SOLVE YOUR POSITION INDICATION NEEDS

WWW.DWYER-INST.COM • WWW.PROXIMITYCONTROLS.COM
INTRODUCTION

Proximity Controls was started in 1965 out of a garage in Fergus Falls, MN. The first product line was the Ultra-Mag™ Series of diaphragm level controls. The Ultra-Mag™ offers a unique and patented magnetic drive that seals the switch compartment. Building on their experience with magnetic drives, Proximity expanded into position indicators in 1977 with the invention of the Mark Series. Like the Ultra-Mag™, the Mark Series offers a patented magnetic drive that completely seals the switch compartment.

Proximity Controls was acquired in 1989 by Dwyer Instruments of Michigan City, IN. Proximity Controls is still operated out of Fergus Falls today. Dwyer continues the innovative spirit of Proximity Controls by continually developing new products such as the Quick-View® and Detector™ position indicating controls and the PLS rotating paddle level switch.

This catalog only includes the Proximity Controls position indicating product line. For Proximity Controls level products, please go to the Dwyer Instruments, Inc. website at www.dwyer-inst.com.
CUSTOMER SERVICE

FRIENDLY AND FAST

REAL PEOPLE
Courteous and professional customer service representatives are available via phone and email to process and provide assistance with your order. Dwyer provides industry leading response time to answer your call quickly without making you wait.

PRICING
Contact us for formal quotes, Dwyer offers bids and project quotes. Discounts are available for particular customer types based on quantities purchased.

PRODUCT DELIVERY

PROMPT AND ACCURATE

LARGE INVENTORY LOCATED CENTRALLY IN THE U.S.
Dwyer is committed to get you your order quickly with more than 5,000 line items in stock in our Michigan City, Indiana headquarters and in most cases lead times less than two weeks for non-stock products.

FAST PROCESSING AND PACKING
Our dedicated shipping staff packs and ships your order the same day on stock items ordered before 2:00 PM U.S. Central Time.

FLEXIBLE SHIPPING
Dwyer offers blanket orders for OEM’s to schedule out your product shipments to be when you need them. Contact us for details.

TECHNICAL SUPPORT

KNOWLEDGEABLE AND HELPFUL

All of our technical sales staff are degreed engineers trained to be product and industry experts. We listen to your needs and get you the answers you want quickly.

WE HELP YOU FIND A SOLUTION
• Product Selection
• Application Assistance
• Regulatory and Agency Approval Compliance
• Installation Guidance
• Maintenance and Repair
• Product Customization for OEM’s

TO CONTACT A TECHNICAL SUPPORT ENGINEER
PHONE 218/739-3364
FAX 218/739-2734
EMAIL proxis@dwyermail.com
Dwyer Instruments, Inc. - Discount Schedule

<table>
<thead>
<tr>
<th>Quantity of Each Item</th>
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<td>500-Up</td>
<td>20% 15%</td>
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*Please contact us for discount schedules for other account types.

Dwyer Instruments, Inc. - Standard Terms and Conditions of Sale

1. Prices and Specifications: Subject to change without notice.
2. Shipping dates: Are approximate. They are dependent upon credit approval and subject to delays beyond our control.
3. Terms: Net 30 days to companies with established credit rating. In the event Buyer fails to fulfill previous terms of payment, or in case Seller shall have any doubt at any time as to Buyer's financial responsibility, Seller may decline to make further deliveries except upon receipt of cash in advance or other special arrangements.
4. Point and Title: All material is sold EXW Ex Works Dwyer Instruments, Inc. Title to all material sold shall pass to Buyer upon delivery by Seller to carrier at shipping point.
5. State and Local Taxes: Any taxes which the Seller may be required to pay or collect upon or with respect to the sale, purchase, delivery, use or consumption of any of the material covered hereby shall be for the account of the Buyer and shall be added to the purchase price.
6. Special tooling, dies, silk screens and molds acquired specially to produce goods for Buyer remain the property of Dwyer Instruments, Inc., and may not be removed. They will be maintained in good condition for a minimum period of three years from the date of the original purchase order.
7. Trade Compliance: Buyer acknowledges that the products, software, and technology, including technical information and documents (collectively "items"), of Dwyer Instruments, Inc., are subject to regulation by agencies of the U.S. government including, but not limited to, the U.S. Department of Commerce. Buyer shall comply with the Export Administration Regulations (EAR) and all applicable U.S. laws and regulations regarding the sale, delivery and transfer of said items. Buyer shall not, without first obtaining the required licenses, authorizations or approvals from the appropriate U.S. government agency; (i) export, re-export, transfer or divert any item directly or indirectly to any country or national resident thereof, or any person, entity or country that has restrictions imposed on them by the U.S. government, (ii) engage in, or knowingly sell to any party engaged in activity related to the development, production, use, testing, or maintenance of Weapons of Mass Destruction, including uses related to nuclear, missile, chemical or biological warfare, or (iii) engage in, or knowingly sell to any party engaged in activity related to the development, production, use, or maintenance of any safeguarded or unsafeguarded nuclear fuel facility or components for such facilities. Buyer shall fully cooperate with Seller, without charge, in any official audit or inspection by an authorized agent, official, employee, or accredited representative of the U.S. government. Buyer shall indemnify and hold Seller harmless from, or in connection with, any violation of this Section by Buyer, its employees, consultants, agents, or customers. The obligations, requirements and claims described herein shall survive the expiration of any business relationship with Dwyer Instruments, Inc., including its divisions, subsidiaries and affiliated companies.
8. Limited Warranty: The Seller warrants all Dwyer Instruments and equipment to be free from defects in workmanship or material under normal use and service for a period of one year from date of shipment. Liability under this warranty is limited to repair or replacement EXW Ex Works Dwyer Instruments, Inc. of any parts which prove to be defective within that time or repayment of the purchase price at the Seller's option provided the instruments have been returned, transportation prepaid, within one year from date of purchase. All technical advice, recommendations and services are based on technical data and information which the Seller believes to be reliable and are intended for use by persons having skill and knowledge of the business, at their own discretion. In no case is Seller liable beyond replacement of equipment EXW Ex Works Dwyer Instruments, Inc. or the full purchase price. This warranty does not apply if the maximum ratings label is removed or if the instrument or equipment is abused, altered, used at ratings above the maximum specified, or otherwise misused in any way. THIS EXPRESS LIMITED WARRANTY IS IN LIEU OF AND EXCLUDES ALL OTHER REPRESENTATIONS MADE BY ADVERTISMENTS OR BY AGENTS AND ALL OTHER WARRANTIES, BOTH EXPRESS AND IMPLIED. THERE ARE NO IMPLIED WARRANTIES OF MERCHANTABILITY OR OF FITNESS FOR A PARTICULAR PURPOSE FOR GOODS COVERED HERUNDER.
9. Buyer's Remedies: THE SELLER'S EXCLUSIVE AND SOLE REMEDY ON ACCOUNT OF OR IN RESPECT TO THE FURNISHING OF NON-COMFORMING OR DEFECTIVE MATERIAL SHALL BE TO SECURE REPLACEMENT THEREOF AS AFORESAID. THE SELLER SHALL NOT IN ANY EVENT BE LIABLE FOR THE COST OF ANY LABOR EXPENDED ON ANY SUCH MATERIAL OR FOR ANY SPECIAL, DIRECT, INDIRECT, CONSEQUENTIAL OR INCIDENTAL DAMAGES TO ANYONE BY REASON OF THE FACT THAT IT SHALL HAVE BEEN CONFORMING OR DEFECTIVE.
10. Acceptance: All orders shall be subject to the terms and conditions contained or referred to in the Seller's quotation, acknowledgment, and to those listed here and to no others whatsoever. No waiver, alteration or modification of these terms and conditions shall be binding unless in writing and signed by an executive officer of the Seller. All orders are subject to written acceptance by Dwyer Instruments, Inc., Michigan City, Indiana, U.S.A.
The Proximity™ Mark Series is a line of position indicators with a selection of various output options. Three model styles make up the Mark series to cover almost any application. Standard models in the Mark Series have visual position indicators and are weatherproof, explosion-proof, and submersible. A large variety of outputs are available to fit specific applications. There is a choice of 1 to 6 switch outputs of 36 varieties including inductive sensors, high temperature switches, gold contact switches, hermetically sealed switches, and high current switches. Besides the switch outputs the Series offers potentiometer outputs, transmitters and HART Communications. The units are purchased for either direct drive applications, such as rotary valves, or lever drive applications, such as linear valves. Adjustable visual indicator is standard on direct drive units that displays OPEN / CLOSED status and degrees.

A magnetic drive that completely seals the switch compartment from the atmosphere for maximum leak protection is utilized in the Mark 1. The Mark 3 uses the same magnetic drive of the Mark 1, but it can be used for multi-turn applications with 1 to 25 revolutions, such as gate valves. A through shaft drive is incorporated in the Mark 4 making the unit a lower cost alternative to the Mark 1 for applications that are not as demanding.

**Mark 1**
- Features a magnetic coupling that isolates the switch compartment, completely sealing the unit from the surrounding atmosphere for maximum hazard and leak protection.
- EZset cams on switch models provide simple set point adjustment.
- Flexible design allows multiple switches and transmitter options.
- Ideal for corrosive environments.

**Mark 3**
- Features a magnetic coupling that isolates the switch compartment, completely sealing the unit from the surrounding atmosphere for maximum hazard and leak protection.
- Multi-Turn models that can provide switch signals between 1 and 25 revolutions, and transmitter models for up to 10 revolutions without gear reduction.
- Flexible design allows multiple switches and transmitter options.
- Ideal for corrosive environments.

**Mark 4**
- Thru-Shaft design that features a 1˝ bushing for long life and O-rings to seal the switch compartment for hazard, corrosion, and leak protection.
- EZset cams on switch models provide simple set point adjustment.
- Flexible design allows multiple switches and transmitter options.
- A lower cost alternative to the Mark 1 Series for less demanding applications.
**Position Indicators/Switches/Transmitters**

**HART® Communications**

- Available on Mark 1, 3, and 4 model indicators
- 4 to 20 mA analog position transmitter with HART® communications
- HART® features include:
  - Digital indication of position
  - 4 digital programmable position switches
  - Calibration of zero and span at the device from pushbuttons or through HART® master
  - Indication of sensor failure, programmable to 3.8 or 21 mA
  - Programmable dampening
  - Self test

**Junction Package**

Complete factory assembled packages combine visual indication, solenoids, switches and transmitter in a single convenient UL, CSA, ATEX, or SAA certified assembly which saves labor and reduces cost. The simple package is shipped ready for installation, complete with a custom designed mounting kit for your specific application. Many options are available such as painted aluminum, epoxy coated aluminum or stainless steel housings including a standard 3/4˝ NPT conduit entrance and choice of 1 or 2 additional 1/2˝ NPT conduit entrances. The optional conduit entrances are drilled and tapped in the base of the position indicator housing and solenoid valves are screwed into the entrances. 22 to 16 AWG wire leads from solenoids, switches and optional transmitter are terminated in prelabeled, easy-access terminal strips protected inside the housing. Note: UL, CSA, ATEX, or SAA approval requires complete package assembly by Proximity. Consult the factory for recommended UL, CSA, ATEX, or SAA approved solenoid valve options.

**Factory Sealed Leads**

Eliminate the possibility of conduit contamination and the need for seal fittings with Proximity’s factory sealed (potted) leads. This seal has been UL tested to 6000 psi (413 bar) and listed for Class I, Groups A, B, C, D; Div. 1 & 2 atmospheres. Groups may vary depending on the switch model. Standard leads are 16 AWG and 36” (91.44 cm) long.

