

# Industrial Pressure Transducers

Standard Industrial (S Model)  
Explosion-Proof (E Model)



## Features

- Accuracy  $\leq 0.5\%$  of span limit point calibration (0.25% of span best fit straight line)
- Broad selection of pressure ranges, engineering units in psi, bar, MPa, kg/cm<sup>2</sup>, and kPa.  
Pressure references: gauge (vacuum, positive, compound) and absolute
- Available with a variety of electrical connections and output signals
- Available with a variety of process connections including flush diaphragm and Swagelok® tube adapter

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## Materials of Construction

| Component  | S Model       | E Model  |
|--|---------------|----------|
| <b>Wetted</b>  |               |          |
| Internal diaphragm<br>(25 bar [362 psi, 2.5 MPa,<br>25.5 kg/cm <sup>2</sup> , 2500 kPa]<br>and lower pressure range) | 316 SS        |          |
| Internal diaphragm<br>(over 25 bar [362 psi, 2.5 MPa,<br>25.5 kg/cm <sup>2</sup> , 2500 kPa]<br>pressure range)      | AISI S13800   | Elgiloy® |
| Process connection,<br>flush diaphragm   | 316 Ti        |          |
| Flush diaphragm, O-ring  | Buna N        |          |
| <b>Nonwetted</b>   |               |          |
| Transducer body  | 316 SS        |          |
| Flush diaphragm<br>internal fluid,<br>piezoresistive sensor<br>internal fluid  | Synthetic oil |          |

## Features

Swagelok industrial pressure transducers provide electronic monitoring of system pressure for general industrial applications, including hazardous locations.



- Stainless steel construction with robust, compact design that resists pressure spikes, shock, and vibration
- Variety of pressure ranges, process connections, electrical connections, and output signals for system versatility
- Thin film and piezoresistive sensor technology for repeatability, reliability, and stability
- Temperature-compensated to ensure accuracy and long-term stability when exposed to temperature variations
- Available in flush diaphragm version for use with viscous fluids and slurries.
- Wiring protection against reverse polarity and short circuit on the instrument side

## Performance Data—All Models

|   |  |
|---|--|
| <b>Accuracy</b>   | ≤ 0.5 % LPC (0.25 % BFS), including nonlinearity, hysteresis, zero-point and full-scale error, measured in accordance with IEC 61298-2   |
| <b>Repeatability</b>  | ≤ 0.1 % of span  |
| <b>Long-Term Stability</b>  | ≤ 0.2 % of span per year   |
| <b>Response Time</b>  | ≤ 1 ms with internal diaphragm connection;<br>≤ 10 ms with flush diaphragm connection  |
| <b>Shock Resistance</b>   | 1000 g (600 g for field case models)<br>in accordance with IEC 60068-2-27<br>(mechanical shock)  |
| <b>Vibration Resistance</b>   | 20 g (10 g for field case models)<br>in accordance with IEC 60068-2-6<br>(vibration under resonance)   |
| <b>Temperature Coefficients (TC) in Compensated Temperature Range</b> | Pressure ranges equal to or less than 0.25 bar (3.6 psi, 0.025 MPa, 0.25 kg/cm <sup>2</sup> , 25 kPa): ≤ 0.4 % of span per 18°F (10°C) change on zero point.<br><br>Pressure ranges higher than 0.25 bar (3.6 psi, 0.025 MPa, 0.25 kg/cm <sup>2</sup> , 25 kPa): ≤ 0.2 % of span per 18°F (10°C) change on zero point.<br><br>≤ 0.2 % of span per 18°F (10°C) change on span within compensated temperature range from 32 to 176°F (0 to 80°C) |

## Calibration

Every Swagelok pressure transducer is factory calibrated to ensure conformance to its stated accuracy.

## Users Manuals

**S Model:** MS-CRD-PTI-S

**E Model:** MS-CRD-PTI-E

**Attachable Indicator Display:** MS-CRD-PTI-AI

## Model Selection Guide

| Models   | S Model<br>Standard Industrial                  |  | E Model<br>Explosion-Proof                              |   |
|--|---|--|---|---|
| Approvals  | CE and CSA®                                     |  | FM® and CSA   |   |
| Diaphragm Type   | Internal  | Flush  | Internal  | Flush   |
| Application  | Wide variety of general industrial applications | Slurries, crystallizing, or high-viscosity media | In hazardous locations requiring explosion-proof design | Slurries, crystallizing, or high-viscosity media requiring explosion-proof design |
| Pressure Range   | See <b>Pressure Range Designators</b> , page 8. |  |   |   |
| Vacuum psi to...   | 15 000 psi                                      | 8000 psi   | 15 000 psi  | 8000 psi  |
| Vacuum bar to...   | 1000 bar  | 600 bar  | 1000 bar  | 600 bar   |
| Vacuum MPa to...   | 100 MPa   | 60 MPa   | 100 MPa   | 60 MPa  |
| Vacuum kg/cm <sup>2</sup> to...  | 1000 kg/cm <sup>2</sup>                         | 600 kg/cm <sup>2</sup>                           | 1000 kg/cm <sup>2</sup>                                 | 600 kg/cm <sup>2</sup>  |
| Vacuum kPa to...   | 100 000 kPa                                     | 60 000 kPa                                       | 100 000 kPa   | 60 000 kPa  |
| Pressure Reference   | Gauge (vacuum, positive, compound) and absolute |  |   |   |
| Output Signal  | 4 to 20 mA<br>0 to 5 V<br>0 to 10 V             |  | 4 to 20 mA<br>1 to 5 V                                  |   |
| Options  | See <b>Options</b> , page 12.                   |  |   |   |
| Special cleaning ASME B40.1 Level IV   | ✓   |  | ✓   |   |
| Accuracy ≤ 0.25 % LPC of span (0.125 % BFSL) (for pressure ranges ≥ 0.25 bar [3.6 psi, 0.025 MPa, 0.25 kg/cm <sup>2</sup> , 25 kPa]) | ✓   | ✓  | —   | —   |
| 11-Point Certificate of Calibration traceable to DKD, EN 10204 3.1   | ✓   | ✓  | ✓   | ✓   |
| General Material Certificate of Compliance, EN 10204 2.2   | ✓   | ✓  | ✓   | ✓   |
| Material Test Certificate, EN 10204 3.1, heat code traceable   | ✓   | ✓  | ✓   | ✓   |
| Certificate of Accuracy, EN 10204 2.2  | ✓   | ✓  | ✓   | ✓   |
| EPDM or fluorocarbon FKM/FPM O-rings   | —   | ✓  | —   | ✓   |
| Integral cooling element (–4 to 302°F [–20 to 150°C])  | —   | ✓  | —   | —   |
| Mounted cooling element (–40 to 302°F [–40 to 150°C] or –40 to 392°F [–40 to 200°C])   | ✓   | —  | —   | —   |
| Alloy C-22 flush diaphragm (for pressure ranges ≥ 0.25 bar [3.6 psi, 0.025 MPa, 0.25 kg/cm <sup>2</sup> , 25 kPa])                   | —   | ✓  | —   | ✓   |
| Cable lengths<br>9 ft (2.7 m), 16 ft (4.9 m),<br>32 ft (9.8 m)   | ✓   | ✓  | —   | —   |
| Cable lengths<br>10 ft (3.0 m), 20 ft (6.1 m),<br>30 ft (9.1 m)  | —   | —  | ✓   | ✓   |
| Display  | See <b>Accessories</b> , page 12.               |  |   |   |

## S Model: Standard Industrial

The Swagelok S model is engineered for use in a wide variety of general industrial applications such as machine control, process control, laboratory and testing equipment, and hydraulics and pneumatics.

