Male
- DE = Deutsch Connector, Male, DT04 Series

6 Fixed Set Point (optional)

- A. Specify set point -**FS** (in PSI or mBAR, see example)⁵
- B. Set Point Actuation
- R** on Rising Pressure
- F** on Falling Pressure
- Example: -**FS200MBARF** for 200 mBAR Falling
- or -**FS3PSIR** for 3 PSI Rising

Notes:

1. Other fittings available. Consult factory.
2. DIN units are available with -**C** SPDT circuit only.
3. 18" is standard. Specify lead length in inches (max. 48"). e.g. -**FL18** or -**EL30**.
4. Ingress Protection requires Fixed Set Point -**FS**.
5. Set Point must be within Pressure Range selected in Step 1.

Table 1 — Pressure Range Codes

Pressure Range Code	Pressure Range	Accuracy*	Average Deadband**
10	0.75-4 psig (51-276 mbar)	±0.15 psi (10 mbar) +4% of setting	0.2 psi (14 mbar) +9% of setting
20	3.5-15 psig (241-1034 mbar)	±0.25 psi (17 mbar) +5% of setting	0.4 psig (26 mbar) +11% of setting

* Accuracy and set point of units may change due to the effects of temperature.

** In certain applications deadband can be tailored and controlled to customer specifications. Consult factory for details.

PS31/PS51 – Kapton® Diaphragm OEM Subminiature Pressure Switch

- ▶ 5 to 300 psi (0.345 to 20 bar)
- ▶ Ideal for Low Temperature Pneumatic Applications
- ▶ Adjustable or Factory Set

These compact pressure switches are designed for OEM applications. Made economical with metal blade contacts in lieu of microswitches, these switches feature Kapton® diaphragms. Kapton® polyimide maintains excellent physical properties over a wide temperature range. It also offers superb chemical resistance and has no known organic solvents.

The PS31 and PS51 share identical construction and envelope dimensions, with the PS51 Series providing higher pressure ranges.

Specifications

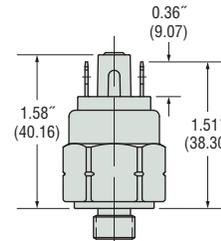
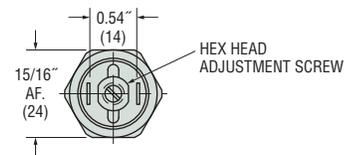
Operating Temperature	-40°F to +230°F (-40°C to +110°C)
Switch*	100 VA Max.
Repeatability	See Table 1
Wetted Parts	
Diaphragm	Teflon® Coated Kapton® (Solid Teflon® Available)
O-Ring	Nitrile (Std.) Consult factory for other materials
Fitting	Brass (optional 316 Stainless Steel)
Electrical Termination	Exposed Terminals IP00; IP option IP66
Deadband	See Table 1
Proof Pressure	500 psi (35 bar)
Burst Pressure	1000 psi (69 bar)
Approvals	CE (limits switch voltage to 42 VDC)
Weight, Approximate	Brass: 0.14 lbs. (0.06 kg)

* Gold contacts (option G) may be required for less than 12 VDC and 20 mA.

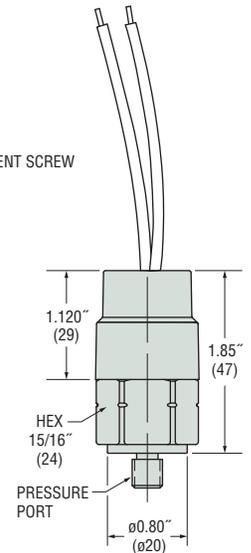


Dimensions

1/4" Spades



Flying Leads with IP Option



How To Order

Use the **Bold** characters from the chart below to construct a product code. Please reference Notes.



1 Series

PS31 or **PS51**

2 Pressure Range Code

Insert Pressure Range Code from Table 1, below.

3 Pressure Fitting¹

Brass

- 2MNB** = 1/8" NPTM
- 4MNB** = 1/4" NPTM
- 2MGB** = 1/8" BSPM (G type)
- 4MGB** = 1/4" BSPM (G type)
- 8MGB** = 1/2" BSPM (G type)
- M10B** = M10 x 1.0, Straight
- M12B** = M12 x 1.5, Straight
- 4MSB** = 7/16"-20 SAE Male
- 6MSB** = 9/16"-18 SAE Male

316 Stainless Steel

- 2MNS** = 1/8" NPTM
- 4MNS** = 1/4" NPTM
- 2MGS** = 1/8" BSPM (G type)
- 4MGS** = 1/4" BSPM (G type)
- 4MSS** = 7/16"-20 SAE Male
- 6MSS** = 9/16"-18 SAE Male

4 Circuit

- A** = SPST/N.O.
- B** = SPST/N.C.

5 Electrical Termination

- SP** = Spade Terminals (standard)
- TS** = Terminal Screws
- FLXX** = Flying Leads²
- FLSXX** = Flying Leads w/PVC Shrink Tubing²
- CABXX** = 18 AWG PVC Cable³

6 Options

- G** = Gold Contacts
(for loads less than 12 mA @ 12 VDC)
- IP** = Ingress Protection⁴
- IPA** = Removable Silicone Seal for Set Point Adjustment⁵
- OF** = Oil Free Cleaned
- RB** = Rubber Boot (shipped loose)
- WF** = Weather Pack Connector, Female
- WM** = Weather Pack Connector, Male
- DE** = Deutsch Connector, Male, DT04 Series

7 Fixed Set Point (optional)

- A. Specify set point **-FS**
(in PSI or BAR, see example)⁶
- B. Set Point Actuation
R on Rising Pressure
F on Falling Pressure
Example: **-FS0.6BARF** for 0.6 BAR Falling
or **-FS10PSIR** for 10 PSI Rising

Notes:

1. Other fittings available. Consult factory.
2. 18" is standard. Specify lead length in inches (max. 48"). e.g. **-FL18** or **-FLS30**.
3. 36" is minimum. Specify cable length in inches. e.g. **-CAB36** or **-CAB120**.
4. Ingress Protection is available only with **-FL**, **-FLS** or **-CAB** Electrical Termination choices.
5. IPA protection is available only with **-FL** or **-FLS**.
6. Set Point must be within Pressure Range selected in Step 2.

Table 1 — Pressure Range Codes

PS31

Pressure Range Code	Pressure Range	Accuracy*	Average Deadband**
20	5-25 psi (0.3-1.7 bar)	±1 psi (0.07 bar) +3% of setting	2 psi (0.14 bar) +4% of setting
30	20-60 psi (1.4-4.1 bar)	±1.5 psi (0.10 bar) +3% of setting	3 psi (0.21 bar) +4% of setting
40	50-150 psi (3.4-10.3 bar)	±2.5 psi (0.17 bar) +3% of setting	4 psi (0.28 bar) +4% of setting

PS51

Pressure Range Code	Pressure Range	Accuracy*	Average Deadband**
15	50-150 psi (3.4-10.3 bar)	±3.0 psi (0.21 bar) +4% of setting	5 psi (0.14 bar) +5% of setting
20	150-300 psi (10.3-20.7 bar)	±4 psi (0.28 bar) +4% of setting	8 psi (0.21 bar) +5% of setting

* Accuracy and set point of units may change due to the effects of temperature.

** In certain applications deadband can be tailored and controlled to customer specifications. Consult factory for details.

PS32/PS52 – Elastomer Diaphragm OEM Subminiature Pressure Switch

- ▶ 10 to 300 psi (0.69 to 20 bar)
- ▶ Ideal for Pneumatic and Low Pressure Hydraulic Applications
- ▶ Adjustable or Factory Set

These compact pressure switches are designed for OEM applications. Made economical by using metal blade contacts in lieu of microswitches, the series features long-lasting Elastomer diaphragms in three materials. Elastomer diaphragms offer increased sensitivity and life for applications without temperature extremes.

The PS32 and PS52 share identical construction and envelope dimensions, with the PS52 Series providing higher pressure ranges.

Specifications

Switch*	100 VA Max.
Repeatability	See Table 1
Wetted Parts	
Diaphragm	Elastomer (Nitrile standard) (Viton®, EPDM optional)
Fitting	Brass standard (optional 316 SS)
Electrical Termination	Exposed Terminals IP00; IP option IP66
Deadband	See Table 1
Proof Pressure	500 psi (35 bar)
Burst Pressure	1000 psi (69 bar)
Approvals	CE (limits switch voltage to 42 VDC)
Weight, Approximate	Brass: 0.14 lbs. (0.06 kg)

* Gold contacts (option G) may be required for less than 12 VDC and 20 mA.

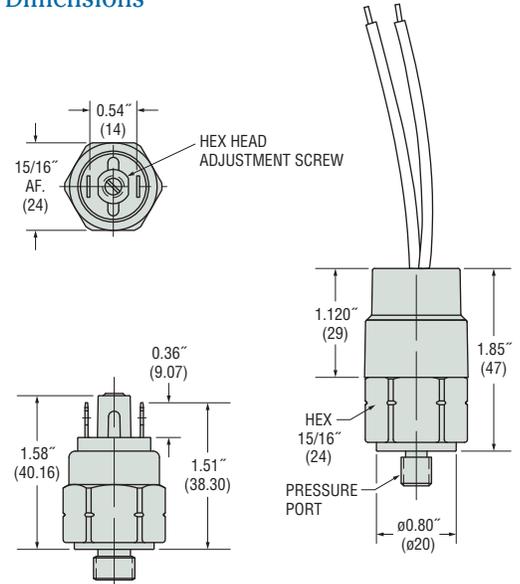
Recommended Operating Temperature Limits

Diaphragm Material	Range
Nitrile	15°F to 230°F (-9°C to 110°C)
Viton®	0°F to 230°F (-18°C to 110°C)
EPDM	-10°F to 230°F (-23°C to 110°C)

Note: Switches may function below the cold temperature limit but the set points and deadband will increase. Consult factory for details.



Dimensions



How To Order

Use the **Bold** characters from the chart below to construct a product code. Please reference Notes.



1 Series

PS32 or **PS52**

2 Pressure Range Code

Insert Pressure Range Code from Tables 1, below.

3 Pressure Fitting¹

Brass

- 2MNB = 1/8" NPTM
- 4MNB = 1/4" NPTM
- 2MGB = 1/8" BSPM (G type)
- 4MGB = 1/4" BSPM (G type)
- 4MSB = 7/16"-20 SAE Male

316 Stainless Steel

- 2MNS = 1/8" NPTM
- 4MNS = 1/4" NPTM
- 2MGS = 1/8" BSPM (G type)
- 4MGS = 1/4" BSPM (G type)
- 4MSS = 7/16"-20 SAE Male

4 Circuit

- A = SPST/N.O.
- B = SPST/N.C.