**AS-Interface**

- AS-Interface allowing networking of up to 31 devices over a 2-wire network
- Option for Mark 1 Magnetic Drive and Mark 4 Thru-Shaft Valve Position Indicators
- Available with 1 or 2 incorporated solenoid valves
**PROXIMITY® Series Mark 1**

**Rotary Position Indicator**

Magnetically Coupled Switches and Transmitters

Ideal for Corrosive Environments

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**BENEFITS**

- The switch compartment is completely isolated from atmosphere.
- A magnetic coupling completely seals the switch compartment for maximum hazard and leak protection. (IP68 and submersible to 50 feet indefinitely).
- Set screw cams provide infinite adjustment, and user-friendly manual cams provide single-step rotational adjustment and locking screw.
- Flexible design allows multiple mechanical or proximity switches and transmitter option(s).
- Adjustable stainless steel visual indicator with scale is standard for quarter turn direct drive applications.
- Housing options include 1, 2 or 3 conduit entrances, junction package, terminal strip and solenoid valve option(s).
- Mounting hardware is available in plated or stainless steel material for your specific requirements, including rotary, linear and NAMUR mounting hardware.

**APPLICATIONS**

- Rotary valve actuators and dampers
- Linear valve actuators and cylinders
- Manual valves
- Gear operators
- Positioners

**SPECIFICATIONS**

**Electrical Connections:** Screw terminal. Optional factory sealed leads that are 36” (914.4 mm) of 16 AWG.

**Conduit Connection:** 3/4” female NPT standard. Optional one or two 1/2” female NPT, M25 and M20 optional (standard on SAA certified products).

**Mounting Orientation:** Not position sensitive.

**Minimum Rotation Travel:** 5°.

**Maximum Rotation Travel:** 360°.

**Operational Life:** Over 10,000,000 cycles.

**Maximum Altitude:** 2000 meters.

**Weight:** 3 to 6 lb (1.5 to 3.0 kg).

**Approvals:** ATEX, CSA, IECEx, INMETRO, UL.

**POPULAR MODELS**

<table>
<thead>
<tr>
<th>Model</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>12AD0</td>
<td>Mark 1 with 2 SPDT switches, direct drive</td>
</tr>
<tr>
<td>12AL0</td>
<td>Mark 1 with 2 SPDT switches, lever drive</td>
</tr>
<tr>
<td>14AD0</td>
<td>Mark 1 with 4 SPDT switches, direct drive</td>
</tr>
<tr>
<td>15VD0</td>
<td>Mark 1 with 2 SPDT switches, position transmitter, direct drive</td>
</tr>
<tr>
<td>19OD6</td>
<td>Stainless Steel Mark 1, Transmitter with HART, direct drive</td>
</tr>
</tbody>
</table>

See model chart on page 11.
**BENEFITS**
- The switch compartment is completely isolated from atmosphere.
- A magnetic coupling completely seals the switch compartment for maximum hazard and leak protection, (IP68 and submersible to 50 feet indefinitely).
- Switch signals are provided between 1 and 25 revolutions. Transmitter output is available up to 10 revolutions without gear reduction.
- Flexible design allows multiple mechanical switch and transmitter option(s).
- Housing options include 1, 2 or 3 conduit entrances, for junction package with solenoid valve option(s).
- Mounting hardware available in plated or stainless steel for your specific requirements includes rotary, linear and NAMUR mounting hardware.

**APPLICATIONS**
- Multi-turn rotary valves and actuators
- Linear valve actuators and cylinders
- Multi-turn manual valves
- Gear operators
- Positioners

**SPECIFICATIONS**
- **Electrical Connections:** Screw terminal. Optional factory sealed leads that are 36” (914.4 mm) of 16 AWG.
- **Conduit Connection:** 3/4” female NPT standard. Optional one or two 1/2” female NPT. M25 and M20 optional (standard on SAA certified products).
- **Mounting Orientation:** Not position sensitive.
- **Minimum Rotation Travel:** 5 revolution.
- **Maximum Rotation Travel:** 25 revolutions.
- **Operational Life:** Over 10,000,000 cycles.
- **Maximum Altitude:** 2000 meters.
- **Weight:** 3 to 6 lb (1.5 to 3.0 kg).
- **Approvals:** ATEX, CSA, IECEx, INMETRO, UL.

**POPULAR MODELS**

<table>
<thead>
<tr>
<th>Model</th>
<th>Description</th>
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<tbody>
<tr>
<td>35OD0</td>
<td>Mark 3 direct drive 4-20mA transmitter</td>
</tr>
<tr>
<td>35OL0</td>
<td>Mark 3 lever drive 4-20mA transmitter</td>
</tr>
<tr>
<td>33OD0</td>
<td>Mark 3 direct drive 1K Ω potentiometer</td>
</tr>
<tr>
<td>33OL0</td>
<td>Mark 3 lever drive 1K Ω potentiometer</td>
</tr>
<tr>
<td>35AD0</td>
<td>Mark 3 direct drive 4-20mA transmitter with SPDT switch</td>
</tr>
</tbody>
</table>

See model chart on page 11.
**PROXIMITY® Series Mark 4**

**Rotary Position Indicator**

Thru-Shaft Switches and Transmitters

Ideal for Corrosive Environments

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**BENEFITS**

- A shaft through a 1” bushing and O-ring seals the switch compartment for hazard, corrosion and leak protection, (IP68 submersible).
- Set screw cams provide infinite adjustment, and user-friendly manual cams provide single-step rotational adjustment and locking set screw.
- Flexible design allows multiple mechanical or proximity switch and transmitter option(s).
- Adjustable stainless steel visual indicator with scale is standard for quarter turn direct drive applications.
- Housing options include 1, 2 or 3 conduit entrances, junction package, terminal strip and solenoid valve(s).
- Mounting hardware available in plated or stainless steel for your specific requirements includes rotary, linear and NAMUR mounting hardware.
- High temperature to 600°F (315°C) for limited duration, consult factory for available options.

**APPLICATIONS**

- Rotary valve actuators and dampers
- Linear valve actuators and cylinders
- Manual valves
- Gear operators
- Positioners

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**SPECIFICATIONS**

**Electrical Connections:** Screw terminal. Optional factory sealed leads that are 36” (914.4 mm) of 16 AWG.

**Conduit Connection:** 3/4” female NPT standard. Optional one or two 1/2” female NPT, M25 and M20 optional (standard on SAA certified products).

**Mounting Orientation:** Not position sensitive.

**Minimum Rotation Travel:** 5°.

**Maximum Rotation Travel:** 360°.

**Operational Life:** Over 10,000,000 cycles.

**Maximum Altitude:** 2000 meters.

**Weight:** 3 to 6 lb (1.5 to 3.0 kg).

**Approvals:** ATEX, CSA, IECEx, INMETRO, UL.

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**POPULAR MODELS**

<table>
<thead>
<tr>
<th>Model</th>
<th>Description</th>
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<tbody>
<tr>
<td>42AD0</td>
<td>Mark 4 with 2 SPDT switches, direct drive</td>
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<tr>
<td>45AD0</td>
<td>Mark 4 with 4 SPDT switches, direct drive</td>
</tr>
<tr>
<td>42VD0-J1</td>
<td>Mark 4 with 2 SPDT switches, junction package, direct drive</td>
</tr>
<tr>
<td>44VD0-J1</td>
<td>Mark 4 with 2 SPDT switches, junction package, direct drive</td>
</tr>
<tr>
<td>49VD0</td>
<td>Mark 4 with 2 SPDT switches, transmitter with HART, direct drive</td>
</tr>
</tbody>
</table>

See model chart on page 11.
The Proximity™ Mark Series is a line of position indicators with a selection of various output options. Three model styles make up the Mark series to cover almost any application. Standard models in the Mark Series have visual position indicators and are weatherproof, explosion-proof, and submersible. A large variety of outputs are available to fit specific applications. There is a choice of 1 to 6 switch outputs of 14 varieties including inductive sensors, high temperature switches, gold contact switches, hermetically sealed switches, and high current switches. Besides the switch outputs the Series offers potentiometer outputs, transmitters and HART® Communications. The units are purchased for either direct drive applications, such as rotary valves, or lever drive applications, such as linear valves. Adjustable visual indicator is standard on direct drive units that displays OPEN / CLOSED status and degrees.

A magnetic drive that completely seals the switch compartment from the atmosphere for maximum leak protection is utilized in the Mark 1. The Mark 3 uses the same magnetic drive of the Mark 1, but it can be used for multturn applications with 1 to 25 revolutions, such as gate valves. A through shaft drive is incorporated in the Mark 4 making the unit a lower cost alternative to the Mark 1 for applications that are not as demanding.

### SPECIFICATIONS

**Product Rating:**
- Weatherproof and flameproof. NEMA 1, 2, 3, 3R, 3S, 4, 4X, 6, 7, 9, 12, 13.
- UL rated: Class I, Div. 1 & 2, Groups B, C, D (Some units available for Group A, consult factory), Class II, Div. 1 & 2, Groups E, F, and G.
- CSA rated: Class I, Div. 1 & 2, Groups B, C, D; Class II, Div. 1 & 2, Groups E, F, and G; Submersible to 50 feet. Certified Ex d IIC T6 IP68 15 meters.

**ATEX Compliant:**
- -IE suffix, directive 94/9/EC, IECEx DEK II.0056X Ex d IIC T6 Gb for -25°C/-40°C/-50°C ≤ Tamb ≤ 80°C (optional wording) depending on output and switch type selected.
- -IE suffix, Ex ia IIC T4 Ga.

**INMETRO Compliant:**
- EM suffix, Certificate: NCC 13.02339 X; Marking: Ex d IIC T6 Gb or Ex d IIC T5 Gb.

**Switch Outputs (Mark 1, 3 and 4)**
- **Temperature Limits:** -58 to 176°F (-50 to 80°C). Switch Type C rated to 350°F (176°C) for 600 hours, Switch Type T rated to 250°F (121°C) continuous. [ATEX flameproof, -B suffix, rated -50 to 80°C (-58 to 176°F) for switch type A, G, H, T, or M; -40 to 80°C (-40 to 176°F) for switch type O, R, S, V, or W; -25 to 80°C (-13 to 176°F) for switch type B, D, I, or AS Interface; ATEX intrinsically safe, -IS suffix, rated -25 to 40°C (-13 to 104°F) for switch type R, V, or W, or -50 to 40°C (-58 to 104°F) for switch type A, G, or H.]

**Switch Type:**
- See model chart on next page.

**Electrical Rating:**
- See model chart on next page.

**Set Point Adjustment:**
- Mark 1 and 4: 5 to 360°; Mark 3: 1 to 25 revolutions.

**Potentiometer (Mark 1, 3 and 4)**
- **Accuracy:** ±0.5% of full span. Optional ±0.25% of full span.
- **Temperature Limits:** -40 to 176°F (-40 to 80°C). [ATEX flameproof, -B suffix, rated -40 to 80°C (-40 to 176°F) for switch type A, G, M, O, R, S, T, V, or W; -25 to 80°C (-13 to 176°F) for switch type B, D, or I; ATEX intrinsically safe, -IS suffix, rated -25 to 40°C (-13 to 104°F) for switch type I, -40 to 40°C (-40 to 104°F) for switch type O, R, S, V, or W.]
- **Power Rating:** 1.5 watt maximum.
- **Output Signal:** 1000 ohm standard. Optional 2000, 5000, 10000, or 20000 ohms.
- **Zero and Span Adjustments:** Span trim pot with 2000 ohm adjustment. No zero adjustment.