- Adjustable zero and span



### Output Signals

- 4 to 20 mA
- 0 to 5 V (dc)
- 0 to 10 V (dc)

### Electrical Connectors

- 4-pin circular (IP67/NEMA 4)
- Bendix MIL plugs (IP67/NEMA 4)
- Direct-wire zero and span adjustable (IP67/NEMA 4) or nonadjustable (IP68/NEMA 6)
- L-plugs (IP65/NEMA 5)

### Process End Connections

#### Internal Diaphragm Type

- Swagelok tube adapter
- Tapered threads: male NPT and PT (ISO 7/1)
- Straight threads: EN (RG) and PF (RJ)

#### Flush Diaphragm Type

- EN flush diaphragm

### Temperature Ratings

#### Without Integral Cooling Element

- Media: -22 to 212°F (-30 to 100°C)
- Ambient: -4 to 176°F (-20 to 80°C)
- Storage: -40 to 212°F (-40 to 100°C)
- Compensated range: 32 to 176°F (0 to 80°C)

#### With Integral Cooling Element (Flush Diaphragm Process Connection Only)

- Media: -4 to 302°F (-20 to 150°C)
- Ambient: -4 to 176°F (-20 to 80°C)
- Storage: -4 to 212°F (-20 to 100°C)

### Electrical Data

- Power supply:
  - 10 to 30 V (dc) for 4 to 20 mA and 0 to 5 V (dc) output signals
  - 14 to 30 V (dc) for 0 to 10 V output signal

### Approvals/Compliance

- CE conformity:
  - EMC Directive—2004/108/EC tested in accordance with EN 61 326-1:2006 and EN 61 326- 2-3:2006
  - Pressure Equipment Directive—2014/68/EU
- CSA (Canada and U.S.A.) approval: Class 2252-01

## S Model: Standard Industrial

### Ordering Information

Build an S Model transducer ordering number by adding the designators as shown below.

A
B
C
D
E  
 PTI - S - NG160 - 1 5 AO - E

#### **A** Pressure Range

See pages 8 and 9.

#### **B** Output Signal

- 1 = 4 to 20 mA
- 2 = 0 to 5 V (dc)
- 3 = 0 to 10 V (dc)

#### **C** Electrical Connector

(see page 10 for Electrical Connector)

- 1 = 4-pin circular connector, M12 × 1 (IP67/NEMA 4)
- 2 = Direct-wire 4 ft (1.5 m) flying lead (IP67/NEMA 4)
- 3 = Bendix 4-pin MIL plug (IP67/NEMA 4)
- 5 = L-plug, PG9 cable gland, DIN EN175301-803 (IP65/NEMA 5)
- 6 = L-plug, 1/2 in. NPT female conduit, DIN EN175301-803 (IP65/NEMA 5)
- 7 = Direct-wire 4 ft (1.5 m) flying lead (IP68/NEMA 6) zero and span nonadjustable
- 8 = Bendix 6-pin MIL plug (IP67/NEMA 4)

#### **D** Process End Connection

(see page 11 for Process Connector)

##### **Internal Diaphragm Type**

- AO = 1/4 in. male NPT
- AP = 1/2 in. male NPT<sup>①</sup>
- AQ = 1/4 in. Swagelok tube adapter
- BG = 3/8 in. Swagelok tube adapter
- AR = 1/2 in. Swagelok tube adapter
- AS = 6 mm Swagelok tube adapter
- BH = 10 mm Swagelok tube adapter
- AT = 12 mm Swagelok tube adapter
- AV = G1/4B EN (1/4 RG)<sup>②</sup>
- AW = G1/2B EN (1/2 RG)<sup>①②</sup>
- AX = G1/4B PF (1/4 RJ)<sup>③</sup>
- AZ = G1/2B PF (1/2 RJ)<sup>③</sup>
- BD = R1/4 PT (1/4 ISO 7 taper)
- BE = R1/2 PT (1/2 ISO 7 taper)

##### **Flush Diaphragm Type**

- BV = G1/2B EN flush diaphragm
- BJ = G1B EN flush diaphragm

<sup>①</sup> Refers to cooling element process connection when ordering mounted cooling element (designator **R** or **S**).

<sup>②</sup> Can be used with Swagelok **RG** adapter fittings.

<sup>③</sup> Can be used with Swagelok **RJ** adapter fittings.

#### **E** Options (See pages 3 and 12.)

For multiple options, add designators in alphabetical order.

- A** = Special cleaning, ASME B40.1 Level IV<sup>①</sup>
- B** = Accuracy ≤ 0.25 % LPC of span (0.125 % BFSL) (for pressure ranges ≥ 0.25 bar [(3.6 psi, 0.025 MPa, 0.25 kg/cm<sup>2</sup>, 25 kPa)])
- C** = 11-Point Certificate of Calibration traceable to DKD, EN 10204 3.1
- D** = General Material Certificate of Compliance, EN 10204 2.2
- E** = Material Test Certificate, EN 10204 3.1, heat code traceable<sup>⑤</sup>
- F** = Certificate of Accuracy, EN 10204 2.2
- R** = Mounted cooling element, -40 to 302°F (-40 to 150°C) (3 fins)<sup>②</sup>
- S** = Mounted cooling element, -40 to 392°F (-40 to 200°C) (5 fins)<sup>②</sup>
- T** = 9 ft (2.7 m) cable<sup>③</sup>
- Y** = 16 ft (4.9 m) cable<sup>③</sup>
- Z** = 32 ft (9.8 m) cable<sup>③</sup>

##### **Flush Diaphragm Type Only**

- U** = Integral cooling element (2 fins) (requires process end connection **BV** or **BJ** and EPDM or fluorocarbon FKM/FPM O-ring [option **W** or **X**])
- V** = Alloy C-22 flush diaphragm (for pressure ranges ≥ 0.25 bar [3.6 psi, 0.025 MPa, 0.25 kg/cm<sup>2</sup>, 25 kPa]; requires process end connection **BV** or **BJ**)
- W** = EPDM O-ring<sup>④</sup>
- X** = Fluorocarbon FKM/FPM O-ring

<sup>①</sup> Available *only* with positive pressure ranges ≥ 0.40 bar (5.8 psi, 0.04 MPa, 0.41 kg/cm<sup>2</sup>, 40 kPa); not available with process end connections **BV** or **BJ**; not available with options **R**, **S**, **U**, **W**, or **X**. When ordered with a piezoresistive sensor range, a halocarbon fluid is included; for oxygen applications, maximum media temperature is 140°F (60°C).