5 Electrical Termination

- SP = Spade Terminals (standard)
- TS = Terminal Screws
- FLXX = Flying Leads²
- FLSXX = Flying Leads w/PVC Shrink Tubing²
- CABXX = 18 AWG PVC Cable³

6 Options

- V = Viton® Diaphragm
- E = EPDM Diaphragm
- H = ECOH Diaphragm
- G = Gold Contacts
(for loads less than 12 mA @ 12 VDC)
- IP = Ingress Protection⁴
- IPA = Removable Silicone Seal for Set Point Adjustment⁵
- OF = Oil Free Cleaned
- RB = Rubber Boot (shipped loose)
- WF = Weather Pack Connector, Female
- WM = Weather Pack Connector, Male
- DE = Deutsch Connector, Male, DT04 Series

7 Fixed Set Point (optional)

- A. Specify set point **-FS**
(in PSI or BAR, see example)⁶
- B. Set Point Actuation
R on Rising Pressure
F on Falling Pressure
Example: **-FS0.6BARF** for 0.6 BAR Falling
or **-FS10PSIR** for 10 PSI Rising

Notes:

1. Other fittings available. Consult factory.
2. 18" is standard. Specify lead length in inches (max. 48"). e.g. **-FL18** or **-FLS30**.
3. 36" is minimum. Specify cable length in inches. e.g. **-CAB36** or **-CAB120**.
4. Ingress Protection is available only with **-FL**, **-FLS** or **-CAB** Electrical Termination choices.
5. IPA protection is available only with **-FL** or **-FLS**.
6. Set Point must be within Pressure Range selected in Step 2.

Table 1 — Pressure Range Codes

PS32

Pressure Range Code	Pressure Range	Accuracy*	Average Deadband**
20	10-25 psi (0.69-1.7 bar)	±1 psi (0.07 bar) +3% of setting	2 psi (0.14 bar) +4% of setting
30	20-60 psi (1.4-4.1 bar)	±1.5 psi (0.10 bar) +3% of setting	3 psi (0.21 bar) +4% of setting
40	50-150 psi (3.4-10.3 bar)	±2.5 psi (0.17 bar) +3% of setting	4 psig (0.28 bar) +4% of setting

PS52

Pressure Range Code	Pressure Range	Accuracy*	Average Deadband**
15	50-150 psi (3.4-10.3 bar)	±3.0 psi (0.21 bar) +4% of setting	5 psi (0.14 bar) +5% of setting
20	150-300 psi (10.3-20.7 bar)	±4 psi (0.28 bar) +4% of setting	8 psi (0.21 bar) +5% of setting

* Accuracy and set point of units may change due to the effects of temperature.

** In certain applications deadband can be tailored and controlled to customer specifications. Consult factory for details.

PS41 – Economical Miniature Pressure Switches

► 4 to 100 psi (0.28 to 7 bar)

These miniature pressure switches are designed for demanding applications where space and/or price are strong concerns. The switches utilize a piston/diaphragm design, which incorporates the high proof pressure of piston technology with the sensitivity of diaphragm designs. Switches are field adjustable via an Allen head screw that is hidden to protect against unauthorized tampering.

Specifications

Switch	SPST; SPDT
Repeatability	See Table 1
Wetted Parts	
Diaphragm Material	Nitrile (optional EPDM, Viton® or Neoprene)
Fitting	Brass (optional 316 Stainless Steel)
Electrical Termination	DIN 43650A IP65; Terminals IP00; Flying Leads IP65; Option IP: IP66; Conduit with Flying Leads IP65
Proof Pressure	350 psi (24 bar)
Burst Pressure	700 psi (48 bar)
Approvals	CE, UL Approved units available
Weight, Approximate	Brass: 0.3 lbs. (0.14 kg)

Recommended Operating Temperature Limits

Diaphragm Material	Options Selected		
	No option, -10A, -SP or -RD	-RD or -RD and -G	-SP or -10A
Nitrile	15°F to 185°F (-9°C to +85°C)	15°F to 250°F (-9°C to +121°C)	15°F to 212°F (-9°C to +100°C)
Viton®	0°F to 185°F (-18°C to +85°C)	0°F to 250°F (-18°C to +121°C)	0°F to 212°F (-18°C to +100°C)
EPDM	-10°F to +185°F (-23°C to +85°C)	-10°F to +250°F (-23°C to +121°C)	-10°F to +212°F (-23°C to +100°C)
Neoprene	-10°F to +185°F (-23°C to +85°C)	-10°F to +250°F (-23°C to +121°C)	-10°F to +212°F (-23°C to +100°C)

Note: Switches may function below the cold temperature limit but the set points and deadband will increase. Consult factory for details.

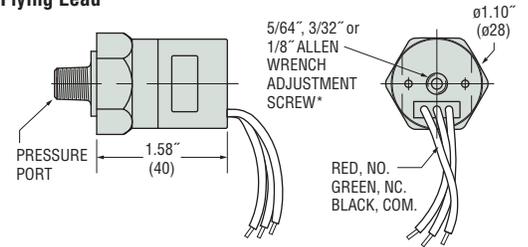
Electrical Switch Ratings

Options Selected	AC	DC
No option or -RD	5 amps @ 125/250 Volts	5 amps resistive, 3 amps inductive @ 28 Volts
-G or -RD with -G	1 amp @ 125 Volts	1 amp resistive, 0.5 amp inductive @ 28 Volts
-SP without -G	10.1 amps @ 125/250 Volts	—
-SP with -G	2 amps @ 125/250 Volts	—



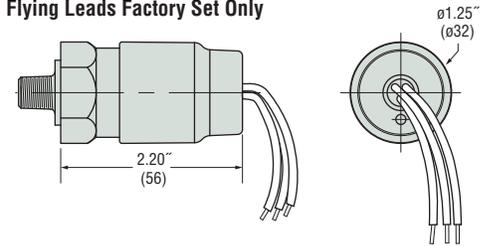
Dimensions

Flying Lead

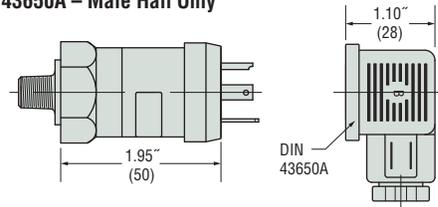


* Adjustment screw is located under protective screw.

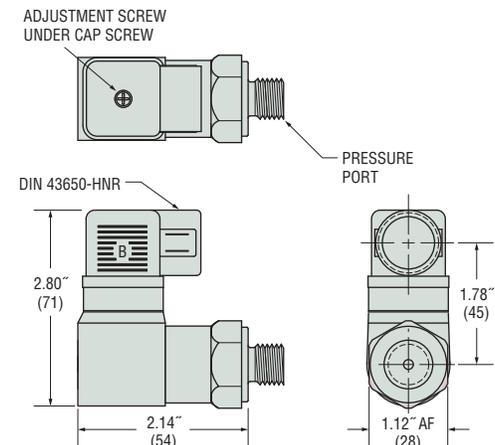
Ingress Protection Option (IP66) with Flying Leads Factory Set Only



DIN 43650A – Male Half Only

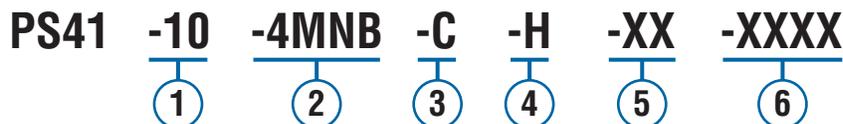


Right Angle DIN (HNR)



How To Order

Use the **Bold** characters from the chart below to construct a product code. Please reference Notes.



① Pressure Range Code

Insert Pressure Range Code from Table 1, below.

② Pressure Fitting¹

Brass

- 2MNB = 1/8" NPTM
- 4MNB = 1/4" NPTM
- 2MGB = 1/8" BSPM (G type)
- 4MGB = 1/4" BSPM (G type)
- 4MSB = 7/16"-20 SAE Male
- 6MSB = 9/16"-18 SAE Male

316 Stainless Steel

- 2MNS = 1/8" NPTM
- 4MNS = 1/4" NPTM
- 4MGS = 1/4" BSPM (G type)
- 4MSS = 7/16"-20 SAE Male

③ Circuit

- A = SPST/N.O.
- B = SPST/N.C.
- C = SPDT

④ Electrical Termination

- SP = Spade Terminals²
- FLXX = Flying Leads³
- FLSXX = Flying Leads w/PVC Shrink Tubing³
- ELXX = 1/2" NPT Male Conduit w/Flying Leads⁴
- CABXX = 18 AWG PVC Cable⁵
 - H = DIN 43650A Male Half Only⁶
 - HR = Right Angle DIN 43650A Male Half Only⁶
 - HC = DIN 43650A 9mm Cable Clamp⁶
 - HCR = Right Angle DIN 43650A 9mm Cable Clamp⁶
 - HN = DIN 43650A with 1/2" Female NPT Conduit⁶
 - HNR = Right Angle DIN 43650A with 1/2" Female NPT Conduit⁶

⑤ Options⁷

- V = Viton[®] Diaphragm
- N = Neoprene Diaphragm
- E = EPDM Diaphragm
- 10A = 10A @ 125/250 VAC Max. Rating
- G = Gold Contacts
(for loads less than 12 mA @ 12 VDC)
- RD = Reduced Differential
(25% reduction typical)
- IP = Ingress Protection⁸
- OF = Oil Free Cleaned
- WF = Weather Pack Connector, Female
- WM = Weather Pack Connector, Male
- DE = Deutsch Connector, Male, DT04 Series

⑥ Fixed Set Point (optional)

- A. Specify set point **-FS**
(in PSI or BAR, see example)⁹
- B. Set Point Actuation
R on Rising Pressure
F on Falling Pressure
Example: **-FS0.5BARF** for 0.5 BAR Falling
or **-FS5PSIR** for 5 PSI Rising

Notes:

1. Other fittings available. Consult factory.
2. Requires **-10A** or **-G** option. (20% increase in deadband typical)
3. 1/8" is standard. Specify lead length in inches (max. 48"). e.g. **-FL18** or **-FLS30**.
4. 1/2" is standard. Specify lead length in inches (max. 48"). e.g. **-EL18** or **-EL30**.
5. 36" is minimum. Specify cable length in inches. e.g. **-CAB36** or **-CAB120**.
6. DIN connectors require **-C** SPDT circuit.
7. Options **-10A**, **-G** or **-RD** cannot be combined.
8. Ingress Protection is available only with **-FL**, **-FLS** or **-CAB** Electrical Termination choices. Ingress Protection requires Fixed Set Point **-FS**.
9. Set Point must be within Pressure Range selected in Step 1.

Table 1 — Pressure Range Codes

Pressure Range Code	Pressure Range	Accuracy*	Average Deadband**
10	4-8 psi (0.28-0.55 bar)	±0.35 psi (0.024 bar) +2% of setting	1.50 psi (0.14 bar) +7% of setting
20	7-30 psi (0.48-2.07 bar)	±0.8 psi (0.055 bar) +2% of setting	3 psi (0.21 bar) +8% of setting
30	25-100 psi (1.7-6.9 bar)	±2.0 psi (0.138 bar) +2% of setting	5 psig (0.28 bar) +10% of setting

* Accuracy and set point of units may change due to the effects of temperature.