**Rotational Travel:**
- Mark 1 and 4: Minimum 0°, Maximum 340°; Mark 3: 0 to 10 revolutions.

**Transmitter (Mark 1, 3 and 4)**
- **Accuracy:** ±0.5% of full span. Optional ±0.25% of full span.
- **Temperature Limits:** -40 to 176°F (-40 to 80°C). [ATEX flameproof, -B suffix, rated -40 to 80°C (-40 to 176°F) for switch type A, G, M, O, R, S, T, V, or W; -25 to 80°C (-13 to 176°F) for switch type B, D, or I; ATEX intrinsically safe, -IS suffix, rated -25 to 40°C (-13 to 104°F) for switch type I, -40 to 40°C (-40 to 104°F) for switch types O, R, S, V, or W.]
- **Power Requirements:** 5 to 30 VDC.
- **Current Consumption:** 50 mA.
- **Output Signal:** 4 to 20 mA.
- **Zero and Span Adjustments:** Trim pots for adjusting both. Mark 1 and 4: Span is adjustable from 50 to 300°; Mark 3: Span is adjustable from 1.5 to 8.5 revolutions.
- **Conduit Connection:** 3/4˝ female NPT standard. Optional one or two 1/2˝ female NPT, M25 and M20 optional.
- **Rotational Travel:** Mark 1 and 4: Minimum 0°, Maximum 340°; Mark 3: Minimum 1.5 revolutions, Maximum 8.5 revolutions.
- **Transmitter w/ HART® (Mark 1, 3 and 4)**
- **Accuracy:** ±0.25% of full span.
- **Temperature Limits:** -40 to 176°F (-40 to 80°C). [ATEX flameproof, -B suffix, rated -40 to 80°C (-40 to 176°F) for switch type A, G, M, O, R, S, T, V, or W; -25 to 80°C (-13 to 176°F) for switch type B, D or I.]
- **Power Requirements:** 8 to 30 VDC.
- **Current Consumption:** 21 mA.
- **Output Signal:** 4 to 20 mA.
- **HART® Receive Impedance:** Rx = 500 ohms; Cx = 2500 pF.
- **Zero and Span Adjustments:** Pushbuttons or HART® master for setting both. Mark 1 and 4: Span is adjustable from 0 to 330°; Mark 3: Span is adjustable from 1.5 to 8.5 revolutions.
- **Conduit Connection:** 3/4˝ female NPT standard. Optional one or two 1/2˝ female NPT, M25 and M20 optional.
- **Rotational Travel:** Mark 1 and 4: Maximum 340°; Mark 3: Minimum 1.5 revolutions, Maximum 8.5 revolutions.

**Recommended accessories:**
- CS6 series flange bushings for direct drive units.
- CS6 series flange bushings for lever drive units.
- Conduit bushing kit.
- Conduit adapter set.
- Pushbutton kit.
- Size S, T, V, W, A, G, M, O.
- S, T, V, W, A, G.
- B, D.
- C.
- R.
- ±5% of full span. Optional ±2.5%.
## Position Indicators/Switches/Transmitters

### Construction

<table>
<thead>
<tr>
<th>1</th>
<th>3</th>
<th>4</th>
</tr>
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<tbody>
<tr>
<td>1</td>
<td>Mark 1, Magnetic Coupling</td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>Mark 3, Multi-Turn</td>
<td></td>
</tr>
<tr>
<td>4</td>
<td>Mark 4, Thru-Shaft</td>
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### Output Type

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<tr>
<th>1</th>
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<tbody>
<tr>
<td>1</td>
<td>1 Switch</td>
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</tr>
<tr>
<td>2</td>
<td>2 Switches</td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>Potentiometer, 1 KΩ. Available with switches, see note below.*</td>
<td></td>
</tr>
<tr>
<td>32</td>
<td>Potentiometer, 2 KΩ. Available with switches, see note below.*</td>
<td></td>
</tr>
<tr>
<td>35</td>
<td>Potentiometer, 5 KΩ. Available with switches, see note below.*</td>
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<tr>
<td>310</td>
<td>Potentiometer, 10 KΩ. Available with switches, see note below.*</td>
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<tr>
<td>320</td>
<td>Potentiometer, 20 KΩ. Available with switches, see note below.*</td>
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<tr>
<td>4</td>
<td>4 Switches</td>
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<tr>
<td>5</td>
<td>Transmitter, to 20 mA. Available with switches, see note below.*</td>
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</tr>
<tr>
<td>7</td>
<td>AS-interface and 1 Switch. Available with Switch Types B, I, R, W.</td>
<td></td>
</tr>
<tr>
<td>8</td>
<td>AS-interface and 2 Switches. Available with Switch Types B, I, R, W.</td>
<td></td>
</tr>
<tr>
<td>9</td>
<td>HART® Transmitter. Available with switches, see note below.*</td>
<td></td>
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</tbody>
</table>

### Switch Type & Rating

<table>
<thead>
<tr>
<th>A</th>
<th>SPDT Snap, Rated: 15 A @ 125/250/480 VAC (<del>), 1/8 hp @ 125 VAC (</del>), 1/4 hp @ 250 VAC (<del>), 1/4 A @ 250 VDC (</del>).</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>B</td>
<td>SPDT High Temperature Snap, 350°F (176°C) for 600 hours, Rated: 15.1 A @ 125/250/277 VAC (<del>), 0.3 A @ 125 VDC (</del>), 0.15 A @ 250 VDC (~).</td>
<td></td>
</tr>
<tr>
<td>C</td>
<td>DPDT Snap, Rated: 10 A @ 125/250 VAC (<del>), 0.3 A @ 125 VDC (</del>), 0.15 A @ 250 VDC (~).</td>
<td></td>
</tr>
<tr>
<td>D</td>
<td>SPDT Gold Contact Snap, Rated: 5 A @ 125/250/480 VAC (~).</td>
<td></td>
</tr>
<tr>
<td>E</td>
<td>SPDT Hermetically Sealed Snap, Rated: 1 A @ 125 VAC (~).</td>
<td></td>
</tr>
<tr>
<td>F</td>
<td>NAMUR Inductive Sensor. 15 mA max @ 5-25 VDC (~).</td>
<td></td>
</tr>
<tr>
<td>G</td>
<td>SPDT Magnetic Blow-Out, Rated: 10 A @ 125 VAC (<del>) / VDC (</del>), 1/4 hp @ 125 VAC (<del>) / VDC (</del>).</td>
<td></td>
</tr>
<tr>
<td>H</td>
<td>No Switches</td>
<td></td>
</tr>
<tr>
<td>I</td>
<td>SPDT Hermetically Sealed Reed, Rated: 2 A @ 125 VAC (<del>), 2 A @ 24 VDC (</del>).</td>
<td></td>
</tr>
<tr>
<td>J</td>
<td>SPDT Snap, Rated: 4 A @ 125/250 VAC (~).</td>
<td></td>
</tr>
<tr>
<td>K</td>
<td>SPDT Snap, Rated: 15 A @ 125/250/480 VAC (<del>) / VDC (</del>), 1/8 hp @ 125 VAC (<del>), 1/4 A @ 250 VDC (</del>).</td>
<td></td>
</tr>
<tr>
<td>L</td>
<td>SPDT Gold Contact Snap, Rated: 0.1 A @ 125 VAC (~).</td>
<td></td>
</tr>
</tbody>
</table>

### Driving Method

<table>
<thead>
<tr>
<th>O</th>
<th>Direct Drive (Shaft) with SS Visual Indicator.</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>L</td>
<td>Lever Drive (Shaft), No Visual Indicator.</td>
<td></td>
</tr>
</tbody>
</table>

### Enclosure

<table>
<thead>
<tr>
<th>J</th>
<th>Aluminum, Painted Black</th>
<th>A A A</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>Aluminum, Painted White Epoxy with SS trim</td>
<td></td>
</tr>
<tr>
<td>6</td>
<td>Cast 316 SS</td>
<td>A A A</td>
</tr>
</tbody>
</table>

### Options

<table>
<thead>
<tr>
<th>J1</th>
<th>Junction Package with One 1/2” NPT Female Conduit Connection and Terminal Strip.</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>J2</td>
<td>Junction Package with Two 1/2” NPT Female Conduit Connection and Terminal Strip.</td>
<td></td>
</tr>
<tr>
<td>SV1</td>
<td>1 Attached Solenoid Valve (Must be ordered with J1 option).</td>
<td></td>
</tr>
<tr>
<td>SV2</td>
<td>2 Attached Solenoid Valves (Must be ordered with J2 option).</td>
<td></td>
</tr>
<tr>
<td>MT</td>
<td>Metric Threaded Conduit Connection, M25 (M20 for optional J1 and J2 connections).</td>
<td></td>
</tr>
<tr>
<td>M</td>
<td>Directive 94/9/EC, KEMA 03 ATEX 2005, Directive 1999/92/EC II 2 G Ex ia IIC T6 (-25/-40/-50°C†† ≤ Tamb ≤ 70°C) (T5 (-25/-40/-50°C†† ≤ Tamb ≤ 80°C) optional wording).</td>
<td></td>
</tr>
<tr>
<td>IM</td>
<td>Certificate: NCC 13.02338 X; Marking: Ex ia IIC T4 Ga.</td>
<td>A A A</td>
</tr>
<tr>
<td>EM</td>
<td>Certification: NCC 13.02339 X; Marking: Ex d IIC T6 Gb or Ex d IIC T5 Gb</td>
<td>A A A</td>
</tr>
</tbody>
</table>

*Note: Mark 1 and 4 potentiometer and transmitter outputs will have no switches when ordered with switch type 0; 2 switches if ordered with switch types B, C, I, R, V, or W, and 4 switches if ordered with switch type S. Mark 3 potentiometer and transmitter outputs will have no switches when ordered with switch type 0, and 2 switches if ordered with switch types A, G, M or T.

††Minimum temperature depends on output and switch type selected.

---

Mark Series mounted to an actuator

Phone: 218/739-3364 • 219/879-8000 | Fax: 218/739-2734 • 219/872-9057
Mounting kits with drive yoke (see drawing), or slotted lever arm, bracket, fasteners and other zinc plated or stainless steel hardware fit over 2000 popular valves and actuators. A high strength spring tempered stainless steel drive yoke/coupling is tailored to fit securely to a specific valve or actuator stem. There is no slippage or binding. No special alignment fixtures are required due to switch offset design and yoke to stem engagement that makes installation a “snap”. Each kit is specially designed for a particular valve or actuator, making field mounting simple with standard tools. Please specify make and model of valve or actuator on order. Mounting kits can be used interchangeably with all models since external mounting features are identical. Rotary valves utilize direct drive couplings and a slotted lever drive is used with linear valves. Lever drives convert linear motion to rotary. Stainless steel visual indicators are standard for direct drive, automated quarter-turn valve applications.