<sup>②</sup> Available *only* with process end connections **AP** and **AW**; transducer-to-cooling element connection is G1/2B EN (1/2 RG). Cooling element is not field removable.

<sup>③</sup> Available *only* with direct-wire electrical connectors; select electrical connector **2** or **7**.

<sup>④</sup> Maximum pressure allowed is 2900 psi or equivalent (200 bar, 20 MPa, 204 kg/cm<sup>2</sup>, 2000 kPa).

<sup>⑤</sup> Not available with process end connections **AX**, **AZ**, **BD** or **BE**.

## E Model: Explosion-Proof

The Swagelok E Model is specifically designed to meet durability and performance demands of industrial applications where explosion-proof ratings are required, such as wellhead monitoring, refining, petrochemical, offshore oil and gas, and gas measurement.

### Features

- Resistant to pressure spikes, vibration, and moisture intrusion to IP67/NEMA 4X



### Output Signals

- 4 to 20 mA
- 1 to 5 V (dc)

### Electrical Connectors

- 1/2 in. male NPT conduit with 6 ft (1.8 m) shielded cable (IP67/NEMA 4X)

### Process End Connections

#### Internal Diaphragm Type

- Swagelok tube adapter
- Tapered threads: male NPT and PT (ISO 7/1)
- Straight threads: EN (RG))

#### Flush Diaphragm Type

- EN flush diaphragm

### Temperature Ratings

- Media: -22 to 212°F (-30 to 100°C)
- Ambient: -22 to 212°F (-30 to 100°C)
- Storage: -40 to 221°F (-40 to 105°C)
- Compensated range: 32 to 176°F (0 to 80°C)

### Electrical Data

- Power supply:
  - 10 to 30 V (dc) for 4 to 20 mA output signal
  - 6 to 30 V (dc) for 1 to 5 V (dc) output signal

### Approvals/Compliance

- CSA (Canada and U.S.A.) and FM:
  - Class I, Division 1, Groups A, B, C, D
  - Class II/III, Division 1, Groups E, F, G
- Temperature class:
  - T6 at maximum ambient 140°F (60°C)
  - T4 at maximum ambient 221°F (105°C)

## E Model: Explosion-Proof

### Ordering Information

Build an E Model transducer ordering number by adding the designators as shown below.

A    B C D    E  
 PTI - E - **NG160** - 1 9 **AQ** - **AE**

#### **A** Pressure Range

See pages 8 and 9.

#### **B** Output Signal

1 = 4 to 20 mA

4 = 1 to 5 V (dc)

#### **C** Electrical Connector

(see page 10 for Electrical Connector)

9 = 1/2 in. male NPT conduit with  
6 ft (1.8 m) shielded cable (IP67/  
NEMA 4X)

#### **D** Process End Connection

(see page 11 for Process Connector)

##### **Internal Diaphragm Type**

**AO** = 1/4 in. male NPT

**AP** = 1/2 in. male NPT

**AQ** = 1/4 in. Swagelok tube adapter

**BG** = 3/8 in. Swagelok tube adapter

**AR** = 1/2 in. Swagelok tube adapter

**AS** = 6 mm Swagelok tube adapter

**BH** = 10 mm Swagelok tube adapter

**AT** = 12 mm Swagelok tube adapter

**AV** = G1/4B EN (1/4 RG)<sup>①</sup>

**AW** = G1/2B EN (1/2 RG)<sup>①</sup>

**BD** = R1/4 PT (1/4 ISO 7 taper)

**BE** = R1/2 PT (1/2 ISO 7 taper)

##### **Flush Diaphragm Type**

**BV** = G1/2B EN flush diaphragm

**BJ** = G1B EN flush diaphragm

<sup>①</sup> Can be used with Swagelok **RG** adapter fittings.

#### **E** Options (See pages 3 and 12.)

For multiple options, add designators in alphabetical order.

**A** = Special cleaning, ASME B40.1 Level IV<sup>①</sup>

**C** = 11-Point Certificate of Calibration traceable to DKD, EN 10204 3.1

**D** = General Material Certificate of Compliance, EN 10204 2.2

**E** = Material Test Certificate, EN 10204 3.1, heat code traceable

**F** = Certificate of Accuracy, EN 10204 2.2

**T** = 10 ft (3.0 m) cable

**Y** = 20 ft (6.1 m) cable

**Z** = 30 ft (9.1 m) cable

##### **Flush Diaphragm Type Only**

**V** = Alloy C-22 flush diaphragm (for pressure ranges  $\geq 0.25$  bar [3.6 psi, 0.025 MPa, 0.25 kg/cm<sup>2</sup>, 25 kPa]; requires process end connection **BV** or **BJ**)

**W** = EPDM O-ring<sup>②</sup>

**X** = Fluorocarbon FKM/FPM O-ring

<sup>①</sup> Available *only* with positive pressure ranges  $\geq 0.25$  bar (3.6 psi, 0.025 MPa, 0.25 kg/cm<sup>2</sup>, 25 kPa); not available with process end connections **BV** or **BJ**; not available with options **W** or **X**. When ordered with a piezoresistive sensor range, a halocarbon fluid is included; for oxygen applications, maximum media temperature is 140°F (60°C).

<sup>②</sup> Maximum pressure 2900 psi (200 bar, 20 MPa, 204 kg/cm<sup>2</sup>, 2000 kPa).