** These numbers are for the standard microswitch. With either the **-SP** or **-10A** option, the values are typically 20% greater than those listed. With the **-RD** option, the values will be typically 25% less than those listed. In certain applications deadband can be tailored and controlled to customer specifications. Consult factory for details.

PS61 – OEM Subminiature Pressure Switch

- ▶ 15 to 3000 psi (1 to 207 bar)
- ▶ Exceptional Size-to-Pressure-Range Ratio
- ▶ Adjustable or Factory Set
- ▶ Perfect for Demanding OHV Applications

These compact pressure switches are designed for OEM applications. They are equipped with high proof pressure capabilities for demanding hydraulic applications such as forklifts, scissor lifts, and off road equipment.

Specifications

Switch*	100 VA Max.
Repeatability	See Table 1
Wetted Parts	
Diaphragm	Nitrile, (optional Low Temperature Nitrile (LTN), EPDM or Viton®)
Fitting	Zinc-Plated Steel (optional 316 Stainless Steel)
Electrical Termination	Exposed Terminals IP00; IP option IP66
Deadband	See Table 1
Proof Pressure	6000 psi (414 bar)
Burst Pressure	9000 psi (600 bar)
Approvals	CE (limits switch voltage to 42 VDC)
Weight, Approximate	Steel: 0.14 lbs. (0.06 kg)

* Gold contacts (option G) may be required for less than 12 VDC and 20 mA.

Recommended Operating Temperature Limits

Diaphragm Material	Range
Nitrile	15°F to 230°F (-9°C to +110°C)
Viton®	0°F to 230°F (-18°C to +110°C)
EPDM	-10°F to +230°F (-23°C to +110°C)
LTN	-40°F to +110°F (-40°C to +230°C)

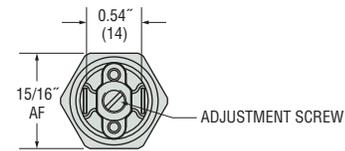
Note:

- Switches may function below the cold temperature limit but the set points and deadband will increase. Consult factory for details.
- Performance dependant on set point and media viscosity.

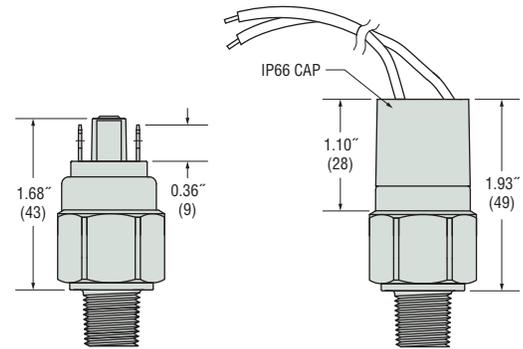


Dimensions

1/4" Spades



Flying Leads with IP Option



How To Order

Use the **Bold** characters from the chart below to construct a product code. Please reference Notes.



1 Pressure Range Code

Insert Pressure Range Code from Table 1, below.

2 Pressure Fitting¹

12L14 Zinc-Plated Steel

- 2MNZ = 1/8" NPTM 12L14
- 4MNZ = 1/4" NPTM 12L14
- 2MGZ = 1/8" BSPM 12L14 (G type)
- 4MGZ = 1/4" BSPM 12L14 (G type)
- 4MSZ = 7/16"-20 SAE Male
- 6MSZ = 9/16"-18 SAE Male
- 8MSZ = 3/4"-16 SAE Male
- M10Z = M10 x 1.0, Straight
- M10TZ = M10 x 1.0, Tapered
- M12Z = M12 x 1.5, Straight

316 Stainless Steel

- 2MNS = 1/8" NPTM
- 4MNS = 1/4" NPTM
- 2MGS = 1/8" BSPM (G type)
- 4MGS = 1/4" BSPM (G type)
- 4MSS = 7/16"-20 SAE Male
- 6MSS = 9/16"-18 SAE Male

3 Circuit

- A = SPST/N.O.
- B = SPST/N.C.

4 Electrical Termination

- SP = Spade Terminals (standard)
- TS = Terminal Screws
- FLXX = Flying Leads²
- FLSXX = Flying Leads w/PVC Shrink Tubing²
- CABXX = 18 AWG PVC Cable³

5 Options

- V = Viton® Diaphragm
- E = EPDM Diaphragm
- LTN = LTN Diaphragm
- H = ECOH Diaphragm
- G = Gold Contacts
(for loads less than 12 mA @ 12 VDC)
- IP = Ingress Protection⁴
- IPA = Removable Silicone Seal for
Set Point Adjustment⁵
- R = Restrictor (low damping coefficient) Brass
- SR = Spiral Restrictor (high damping coefficient)
12L14 Steel w/Black Oxide Finish⁶
- OF = Oil Free Cleaned (requires SS housing)
- RB = Rubber Boot (shipped loose)
- WF = Weather Pack Connector, Female
- WM = Weather Pack Connector, Male
- DE = Deutsch Connector, Male, DT04 Series

6 Fixed Set Point (optional)

- A. Specify set point -FS
(in PSI or BAR, see example)⁷
- B. Set Point Actuation
R on Rising Pressure
F on Falling Pressure
Example: -FS3BARF for 3 BAR Falling
or -FS60PSIR for 60 PSI Rising

Notes:

1. Other fittings available. Consult factory.
2. 18" is standard. Specify lead length in inches (max. 48"). e.g. -FL18 or -FLS30.
3. 36" is minimum. Specify cable length in inches. e.g. -CAB36 or -CAB120.
4. Ingress Protection is available only with -FL, -FLS or -CAB Electrical Termination choices.
5. IPA protection is available only with -FL or -FLS.
6. -SR will result in wider deadbands and slower response times.
7. Set Point must be within Pressure Range selected in Step 1.

Table 1 — Pressure Range Codes

Pressure Range Code	Pressure Range	Accuracy*	Average Deadband**
11	15-60 psi (1-4 bar)	±1.5 psi (0.10 bar) +3% of setting	3 psi (0.21 bar) +5% of setting
15	40-150 psi (3-10 bar)	±2.5 psi (0.17 bar) +3% of setting	5 psig (0.34 bar) +6% of setting
19	75-275 psi (5.2-18.9 bar)	±3.75 psi (0.26 bar) +3% of setting	7 psig (0.48 bar) +8% of setting
25	150-500 psi (10.3-34.5 bar)	±5 psi (0.34 bar) +3% of setting	10 psi (0.69 bar) +10% of setting
29	275-800 psi (19.0-55.2 bar)	±8 psi (0.55 bar) +3% of setting	15 psi (1.03 bar) +11% of setting
35	400-1100 psi (27.6-76 bar)	±13 psi (0.90 bar) +3% of setting	30 psi (2.07 bar) +12% of setting
50	1000-3000 psi (69-207 bar)	±35 psi (2.41 bar) +3% of setting	70 psi (4.83 bar) +14% of setting

* Accuracy and set point of units may change due to the effects of temperature.

** In certain applications deadband can be tailored and controlled to customer specifications. Consult factory for details.

PS62 – OEM Subminiature Pressure Switch

- ▶ 15 to 600 psi (1 to 41 bar)
- ▶ Exceptional Size-to-Pressure-Range Ratio
- ▶ Adjustable or Factory Set
- ▶ Minimal Set Point Change at Low Temperature Extremes

These compact pressure switches are designed for medium pressure OEM applications. They offer all the performance of our proven PS61 model with the low temperature capability of Kapton®.

Specifications

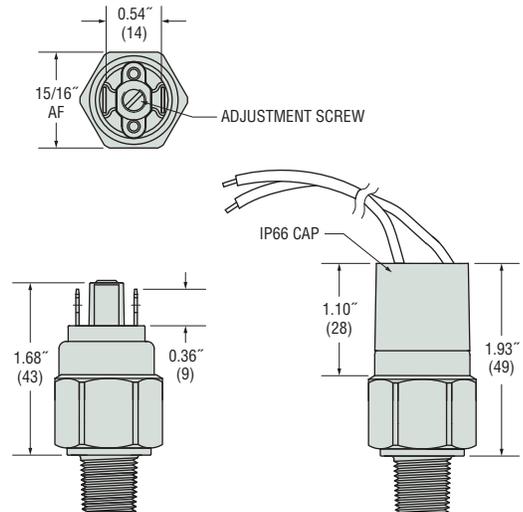
Operating Temperature	-40°F to +230°F (-40°C to +110°C)
Switch*	100 VA Max.
Repeatability	See Table 1
Wetted Parts	
Housing	Zinc-Plated Steel (optional 316L Stainless Steel)
Diaphragm	Kapton® (polyimide)
O-Ring	Nitrile (other materials available)
Electrical Termination	Exposed Terminals IP00; IP option IP66
Deadband	See Table 1
Proof Pressure	3000 psi (207 bar)
Burst Pressure	6000 psi (414 bar)
Approvals	CE (limits switch voltage to 42 VDC)
Weight, Approximate	Steel: 0.14 lbs. (0.06 kg)

* Gold contacts (option G) may be required for less than 12 VDC and 20 mA.



CE

Dimensions



How To Order

Use the **Bold** characters from the chart below to construct a product code. Please reference Notes.



① Pressure Range Code

Insert Pressure Range Code from Table 1, below.

② Pressure Fitting¹

12L14 Zinc-Plated Steel

- 2MNZ = 1/8" NPTM 12L14
- 4MNZ = 1/4" NPTM 12L14
- 2MGZ = 1/8" BSPM 12L14 (G type)
- 4MGZ = 1/4" BSPM 12L14 (G type)
- 4MSZ = 7/16"-20 SAE Male
- 6MSZ = 9/16"-18 SAE Male
- M10Z = M10 x 1.0, Straight
- M14Z = M14 x 1.5, Straight

316L Stainless Steel

- 2MNS = 1/8" NPTM
- 4MNS = 1/4" NPTM
- 2MGS = 1/8" BSPM (G type)
- 4MGS = 1/4" BSPM (G type)
- 4MSS = 7/16"-20 SAE Male
- 6MSS = 9/16"-18 SAE Male

③ Circuit

- A = SPST/N.O.
- B = SPST/N.C.