### SPECIFICATIONS

**Material:** Plated steel or stainless steel.

**Valve Types:** Quarter turn actuators, manual quarter turn valves, linear control valves.

### Popular Bracket Models

<table>
<thead>
<tr>
<th>Model</th>
<th>Description</th>
<th>Hole Pattern</th>
<th>Shaft Height</th>
<th>Material</th>
</tr>
</thead>
<tbody>
<tr>
<td>901-564</td>
<td>NAMUR A</td>
<td>30 x 80 mm</td>
<td>20 mm</td>
<td>Plated steel</td>
</tr>
<tr>
<td>901-565</td>
<td>NAMUR B</td>
<td>30 x 80 mm</td>
<td>30 mm</td>
<td>Plated steel</td>
</tr>
<tr>
<td>901-566</td>
<td>NAMUR C</td>
<td>30 x 130 mm</td>
<td>30 mm</td>
<td>Plated steel</td>
</tr>
<tr>
<td>901-567</td>
<td>NAMUR D</td>
<td>30 x 130 mm</td>
<td>50 mm</td>
<td>Plated steel</td>
</tr>
<tr>
<td>901-632</td>
<td>NAMUR E</td>
<td>25 x 50 mm</td>
<td>20 mm</td>
<td>Plated steel</td>
</tr>
<tr>
<td>901-979</td>
<td>NAMUR F</td>
<td>30 x 150 mm</td>
<td>30 mm</td>
<td>Plated steel</td>
</tr>
<tr>
<td>901-564</td>
<td>NAMUR A</td>
<td>30 x 80 mm</td>
<td>20 mm</td>
<td>Stainless steel</td>
</tr>
<tr>
<td>901-565</td>
<td>NAMUR B</td>
<td>30 x 80 mm</td>
<td>30 mm</td>
<td>Stainless steel</td>
</tr>
<tr>
<td>901-566</td>
<td>NAMUR C</td>
<td>30 x 130 mm</td>
<td>30 mm</td>
<td>Stainless steel</td>
</tr>
<tr>
<td>901-567</td>
<td>NAMUR D</td>
<td>30 x 130 mm</td>
<td>50 mm</td>
<td>Stainless steel</td>
</tr>
<tr>
<td>901-632</td>
<td>NAMUR E</td>
<td>25 x 50 mm</td>
<td>20 mm</td>
<td>Stainless steel</td>
</tr>
<tr>
<td>901-979</td>
<td>NAMUR F</td>
<td>30 x 150 mm</td>
<td>30 mm</td>
<td>Stainless steel</td>
</tr>
<tr>
<td>901-567</td>
<td>NAMUR G</td>
<td>30 x 175 mm</td>
<td>30 mm</td>
<td>Stainless steel</td>
</tr>
</tbody>
</table>

**Note:** Additional mounting kit options are available, contact factory for mounting kit model numbers.
The Series VPI Rotary Valve Position Indicators are compact yet rugged for confined and severe locations. These versatile units offer visual position indication as well as two internal limit switches. The spring-loaded splined cams require no tools for a quick and precise adjustment. The Series VPI is available with mechanical or proximity limit switches. The mechanical models feature two SPDT limit switches. The proximity models feature two solid-state inductive limit switches eliminating the need for the cams to make contact with the switches. The NEMA 6 (IP67) rating ensures protection against the ingress of liquid and debris.

### SPECIFICATIONS

- **Minimum Rotation Travel:** 60°
- **Maximum Rotation Travel:** 360°
- **Temperature Limits:** -4 to 176°F (-20 to 80°C)
- **Switch Type:**
  - VPI-M: (2) mechanical SPDT limit switches
  - VPI-P: (2) inductive proximity limit switches
- **Electrical Rating:**
  - VPI-M: AC: 3 A at 250 V, 5 A at 125 V; DC: 0.2 A at 250 V, 0.4 A at 125 V, 4 A at 30 V
  - VPI-P: 12 to 24 VDC, 30 VDC max.
- **Power Requirements:** VPI-P: 12 to 24 VDC, 30 VDC max.
- **Enclosure Material:** Aluminum die-casting
- **Electrical Connections:** 8-contact screw terminal strip
- **Conduit Connection:** (2) 1/2˝ female NPT
- **Enclosure Rating:** NEMA 6 (IP67)
- **Mounting:** NAMUR
- **Weight:** 1.9 lb (0.88 kg)

### Bracket Dimensions

<table>
<thead>
<tr>
<th>Model</th>
<th>H in (mm)</th>
<th>L1 in (mm)</th>
<th>L2 in (mm)</th>
<th>W3 in (mm)</th>
<th>W4 in (mm)</th>
</tr>
</thead>
<tbody>
<tr>
<td>VPI-B02</td>
<td>1-19/64 [40.5]</td>
<td>3-5/32 [80]</td>
<td>3-15/16 [100]</td>
<td>1-13/64 [30]</td>
<td>2 [50]</td>
</tr>
</tbody>
</table>

### Model VPI mounted to an actuator

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For more information, contact:

Phone: 218/739-3364 • 219/879-8000 | Fax: 218/739-2734 • 219/872-9057
PROXIMITY® Series QV

QUICK-VIEW® Valve Position Indicator/Switch

Ultra-Low Cost, Compact, Backlit, Corrosion Resistant

FEATURES AND BENEFITS

The QUICK-VIEW® Rotary Valve Position Indicators, UL and CSA rated, are produced by Proximity with up to four individual mechanical or proximity switches. The QUICK-VIEW® indicator is also available with optional backlighting. Benefits include:

- The lowest cost position indication
- Extremely compact design
- Easily interchangeable with key competition
- Backlighting option available for maximum visibility
- QUICK-VIEW® Indicator and mounting kits, including NAMUR kits, are stocked for fast delivery
- Flame retardant
- UV protection
- Hazardous location option

APPLICATIONS

The QV Series Proximity Position Indicators are designed for maximum reliability in general purpose and corrosive environments. Applications include: rotary and linear valves, actuators, manual valves, gear operators and positioners. Consult factory for optional VI colors.

SPECIFICATIONS

Minimum Rotation Travel - Switches only: 5°.
Maximum Rotation Travel - Switches only: 360°.
Temperature Limits: -40 to 180°F (-40 to 82°C).
Switch Type: SPDT.

Electrical Ratings:
QV-X1XXXX: 10 A @ 125/250 VAC; 0.5 A 125 VDC; 10 A @ 24 VDC mech. switch;
QV-X2XXXX: 1 A @ 125 VAC; 1 A @ 24 VDC mech. switch;
QV-X3XXXX: 2 A @ 125 VAC; 2 A @ 30 VDC prox. switch;
QV-X4XXXX: 5-25 VDC NAMUR sensor;
QV-X5XXXX: 10-30 VDC INDUCTIVE sensor;
QV-X6XXXX: 10 A @ 125/250 VAC mech. switch.

Power Requirement: 24-28 VDC for lighting option.
Enclosure Material: Polycarbonate housing and conduit.
Conduit Entrance: One 3/4” NPT.
Maximum Altitude: 2000 m (6560 ft).
Agency Approvals: CE, CSA, cUL, UL.

Quick-View® Complete Model Chart

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>QV2 1 0 1 0 0 1</td>
<td>0 One Switch+</td>
<td>0 No Switches+</td>
<td>0 None+</td>
<td>0 None+</td>
<td>0 None+</td>
<td>Class I, Div. II, Groups A, B, C &amp; D</td>
</tr>
</tbody>
</table>

+ EX: Explosion-proof option available.

Note: The 1st, 2nd, 3rd and 6th codes can not all be zero.

Model QV mounted to an actuator

Note: Stocked position indicators include two 10 amp SPDT mechanical snap switches, are direct drive type and include the standard quarter-turn OPEN/CLOSED visual indicator. Standard units are CSA & UL approved but not for hazardous locations. Specify "EX" for hazardous location option.
**The Series DT Detector Position Sensors** are reliable, magnetically actuated, SS, completely interchangeable with competitive units. AC or DC for user friendly operation. They have no moving parts, eliminate costly seal fittings and offer enhanced reliability by eliminating arcing. Unintentional actuation by metals is not a problem. The sensor consists of a durable hermetically sealed reed switch potted in a SS housing and a separate 316 SS magnetic actuator bolt. As the actuator moves within the sensing range of the sensor, the magnet in the actuator changes the state of reed switch contacts inside the sensor. This either opens or closes a circuit depending on wiring configuration. Sensing distance is 0.1” (2.54 mm) for the standard target. Greater sensitivity of a larger magnetic target increases the sensing distance to 0.5” (12.7 mm).

The detector is excellent for hazardous and corrosive environments, solid state and intrinsically safe applications. A detector may be mounted in any position. For installation in hazardous locations, be sure to check local and national electrical codes. The detector is designed to NEMA 1, 3, 4X, 6, 7, 9, 12 and 13.

**APPLICATIONS**
- Linear control valves and actuators
- Gates and doors
- Rotary valves and actuators
- Dampers

**FEATURES**
- Rugged and corrosion proof stainless steel body
- Potted electronics ensuring waterproof rating and shock and vibration resistance
- Sensing distance up to 0.5” for mounting flexibility

**SPECIFICATIONS**
- **Temperature Limits:** -40 to 163°F (-40 to 73°C).
- **Switch Type:** Tungsten, SPDT, Form C.
- **Electrical Rating:** 3 A @ 125 VAC, 3 A @ 30 VDC.
- **Enclosure Rating:** Weatherproof, Hermetically sealed, Explosion-proof UL & CSA listed for Class I, Groups A, B, C, & D; Class II, Groups E, F & G. Divisions 1 & 2.
- **Intrinsically Safe:** Simple apparatus (w/barrier).
- **Operating/Response Time:** 3.0 m s.
- **Initial Contact Resistance:** 0.50 Ω (max).
- **Repeatability:** 0.005” (.01 cm).
- **Hysteresis:** 0.030” (.08 cm).
- **Electrical Connection:** Factory sealed leads with 18” min, 4 conductor, PVC insulated, 18 AWG – green/red/black/white (ground/NC / NO/common).
- **Housing:** 316 SS.
- **Potting:** Epoxy resin.
- **Conduit:** 1/2-14” female NPT.
- **Weight:** 0.32 lb (145 g); 0.45 lb (204 g) with actuator.
- **Agency Approvals:** CSA, cUL, UL.

<table>
<thead>
<tr>
<th>Model</th>
<th>Description</th>
<th>Sensing Distance</th>
</tr>
</thead>
<tbody>
<tr>
<td>DT1060</td>
<td>Detector and standard actuator</td>
<td>0.1” (2.54 mm)</td>
</tr>
<tr>
<td>DT1160</td>
<td>Detector and high strength actuator</td>
<td>0.5” (12.7 mm)</td>
</tr>
</tbody>
</table>

**Standard Target with DT1060 (3/8–16 UNC X 3/4”)**

**High Strength Target with DT1160 (1/2–13 UNC X 3/4”)**

Phone: 218/739-3364 • 219/879-8000 | Fax: 218/739-2734 • 219/872-9057
The dual inductive, 2-wire AC/DC Series VPS Valve Position Sensor maintains VDI/VDE 3845 dimensions so positioners can be easily mounted on top of the sensor and target. The Model VPS2411 Sensor and Model P1 Target mount easily and directly to actuators with ISO NAMUR topworks (see picture below). Fully adjustable target in 2° increments, the sensor has two independent LED's and bright flow line indicator that provide local visual indication. All electrical connections are made with the Model VIP82 4-pin quick disconnect cable (6’ in length) for ease in installation. Solid state components are fully embedded in an epoxy resin to prevent condensation build-up and to protect against vibration and shock. The rugged PBTP housing provides excellent corrosion resistance and moisture protection.

**SPECIFICATIONS**

- **Temperature Limits:** -13 to 176°F (-25 to 80°C).
- **Switch Type:** Dual NO.
- **Electrical Rating:** 200 mA.
- **Minimum Load Current:** 5 mA.
- **Leakage Current:** 0.8 mA.
- **Voltage Drop:** 5.0 V.
- **Repeatability:** 0.01 mm.
- **Hysteresis:** 3 to 15% of sensing range.
- **Switching Frequency:** 25 Hz.
- **Power Requirements:** 20 to 140 VAC (50/60 Hz), 10 to 200 VDC.
- **Enclosure Material:** Polybutylene terephthalate.
- **Enclosure Rating:** IP67.
- **Mounting Holes:** NAMUR mounting - 3.15˝ x 1.18˝ (80 x 30 mm) or 5.118˝ x 1.18˝ (130 x 30 mm).
- **Electrical Connection:** 4-pin quick disconnect.