## Pressure Range Designators—All Models

psi

| Pressure Range             |                     | Designator        | Over-pressure Rating | Burst Rating | Sensor Type    |
|----------------------------|---------------------|-------------------|----------------------|--------------|----------------|
| Minimum                    | Maximum             |                   |                      |              |                |
| <b>psi Gauge Reference</b> |                     |                   |                      |              |                |
| Vacuum<br>-30 in. Hg       | 0                   | NC0               | 72                   | 87           | Piezoresistive |
|                            | 30                  | NC30 <sup>①</sup> | 140                  | 170          |                |
|                            | 60                  | NC60              | 140                  | 170          |                |
|                            | 100                 | NC100             | 140                  | 170          |                |
|                            | 160                 | NC160             | 500                  | 600          |                |
|                            | 200                 | NC200             | 500                  | 600          |                |
|                            | 300                 | NC300             | 500                  | 600          |                |
| 0                          | 5                   | NG5 <sup>②</sup>  | 72                   | 87           | Piezoresistive |
|                            | 10                  | NG10              | 72                   | 87           |                |
|                            | 15                  | NG15              | 72                   | 87           |                |
|                            | 25                  | NG25              | 72                   | 87           |                |
|                            | 30                  | NG30 <sup>①</sup> | 72                   | 87           |                |
|                            | 50                  | NG50              | 140                  | 170          |                |
|                            | 60                  | NG60              | 240                  | 290          |                |
|                            | 100                 | NG100             | 240                  | 290          |                |
|                            | 160                 | NG160             | 500                  | 600          |                |
|                            | 200                 | NG200             | 500                  | 600          |                |
|                            | 250                 | NG250             | 500                  | 600          |                |
|                            | 300                 | NG300             | 500                  | 600          |                |
|                            | 400                 | NG400             | 1 160                | 1 390        |                |
|                            | 500                 | NG500             | 1 160                | 5 800        |                |
|                            | 600                 | NG600             | 1 740                | 7 970        |                |
|                            | 750                 | NG750             | 1 740                | 7 970        |                |
|                            | 1 000               | NG1000            | 2 900                | 11 600       |                |
|                            | 1 500               | NG1500            | 4 640                | 14 500       |                |
|                            | 2 000               | NG2000            | 4 640                | 14 500       |                |
|                            | 3 000               | NG3000            | 7 250                | 17 400       |                |
| 5 000                      | NG5000 <sup>③</sup> | 11 600            | 24 650               |              |                |
| 8 000                      | NG8000 <sup>④</sup> | 17 400            | 34 800               |              |                |
| 10 000                     | NG10K <sup>⑤</sup>  | 21 750            | 43 500               |              |                |
| 15 000                     | NG15K               | 21 750            | 43 500               |              |                |
| <b>psi Absolute</b>        |                     |                   |                      |              |                |
| 0                          | 15                  | NA15              | 72                   | 87           | Piezoresistive |
|                            | 25                  | NA25 <sup>①</sup> | 72                   | 87           |                |
|                            | 50                  | NA50              | 140                  | 170          |                |
|                            | 100                 | NA100             | 240                  | 290          |                |
|                            | 250                 | NA250             | 500                  | 600          |                |

① Minimum for G1/2 EN flush diaphragm; maximum for G1B EN flush diaphragm.

② Minimum for E model.

③ Maximum for 3/8 and 1/2 in.; 10 and 12 mm Swagelok tube adapter.

④ Maximum for G1/2B EN flush diaphragm.

⑤ Maximum for 1/4 in. and 6 mm Swagelok tube adapter.

⑥ Only available on S Models.

bar

| Pressure Range             |         | Designator          | Over-pressure Rating | Burst Rating | Sensor Type    |
|----------------------------|---------|---------------------|----------------------|--------------|----------------|
| Minimum                    | Maximum |                     |                      |              |                |
| <b>bar Gauge Reference</b> |         |                     |                      |              |                |
| Vacuum<br>-1               | 0       | AC0                 | 1                    | 2            | Piezoresistive |
|                            | 0.6     | AC.6 <sup>①</sup>   | 4                    | 4.8          |                |
|                            | 3       | AC3                 | 17                   | 20.5         |                |
|                            | 5       | AC5                 | 35                   | 42           |                |
|                            | 9       | AC9                 | 35                   | 42           |                |
|                            | 15      | AC15                | 80                   | 96           |                |
|                            | 25      | AC25                | 50                   | 250          |                |
| 0                          | 0.1     | AG.1 <sup>⑥</sup>   | 1                    | 2            | Piezoresistive |
|                            | 0.16    | AG.16 <sup>⑥</sup>  | 1.5                  | 2            |                |
|                            | 0.25    | AG.25 <sup>⑥</sup>  | 2                    | 2.4          |                |
|                            | 0.4     | AG.4 <sup>②</sup>   | 2                    | 2.4          |                |
|                            | 0.6     | AG.6                | 4                    | 4.8          |                |
|                            | 1       | AG1                 | 5                    | 6            |                |
|                            | 1.6     | AG1.6 <sup>①</sup>  | 10                   | 12           |                |
|                            | 2.5     | AG2.5               | 10                   | 12           |                |
|                            | 4       | AG4                 | 17                   | 20.5         |                |
|                            | 6       | AG6                 | 35                   | 42           |                |
|                            | 10      | AG10                | 35                   | 42           |                |
|                            | 16      | AG16                | 80                   | 96           |                |
|                            | 25      | AG25                | 50                   | 250          |                |
|                            | 40      | AG40                | 80                   | 400          |                |
|                            | 60      | AG60                | 120                  | 400          |                |
|                            | 100     | AG100               | 200                  | 800          |                |
|                            | 160     | AG160               | 320                  | 1 000        |                |
|                            | 250     | AG250               | 500                  | 1 200        |                |
|                            | 400     | AG400 <sup>③</sup>  | 800                  | 1 500        |                |
|                            | 600     | AG600 <sup>④⑤</sup> | 1 200                | 1 500        |                |
| 1 000                      | AG1000  | 1 500               | 3 000                |              |                |
| <b>bar Absolute</b>        |         |                     |                      |              |                |
| 0                          | 0.25    | AA.25               | 2                    | 2.4          | Piezoresistive |
|                            | 0.4     | AA.4                | 2                    | 2.4          |                |
|                            | 0.6     | AA.6                | 4                    | 4.8          |                |
|                            | 1       | AA1                 | 5                    | 6            |                |
|                            | 1.6     | AA1.6 <sup>①</sup>  | 10                   | 12           |                |
|                            | 2.5     | AA2.5               | 10                   | 12           |                |
|                            | 4       | AA4                 | 17                   | 20.5         |                |
|                            | 6       | AA6                 | 35                   | 42           |                |
|                            | 10      | AA10                | 35                   | 42           |                |
| 16                         | AA16    | 80                  | 96                   |              |                |