④ Electrical Termination

- SP = Spade Terminals (standard)
- TS = Terminal Screws
- FLXX = Flying Leads²
- FLSXX = Flying Leads w/PVC Shrink Tubing²
- CABXX = 18 AWG PVC Cable³

⑤ Options

- G = Gold Contacts
(for loads less than 12 mA @ 12 VDC)
- IP = Ingress Protection⁴
- IPA = Removable Silicone Seal for Set Point Adjustment⁵
- R = Restrictor (low damping coefficient) Brass
- SR = Spiral Restrictor (high damping coefficient) 12L14 Steel w/Black Oxide Finish⁶
- OF = Oil Free Cleaned (requires SS housing)
- RB = Rubber Boot (shipped loose)
- WF = Weather Pack Connector, Female
- WM = Weather Pack Connector, Male
- DE = Deutsch Connector, Male, DT04 Series

⑥ Fixed Set Point (optional)

- A. Specify set point **-FS**
(in PSI or BAR, see example)⁷
 - B. Set Point Actuation
 - R** on Rising Pressure
 - F** on Falling Pressure
- Example: **-FS3BARF** for 3 BAR Falling
or **-FS60PSIR** for 60 PSI Rising

Notes:

1. Other fittings available. Consult factory.
2. 18" is standard. Specify lead length in inches (max. 48"). e.g. **-FL18** or **-FLS30**.
3. 36" is minimum. Specify cable length in inches. e.g. **-CAB36** or **-CAB120**.
4. Ingress Protection is available only with **-FL**, **-FLS** or **-CAB** Electrical Termination choices.
5. IPA protection is available only with **-FL** or **-FLS**.
6. **-SR** will result in wider deadbands and lower response time.
7. Set Point must be within Pressure Range selected in Step 1.

Table 1 — Pressure Range Codes

Pressure Range Code	Pressure Range	Accuracy*	Average Deadband**
10	15-60 psi (1-4 bar)	±1.5 psi (0.10 bar) +4% of setting	3 psi (0.21 bar) +6% of setting
20	40-150 psi (3-10 bar)	±2.5 psi (0.17 bar) +4% of setting	5 psig (0.34 bar) +7% of setting
30	75-275 psi (5.2-18.9 bar)	±3.75 psi (0.26 bar) +4% of setting	7 psig (0.48 bar) +9% of setting
40	150-600 psi (10.3-41.4 bar)	±5 psi (0.34 bar) +4% of setting	10 psi (0.69 bar) +11% of setting

* Accuracy and set point of units may change due to the effects of temperature.

** In certain applications deadband can be tailored and controlled to customer specifications. Consult factory for details.

PS71 – General Purpose Mini Pressure Switches

▶ 10 to 5000 psi (0.7 to 344 bar)

These versatile general purpose switches with snap action microswitches can be used in a wide range of hydraulic and pneumatic applications. Their proven piston/diaphragm design offers outstanding accuracy over a very wide pressure range with an outstanding 6000 psi proof pressure. Their modular construction allows Gems to offer a large number of standard pressure fittings in two materials as well as numerous electrical ratings and terminations. Users can easily configure this model to meet their needs.

Specifications

Switch	SPST; SPDT
Repeatability	See Table 1
Wetted Parts	
Diaphragm	Nitrile (optional EPDM, Viton® or Neoprene)
Fitting	Zinc-Plated Steel (Optional 316 SS)
Electrical Termination	DIN 43650A IP65; Spade Terminals IP00; Flying Leads IP65; Conduit with Flying Leads IP65; IP option IP66
Proof Pressure	6000 psi (414 bar)
Burst Pressure	9000 psi (600 bar)
Approvals	CE, UL Approved units available
Weight, Approximate	0.4 lbs. (0.15 kg)

Recommended Operating Temperature Limits

Diaphragm Material	Options Selected		
	No option, -10A, -SP or -RD	-RD or -RD and -G	-SP or -10A
Nitrile	15°F to 185°F (-9°C to +85°C)	15°F to 250°F (-9°C to +121°C)	15°F to 212°F (-9°C to +100°C)
Viton®	0°F to 185°F (-18°C to +85°C)	0°F to 250°F (-18°C to +121°C)	0°F to 212°F (-18°C to +100°C)
EPDM	-10°F to +185°F (-23°C to +85°C)	-10°F to +250°F (-23°C to +121°C)	-10°F to +212°F (-23°C to +100°C)
Neoprene	-10°F to +185°F (-23°C to +85°C)	-10°F to +250°F (-23°C to +121°C)	-10°F to +212°F (-23°C to +100°C)

Note: Switches may function below the cold temperature limit but the set points and deadband will increase. Consult factory for details.

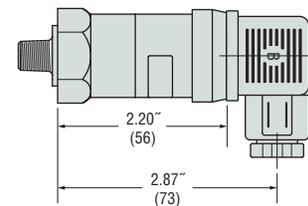
Electrical Switch Ratings

Options Selected	AC	DC
No option or -RD	5 amps @ 125/250 Volts	5 amps resistive, 3 amps inductive @ 28 Volts
-G only or -RD with -G	1 amp @ 125 Volts	1 amp resistive, 0.5 amp inductive @ 28 Volts
-10A only or -SP without -G	10.1 amps @ 125/250 Volts	—
-SP with -G	2 amps @ 125/250 Volts	—

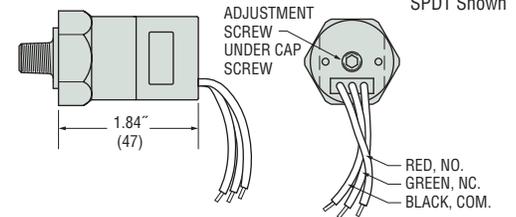


Dimensions

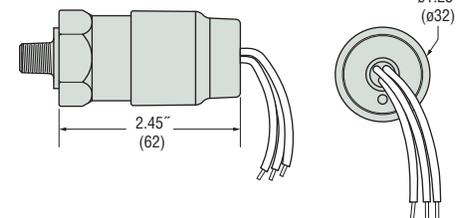
DIN 43650A with Cable Clamp



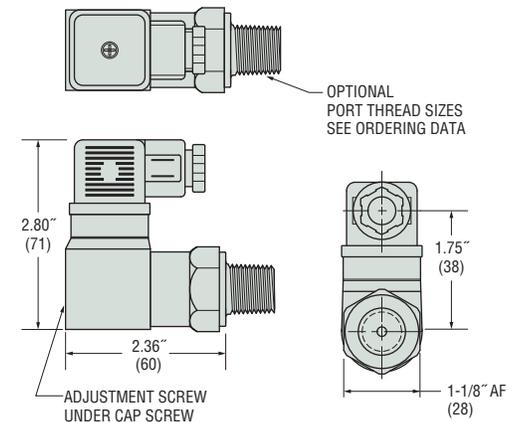
Flying Lead



IP66 Option



Right Angle DIN 43650A with Cable Clamp



How To Order

Use the **Bold** characters from the chart below to construct a product code. Please reference Notes.



1 Pressure Range Code

Insert Pressure Range Code from Table 1, below.

2 Pressure Fitting¹

12L14 Zinc-Plated Steel

- 2MNZ = 1/8" NPTM
- 4MNZ = 1/4" NPTM
- 8MNZ = 1/2" NPTM
- 2MGZ = 1/8" BSPM (G type)
- 4MGZ = 1/4" BSPM (G type)
- 4MSZ = 7/16"-20 SAE Male
- 6MSZ = 9/16"-18 SAE Male
- M10Z = M10 x 1.0, Straight
- M12Z = M12 x 1.5, Straight
- M14Z = M14 x 1.5, Straight

316 Stainless Steel

- 2MNS = 1/8" NPTM
- 4MNS = 1/4" NPTM
- 2MGS = 1/8" BSPM (G type)
- 4MGS = 1/4" BSPM (G type)

3 Circuit

- A = SPST/N.O.
- B = SPST/N.C.
- C = SPDT

4 Electrical Termination

- SP = Spade Terminals²
- FLXX = Flying Leads³
- FLSXX = Flying Leads w/PVC Shrink Tubing³
- ELXX = 1/2" NPT Male Conduit w/Flying Leads⁴
- CABXX = 18 AWG PVC Cable⁵
 - H = DIN 43650A Male Half Only⁶
 - HR = Right Angle DIN 43650A Male Half Only⁶
 - HC = DIN 43650A 9mm Cable Clamp⁶
 - HCR = Right Angle DIN 43650A 9mm Cable Clamp⁶
 - HN = DIN 43650A with 1/2" Female NPT Conduit⁶
 - HNR = Right Angle DIN 43650A with 1/2" Female NPT Conduit⁶

5 Options⁷

- V = Viton[®] Diaphragm
- E = EPDM Diaphragm
- N = Neoprene Diaphragm
- 10A = 10A @ 125/250 VAC Max. Rating
- G = Gold Contacts
(for loads less than 12 mA @ 12 VDC)
- RD = Reduced Differential
(25% reduction typical)
- IP = Ingress Protection⁸
- OF = Oil Free Cleaned⁹
- R = Restrictor (low damping coefficient) Brass
- SR = Spiral Restrictor (high damping coefficient)
300 Series Stainless Steel¹⁰
- WF = Weather Pack Connector, Female
- WM = Weather Pack Connector, Male
- DE = Deutsch Connector, Male, DT04 Series

6 Fixed Set Point (optional)

- A. Specify set point **-FS**
(in PSI or BAR, see example)¹¹
- B. Set Point Actuation
R on Rising Pressure
F on Falling Pressure
Example: **-FS2BARF** for 2 BAR Falling
or **-FS20PSIR** for 20 PSI Rising

Notes:

1. Other fittings available. Consult factory.
2. 20% increase in deadband typical.
3. 1/8" is standard. Specify lead length in inches (max. 48"). e.g. **-FL18** or **-FLS30**.
4. 1/8" is standard. Specify lead length in inches (max. 48"). e.g. **-EL18** or **-EL30**.
5. 36" is minimum. Specify cable length in inches. e.g. **-CAB36** or **-CAB120**.
6. DIN connectors require **-C** SPDT circuit.
7. Options **-10A**, **-G** or **-RD** cannot be combined.
8. Ingress Protection is available only with **-FL**, **-FLS** or **-CAB** Electrical Termination choices. Ingress Protection requires Fixed Set Point **-FS**.
9. Requires stainless steel housing.
10. **-SR** will result in wider deadbands and slower response time.
11. Set Point must be within Pressure Range selected in Step 1.

Table 1 — Pressure Range Codes

Pressure Range Code	Pressure Range	Accuracy*	Average Deadband**
10	10-30 psi (0.7-2.1 bar)	±1.5 psi (0.103 bar) +2% of setting	3.5 psi (0.28 bar) +11% of setting
20	25-75 psi (1.7-5.2 bar)	±2.5 psi (0.172 bar) +2% of setting	3.5 psi (0.28 bar) +11% of setting
30	65-300 psi (4.5-20.7 bar)	±5.0 psi (0.345 bar) +2% of setting	20 psig (1.38 bar) +11% of setting
40	250-1000 psi (17.2-69.0 bar)	±15 psi (1.03 bar) +2% of setting	45 psig (3.10 bar) +12% of setting
50	1000-3000 psi (69-206.8 bar)	±30 psi (2.06 bar) +3% of setting	70 psig (4.83 bar) +12% of setting
60	2500-5000 psi (172.4-344.7 bar)	±50 psi (3.45 bar) +4% of setting	140 psi (9.65 bar) +13% of setting

* Accuracy and set point of units may change due to the effects of temperature.

** These numbers are for the standard microswitch. With either the **-SP** or **-10A** option, the values are typically 20% greater than those listed. With the **-RD** option, the values will be typically 25% less than those listed. In certain applications deadband can be tailored and controlled to customer specifications. Consult factory for details.