---

The Series VPT Valve Position Transmitter is an ideal way to track position of valve. With both linear and rotary motion monitoring available, this Valve Position Transmitter can suit a wide variety of applications. Using a resistance gear in conjunction with a potentiometer, the change in resistance outputs a proportional current signal which is sent to the controller. The standard LCD display allows the operator to monitor precise position of valve.

**FEATURES**

- Simple zero and span adjustment
- Reverse acting or direct acting settings
- 4 to 20 mA (2-wire)
- LCD standard

**SPECIFICATIONS**

- **Input Signal:** 0 to 30° (LA1); 0 to 90° (RA1).
- **Output Signal:** 4 to 20 mA DC.
- **Power Requirements:** 9 to 28 VDC.
- **Electrical Connection:** M20 cable gland.
- **Linearity:** ±1% FS.

---

Model VPS2411, Valve Position Sensor  
Model P1, Valve Position Target  
Model VIP82, Quick Disconnect Cable
<table>
<thead>
<tr>
<th>SERIES</th>
<th>DESCRIPTION</th>
<th>PAGE</th>
</tr>
</thead>
<tbody>
<tr>
<td>165</td>
<td>PRECISOR® II PNEUMATIC AND ELECTRO-PNEUMATIC POSITIONER</td>
<td>18</td>
</tr>
<tr>
<td>265</td>
<td>PRECISOR® II PNEUMATIC AND ELECTRO-PNEUMATIC POSITIONER</td>
<td>19</td>
</tr>
<tr>
<td>275</td>
<td>PRECISOR® III ELECTRO-PNEUMATIC POSITIONERS</td>
<td>20</td>
</tr>
<tr>
<td>185</td>
<td>LINEAR SMART POSITIONER</td>
<td>21</td>
</tr>
<tr>
<td>285</td>
<td>ROTARY SMART POSITIONER</td>
<td>22</td>
</tr>
<tr>
<td>195</td>
<td>COMPACT LINEAR SMART POSITIONER</td>
<td>23</td>
</tr>
<tr>
<td>295</td>
<td>COMPACT ROTARY SMART POSITIONER</td>
<td>24</td>
</tr>
<tr>
<td>IP</td>
<td>CURRENT TO PRESSURE TRANSDUCER</td>
<td>25</td>
</tr>
<tr>
<td>2700 &amp; 2800</td>
<td>CURRENT TO PRESSURE TRANSDUCER</td>
<td>26</td>
</tr>
<tr>
<td>2900</td>
<td>CURRENT TO PRESSURE TRANSDUCER</td>
<td>27</td>
</tr>
</tbody>
</table>
The Series 165 PRECISOR® II Pneumatic and Electro-Pneumatic Positioners deliver stable process control at an exceptionally low price. Its rugged, durable design makes it ideal for harsh environments while maintaining precise, accurate positioning of the control element. Units can be easily changed from direct to reverse action, or vice versa. Low air consumption keeps operating costs at a minimum, while still responding quickly and accurately. Excellent for use in chemical processing, food and beverage, pulp and paper, and pharmaceutical industries, as well as many others.

**FEATURE**

- Field selectable cam for direct or reverse acting.

**SPECIFICATIONS**

- **Input Signal:**
  - Pneumatic: 3 to 15 psig (0.2 to 1 bar);
  - Electro-pneumatic: 4 to 20 mA DC.
- **Input Impedance:** (165EL only): 250 ±15 Ω.
- **Enclosure Material:** Aluminum or 316 SS.
- **Air Supply:** 20 to 100 psig (1.4 to 6.9 bar).
- **Air Supply Connection:** 1/4˝ NPT.
- **Gage Connection:** 1/8˝ NPT.
- **Electrical Connection:** Screw terminal.
- **Conduit Connection:** 1/2˝ NPT (165EL only).
- **Linearity:** ±0.2% FS.
- **Hysteresis:** 1% FS.
- **Sensitivity:** ±0.2% FS.
- **Repeatability:** ±0.5% FS.
- **Air Consumption:** 0.10 scfm (3 LPM) at 20 psig (1.4 bar) supply.
- **Flow Capacity:** 28 scfm (80 LPM) at 20 psig (1.4 bar) supply.
- **Stroke:** 0.5 to 6˝ (10 to 150 mm).
- **Enclosure Rating:** IP66 (NEMA 4X).
- **Temperature Limits:** Aluminum: -4 to 158°F (-20 to 70°C);
  - SS: -40 to 158°F (-40 to 70°C).
- **Weight:**
  - 165NL: 3.1 lb (1.7 kg);
  - 165EL: 6.1 lb (2.7 kg).
- **Agency Approvals:** CE (165EL only).

**APPLICATIONS**

Series 165 PRECISOR® II Pneumatic and Electro-Pneumatic Positioners provide excellent modulating control when used between the Dwyer Temperature Controllers, Current to Pressure Transducer, and the Hi-Flow™ Valve in such industries as the food and beverage processing, chemical, pharmaceutical, and wood pulp and paper.
Proximity Series 265 PRECISOR® II Pneumatic and Electro-Pneumatic Positioners combine outstanding performance with an extremely low price, making it an exceptional value for industrial applications. Rotary valves with single or double acting pneumatic actuators can be precisely controlled, such as our ball and butterfly valves. The PRECISOR® II positioner proportionally modulates the valve from either an electric 4 to 20 mA or pneumatic 3 to 15 psig input signal, based on the model chosen and is user-selectable for single or double action. Its rugged, durable design makes it ideal for use in harsh environments, while maintaining precise, accurate positioning of the control elements. Includes a bracket for mounting onto actuators with NAMUR standard connections, and features a versatile linear cam for direct action, reverse action, or split ranges.

**FEATURES**
- Field selectable cam for direct or reverse acting
- User selectable single or double action.

<table>
<thead>
<tr>
<th>Model</th>
<th>Input</th>
<th>Lever Type</th>
<th>Enclosure</th>
</tr>
</thead>
<tbody>
<tr>
<td>265NR-D5</td>
<td>3 to 15 psig</td>
<td>NAMUR</td>
<td>Aluminum</td>
</tr>
<tr>
<td>265ER-D5</td>
<td>4 to 20 mA</td>
<td>NAMUR</td>
<td>Aluminum</td>
</tr>
<tr>
<td>265ER-DSS</td>
<td>4 to 20 mA</td>
<td>NAMUR</td>
<td>Stainless Steel</td>
</tr>
</tbody>
</table>

**SPECIFICATIONS**
-Input Signal: Pneumatic: 3 to 15 psig (0.2 to 1 bar); Electro-pneumatic: 4 to 20 mA DC.
-Input Impedance: (265ER only): 250 ±15 Ω.
-Enclosure Material: Aluminum or 316 SS.
-Air Supply: 20 to 101 psig (1.4 to 7.0 bar).
-Air Supply Connection: 1/4˝ NPT.
-Gage Connection: 1/8˝ NPT.
-Electrical Connection: Screw terminal.
-Conduit Connection: 1/2˝ NPT (265ER only).
-Linearity: ±2% FS.
-Hysteresis: 1% FS.
-Sensitivity: ±0.5% FS.
-Repeatability: ±0.5% FS.
-Air Consumption: 0.10 scfm (3 LPM) at 20 psig (1.4 bar) supply.
-Flow Capacity: 28 scfm (80 LPM) at 20 psig (1.4 bar) supply.
-Stroke: 0 to 90°
-Enclosure Rating: IP66 (NEMA 4X).
-Temperature Limits: Aluminum: -4 to 158°F (-20 to 70°C); SS: -40 to 158°F (-40 to 70°C).
-Weight: 265NR: 3.1 lb (1.7 kg); 265ER: 6.2 lb (2.8 kg).
-Agency Approvals: CE (265ER only).

Model 265 mounted to an actuator
Proximity Series 275 PRECISOR® III Electro-Pneumatic Positioners combine an easy to use, high performance unit with a low price. Series 275 models accurately control valve stroke of rotary motion valves such as Dwyer Instruments ball or butterfly valves according to an input signal of 4 to 20 mA from the controller. Its rugged, durable design makes it ideal for harsh environments. The NEMA 4X (IP 66) enclosure rating protects the highly efficient microprocessing unit. An analog feedback signal is outputted to stabilize any valve system, and easy to use functions such as auto-calibration ensure the accuracy of the Series 275. Low air consumption reduces operating cost, but does not sacrifice the performance of the positioner. The compact design of this unit makes it easy to use with any size actuator. PRECISOR® III Positioners feature user selectable single or double action and LCD screen attached to the outer face of the unit, allowing for an easy inspection of the positioner condition while in the field.

**FEATURES**
- Integral LCD for monitoring or programming.
- Mounting bracket is included.
- Adjustable for various characteristics - quick open or linear valves.
- User selectable single or double action.

**SPECIFICATIONS**
- Input Signal: 4 to 20 mA DC.
- Input Impedance: 460 Ω max at 20 mA DC.
- Enclosure Material: Aluminum.
- Air Supply: 20 to 100 psi (1.4 to 6.9 bar).
- Air Connection: 1/4˝ NPT.
- Gage Connection: 1/8˝ NPT.
- Conduit Connection: 1/2˝ NPT.
- Linearity: ±0.5% of full-scale.
- Hysteresis: ±0.5% of full-scale.
- Sensitivity: ±0.2% of full-scale.
- Repeatability: ±0.3% of full-scale.
- Air Consumption: Below 0.07 scfm (2 LPM) at 20 psig (1.4 bar) supply.
- Flow Capacity: 2.5 scfm (70 LPM) at 20 psig (1.4 bar) supply.
- Stroke: 0 to 90°.
- Temperature Limits: -40 to 185°F (-40 to 85°C).
- Lever: NAMUR.
- Weight: 3.3 lb (1.5 kg).

<table>
<thead>
<tr>
<th>Model</th>
<th>Communication</th>
<th>Option</th>
</tr>
</thead>
<tbody>
<tr>
<td>275ER-DS000</td>
<td>None</td>
<td>None</td>
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<tr>
<td>275ER-DS001</td>
<td>None</td>
<td>Transmitter</td>
</tr>
<tr>
<td>275ER-DS021</td>
<td>HART®</td>
<td>Transmitter</td>
</tr>
</tbody>
</table>
Proximity Series 185 Smart Positioners combine an easy to use, high performance unit with a low price. Series 185 models accurately control the valve stroke of linear motion valves, such as W.E. Anderson globe valves, according to an input signal of 4 to 20 mA from the controller. Its rugged, durable aluminum or available stainless steel construction makes it ideal for harsh environments. The NEMA 4X (IP66) enclosure rating protects the highly efficient microprocessing unit inside the Smart Positioner. An analog feedback signal is outputted to stabilize any valve system, and easy to use functions such as auto calibration ensure the accuracy of the unit. Low air consumption reduces operating cost, but does not sacrifice the performance of the Smart Positioner. The compact design of this unit makes it easy to use with any size actuator. Smart Positioners feature a LCD screen attached to the outer surface of the unit, allowing for an easy inspection of the positioner condition while in the field. Available in user selectable single or double action, with HART communication as standard. In the event that the 4-20 mA input signal is lost the 185 will fail in place.