## MPa

| Pressure Range             |         | Designator         | Over-pressure Rating | Burst Rating | Sensor Type    |                 |
|----------------------------|---------|--------------------|----------------------|--------------|----------------|-----------------|
| Minimum                    | Maximum |                    |                      |              |                |                 |
| <b>MPa Gauge Reference</b> |         |                    |                      |              |                |                 |
| Vacuum<br>-0.1             | 0       | MC0                | 0.1                  | 0.2          | Piezoresistive |                 |
|                            | 0.06    | MC.06              | 0.4                  | 0.48         |                |                 |
|                            | 0.15    | MC.15 <sup>①</sup> | 1                    | 1.2          |                |                 |
|                            | 0.3     | MC.3               | 1.7                  | 2            |                |                 |
|                            | 0.6     | MC.6               | 3.5                  | 4.2          |                |                 |
|                            | 0.9     | MC.9               | 3.5                  | 4.2          |                |                 |
|                            | 1.5     | MC1.5              | 8                    | 9.6          |                |                 |
|                            | 2.5     | MC2.5              | 5                    | 25           |                |                 |
| 0                          | 0.04    | MG.04 <sup>②</sup> | 0.2                  | 0.24         | Piezoresistive |                 |
|                            | 0.06    | MG.06              | 0.4                  | 0.48         |                |                 |
|                            | 0.1     | MG.1               | 0.5                  | 0.6          |                |                 |
|                            | 0.16    | MG.16 <sup>①</sup> | 1                    | 1.2          |                |                 |
|                            | 0.25    | MG.25              | 1                    | 1.2          |                |                 |
|                            | 0.4     | MG.4               | 1.7                  | 2            |                |                 |
|                            | 0.6     | MG.6               | 3.5                  | 4.2          |                |                 |
|                            |         | 1                  | MG1.0                | 3.5          | 4.2            |                 |
|                            |         | 1.6                | MG1.6                | 8            | 9.6            |                 |
|                            |         | 2.5                | MG2.5                | 5            | 25             |                 |
|                            |         | 4                  | MG4                  | 8            | 40             | Metal thin film |
|                            |         | 6                  | MG6                  | 12           | 40             |                 |
|                            |         | 10                 | MG10                 | 20           | 80             |                 |
|                            |         | 16                 | MG16                 | 32           | 100            |                 |
|                            |         | 25                 | MG25                 | 50           | 120            |                 |
|                            | 40      | MG40 <sup>③</sup>  | 80                   | 150          |                |                 |
|                            | 60      | MG60 <sup>④⑤</sup> | 120                  | 150          |                |                 |
|                            | 100     | MG100              | 150                  | 300          |                |                 |

kg/cm<sup>2</sup>

| Pressure Range                           |         | Designator         | Over-pressure Rating | Burst Rating | Sensor Type    |                 |
|--|---------|--------------------|----------------------|--------------|----------------|-----------------|
| Minimum                                  | Maximum |                    |                      |              |                |                 |
| <b>kg/cm<sup>2</sup> Gauge Reference</b> |         |                    |                      |              |                |                 |
| Vacuum<br>-1                             | 0       | CC0                | 1                    | 2            | Piezoresistive |                 |
|  | 0.6     | CC.6               | 4                    | 4.8          |                |                 |
|  | 1       | CC1                | 5                    | 6            |                |                 |
|  | 1.6     | CC1.6 <sup>①</sup> | 10                   | 12           |                |                 |
|  | 3       | CC3                | 17                   | 20.5         |                |                 |
|  | 4       | CC4                | 17                   | 20.5         |                |                 |
|  | 5       | CC5                | 35                   | 42           |                |                 |
|  | 9       | CC9                | 35                   | 42           |                |                 |
|  | 15      | CC15               | 80                   | 96           |                |                 |
|  | 25      | CC25               | 50                   | 250          |                |                 |
| 0  | 0.6     | CG.6 <sup>②</sup>  | 4                    | 4.8          | Piezoresistive |                 |
|  | 1       | CG1                | 5                    | 6            |                |                 |
|  | 1.6     | CG1.6 <sup>①</sup> | 10                   | 12           |                |                 |
|  | 2.5     | CG2.5              | 10                   | 12           |                |                 |
|  | 4       | CG4                | 17                   | 20.5         |                |                 |
|  | 6       | CG6                | 35                   | 42           |                |                 |
|  | 10      | CG10               | 35                   | 42           |                |                 |
|  | 16      | CG16               | 80                   | 96           |                |                 |
|  | 25      | CG25               | 50                   | 250          |                |                 |
|  | 40      | CG40               | 80                   | 400          |                |                 |
|  |         | 60                 | CG60                 | 120          | 400            | Metal thin film |
|  |         | 100                | CG100                | 200          | 800            |                 |
|  |         | 160                | CG160                | 320          | 1 000          |                 |
|  |         | 250                | CG250                | 500          | 1 000          |                 |
|  |         | 400                | CG400 <sup>③</sup>   | 800          | 1 500          |                 |
|  |         | 600                | CG600 <sup>④⑤</sup>  | 1 200        | 1 500          |                 |
|  |         | 1 000              | CG1000               | 1 500        | 3 000          |                 |

## kPa

| Pressure Range             |         | Designator          | Over-pressure Rating | Burst Rating | Sensor Type    |                 |
|----------------------------|---------|---------------------|----------------------|--------------|----------------|-----------------|
| Minimum                    | Maximum |                     |                      |              |                |                 |
| <b>kPa Gauge Reference</b> |         |                     |                      |              |                |                 |
| Vacuum<br>-100             | 0       | JC0                 | 100                  | 200          | Piezoresistive |                 |
|                            | 60      | JC60 <sup>①</sup>   | 400                  | 480          |                |                 |
|                            | 300     | JC300               | 1 700                | 2 000        |                |                 |
|                            | 500     | JC500               | 1 700                | 2 000        |                |                 |
|                            | 900     | JC900               | 3 500                | 4 200        |                |                 |
|                            | 1 500   | JC1500              | 8 000                | 9 600        |                |                 |
| 0                          | 40      | JG40 <sup>②</sup>   | 200                  | 240          | Piezoresistive |                 |
|                            | 60      | JG60                | 400                  | 480          |                |                 |
|                            | 100     | JG100               | 500                  | 600          |                |                 |
|                            | 160     | JG160 <sup>①</sup>  | 1 000                | 1 200        |                |                 |
|                            | 250     | JG250               | 1 000                | 1 200        |                |                 |
|                            | 400     | JG400               | 1 700                | 2 000        |                |                 |
|                            | 600     | JG600               | 3 500                | 4 200        |                |                 |
|                            |         | 1 000               | JG1000               | 3 500        | 4 200          |                 |
|                            |         | 1 600               | JG1600               | 8 000        | 9 600          |                 |
|                            |         | 2 500               | JG2500               | 5 000        | 25 000         | Metal thin film |
|                            |         | 4 000               | JG4000               | 8 000        | 40 000         |                 |
|                            |         | 6 000               | JG6000               | 12 000       | 40 000         |                 |
|                            |         | 10 000              | JG10K                | 20 000       | 80 000         |                 |
|                            |         | 16 000              | JG16K                | 32 000       | 100 000        |                 |
|                            |         | 25 000              | JG25K                | 50 000       | 120 000        |                 |
|                            | 31 500  | JG31.5K             | 50 000               | 120 000      |                |                 |
|                            | 40 000  | JG40K <sup>③</sup>  | 80 000               | 150 000      |                |                 |
|                            | 60 000  | JG60K <sup>④⑤</sup> | 120 000              | 150 000      |                |                 |
|                            | 100 000 | JG100K              | 150 000              | 300 000      |                |                 |

① Minimum for G1/2 EN flush diaphragm; maximum for G1B EN flush diaphragm.