PS72 – General Purpose Mini Pressure Switches

- ▶ 10 to 750 psi (0.7 to 51.7 bar)
- ▶ Adjustable or Factory Set
- ▶ Minimal Set Point Change at Low Temperature Extremes

These versatile microswitch based pressure switches are designed for medium pressure OEM applications. They offer all the performance of our proven PS71 model with the low temperature capability of Kapton®.

Specifications

Switch	SPST; SPDT
Repeatability	See Table 1
Wetted Parts	
Housing	Zinc-Plated Steel (316L stainless steel and brass available)
Diaphragm	Kapton® (polyimide)
O-Ring	Nitrile (other materials available)
Electrical Termination	DIN 43650A IP65; Spade Terminals IP00; Flying Leads IP65; Conduit with Flying Leads IP65; IP option IP66
Proof Pressure	3000 psi (207 bar)
Burst Pressure	6000 psi (414 bar)
Approvals	CE, UL Approved units available
Weight, Approximate	Steel: 0.4 lbs. (0.15 kg)

Recommended Operating Temperature Limits

Options Selected	Temperature
-RD	-40°F to +250°F (-40°C to +121°C)
No Options	-40°F to +185°F (-40°C to +85°C)
-SP or -10A	-40°F to +212°F (-40°C to +100°C)

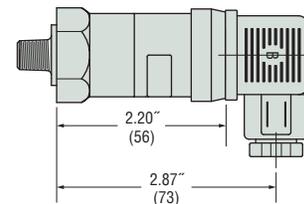
Electrical Switch Ratings

Options Selected	AC	DC
No option or -RD	5 amps @ 125/250 Volts	5 amps resistive, 3 amps inductive @ 28 Volts
-G only or -RD with -G	1 amp @ 125 Volts	1 amp resistive, 0.5 amp inductive @ 28 Volts
-10A only or -SP without -G	10.1 amps @ 125/250 Volts	—
-SP with -G	2 amps @ 125/250 Volts	—

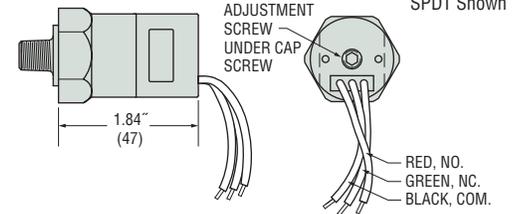


Dimensions

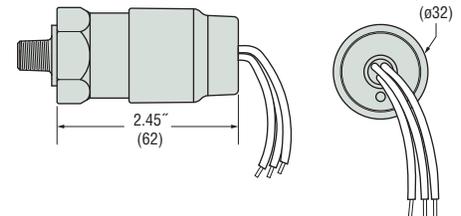
DIN 43650A with Cable Clamp



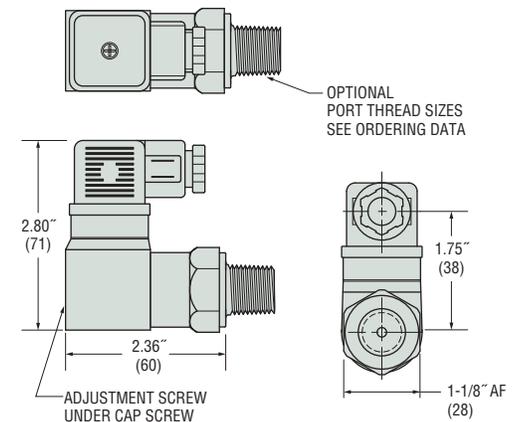
Flying Lead



IP66 Option



Right Angle DIN 43650A with Cable Clamp



How To Order

Use the **Bold** characters from the chart below to construct a product code. Please reference Notes.



1 Pressure Range Code

Insert Pressure Range Code from Table 1, below.

2 Pressure Fitting¹

12L14 Zinc-Plated Steel

- 2MNZ = 1/8" NPTM
- 4MNZ = 1/4" NPTM
- 2MGZ = 1/8" BSPM (G type)
- 4MGZ = 1/4" BSPM (G type)
- 4MSZ = 7/16"-20 SAE Male
- 6MSZ = 9/16"-18 SAE Male

316 Stainless Steel

- 2MGS = 1/8" BSPM (G type)
- 4MNS = 1/4" NPTM
- 4MGS = 1/4" BSPM (G type)

3 Circuit

- A = SPST/N.O.
- B = SPST/N.C.
- C = SPDT

4 Electrical Termination

- SP = Spade Terminals²
- FLXX = Flying Leads³
- FLSXX = Flying Leads w/PVC Shrink Tubing³
- ELXX = 1/2" NPT Male Conduit w/Flying Leads⁴
- CABXX = 18 AWG PVC Cable⁵
 - H = DIN 43650A Male Half Only⁶
 - HR = Right Angle DIN 43650A Male Half Only⁶
 - HC = DIN 43650A 9mm Cable Clamp⁶
 - HCR = Right Angle DIN 43650A 9mm Cable Clamp⁶
 - HN = DIN 43650A with 1/2" Female NPT Conduit⁶
 - HNR = Right Angle DIN 43650A with 1/2" Female NPT Conduit⁶

5 Options⁷

- 10A = 10A @ 125/250 VAC Max. Rating
- G = Gold Contacts (for loads less than 12 mA @ 12 VDC)
- RD = Reduced Differential (25% reduction typical)
- IP = Ingress Protection⁸
- OF = Oil Free Cleaned⁹
- R = Restrictor (low damping coefficient) Brass
- SR = Spiral Restrictor (high damping coefficient) 300 Series Stainless Steel¹⁰
- WF = Weather Pack Connector, Female
- WM = Weather Pack Connector, Male
- DE = Deutsch Connector, Male, DT04 Series

6 Fixed Set Point (optional)

- A. Specify set point **-FS** (in PSI or BAR, see example)¹¹
 - B. Set Point Actuation
 - R** on Rising Pressure
 - F** on Falling Pressure
- Example: **-FS2BARF** for 2 BAR Falling or **-FS20PSIR** for 20 PSI Rising

Notes:

1. Other fittings available. Consult factory.
2. Requires **-10A** or **-G** option. (20% increase in deadband typical)
3. 1/8" is standard. Specify lead length in inches (max. 48"). e.g. **-FL18** or **-FLS30**.
4. 1/8" is standard. Specify lead length in inches (max. 48"). e.g. **-EL18** or **-EL30**.
5. 36" is minimum. Specify cable length in inches. e.g. **-CAB36** or **-CAB120**.
6. DIN connectors require **-C** SPDT circuit.
7. Options **-10A**, **-G** or **-RD** cannot be combined.
8. Ingress Protection is available only with **-FL**, **-FLS** or **-CAB** Electrical Termination choices. Ingress Protection requires Fixed Set Point **-FS**.
9. Requires stainless steel housing.
10. **-SR** will result in wider deadbands and slower response times.
11. Set Point must be within Pressure Range selected in Step 1.

Table 1 — Pressure Range Codes

Pressure Range Code	Pressure Range	Accuracy	Average Deadband*
10	10-30 psi (0.7-2.1 bar)	±1.5 psi (0.103 bar) +3% of setting	3.5 psi (0.28 bar) +12% of setting
20	25-75 psi (1.7-5.2 bar)	±2.5 psi (0.172 bar) +3% of setting	3.5 psi (0.28 bar) +12% of setting
30	65-300 psi (4.5-20.7 bar)	±5.0 psi (0.345 bar) +3% of setting	20 psig (1.38 bar) +12% of setting
40	250-750 psi (17.2-51.7 bar)	±15 psi (1.03 bar) +3% of setting	45 psig (3.10 bar) +13% of setting

* These numbers are for the standard microswitch. With either the **-SP** or **-10A** option, the values are typically 20% greater than those listed. With the **-RD** option, the values will be typically 25% less than those listed. In certain applications deadband can be tailored and controlled to customer specifications. Consult factory for details.

PS75 – Rugged Cylindrical Pressure Switch

- ▶ Side Mounted DIN Connection
- ▶ Top Mounted Electrical Connection
- ▶ 5 to 6000 psi (0.35 to 414 bar)
- ▶ Wear Disc Design for Longer Life

Gems PS75 Series have all metal surfaces for overload stops and deliver reliable operation under extremely high pressure surges. They are designed with a wear disc and cushioning ring for increased life. The switches use a piston/diaphragm design, which combine the high proof pressure of piston technology with the sensitivity of a diaphragm design. They can be field or factory adjusted.

Specifications

Switch	SPST; SPDT
Repeatability	See Table 1
Wetted Parts	
Diaphragm	Nitrile (optional Viton®, Neoprene or EPDM)
Fitting	Zinc-Plated Steel (optional 316 Stainless Steel)
Housing	Brass or Zinc-Plated Steel (optional 316 Stainless Steel)
Electrical Termination	DIN 43650A IP65; Conduit with Flying Leads IP65; Flying Leads IP65
Proof Pressure	7500 psi (517 bar) except range 10: 500 psi (35 bar)
Burst Pressure	9000 psi (600 bar)
Approvals	CE, UL Approved units available
Weight, Approximate	Steel: 0.6 lbs. (0.27 kg)

Recommended Operating Temperature Limits

Diaphragm Material	Circuit Codes	
	-A, -B, -C	-A, -B, -C with -RD option
Nitrile (Std)	15°F to 185°F (-9°C to +85°C)	15°F to 250°F (-9°C to +121°C)
Viton®	0°F to 185°F (-18°C to +85°C)	0°F to 250°F (-18°C to +121°C)
EPDM	-10°F to +185°F (-23°C to +85°C)	-10°F to +250°F (-23°C to +121°C)
Neoprene	-10°F to +185°F (-23°C to +85°C)	-10°F to +250°F (-23°C to +121°C)

Note: Switches may function below the cold temperature limit but the set points and deadband will increase. Consult factory for details.

Electrical Switch Ratings

Circuit Code	AC	DC
-A, -B, -C¹	5 amps @ 125/250 Volts	5 amps resistive, 3 amps inductive @ 28 Volts
-A, -B, -C²	1 amp @ 125 Volts	1 amp resistive, 0.5 amp inductive @ 28 Volts

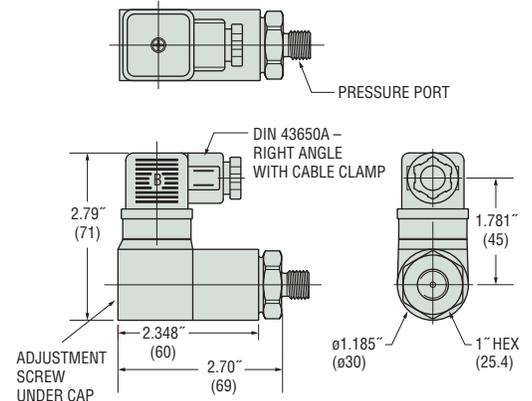
Notes:

1. Without Gold Contacts Option (-G).
2. With Gold Contacts Option (-G).

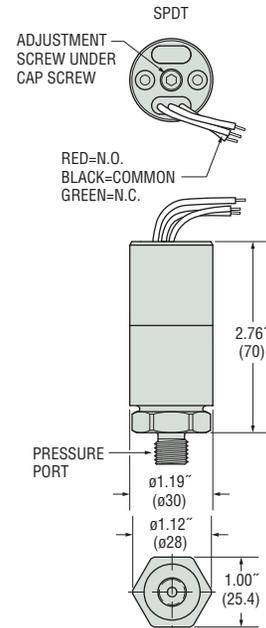


Dimensions

Right Angle DIN 43650A with Cable Clamp



Flying Lead



How To Order

Use the **Bold** characters from the chart below to construct a product code. Please reference Notes.



