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

<table>
<thead>
<tr>
<th>Circuit Codes</th>
<th>AC</th>
<th>DC</th>
</tr>
</thead>
<tbody>
<tr>
<td>-A, -B, -C</td>
<td>5 amps @ 125/250 Volts</td>
<td>5 amps resistive, 3 amps inductive @ 28 Volts</td>
</tr>
<tr>
<td>-A, -B, -C</td>
<td>1 amp @ 125 Volts</td>
<td>1 amp resistive, 0.5 amp inductive @ 28 Volts</td>
</tr>
</tbody>
</table>

Notes:
1. Without Gold Contacts Option (-G).
2. With Gold Contacts Option (-G).
How To Order
Use the **Bold** characters from the chart below to construct a product code. Please reference Notes.

| PS75 | -10 | -4MNZ | -C | -H | -XX | -XXXX |

1. **Pressure Range Code**
   Insert Pressure Range Code from Table 1, below.

2. **Pressure Fitting**
   12L14 Zinc-Plated Steel
   -2MNZ = 1/8" NPTM
   -4MNZ = 1/4" NPTM
   -4FGZ = 1/4" NPTF
   -4MGZ = 1/4" BSPM (G type)
   -4FGS = 1/4" BSPF (G type)
   -4MFS = 1/4" NPTF
   -6MSZ = 9/16-18 SAE Male
   -4SSZ = 7/16-20 SAE Male Swivel

3. **Circuit**
   -A = SPST/N.O.
   -B = SPST/N.C.
   -C = SPDT

4. **Electrical Termination**
   -FLXX = Flying Leads
   -FLSXX = Flying Leads w/PVC Shrink Tubing
   -ELXX = 1/2" NPT Male Conduit w/Flying Leads
   -HR = Right Angle DIN 43650A Male Half Only
   -HC = DIN 43650A 9mm Cable Clamp
   -C = DIN 43650A with 1/2" Female NPT Conduit
   -HCR = Right Angle DIN 43650A 9mm Cable Clamp
   -HNC = DIN 43650A with 1/2" Female NPT Conduit

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 Cleaned
   -R = Restrictor (low damping coefficient) Brass
   -SR = Spiral Restrictor (high damping coefficient) 300 Series Stainless Steel
   -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)
   B. Set Point Actuation
   R on Rising Pressure
   F on Falling Pressure
   Example: -FS1BARF for 1 BAR Falling
   or -FS20PSIR for 20 PSI Rising

Table 1 — Pressure Range Codes
For Circuit Codes -A, -B and -C

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

* 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), 12089040 Male 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

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

### 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

**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.

### 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.

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* See individual product data sheets for temperature ranges.