FEATURES
• LCD allows the user to directly check the positioner condition in the field
• Can endure severe vibration
• Operates normally regardless of changes in supply pressure during operation
• Simple to use auto calibration
• Easily equipped on small actuators because of its small size
• Low air consumption reduces operating cost
• Can be used in low voltage (8.5 V), leaving no limitation in controller
• HART® communication available for configuring parameters or monitoring the valve position
• Analog feedback signal (4 to 20 mA)
• The adjustment of valve characteristics (linear, quick open, equal percentage) available
• Tight shut-close and shut-open can be set in the programming menu
• PID parameters can easily be adjusted in the field without additional communicator
• Split ranges such as 4 to 12 mA, with 12 to 20 mA available
• The positioner can manually activate the valve or damper
• An air filter regulator can be mounted directly to the positioner

SPECIFICATIONS
Input Signal: 4 to 20 mA DC.
Input Impedance: 460 Ω max @ 20 mA DC.
Enclosure Material: Aluminum or 316 SS.
Air Supply: 35 to 116 psi (2.4 to 8 bar).
Air Connection: 1/4˝ NPT.
Gage Connection: 1/8˝ NPT.
Conduit Connection: 1/2˝ NPT.
Linearity: ±0.5% FS.
Hysteresis: ±0.5% FS.
Sensitivity: ±0.2% FS.
Repeatability: ±0.3% FS.
Air Consumption: 0.0004 scfm (.01 LPM) at 20 psig (1.4 bar) supply.
Flow Capacity: 2.1 scfm (60 LPM) at 20 psig (1.4 bar) supply.
Stroke: 0.5 to 6˝ (10 to 150 mm).
Enclosure Rating: NEMA 4X (IP66).
Temperature Limits: -22 to 185°F (-30 to 85°C).
Weight: 3.3 lb (1.5 kg); SS models: 6.4 lb (2.9 kg).

<table>
<thead>
<tr>
<th>Model</th>
<th>Communication</th>
<th>Enclosure</th>
</tr>
</thead>
<tbody>
<tr>
<td>185EL-D1</td>
<td>HART®</td>
<td>Aluminum diecast</td>
</tr>
<tr>
<td>185EL-D1SS</td>
<td>HART®</td>
<td>Stainless steel</td>
</tr>
</tbody>
</table>
Proximity Series 285 Smart Positioners combine an easy to use, high performance unit with a low price. Series 285 models accurately control the valve stroke of rotary motion valves, such as W.E. Anderson ball or butterfly valves, according to an input signal of 4 to 20 mA from the controller. Its rugged, durable design makes it ideal for harsh environments. The NEMA 4X (IP66) enclosure rating protects the highly efficient microprocessing unit inside the Smart Positioner. An analog feedback signal is outputted to stabilize any valve system, and easy to use functions such as auto calibration ensure the accuracy of the unit. Low air consumption reduces operating cost but does not sacrifice the performance of the Smart Positioner. The compact design of this unit makes it easy to use with any size actuator. Smart Positioners feature a LCD screen attached to the outer surface of the unit, allowing for an easy inspection of the positioner condition while in the field. Available in user selectable single or double action, with HART communication as standard. In the event that the 4-20 mA input signal is lost the 285 will fail in place.

**FEATURES**
- LCD allows the user to directly check the positioner condition in the field
- Can tolerate severe vibration
- Operates normally regardless of changes in supply pressure during operation
- Simple to use auto-calibration
- Easily equipped on small actuators because of its small size
- Low air consumption reduces operating cost
- Can be used in low voltage (8.5 V), leaving no limitation in controller
- HART® communication available for configuring parameters or monitoring the valve position
- Analog feedback signal (4 to 20 mA)
- The adjustment of valve characteristics (linear, quick open) available
- Tight shut-close and shut-open can be set in the programming menu
- PID parameters can easily be adjusted in the field without additional communicator
- Split ranges such as 4 to 12 mA, with 12 to 20 mA available
- The positioner can manually activate the valve or damper
- An air filter regulator can be mounted directly to the positioner

**SPECIFICATIONS**
- Input Signal: 4 to 20 mA DC.
- Input Impedance: 460 Ω max @ 20 mA DC.
- Enclosure Material: Aluminum or 316 SS.
- Air Supply: 35 to 116 psi (2.4 to 9 bar).
- Air Connection: 1/4˝ NPT.
- Gage Connection: 1/8˝ NPT.
- Conduit Connection: 1/2˝ NPT.
- Linearity: ±0.5% FS.
- Hysteresis: ±0.5% FS.
- Sensitivity: ±0.2% FS.
- Repeatability: ±0.3% FS.
- Air Consumption: .0004 scfm (.01LPM) at 20 psig (1.4 bar) supply.
- Flow Capacity: 2.1 scfm (60 LPM) at 20 psig (1.4 bar) supply.
- Stroke: 0 to 90°.
- Temperature Limits: -22 to 185°F (-30 to 85°C).
- Weight: 3.3 lb (1.5 kg); SS models: 6.4 lb (2.9 kg).

<table>
<thead>
<tr>
<th>Model</th>
<th>Communication</th>
<th>Enclosure</th>
</tr>
</thead>
<tbody>
<tr>
<td>285ER-DS</td>
<td>HART®</td>
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<tr>
<td>285ER-DSS</td>
<td>HART®</td>
<td>Stainless Steel</td>
</tr>
</tbody>
</table>

HART® is a registered trademark of Hart Communication Foundation.
Proximity Series 195 Smart Positioners are a compact, high performance unit with a low price. Series 195 models accurately control the valve stroke of linear motion valves, such as W.E. Anderson globe valves, according to an input signal of 4 to 20 mA from the controller. Its rugged, durable design makes it ideal for harsh environments. The NEMA 4X (IP66) enclosure rating protects the highly efficient microprocessing unit inside the Smart Positioner. An analog feedback signal is outputted to stabilize any valve system, and easy to use functions such as auto calibration ensure the accuracy of the unit. Low air consumption reduces operating cost, but does not sacrifice the performance of the Smart Positioner. The handheld size of this unit makes it easy to use with any size actuator, and can be used in applications where a larger positioner may not fit. Series 195 Smart Positioners feature a LCD screen attached to the outer surface of the unit, allowing for an easy inspection of the positioner condition while in the field. Available with HART communication.

FEATURES
- LCD allows the user to directly check the positioner condition in the field
- Can endure severe vibration
- Operates normally regardless of changes in supply pressure during operation
- Simple to use auto-calibration
- Low air consumption reduces operating cost
- Compact size allows for installation on small actuators
- Can be used in low voltage (8.5 V), leaving no limitation in controller
- Variable orifice is applied in case of a small actuator, the hunting is controlled to the optimum condition during operation
- HART® communication available for configuring parameters or monitoring the valve position
- Analog feedback signal (4 to 20 mA)
- The adjustment of valve characteristics (linear, quick open) available
- Specific flow control is available with setting 16 points at users’ command
- Tight shut-close and shut-open can be set in the programming menu
- PID parameters can easily be adjusted in the field without additional communicator
- Split ranges such as 4 to 12 mA, with 12 to 20 mA available
- The positioner can manually activate the valve or damper

SPECIFICATIONS
- Input Signal: 4 to 20 mA DC.
- Input Impedance: 460 Ω max @ 20 mA DC.
- Enclosure Material: Aluminum.
- Air Supply: 35 to 116 psi (2.4 to 8 bar).
- Air Connection: 1/4˝ NPT.
- Gage Connection: 1/8˝ NPT.
- Conduit Connection: 1/2˝ NPT.
- Linearity: ±0.5% FS.
- Hysteresis: ±0.5% FS.
- Sensitivity: ±0.2% FS.
- Repeatability: ±0.3% FS.
- Air Consumption: .0004 scfm (.01 LPM) at 20 psig (1.4 bar) supply.
- Flow Capacity: .32 scfm (9 LPM) at 20 psig (1.4 bar) supply.
- Stroke: 0.19 to 1.38˝ (5 to 35 mm).
- Temperature Limits: -22 to 185°F (-30 to 85°C).
- Weight: 1.8 lb (.82 kg).

<table>
<thead>
<tr>
<th>Model</th>
<th>Action</th>
<th>Communication</th>
</tr>
</thead>
<tbody>
<tr>
<td>195EL-S1</td>
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<td>195EL-S2</td>
<td>Single</td>
<td>HART®</td>
</tr>
</tbody>
</table>

HART® is a registered trademark of Hart Communication Foundation.
Series 295 Compact Rotary Smart Positioner
Low Cost, Rotary Operation, HART Communication

Proximity Series 295 Smart Positioners are a compact, high performance unit with a low price. Series 295 models accurately control the valve stroke of rotary motion valves, such as W.E. Anderson ball or butterfly valves, according to an input signal of 4 to 20 mA from the controller. Its rugged, durable design makes it ideal for harsh environments. The NEMA 4X (IP66) enclosure rating protects the highly efficient microprocessing unit inside the Smart Positioner. An analog feedback signal is outputted to stabilize any valve system and easy to use functions such as auto-calibration ensure the accuracy of the unit. Low air consumption reduces operating cost, but does not sacrifice the performance of the Smart Positioner. The handheld size of this unit makes it easy to use with any size actuator, and can be used in applications where a larger positioner may not fit. Series 295 Smart Positioners feature a LCD screen attached to the outer surface of the unit, allowing for an easy inspection of the positioner condition while in the field. Available with HART communication.

FEATURES
- LCD allows the user to directly check the positioner condition in the field
- Can endure severe vibration
- Operates normally regardless of changes in supply pressure during operation
- Simple to use auto-calibration
- Low air consumption reduces operating cost
- Compact size allows for installation on small actuators
- Can be used in low voltage (8.5 V), leaving no limitation in controller
- Variable orifice is applied in case of a small actuator, the hunting is controlled to the optimum condition during operation
- HART® communication available for configuring parameters or monitoring the valve position
- Analog feedback signal (4 to 20 mA)
- The adjustment of valve characteristics (linear, quick open, equal percentage) available
- Specific flow control is available with setting 16 points at users’ command
- Tight shut-close and shut-open can be set in the programming menu
- PID parameters can easily be adjusted in the field without additional communicator
- Split ranges such as 4 to 12 mA, with 12 to 20 mA available
- The positioner can manually activate the valve or damper

SPECIFICATIONS
Input Signal: 4 to 20 mA DC.
Input Impedance: 460 Ω max @ 20 mA DC.
Enclosure Material: Aluminum.
Air Supply: 35 to 116 psi (2.4 to 8 bar).
Air Connection: 1/4˝ NPT.
Gage Connection: 1/8˝ NPT.
Conduit Connection: 1/2˝ NPT.
Linearity: ±0.5% FS.
Hysteresis: ±0.5% FS.
Sensitivity: ±0.2% FS.
Repeatability: ±0.3% FS.
Air Consumption: .0004 scfm (.01 LPM) at 20 psig (1.4 bar) supply.
Flow Capacity: .32 scfm (9 LPM) at 20 psig (1.4 bar) supply.
Stroke: 0 to 90°.
Enclosure Rating: NEMA 4X (IP66).
Temperature Limits: -22 to 185°F (-30 to 85°C).
Weight: 1.8 lb (.82 kg).

<table>
<thead>
<tr>
<th>Model</th>
<th>Action</th>
<th>Communication</th>
</tr>
</thead>
<tbody>
<tr>
<td>290ER-S1</td>
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<tr>
<td>295ER-S2</td>
<td>Single</td>
<td>HART®</td>
</tr>
</tbody>
</table>

HART® is a registered trademark of Hart Communication Foundation.
The Series IP Current to Pressure Transducer converts a current input signal to a linearly proportional pneumatic output pressure. The features include built-in volume booster, low air consumption, field reversible (provides output which is inversely proportional to input signal) and flexible zero and span adjustments. The rugged NEMA 4X enclosure allows splashdown and outdoor installation. The IP can be used for applications that require operation of valve actuators, pneumatic valve positioners, damper and louver actuators, final control elements and relays.