1 Pressure Range Code

Insert Pressure Range Code from Table 1, below.

2 Pressure Fitting¹

12L14 Zinc-Plated Steel

- 2MNZ = 1/8" NPTM
- 4MNZ = 1/4" NPTM
- 4FNZ = 1/4" NPTF
- 4MGZ = 1/4" BSPM (G type)
- 4FGZ = 1/4" BSPF (G type)
- 4MSZ = 7/16"-20 SAE Male
- 6MSZ = 9/16"-18 SAE Male
- 4SSZ = 7/16"-20 SAE Male Swivel

316 Stainless Steel

- 4MNS = 1/4" NPTM
- 4MGS = 1/4" BSPM (G type)
- 4FGS = 1/4" BSPF (G type)
- 4FNS = 1/4" NPTF
- 6MSS = 9/16"-18 SAE Male

3 Circuit

- A = SPST/N.O.
- B = SPST/N.C.
- C = SPDT

4 Electrical Termination

- FLXX = Flying Leads²
- FLSXX = Flying Leads w/PVC Shrink Tubing²
- ELXX = 1/2" NPT Male Conduit w/Flying Leads³
 - H = DIN 43650A Male Half Only⁴
 - HR = Right Angle DIN 43650A Male Half Only⁴
 - HC = DIN 43650A 9mm Cable Clamp⁴
 - HCR = Right Angle DIN 43650A 9mm Cable Clamp⁴
 - HN = DIN 43650A with 1/2" Female NPT Conduit⁴
 - HNR = Right Angle DIN 43650A with 1/2" Female NPT Conduit⁴

5 Options

- V = Viton[®] Diaphragm
- N = Neoprene Diaphragm
- E = EPDM Diaphragm
- G = Gold Contacts
(for loads less than 12 mA @ 12 VDC)
- RD = Reduced Differential (25% reduction typical)
- OF = Oil Free Cleaned⁵
- R = Restrictor (low damping coefficient) Brass
- SR = Spiral Restrictor (high damping coefficient)
300 Series Stainless Steel⁶
- WF = Weather Pack Connector, Female
- WM = Weather Pack Connector, Male
- DE = Deutsch Connector, Male, DT04 Series

6 Fixed Set Point (optional)

- A. Specify set point **-FS** (in PSI or BAR, see example)⁷
 - B. Set Point Actuation
 - R** on Rising Pressure
 - F** on Falling Pressure
- Example: **-FS1BARF** for 1 BAR Falling
or **-FS20PSIR** for 20 PSI Rising

Notes:

1. Manifold mounts available. Consult factory.
2. 18" is standard. Specify lead length in inches (max. 48"). e.g. **-FL18** or **-FL30**.
3. 18" is standard. Specify lead length in inches (max. 48"). e.g. **-EL18** or **-EL30**.
4. DIN connectors require **-C** SPDT circuit.
5. Requires stainless steel pressure fitting.
6. **-SR** will result in wider deadbands and slower response times.
7. Set Point must be within Pressure Range selected in Step 1.

Table 1 — Pressure Range Codes

For Circuit Codes -A, -B and -C

Pressure Range Code	Pressure Range	Accuracy*	Average Deadband**
10	5-25 psi (0.35-1.7 bar)	±1.0 psi (0.07 bar) +2% of setting	3 psi (0.21 bar) +5% of setting
20	15-75 psi (1.0-5.2 bar)	±2.5 psi (0.17 bar) +2% of setting	5 psig (0.34 bar) +10% of setting
30	50-150 psi (3.5-10.3 bar)	±6 psi (0.41 bar) +2% of setting	15 psig (1.03 bar) +13% of setting
40	150-650 psi (10.3-44.8 bar)	±15 psi (1.03 bar) +2% of setting	25 psi (1.72 bar) +14% of setting
50	500-1750 psi (34.5-121 bar)	±25 psi (1.72 bar) +2% of setting	55 psi (3.79 bar) +15% of setting
60	1000-3500 psi (69-241 bar)	±45 psi (3.10 bar) +3% of setting	100 psi (6.89 bar) +16% of setting
70	2500-6000 psi (172-414 bar)	±80 psi (5.51 bar) +4% of setting	200 psi (13.8 bar) +17% of setting

* Accuracy and set point of units may change due to the effects of temperature.

** In certain applications deadband can be tailored and controlled to customer specifications. Consult factory for details.

PS76 – Rugged Cylindrical Pressure Switch

- ▶ Side Mounted DIN Connection
- ▶ Top Mounted Electrical Connection
- ▶ 15 to 1750 psi (1 to 121 bar)
- ▶ Minimal Set Point Change at Low Temperature Extremes

These versatile microswitch based pressure switches are designed for high pressure OEM applications. They offer all the performance of our proven PS75 model with the low temperature capability of Kapton®.

Specifications

Switch	SPST, SPDT
Repeatability	See Table 1
Wetted Parts	
Port Fitting	Zinc-Plated Steel (316L Stainless Steel available)
Diaphragm	Kapton® (polyimide)
O-Ring	Nitrile (other materials available)
Electrical Termination	DIN 43650A IP65; Conduit with Flying Leads IP65; Flying Leads IP65
Proof Pressure	4500 psi (310 bar) except Range 10: 500 psi (35 bar)
Burst Pressure	6000 psi (414 bar)
Approvals	CE, UL Approved units available
Weight, Approximate	Steel: 0.6 lbs. (0.27 kg)

Recommended Operating Temperature Limits

Diaphragm Material	Circuit Codes	
	-A, -B, -C	-A, -B, -C with -RD option
Teflon® Coated Kapton®	-40°F to +185°F (-40°C to +85°C)	-40°F to +250°F (-40°C to +121°C)

Electrical Switch Ratings

Circuit Code	AC	DC
-A, -B, -C ¹	5 amps @ 125/250 Volts	5 amps resistive, 3 amps inductive @ 28 Volts
-A, -B, -C ²	1 amp @ 125 Volts	1 amp resistive, 0.5 amp inductive @ 28 Volts

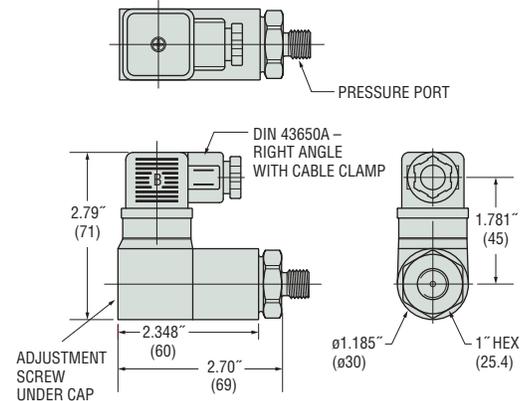
- Notes:
- Without Gold Contacts Option (-G).
 - With Gold Contacts Option (-G).



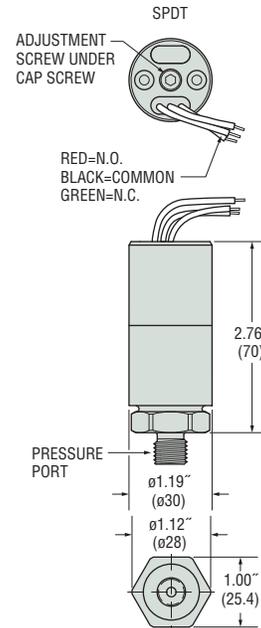
UL US

Dimensions

Right Angle DIN 43650A with Cable Clamp

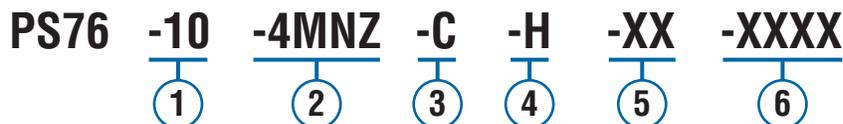


Flying Lead



How To Order

Use the **Bold** characters from the chart below to construct a product code. Please reference Notes.



1 Pressure Range Code

Insert Pressure Range Code from Table 1, below.

2 Pressure Fitting¹

12L14 Zinc-Plated Steel

- 2MNZ = 1/8" NPTM
- 4MNZ = 1/4" NPTM
- 4FNZ = 1/4" NPTF
- 4MGZ = 1/4" BSPM (G type)
- 4FGZ = 1/4" BSPF (G type)
- 4MSZ = 7/16"-20 SAE Male
- 6MSZ = 9/16"-18 SAE Male
- 4SSZ = 7/16"-20 SAE Male Swivel

316L Stainless Steel

- 4MNS = 1/4" NPTM
- 4MGS = 1/4" BSPM (G type)
- 4FGS = 1/4" BSPF (G type)
- 6MSS = 9/16"-18 SAE Male

3 Circuit

- A = SPST/N.O.
- B = SPST/N.C.
- C = SPDT

4 Electrical Termination

- FLXX = Flying Leads²
- FLSXX = Flying Leads w/PVC Shrink Tubing²
- ELXX = 1/2" NPT Male Conduit w/Flying Leads³
 - H = DIN 43650A Male Half Only⁴
 - HR = Right Angle DIN 43650A Male Half Only⁴
 - HC = DIN 43650A 9mm Cable Clamp⁴
 - HCR = Right Angle DIN 43650A 9mm Cable Clamp⁴
 - HN = DIN 43650A with 1/2" Female NPT Conduit⁴
 - HNR = Right Angle DIN 43650A with 1/2" Female NPT Conduit⁴

5 Options

- G = Gold Contacts (for loads less than 12 mA @ 12 VDC)
- RD = Reduced Differential (25% reduction typical)
- OF = Oil Free Cleaned⁵
- R = Restrictor (low damping coefficient) Brass
- SR = Spiral Restrictor (high damping coefficient) 300 Series Stainless Steel⁶
- WF = Weather Pack Connector, Female
- WM = Weather Pack Connector, Male
- DE = Deutsch Connector, Male, DT04 Series

6 Fixed Set Point (optional)

- A. Specify set point **-FS** (in PSI or BAR, see example)⁷
 - B. Set Point Actuation
 - R** on Rising Pressure
 - F** on Falling Pressure
- Example: **-FS1BARF** for 1 BAR Falling
or **-FS20PSIR** for 20 PSI Rising

Notes:

1. Manifold mounts available. Consult factory.
2. 18" is standard. Specify lead length in inches (max. 48"). e.g. **-FL18** or **-FL30**.
3. 18" is standard. Specify lead length in inches (max. 48"). e.g. **-EL18** or **-EL30**.
4. DIN connectors require **-C** SPDT circuit.
5. Requires stainless steel pressure fitting.
6. **-SR** will result in wider deadbands and slower response times.
7. Set Point must be within Pressure Range selected in Step 1.