② Minimum for E model.

③ Maximum for 3/8 and 1/2 in.; 10 and 12 mm Swagelok tube adapter.

④ Maximum for G1/2B EN flush diaphragm.

⑤ Maximum for 1/4 in. and 6 mm Swagelok tube adapter.

### Dimensions

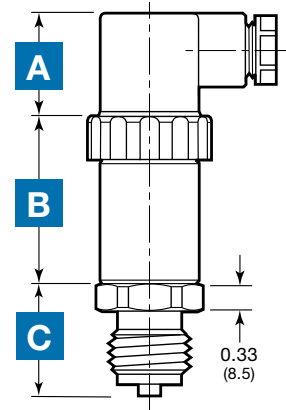
Choose electrical connector, body type, and process end connection, and add together for overall height of transducer.

Dimensions, in inches (millimeters), are for reference only and are subject to change.

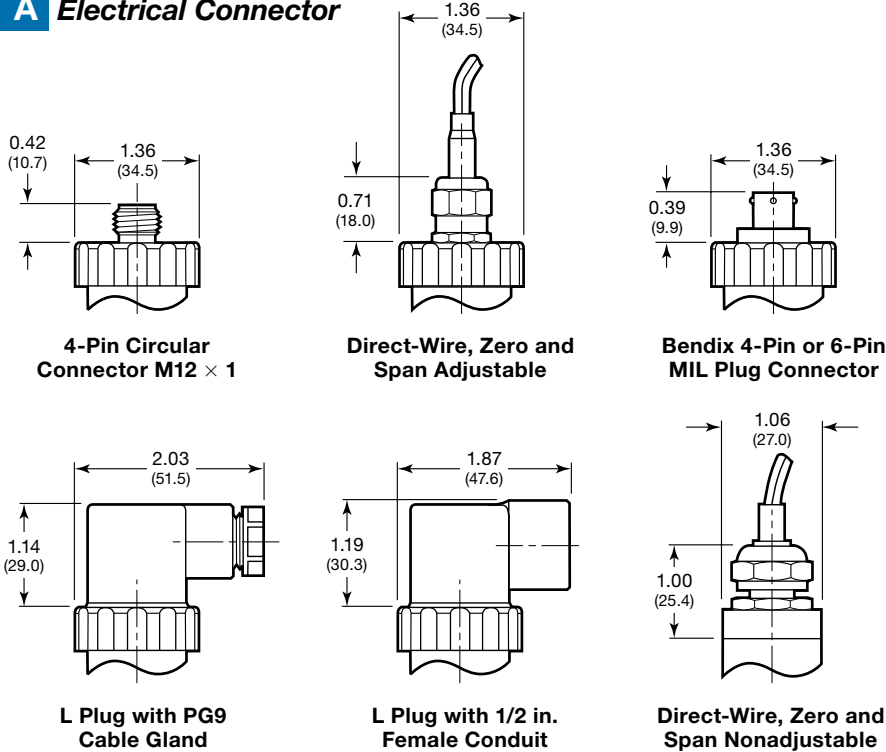
**Electrical Connector**

**Body**

**Process End Connection**

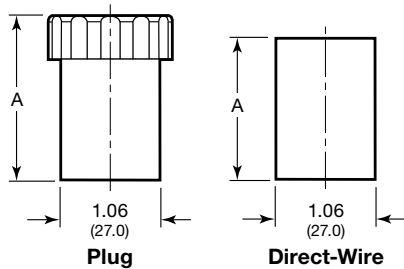


### A Electrical Connector

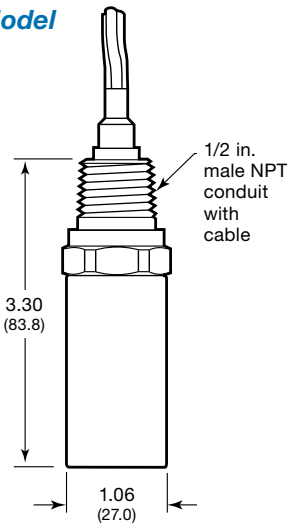


### B Body

*S Model*



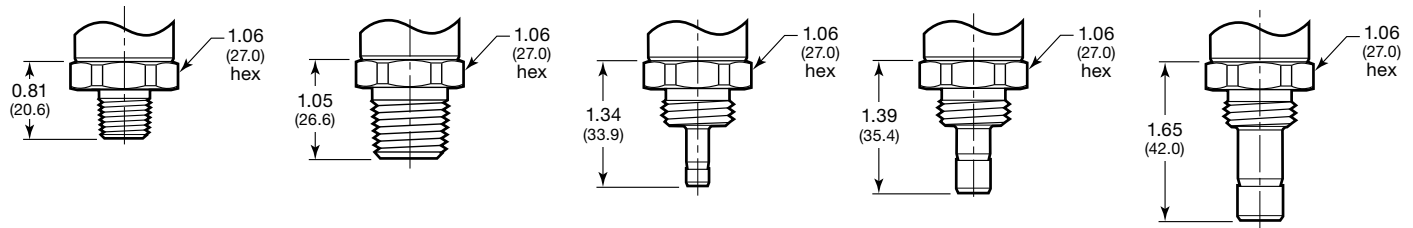
*E Model*



| Body Style                              | Model Accuracy | A<br>in. (mm) |
|---|----------------|---------------|
| Plug                                    | ≤ 0.5 %        | 1.77 (45.0)   |
|   | ≤ 0.25 %       | 2.56 (65.0)   |
| Direct-wire zero and span nonadjustable | ≤ 0.5 %        | 1.52 (38.5)   |
|   | ≤ 0.25 %       | 2.13 (54.0)   |

## Dimensions

### C Process End Connection



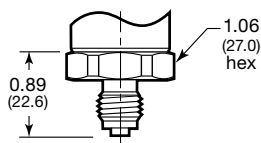
**1/4 in. Male NPT and R1/4PT (ISO 7/1 Taper)**