**SPECIFICATIONS**

- **Service:** Oil free, clean dry air filtered to 40 microns.
- **Input Signal:** 4 to 20 mA.
- **Input Impedance:** IP-42: 180 Ω; IP-43 and IP-44: 220 Ω.
- **Air Pressure:** Min: 3 psig (21 kPa) above max output; Maximum: 100 psig (700 kPa).
- **Linearity:** < ±0.75% of span.
- **Hysteresis:** < 1% of span.
- **Repeatability:** < 0.5% of span.
- **Supply Pressure Sensitivity:** < ±0.1% of span per psig (< ±0.15% of span per 10 kPa).
- **Power Requirements:** Loop-powered.
- **Temperature Limits:** -20 to 140°F (-30 to 60°C).
- **Pressure Connections:** 1/4˝ female NPT.
- **Electrical Connection:** 1/2˝ female NPT.
- **Air Consumption:** 0.03 SCFM (0.5 m³/h) typical.
- **Output Capacity:** 4.5 SCFM (7.6 m³/h ANR) at 25 psig (175 kPa) supply; 12 SCFM (20 m³/h) at 100 psig (700 kPa) supply.
- **Relief Capacity:** 2 SCFM (3.4 m³/h) at 5 psig (35 kPa) above 20 psig (140 kPa) setpoint.
- **Weight:** 2.1 lb (0.94 kg).
- **Agency Approvals:** CE, FM.
The Series 2700 Current to Pressure Transducer combines economical startup cost, low air consumption, and reliable performance to make the 2700 a great investment. The unit converts a variable current signal to a proportional pneumatic output. It has input and output ports on both the front and back which allows for versatile plumbing. The NEMA 4X enclosure enables the unit to be installed indoors or outdoors, however, the unit is not vibration resistant. It is FM and CSA approved for intrinsically safe operation. The 2700 is designed for remote or panel mounting. An integral volume booster provides high flow capacity, increasing control speed in critical applications. Other features include external zero and span adjustments which are convenient for field calibration.

The Series 2800 Current to Pressure Transducer utilizes a closed loop pressure feedback system that closely controls output and compensates for vibration, mounting angle, temperature, and supply pressure variations. These characteristics make this unit ideal for field mounting on a valve. The control mechanism is a piezoceramic actuator encapsulated in a protective skin, which provides a constant pressure feedback system that closely controls output and compensates for vibration, utilization a closed loop.

### Specifications

**Service:** Oil free, clean dry air filtered to 40 microns.

**Input Signal:** 4 to 20 mA.

**Air Supply:** Min: 5 psig (0.3 bar) above max output; Max: 100 psig (6.9 bar).

**Output:** 3 to 15 psig (0.2 to 1.0 bar), 6 to 30 psig (0.4 to 2.1 bar).

**Linearity:** Series 2700: ±0.5% of span.

**Hysteresis:** Series 2700: < 0.5% of span; Series 2800: ±0.1% of span.

**Repeatability:** Series 2700: < 0.5% of span; Series 2800: ±0.1% of span.

**Deadband:** Series 2800: 0.02% of span.

**Supply Pressure Sensitivity:** Series 2700: < 0.1% of span per 1.0 psig (0.1 bar).

**Power Requirement:** Loop powered.

**Temperature Limits:** Series 2700: -40 to 160°F (-40 to 71°C); Series 2800: 
Series 2700: -20 to 150°F (-29 to 66°C); Series 2800: 

**Power Requirement:** Series 2700: 1.3 lb (0.59 kg); Series 2800: 0.8 lb (0.37 kg).

**Agency Approvals:** CE, CSA, FM.

### Series 2700

<table>
<thead>
<tr>
<th>Model</th>
<th>Input</th>
<th>Output</th>
</tr>
</thead>
<tbody>
<tr>
<td>2713-WP</td>
<td>4 to 20 mA</td>
<td>3 to 15 psig (0.2 to 1.0 bar)</td>
</tr>
<tr>
<td>2716-WP</td>
<td>4 to 20 mA</td>
<td>6 to 30 psig (0.4 to 2.1 bar)</td>
</tr>
</tbody>
</table>

### Series 2800

<table>
<thead>
<tr>
<th>Model</th>
<th>Input</th>
<th>Output</th>
</tr>
</thead>
<tbody>
<tr>
<td>2813-WP</td>
<td>4 to 20 mA</td>
<td>3 to 15 psig (0.2 to 1.0 bar)</td>
</tr>
<tr>
<td>2816-WP</td>
<td>4 to 20 mA</td>
<td>6 to 30 psig (0.4 to 2.1 bar)</td>
</tr>
</tbody>
</table>

### ACCESSORIES

- **A-180 Valve Mounting Bracket**, for Hi-Flow™ control valves (Series 2800 only)
- **A-181 DIN Rail Mounting Kit**, suitable for EN-50035, EN-50042, and EN-50022 rails
- **A-182 Pipe Mounting Kit**, for 1-1/2 and 2" pipes
- **Valve Mount**, for factory mounting and calibration to Hi-Flow™ control valves, add Current-to-Pressure Transducer model number as suffix (Series 2800 only)
The Series 2900 Current to Pressure Transducer delivers reliable high performance for the toughest applications in the most hazardous environments. Its NEMA 4X housing is designed and FM and CSA approved for both intrinsically safe and explosion-proof operation. This unit has advanced circuitry which includes electronic feedback control for superior vibration protection and highly accurate output. The 2900 is not position sensitive and the easily accessible zero and span adjustments make field calibration quick and easy. For ease of installation, this model has input and output ports on both the front and back. It is also not vibration sensitive, which makes the 2900 ideal for field mounting on a valve. These features coupled with the unit’s compact size help make set-up and installation simple.

**FEAT URES**
- Designed for hazardous environments
- Vibration resistant
- Explosion-proof
- Weatherproof and intrinsically safe

**SPECIFICATIONS**
- **Service:** Oil free, clean dry air filtered to 40 microns.
- **Input Signal:** 4 to 20 mA.
- **Air Supply:** Min: 5 psig (0.3 bar) above max output; Max: 100 psig (6.9 bar).
- **Output:** 3 to 15 psig (0.2 to 1.0 bar), 6 to 30 psig (0.4 to 2.1 bar).
- **Accuracy:** ±0.1% of span.
- **Hysteresis:** ±0.1% of span.
- **Repeatability:** ±0.1% of span.
- **Deadband:** 0.02% of span.
- **Power Requirement:** Loop powered.
- **Temperature Limits:** Operating: -40 to 160°F (-40 to 71°C); Storage: -40 to 200°F (-40 to 93°C).
- **Pressure Connections:** 1/4” female NPT.
- **Electrical Connection:** 1/2” female NPT.
- **Air Consumption:** 0.05 scfm (0.2 l/s) at midrange typical.
- **Output Capacity:** 4.5 scfm (2.1 l/s) at 25 psig (1.7 bar) supply; 12.0 scfm (5.7 l/s) at 100 psig (6.9 bar) supply.
- **Enclosure:** Chromate-treated aluminum with epoxy paint.
- **Enclosure Rating:** Weatherproof NEMA 4X (IP66), explosion-proof and intrinsically safe.
- **Weight:** 1.8 lb (0.82 kg).
- **Agency Approvals:** CE, CSA, FM.

**FM Ratings:**
- Explosion-proof for Class I Division 1, Groups B, C, and D, T6; Dust Ignitionproof for Class I, Division 1, Groups E, F, and G, T6; Intrinsically safe for Class I, II, and III, Division 1, Groups C, D, E, F, and G, T4 hazardous (classified) locations and intrinsically safe for Class I, Zone 0, Group IIB, T4 hazardous (classified) locations and suitable for Class I, Groups A, B, C, D, T4, and Class II and III, Division 2, Groups F and G, T6 hazardous (classified) locations.

**CSA Ratings:**
- Class I Division 1, Groups B, C, and D; Class I, Division 2, Groups E, F, and G; Class II and III, Division 2, Groups F and G.
SERIES VB, VOLUME BOOSTER ................................................................. 29
SERIES AFR2, INSTRUMENT AIR FILTER REGULATOR .................. 29
SERIES SAFR, SUBMINIATURE AIR PRESSURE REGULATOR .......... 30
SERIES R, REGULATORS ................................................................. 30
SERIES FR, FILTER REGULATORS ............................................... 31
SERIES SN, NAMUR MOUNT SOLENOID VALVE ......................... 32
The Series VB Volume Booster is a one to one signal to output relay and an ideal solution to increasing valve stroke speed. A large input signal change to the booster delivers high volume for quick throttling control. Volume booster responds to the slightest changes in input signal, which in turn increases accuracy of the output of air pressure to the actuator. This booster receives the positioner’s signal output and supplies the proper air pressure to the actuator to reduce response and adjustment time. Available in aluminum or stainless steel.

### Series VB Volume Booster

**Economical, 1:1 Ratio**

**Specifications**

- **Service:** Aluminum or SS.
- **Wetted Materials:**
  - Body: Aluminum or SS;
  - Diaphragm: Nitrile elastomer.
- **Max Supply Pressure:** 145 psi (10 bar).
- **Max Signal/Output Pressure:** 101.5 psi (7 bar).
- **Signal Connection:** 1/4˝ NPT.
- **In/Output Pressure Ratio:** 1:1.
- **Temperature Limits:** -4 to 158°F (-20 to 70°C).
- **Linearity:** ±1% FS.
- **Weight:** See model chart.

#### Model Specifications

<table>
<thead>
<tr>
<th>Model</th>
<th>Cv</th>
<th>Weight</th>
<th>In/Out Connection</th>
<th>Construction</th>
</tr>
</thead>
<tbody>
<tr>
<td>VB-01</td>
<td>1.02</td>
<td>1.1 lb (0.5 kg)</td>
<td>1/4˝ NPT</td>
<td>Aluminum</td>
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<tr>
<td>VB-01SS</td>
<td>1.02</td>
<td>2.9 lb (1.3 kg)</td>
<td>1/4˝ NPT</td>
<td>SS</td>
</tr>
<tr>
<td>VB-02</td>
<td>2.32</td>
<td>1.7 lb (0.76 kg)</td>
<td>1/2˝ NPT</td>
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<tr>
<td>VB-02SS</td>
<td>2.32</td>
<td>4.2 lb (1.9 kg)</td>
<td>1/2˝ NPT</td>
<td>SS</td>
</tr>
<tr>
<td>VB-03</td>
<td>4.98</td>
<td>5.1 lb (2.3 kg)</td>
<td>3/4˝ NPT</td>
<td>Aluminum</td>
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<td>VB-03SS</td>
<td>4.98</td>
<td>11 lb (5 kg)</td>
<td>3/4˝ NPT</td>
<td>SS</td>
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</tbody>
</table>

### Series AFR2 Instrument Air Filter Regulator

**Compact, Stainless Steel Models, Cost-Effective**

Series AFR2 Instrument Air Filter Regulator provides clean air pressure to pneumatic controllers, valve positioners, air cylinders and other equipment. Self-relieving regulator is equipped with a 40 micron filter housed in a dripwell with gage port.

**Specifications**

- **Service:** Air only.
- **Wetted Materials:**
  - Body: Aluminum or SS;
  - Diaphragm and Valve Seat Plug: Nitrile elastomer.
- **Max Supply Pressure:** 250 psi (17.2 bar).
- **Temperature Limits:** -4 to 158°F (-20 to 70°C).
- **Minimum Filtering Size:** 5 microns.
- **Weight:** 1.7 lb (0.6 kg), SS models: 3.0 lb (1.4 kg).