Table 1 — Pressure Range Codes

For Circuit Codes -A, -B and -C

Pressure Range Code	Pressure Range	Accuracy*	Average Deadband**
10	15-75 psi (1.0-5.2 bar)	±2.5 psi (0.17 bar) +3% of setting	5 psig (0.34 bar) +11% of setting
20	50-150 psi (3.5-10.3 bar)	±6 psi (0.41 bar) +3% of setting	15 psig (1.03 bar) +14% of setting
30	150-650 psi (10.3-44.8 bar)	±15 psi (1.03 bar) +3% of setting	25 psi (1.72 bar) +15% of setting
40	500-1750 psi (34.5-121 bar)	±25 psi (1.72 bar) +3% of setting	55 psi (3.79 bar) +16% of setting

* Accuracy and set point of units may change due to the effects of temperature.

** In certain applications deadband can be tailored and controlled to customer specifications. Consult factory for details.

PS81 – Ultra-Long Life Vacuum Switches

- ▶ 1.5" to 15" Hg (51 to 508 mbar)
- ▶ Sensitive Diaphragm for Lower Set Points
- ▶ Factory Fixed or Adjustable Set Points

For low vacuum applications, the longevity of our PS81 Series is hard to beat. A life expectancy of 1 million cycles means long-term reliability. Their brass housing and choice of four diaphragm materials ensures chemical compatibility with your system. PS81 series switches have a field adjustable set point or can be factory set.

Specifications

Switch*	5A @ 125/250 VAC, 3 Amp inductive @ 24 VDC (Std)
Repeatability	See Table 1
Wetted Parts	
Diaphragm and O-Ring	Nitrile standard (optional EPDM, Viton® or Kapton® with o-ring)
Fitting	Brass
Housing	Brass
Spring	300 Series SS
Spring Guide	Delrin®
Ingress Protection**	DIN 43650A IP00; Terminals IP00; Flying Leads IP00; IP option IP00
Proof Pressure	0 psia to 150 psig (-1 bar to 10.3 bar)
Burst Pressure	500 psi (34.5 bar)
Approvals	CE, UL Approved units available
Weight, Approximate	0.31 lbs. (0.14 kg)

* Gold contacts (option G) may be required for less than 12 VDC and 20 mA.

** Plastic housing is vented to atmosphere. Consult factory for sealed versions.

Recommended Operating Temperature Limits

Diaphragm Material	Range
Nitrile	15°F to 250°F (-9°C to +121°C)
Viton®	0°F to 250°F (-18°C to +121°C)
EPDM	-20°F to +250°F (-29°C to +121°C)
Kapton®	-40°F to +250°F (-40°C to +121°C)

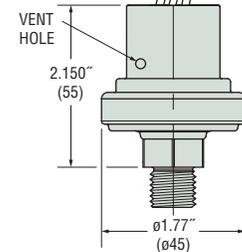
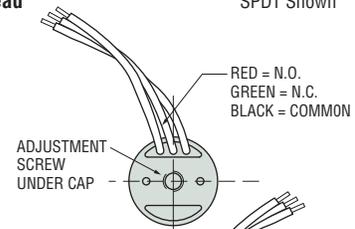
Note: Switches may function below the cold temperature limit but the set points and deadband will increase. Consult factory for details.



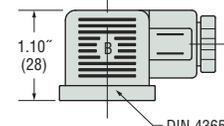
Dimensions

Flying Lead

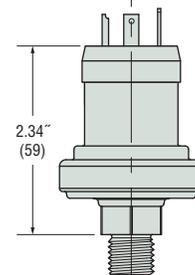
SPDT Shown



DIN 43650A with Calbe Clamp

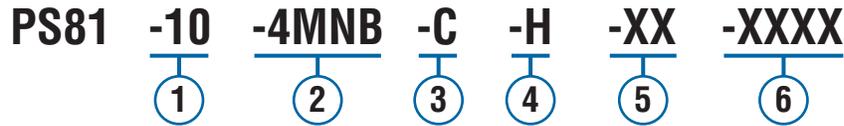


DIN 43650A Male Half Only



How To Order

Use the **Bold** characters from the chart below to construct a product code. Please reference Notes.



1 Pressure Range Code

Insert Pressure Range Code from Table 1, below.

2 Pressure Fitting¹

- 2MNB = 1/8" NPTM Brass
- 4MNB = 1/4" NPTM Brass
- 4MGB = 1/4" BSPM Brass (G type)
- 4MSB = 7/16"-20 SAE Male, Brass

3 Circuit

- A = SPST/N.O.
- B = SPST/N.C.
- C = SPDT

4 Electrical Termination

- FLXX = Flying Leads²
- ELXX = 1/2" NPT Male Conduit w/Flying Leads³
- H = DIN 43650A Male Half Only⁴
- HC = DIN 43650A 9mm Cable Clamp⁴
- HN = DIN 43650A with 1/2" Female NPT Conduit⁴

5 Options

- V = Viton[®] Diaphragm
- E = EPDM Diaphragm
- K = Kapton[®] Diaphragm (Nitrile O-ring)
- G = Gold Contacts
(for loads less than 12 mA @ 12 VDC)
- OF = Oil Free Cleaned
- IP = Ingress Protection⁵

6 Fixed Set Point (optional)

- A. Specify set point **-FS**
(in Inches Hg or mBAR, see example)⁶
- B. Set Point Actuation
R on Rising Vacuum
F on Falling Vacuum
Example: **-FS100MBARF** for 100 mBAR Falling
or **-FS2INHGR** for 2" Hg Rising

Notes:

1. Other fittings available. Consult factory.
2. 18" is standard. Specify lead length in inches (max. 48"). e.g. **-FL18** or **-FL30**.
3. 18" is standard. Specify lead length in inches (max. 48"). e.g. **-EL18** or **-EL30**.
4. DIN connectors require **-C** SPDT circuit.
5. Ingress Protection is available only with **-FL** or **-EL** Electrical Termination and requires Fixed Set Point **-FS**.
6. Set Point must be within Pressure Range selected in Step 1.

Table 1 — Pressure Range Codes

Pressure Range Code	Pressure Range	Accuracy*	Average Deadband**
10	1.5-5" Hg (51-169 mbar)	±0.2" Hg (7 mbar) +3% of setting	0.3" Hg (10 mbar) +9% of setting
20	4-15" Hg (136-508 mbar)	±0.35" Hg (12 mbar) +4% of setting	0.6" Hg (20 mbar) +11% of setting

* Accuracy and set point of units may change due to the effects of temperature.

** In certain applications deadband can be tailored and controlled to customer specifications. Consult factory for details.

PS82 – Economical Miniature Vacuum Switches

► 5" to 28" Hg (169 to 948 mbar)

These miniature vacuum switches, based on our proven PS41 series, are designed for demanding applications where space and/or price are strong concerns.

Specifications

Switch	SPST; SPDT
Repeatability	See Table 1
Wetted Parts	
Diaphragm Material	Nitrile standard (optional EPDM, Viton® and Neoprene)
Fitting	Brass (optional 316 Stainless Steel)
Spring	316 Stainless Steel
Electrical Termination	DIN 43650A IP65; Male Conduit with Flying Leads IP65; Flying Leads IP00; IP option IP66
Proof Pressure	0 psia to 350 psig (-1 bar to 24 bar)
Burst Pressure	700 psi (48 bar)
Approvals	CE
Weight, Approximate	Brass: 0.4 lbs. (0.18 kg)

Recommended Operating Temperature Limits

Diaphragm Material	Options Selected		
	No option, -10A, -SP or -RD	-RD or -RD and -G	-SP or -10A
Nitrile	15°F to 185°F (-9°C to +85°C)	15°F to 250°F (-9°C to +121°C)	15°F to 212°F (-9°C to +100°C)
Viton®	0°F to 185°F (-18°C to +85°C)	0°F to 250°F (-18°C to +121°C)	0°F to 212°F (-18°C to +100°C)
EPDM	-10°F to +185°F (-23°C to +85°C)	-10°F to +250°F (-23°C to +121°C)	-10°F to +212°F (-23°C to +100°C)
Neoprene	-10°F to +185°F (-23°C to +85°C)	-10°F to +250°F (-23°C to +121°C)	-10°F to +212°F (-23°C to +100°C)

Note: Switches may function below the cold temperature limit but the set points and deadband will increase. Consult factory for details.

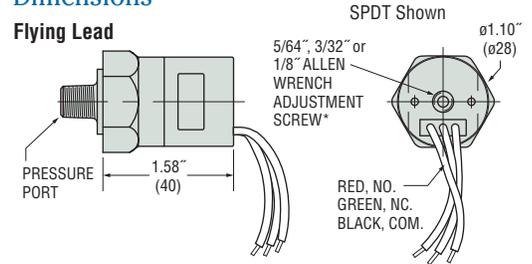
Electrical Switch Ratings

Options Selected	AC	DC
No option or -RD	5 amps @ 125/250 Volts	5 amps resistive, 3 amps inductive @ 28 Volts
-G only or -RD with -G	1 amp @ 125 Volts	1 amp resistive, 0.5 amp inductive @ 28 Volts
-10A only or -SP without -G	10.1 amps @ 125/250 Volts	—
-SP with -G	2 amps @ 125/250 Volts	—



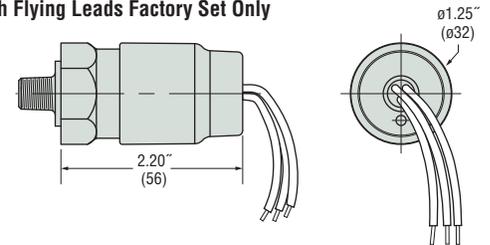
Dimensions

Flying Lead

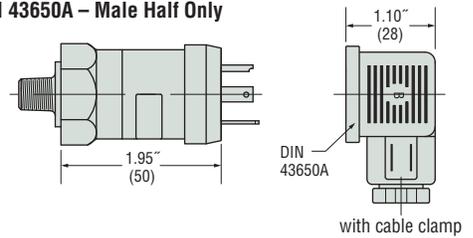


* Adjustment screw is located under protective screw.

Ingress Protection Option (IP66) with Flying Leads Factory Set Only

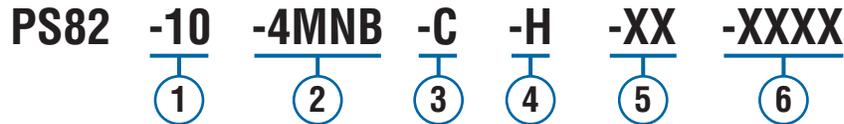


DIN 43650A – Male Half Only



How To Order

Use the **Bold** characters from the chart below to construct a product code. Please reference Notes.