**1/2 in. Male NPT and R1/2PT (ISO 7/1 Taper)**

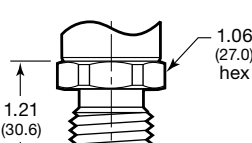
**1/4 in. and 6 mm Swagelok Tube Adapter**

**3/8 in. and 10 mm Swagelok Tube Adapter**

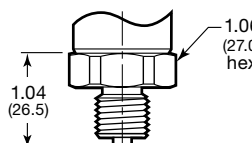
**1/2 in. and 12 mm Swagelok Tube Adapter**



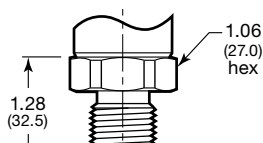
**G1/4B EN (1/4 RG)**



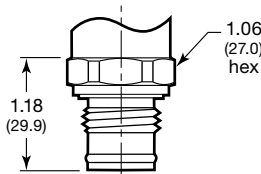
**G1/2B EN (1/2 RG)**



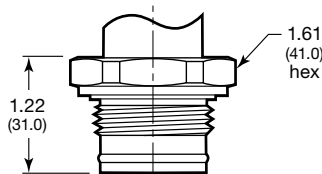
**G1/4B PF (1/4 RJ)**



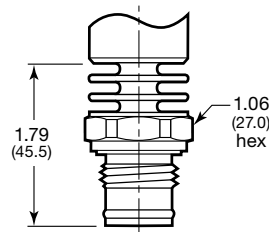
**G1/2B PF (1/2 RJ)**



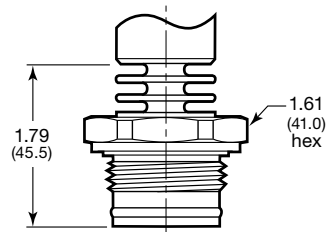
**G1/2B EN Flush Diaphragm**



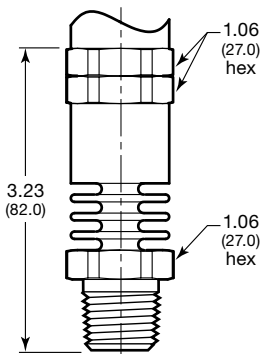
**G1B EN Flush Diaphragm**



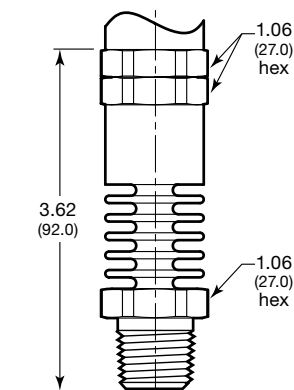
**G1/2B EN Flush Diaphragm with Integral Cooling Element (2 Fins)**



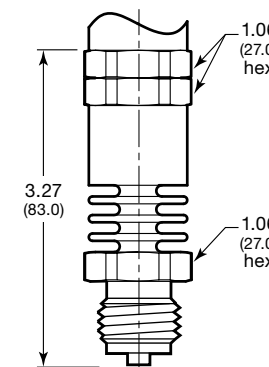
**G1B EN Flush Diaphragm with Integral Cooling Element (2 Fins)**



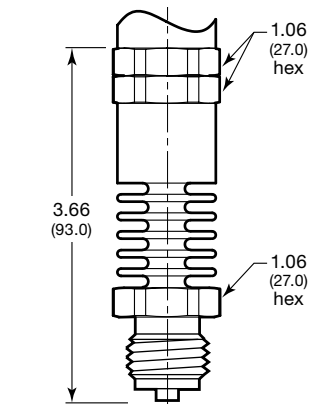
**1/2 in. Male NPT with Mounted Cooling Element -40 to 302°F (-40 to 150°C) (3 Fins)**



**1/2 in. Male NPT with Mounted Cooling Element -40 to 392°F (-40 to 200°C) (5 Fins)**



**G1/2B EN with Mounted Cooling Element -40 to 302°F (-40 to 150°C) (3 Fins)**



**G1/2 EN with Mounted Cooling Element -40 to 392°F (-40 to 200°C) (5 Fins)**

## Options

Options are specified in transducer ordering numbers as shown in **Ordering Information** for each model.

### EPDM and Fluorocarbon FKM/FPM O-Rings

EPDM or fluorocarbon FKM/FPM O-rings are available for flush diaphragm-type transducers.

*FKM* is the designation for fluorinated elastomers as defined in ASTM D1418; *FPM* is the international designation defined in ISO/DIN 1629.

### Alloy C-22 Diaphragm

An alloy C-22 diaphragm is available for flush diaphragm-type transducers with pressure ranges equal to or higher than 0.25 bar (3.6 psi, 0.025 MPa, 0.25 kg/cm<sup>2</sup>, 25 kPa).

### Cables

Optional cable lengths are available. See **Ordering Information** for lengths available for each transducer model.

## Cooling Elements

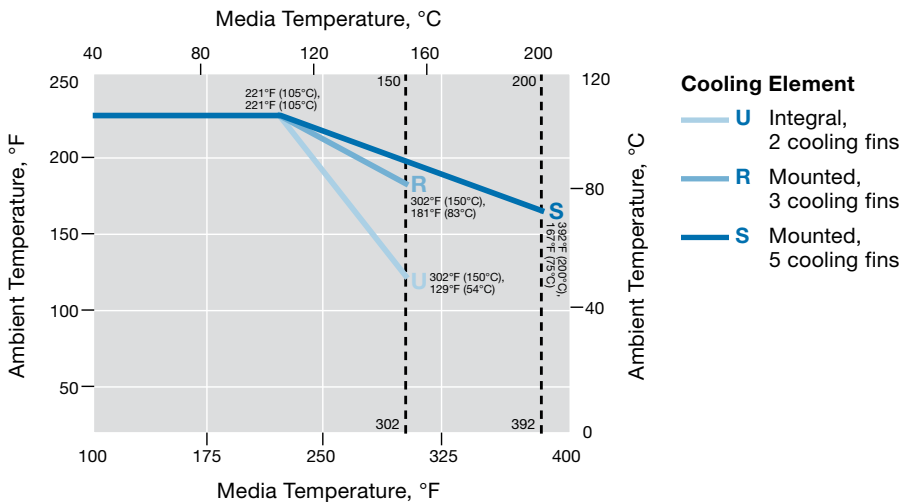
Cooling elements extend the temperature ratings of pressure transducers.

**Integral** cooling elements (option designator **U**) have two cooling fins and are available on S model transducers with flush diaphragms.

**Mounted** cooling elements (option designators **R** and **S**) have three and five cooling fins, respectively, and are available on S model transducers with internal diaphragms.

See the graph below for cooling element selection information.

