

# 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

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

## Recommended Operating Temperature Limits

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

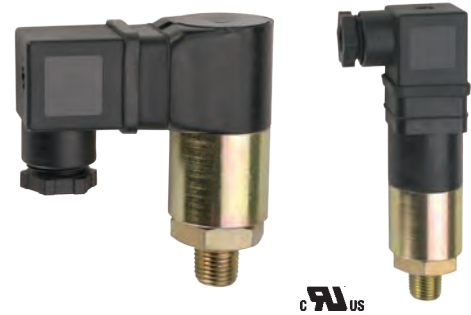
Note: Switches may function below the cold temperature limit but the set points and deadband will increase. Consult factory for details.

## Electrical Switch Ratings

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

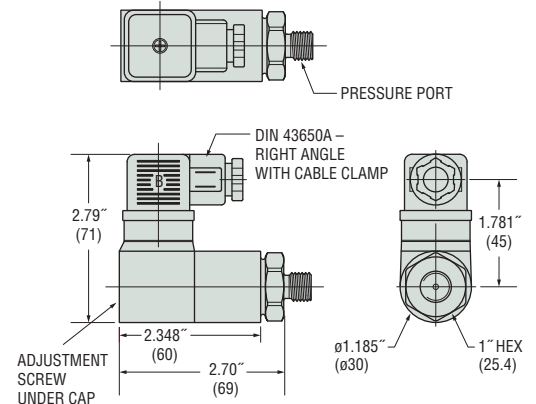
Notes:

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

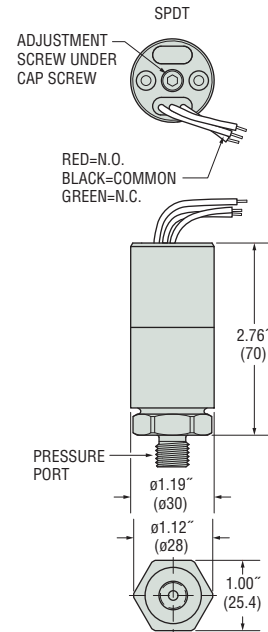


## Dimensions

### Right Angle DIN 43650A with Cable Clamp

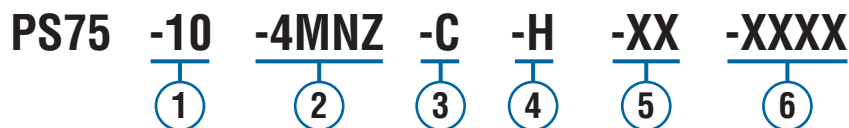


### Flying Lead



## 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 Fitting<sup>1</sup>

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 Leads<sup>2</sup>
- FLSXX = Flying Leads w/PVC Shrink Tubing<sup>2</sup>
- ELXX = 1/2" NPT Male Conduit w/Flying Leads<sup>3</sup>
  - H = DIN 43650A Male Half Only<sup>4</sup>
  - HR = Right Angle DIN 43650A Male Half Only<sup>4</sup>
  - HC = DIN 43650A 9mm Cable Clamp<sup>4</sup>
  - HCR = Right Angle DIN 43650A 9mm Cable Clamp<sup>4</sup>
  - HN = DIN 43650A with 1/2" Female NPT Conduit<sup>4</sup>
  - HNR = Right Angle DIN 43650A with 1/2" Female NPT Conduit<sup>4</sup>

### 5 Options

- V = Viton<sup>®</sup> 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 Cleaned<sup>5</sup>
- R = Restrictor (low damping coefficient) Brass
- SR = Spiral Restrictor (high damping coefficient)  
300 Series Stainless Steel<sup>6</sup>
- 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)<sup>7</sup>

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**
<b>10</b>	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
<b>20</b>	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
<b>30</b>	50-150 psi (3.5-10.3 bar)	±6 psi (0.41 bar) +2% of setting	15 psig (1.03 bar) +13% of setting
<b>40</b>	150-650 psi (10.3-44.8 bar)	±15 psi (1.03 bar) +2% of setting	25 psi (1.72 bar) +14% of setting
<b>50</b>	500-1750 psi (34.5-121 bar)	±25 psi (1.72 bar) +2% of setting	55 psi (3.79 bar) +15% of setting
<b>60</b>	1000-3500 psi (69-241 bar)	±45 psi (3.10 bar) +3% of setting	100 psi (6.89 bar) +16% of setting
<b>70</b>	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.

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