1 Pressure Range Code

Insert Pressure Range Code from Table 1, below.

2 Pressure Fitting¹

Brass

- 2MNB = 1/8" NPTM
- 4MNB = 1/4" NPTM
- 2MGB = 1/8" BSPM (G type)
- 4MGB = 1/4" BSPM (G type)
- 4MSB = 7/16"-20 SAE Male
- 6MSB = 9/16"-18 SAE Male

316 Stainless Steel

- 2MNS = 1/8" NPTM
- 4MNS = 1/4" NPTM
- 4MGS = 1/4" BSPM (G type)

3 Circuit

- A = SPST/N.O.
- B = SPST/N.C.
- C = SPDT

4 Electrical Termination

- FLXX = Flying Leads²
- FLSXX = Flying Leads w/PVC Shrink Tubing²
- ELXX = 1/2" NPT Male Conduit w/Flying Leads³
- CABXX = 18 AWG PVC Cable⁴
 - H = DIN 43650A Male Half Only⁵
 - HR = Right Angle DIN 43650A Male Half Only⁵
 - HC = DIN 43650A 9mm Cable Clamp⁵
 - HCR = Right Angle DIN 43650A 9mm Cable Clamp⁵
 - HN = DIN 43650A with 1/2" Female NPT Conduit⁵
 - HNR = Right Angle DIN 43650A with 1/2" Female NPT Conduit⁵
 - HM = Micro (9.4mm Spacing) DIN Style Male Half Only⁵
 - SP = Spade Terminals⁶

5 Options

- 10A = 10A @ 125/250 VAC Max. Rating⁷
- V = Viton[®] Diaphragm
- N = Neoprene Diaphragm
- E = EPDM Diaphragm
- G = Gold Contacts
(for loads less than 12 mA @ 12 VDC)
- RD = Reduced Differential
(25% reduction typical)
- IP = Ingress Protection⁸
- OF = Oil Free Cleaned
- WF = Weather Pack Connector, Female
- WM = Weather Pack Connector, Male
- DE = Deutsch Connector, Male, DT04 Series

6 Fixed Set Point (optional)

- A. Specify set point **-FS**
(in Inches Hg or mBAR, see example)⁹
- B. Set Point Actuation
R on Rising Vacuum
F on Falling Vacuum
Example: **-FS300MBARF** for 300 mBAR Falling
or **-FS10INHGR** for 10" Hg Rising

Notes:

1. Other fittings available. Consult factory.
2. 18" is standard. Specify lead length in inches (max. 48"). e.g. **-FL18** or **-FLS30**.
3. 18" is standard. Specify lead length in inches (max. 48"). e.g. **-EL18** or **-EL30**.
4. 36" is minimum. Specify cable length in inches. e.g. **-CAB36** or **-CAB120**.
5. DIN connectors require **-C** SPDT circuit.
6. Requires **-10A**, **-G** options (50% increase in deadband typical).
7. Options **-10A**, **-G** or **-RD** cannot be combined.
8. Ingress Protection is available only with **-FL**, **-FLS**, **-ELS** or **-CAB** Electrical Termination choices. Ingress Protection requires Fixed Set Point **-FS**.
9. Set Point must be within Pressure Range selected in Step 1.

Table 1 — Vacuum Range Codes

The deadband values tabulated are for the standard microswitch. With either the -SP or -10A option, the deadband values are typically 50% greater than those listed. With the -RD option, the values will be typically 25% less than those listed. In certain applications deadband can be tailored and controlled to customer specifications. Consult factory for details.

Vacuum Range Code	Vacuum Range	Accuracy	Average Deadband*
10	5-15" Hg (169-508 mbar)	±0.71" Hg (24 mbar) +2% of setting	3.05" Hg (103 mbar) +7% of setting
20	12-28" Hg (406-948mbar)	±1.63" Hg (55 mbar) +2% of setting	6.1" Hg (207 mbar) +8% of setting

* -IP and -EL options are approximate gauge switches. Altitude and temperature changes will result in set point shifts.

PS98 - Solid-State Pressure Switch

- ▶ 0 to 6000 psi and 0 to 400 bar
- ▶ No Moving Parts—Highly Resistant to Shock and Vibration
- ▶ Ideal for Off-Highway, Mobile, Demanding Applications
- ▶ Long Cycle Life

Answering the demand for solid-state switches, Gems proudly offers the PS98. Built from our proven CVD and ASIC design, the PS98 Solid-State pressure switch offers greater accuracy in rough environments. This switch is an ideal alternative to electromechanical types when cycles exceed 50 cycles/minute and broad frequency response is needed. In addition to a modular design, a host of pressure ports and electrical connections are available. Switch and switch-back points are factory set per customer specification.

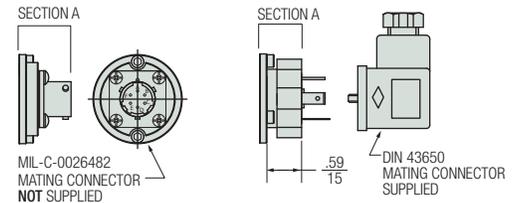
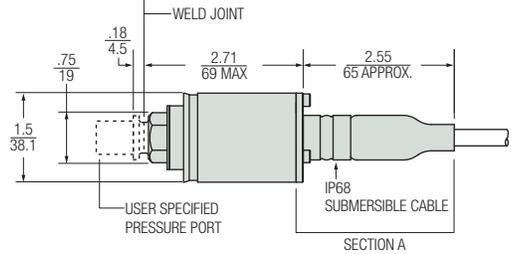
Specifications:

Operating Temperature	-40°F to +260°F (-40°C to +127°C)
Switch	Relay or Transistor
Repeatability*	.25% of Full Set point range @ 70°F (20°C)
Fatigue Life	Designed for more than 100 million FS cycles
Wetted Parts	
Diaphragm	17-4PH Stainless Steel
Fitting	316 Stainless Steel
Electrical Termination	DIN "G" IP65 10-6 MIL CONN "C" IP65 Submersible Cable "M" IP68
Supply Voltage (Vs)	24-72 VDC
Vibration	70g, peak to peak sinusoidal, 5 to 2000 Hz (Random Vibration: 20 to 2000 Hz @ approx. 20g Peak per MIL-STD-810E Method 514.4)
Acceleration	100g steady acceleration in any direction 0.032% FS/g for 1 bar (15 psi) range decreasing logarithmically to 0.0007% FS/g for 400 bar (6000 psi) range.
Shock	20g, 11 ms, per MIL-STD-810E Method 516.4 Procedure 1
Proof Pressure	2X Full Scale
Approvals	CE (limits switch voltage to 42 VDC)
Weight, Approximate	1.0 lbs. (0.45 kg)

* Repeatability and set point of units may change due to the effects of temperature.

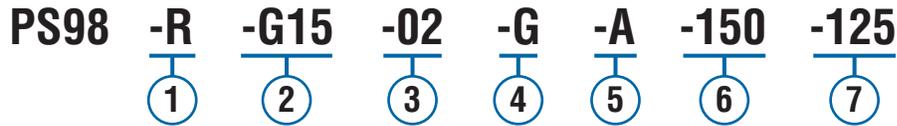


Dimensions



How To Order

Use the **Bold** characters from the chart below to construct a product code. Please reference Notes.



① Output

- R=Relay
- T=Transistor

② Pressure Range

Insert Pressure Range Code from Tables 1, below.

③ Pressure Port

- 08=1/8"-27 NPT External
- 02=1/4"-18 NPT External
- 0J=1/4" NPT External w/snubber
- 0E=1/4" NPT Internal
- 0H=1/2"-14 NPT External
- 04=7/16"-20 External (SAE #4, J514)
- 1P=9/16"-18 External (SAE #6, J1926-2)
- 1J=7/16"-20 External (SAE #4, J1926-2)
- 09=G1/8" Internal
- 01=G1/4" External
- 0A=R1/4" External

④ Electrical Termination

- G=Large DIN (Mating Connector Supplied)
- MXXX=IP68 Cable
(Specify length in meters; e.g. -M012)
- C=6-Pin Connector
(Mating Connector Supplied)

⑤ Circuit

- A=N.O.
- B=N.C.

⑥ Factory Set Point¹

⑦ Re-Set Point¹

Note:

1. Set Points must be within Pressure Range selected in Step 2.

Accessories

PN	Description
557254	Mating Connector for -G
165835	Mating Connector for -C

Tables 1 — Pressure Range Codes

PSI Measurement

Pressure Range Code	Pressure Range (psi)
F15	0-15
F30	0-30
F60	0-60
G10	0-100
G15	0-150
G20	0-200
G30	0-300
G50	0-500
G60	0-600
H10	0-1000
H15	0-1500
H20	0-2000
H30	0-3000
H40	0-4000
H50	0-5000
H60	0-6000

Bar Measurement

Pressure Range Code	Pressure Range (bar)
A10	0-1
A16	0-1.6
A25	0-2.5
A40	0-4
A60	0-6
B10	0-10
B16	0-16
B25	0-25
B40	0-40
B60	0-60
C10	0-100
C16	0-160
C25	0-250
C40	0-400
—	—
—	—

TM-950 – Open Thermistor Sensor

- ▶ Hermetically Sealed
- ▶ High Pressure Capability
- ▶ Direct Reading Ceramic Thermistor
- ▶ Ideal For Non-Conductive Oils & Refrigerants

The Gems TM-950 is an Open Thermistor Sensor ideal for temperature sensing in non-conductive liquids, such as oil and refrigerants. It utilizes a proprietary fused glass hermetic seal, an axial feedthrough design to provide exceptional high pressure, and temperature sensing capability.

Specifications

Temperature Capability	-40°F to +250°F (-40°C to +125°C)
Referenced Temperature Range	32°F to 100°F (0°C to 38°C)
Setting Tolerance	±6°F (±3°C)
Wetted Parts	
Housing	Zinc Plated Steel
Thermistor	Ceramic, Tinned Copper
Fused Hermetic Seal	Soda Lime Glass
Spacer Disc	PTFE
Electrical Termination	Flying Leads IP65, 18 AWG PTFE Insulated, 6.5"
Maximum Pressure	450 PSIG ¹

Note:
1. Higher Pressure Capability Available Upon Request.

Sensor Color Codes

Color Code	Sensor Type
Green	50 Ohms
Red	100 Ohms

Typical Resistance Values at Referenced Temperatures

Media Temperature	Resistance Reading (Ohms)	
	Green	Red
@ 32°F (0°C)	124.0 – 161.0	242.1 – 321
@ 75°F (24°C)	48.5 – 59.5	97 – 121
@ 90°F (32°C)	31.5 – 42.5	65.6 – 87

How To Order

Select Part Number based on Thermistor, Nominal Value and Shrink Tubing Color.

Nominal Thermistor Value	Shrink Tubing Color	Part Number
50 Ohm	Green	243650
100 Ohm	Red	243700

Note: Other alternate Thermistor values with R-T curves are available upon request.



Dimensions