### Cooling Element Ratings—Media vs Ambient Temperature



Examples: For an ambient temperature of 150°F (65°C) and a media temperature of 250°F (121°C), cooling elements **U**, **R**, and **S** would be suitable.

For an ambient temperature of 150°F (65°C) and a media temperature of 350°F (176°C), only cooling elements **R** and **S** would be acceptable.

## Accessories

### Attachable Indicator Display

This LCD, 4-digit digital display attaches directly to S model transducers using an L-plug connector and 4 to 20 mA output signals. The display provides local readout of system pressure with simultaneous signal transmission.

#### Features

- Retrofits to transducers already in use
- Adjustable and programmable with flush-mounted keys below the front cover
- Rugged, compact plastic case meets IP65
- CE conformity to 89/336/EEC
- Integrated self-diagnosing circuit monitoring

#### Performance

- Accuracy: 0.2% of span  $\pm$  1 digit
- Scale adjustment: manually programmed, menu driven

#### Display

- Range: -1999 to 9999
- Pickup rate: 5/s
- 4-digit LCD, 0.40 in. (10.2 mm) high

#### Housing

- Material: ABS plastic

#### Electrical Data

- Input/output signal: 4 to 20 mA
- Voltage drop: 3 V
- Maximum current rating: 40 mA
- Power supply: supplied by the 4 to 20 mA loop

## Accessories



### Temperature Rating

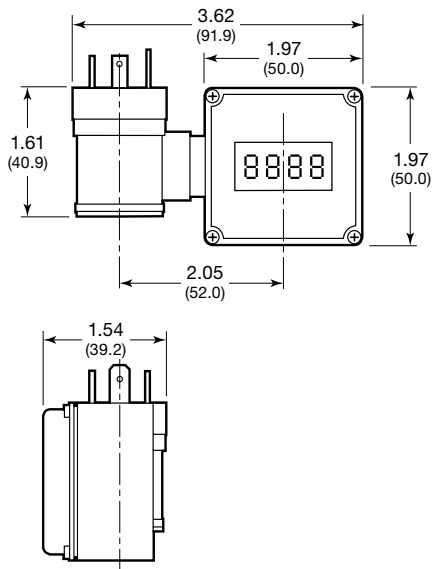
- Ambient:  
32 to 122°F (0 to 50°C)
- Storage:  
-22 to 176°F (-30 to 80°C)
- Influence on display:  
0.1 % per 18°F (10°C)

### Ordering Number

PTI-AI

### Dimensions

Dimensions, in inches (millimeters), are for reference only and are subject to change.



## Accessories

### Cooling Elements

Thread-on cooling element adapters are available for use with G1/2B EN (1/2 RG) process connections on S model transducers only. These cooling adapters increase the media temperature ratings.



| Description  | Ordering Number |
|--|-----------------|
| G1/2B EN (1/2 RG), 302°F (150°C) media, 86°F (30°C) ambient (3 fins) | PTI-CE150-AW    |
| G1/2B EN (1/2 RG), 392°F (200°C) media, 86°F (30°C) ambient (5 fins) | PTI-CE200-AW    |
| 1/2 in. male NPT, 302°F (150°C) media, 86°F (30°C) ambient (3 fins)  | PTI-CE150-AP    |
| 1/2 in. male NPT, 392°F (200°C) media, 86°F (30°C) ambient (5 fins)  | PTI-CE200-AP    |

### Weld Adapters

Field-installed weld adapters with factory machined mating ports are available for the G1/2B EN and G1B EN flush diaphragm process connections.



| Description                           | Ordering Number |
|---------------------------------------|-----------------|
| G1/2B EN flush diaphragm weld adapter | PTI-WA-BV       |
| G1B EN flush diaphragm weld adapter   | PTI-WA-BJ       |

### Cables and Connectors



| Mating Connector  | Ordering Number |
|---|-----------------|
| M12 × 1, 6 ft (2 m) cable, straight, 4-wire                             | PTU-MC-3        |
| M12 × 1, 16 ft (5 m) cable, straight, 4-wire                            | PTU-MC-4        |
| M12 × 1, 6 ft (2 m) cable, 90° angled, 4-wire                           | PTU-MC-5        |
| M12 × 1, no cable, straight, 4-pin                                      | PTU-MC-6        |
| M12 × 1, no cable, 90° angled, 4-pin                                    | PTU-MC-7        |
| M12 × 1, 6 ft (2 m) cable, straight, 5-wire, UL listed <sup>①</sup>     | PTU-MC-8        |
| M12 × 1, 16 ft (5 m) cable, straight, 5-wire, UL listed <sup>②</sup>    | PTU-MC-9        |
| M12 × 1, 6 ft (2 m) cable, 90° angled, 5-wire, UL listed <sup>②</sup>   | PTU-MC-10       |
| M12 × 1, 16 ft (5 m) cable, 90° angled, 5-wire, UL listed <sup>②</sup>  | PTU-MC-11       |
| M12 × 1, no cable, straight, 5-pin                                      | PTU-MC-12       |
| M12 × 1, no cable, 90° angled, 5-pin                                    | PTU-MC-13       |
| M12 × 1 male, no cable, 90° angled, 4-pin,                              | PTU-MC-14       |
| M12 × 1, 32 ft (10 m) cable, 90° angled, 4-wire, UL listed <sup>②</sup> | PTU-MC-15       |

① UL style 2164/1061, temperature rating 176°F (80°C).

② UL style 20549/1061, temperature rating 176°F (80°C).

**Caution: Do not mix or interchange parts with those of other manufacturers.**

## Introduction

Since 1947, Swagelok has designed, developed, and manufactured high-quality, general-purpose and specialty fluid system products to meet the evolving needs of global industries. Our focus is on understanding our customers' needs, finding timely solutions, and adding value with our products and services.

We are pleased to provide this global edition of the book-bound *Swagelok Product Catalog*, which compiles more than 100 separate product catalogs, technical bulletins, and reference documents into one convenient, easy-to-use volume. Each product catalog is up to date at the time of printing, with its revision number shown on the last page of the individual catalog. Subsequent revisions will supersede the printed version and will be posted on the Swagelok website and in the Swagelok electronic Desktop Technical Reference (eDTR) tool.

For more information, visit your Swagelok website or contact your authorized Swagelok sales and service representative.

## Warranty Information

Swagelok products are backed by The Swagelok Limited Lifetime Warranty. For a copy, visit [swagelok.com](http://swagelok.com) or contact your authorized Swagelok representative.

### Safe Product Selection

**When selecting a product, the total system design must be considered to ensure safe, trouble-free performance. Function, material compatibility, adequate ratings, proper installation, operation, and maintenance are the responsibilities of the system designer and user.**

**Caution: Do not mix or interchange parts with those of other manufacturers.**

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