#### Model Specifications

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<thead>
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<th>Model</th>
<th>Range</th>
<th>Body</th>
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<tbody>
<tr>
<td>AFR2-1</td>
<td>0 to 60 psi (0 to 4 bar)</td>
<td>Aluminum</td>
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<tr>
<td>AFR2-2</td>
<td>0 to 121 psi (0 to 8 bar)</td>
<td>Aluminum</td>
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<tr>
<td>AFR2-1SS</td>
<td>0 to 60 psi (0 to 4 bar)</td>
<td>Stainless Steel</td>
</tr>
<tr>
<td>AFR2-2SS</td>
<td>0 to 121 psi (0 to 8 bar)</td>
<td>Stainless Steel</td>
</tr>
</tbody>
</table>
The Series SAFR is a miniature air pressure regulator that provides the highest level of regulation accuracy and repeatability available in a compact, lightweight body. This is ideal for applications that require exact pressure control and substantial flow capacity under variable operating conditions and limited space.

<table>
<thead>
<tr>
<th>Model</th>
<th>Range</th>
</tr>
</thead>
<tbody>
<tr>
<td>SAFR-1</td>
<td>0 to 30 psig (0 to 2 BAR)</td>
</tr>
<tr>
<td>SAFR-2</td>
<td>0 to 60 psig (0 to 4 BAR)</td>
</tr>
<tr>
<td>SAFR-3</td>
<td>0 to 120 psig (0 to 8 BAR)</td>
</tr>
</tbody>
</table>

SAFR-BRKT, Mounting Bracket

**SAFR-BRKT**

**Pressure Range**
- 0 to 30 psig (0 to 2 BAR)
- 0 to 60 psig (0 to 4 BAR)
- 0 to 120 psig (0 to 8 BAR)

**Specifications**
- **Service:** Air only.
- **Wetted Materials:**
  - Body: Aluminum alloy, chromate and epoxy paint;
  - Diaphragm: Nitrile elastomer;
  - Trim: Zinc plated steel;
  - Additional Materials: Brass, aluminum, SS, zinc plated steel.
- **Output:**
  - 0.7 to 30 psig (0.05 to 2 BAR);
  - 1.4 to 60 psig (0.1 to 4 BAR);
  - 1.4 to 120 psig (0.1 to 8 BAR).
- **Max. Supply Pressure:** 150 psig (10 BAR).
- **Temperature Limits:** 0 to 160°F (-18°C to 71°C).
- **Sensitivity:** 0.25 in w.c. (6.4 mm w.c.).
- **Air Consumption:** 6.0 scfh (170NI/min) max. at 150 psig (10 BAR) supply change.
- **Flow Capacity:** 14 scfm (396 NI/min).
- **Exhaust Capacity:** 7 scfm (199 NI/min).
- **Process Connection:** 1/8" in, out, gage (2) female NPT.
- **Weight:** 0.35 lb (0.16 kg).

**SAFR-R**

**R Series Pressure Regulators** offer economic prices and high performance pressure regulation. Configurable units offer a variety of fitting and port sizes, and supply pressures ranging from 10 to 120 psig. The non-rising adjustment knob allows for simple and precise monitoring of pressure and features a push-pull lock ring.

<table>
<thead>
<tr>
<th>Model</th>
<th>Process Connection</th>
<th>Pressure Range</th>
</tr>
</thead>
<tbody>
<tr>
<td>R1-1120</td>
<td>1/8&quot; NPT</td>
<td>120 psi</td>
</tr>
<tr>
<td>R1-2120</td>
<td>1/4&quot; NPT</td>
<td>120 psi</td>
</tr>
<tr>
<td>R2-2120</td>
<td>1/4&quot; NPT</td>
<td>120 psi</td>
</tr>
<tr>
<td>R1-1030</td>
<td>1/8&quot; NPT</td>
<td>30 psi</td>
</tr>
<tr>
<td>R1-2030</td>
<td>1/4&quot; NPT</td>
<td>30 psi</td>
</tr>
<tr>
<td>R2-2030</td>
<td>1/4&quot; NPT</td>
<td>30 psi</td>
</tr>
</tbody>
</table>

**Specifications**
- **Service:** Air only.
- **Wetted Material:** Aluminum, polycarbonate and nitrile elastomer.
- **Output:** 0 to 30 psig or 0 to 120 psig.
- **Max. Supply Pressure:** 150 psig (10 BAR).
- **Temperature Limits:** 41 to 140°F (5 to 60°C).
- **Sensitivity:** <0.2 psig @ 25 psig.
- **Air Consumption:** 0.3 SCFH @ max. output.
- **Flow Capacity:** R1: 40 or 60 SCFM @ 70 psig; R2: 90 SCFM @ 70 psig.
- **Exhaust Capacity:** <0.25 SCFM @ 5 psig.
- **Process Connection:** R1: 1/8" NPT or 1/4" NPT; R2: 1/4" NPT.
PROXIMITY® Series FR Filter Regulators
Combination Packages For Pneumatic Air Applications

The Series FR Filter-Regulators are combination units that provide maximum options in minimal space. Constructed of aluminum and polycarbonate, these rugged units offer the same air pressure regulation features as our standard R Series units side-by-side with the convenience of a filter. Unscrewing the adjustment knob and retaining flange easily adapts panel or bracket mounting.

### Model Specifications

<table>
<thead>
<tr>
<th>Model</th>
<th>Process Connection</th>
<th>Pressure Range</th>
<th>Filtration</th>
</tr>
</thead>
<tbody>
<tr>
<td>FR1-112050M</td>
<td>1/8&quot; NPT</td>
<td>120 psi</td>
<td>50 microns</td>
</tr>
<tr>
<td>FR1-212050M</td>
<td>1/4&quot; NPT</td>
<td>120 psi</td>
<td>50 microns</td>
</tr>
<tr>
<td>FR1-112005M</td>
<td>1/8&quot; NPT</td>
<td>5 microns</td>
<td></td>
</tr>
<tr>
<td>FR1-121050M</td>
<td>1/4&quot; NPT</td>
<td>5 microns</td>
<td></td>
</tr>
<tr>
<td>FR2-212050M</td>
<td>1/4&quot; NPT</td>
<td>120 psi</td>
<td>50 microns</td>
</tr>
<tr>
<td>FR2-212005M</td>
<td>1/4&quot; NPT</td>
<td>120 psi</td>
<td>50 microns</td>
</tr>
<tr>
<td>FR1-103050M</td>
<td>1/8&quot; NPT</td>
<td>30 psi</td>
<td>50 microns</td>
</tr>
<tr>
<td>FR1-203050M</td>
<td>1/4&quot; NPT</td>
<td>30 psi</td>
<td>50 microns</td>
</tr>
<tr>
<td>FR1-103005M</td>
<td>1/8&quot; NPT</td>
<td>30 psi</td>
<td>50 microns</td>
</tr>
<tr>
<td>FR1-203005M</td>
<td>1/4&quot; NPT</td>
<td>30 psi</td>
<td>50 microns</td>
</tr>
<tr>
<td>FR2-203050M</td>
<td>1/4&quot; NPT</td>
<td>30 psi</td>
<td>50 microns</td>
</tr>
</tbody>
</table>

### General Information
- **Service**: Air
- **Temperature Limits**: 41 to 140°F (5 to 60°C)
- **Maximum Supply Pressure**: 165 psig
- **Filters**: 50 microns, 5 microns
- **Maximum Supply Pressure**: 165 psig
- **Drain**: Manual
- **Flow Capacity**: Based on 100 psi inlet pressure with 50 micron filter
- **Construction**: Body: Aluminum; Filter: Sintered Bronze

### Effect of Supply Pressure Variation on Outlet Pressure

<table>
<thead>
<tr>
<th>Pressure Variation (psig)</th>
<th>Outlet Pressure (psig)</th>
</tr>
</thead>
<tbody>
<tr>
<td>(25 psig)</td>
<td>&lt; 0.25 psig</td>
</tr>
<tr>
<td>(50 psig)</td>
<td>&lt; 0.50 psig</td>
</tr>
</tbody>
</table>

### Flow Capacity at 100 psi Supply and 70 psi Outlet

<table>
<thead>
<tr>
<th>Flow Capacity (SCFM)</th>
</tr>
</thead>
<tbody>
<tr>
<td>40</td>
</tr>
<tr>
<td>60</td>
</tr>
<tr>
<td>80</td>
</tr>
<tr>
<td>100</td>
</tr>
</tbody>
</table>

### Total Air Consumption @ Maximum Output

<table>
<thead>
<tr>
<th>Flow Capacity (SCFH)</th>
</tr>
</thead>
<tbody>
<tr>
<td>0.3</td>
</tr>
<tr>
<td>0.3</td>
</tr>
</tbody>
</table>

### Construction
- **Body**: Aluminum; **Filter**: Sintered Bronze
**PROXIMITY® Series SN**

**NAMUR Mount Solenoid Valve**

**Manual Override, 100% Duty Rating**

The **Series SN Solenoid Valves** are designed to easily mount directly to pneumatic valve actuators reducing the need for tubing, fittings or brackets, reducing assembly cost. The SN solenoid comes with nitrile o-rings and offers a manual override as a standard feature. The 3/2 solenoids are designed for spring return actuators and 5/2 solenoids are designed to be used with double acting actuators. The SN series is available in a variety of voltage for any application.

**FEATURES**

- NAMUR mount means the solenoid can be mounted directly to valve actuators.
- Designed for double acting or spring return actuators.
- 100% continuous duty rating.
- Manual override.

---

### SPECIFICATIONS

**Service:** Air only.

**Power Requirements:** 24 VAC, 110 VAC, 220 VAC, 12 VDC, or 24 VDC.

**Supply Pressure:** 22 to 116 psi (1.5 to 7.9 bar).

**Air Connections:** 1/4˝ FNPT.

**Temperature Limits:** 23 to 140°F (-5 to 60°C).

**Electrical Connection:** DIN 43650 form A.

**Enclosure Rating:** IP65.

**Mounting:** NAMUR.

**Standard Features:** Manual override.

**Weight:** 1.0 lb (.45 kg).

**Agency Approvals:** CE.

---

<table>
<thead>
<tr>
<th>Model</th>
<th>Power</th>
<th>Action</th>
<th>Actuator Type</th>
</tr>
</thead>
<tbody>
<tr>
<td>SN-5A</td>
<td>110 VAC</td>
<td>5/2</td>
<td>Double Acting</td>
</tr>
<tr>
<td>SN-5B</td>
<td>220 VAC</td>
<td>5/2</td>
<td>Double Acting</td>
</tr>
<tr>
<td>SN-5C</td>
<td>24 VAC</td>
<td>5/2</td>
<td>Double Acting</td>
</tr>
<tr>
<td>SN-5E</td>
<td>24 VDC</td>
<td>5/2</td>
<td>Double Acting</td>
</tr>
<tr>
<td>SN-5D</td>
<td>12 VDC</td>
<td>5/2</td>
<td>Double Acting</td>
</tr>
<tr>
<td>SN-3A</td>
<td>110 VAC</td>
<td>3/2</td>
<td>Spring Return</td>
</tr>
<tr>
<td>SN-3B</td>
<td>220 VAC</td>
<td>3/2</td>
<td>Spring Return</td>
</tr>
<tr>
<td>SN-3C</td>
<td>24 VAC</td>
<td>3/2</td>
<td>Spring Return</td>
</tr>
<tr>
<td>SN-3E</td>
<td>24 VDC</td>
<td>3/2</td>
<td>Spring Return</td>
</tr>
<tr>
<td>SN-3D</td>
<td>12 VDC</td>
<td>3/2</td>
<td>Spring Return</td>
</tr>
</tbody>
</table>

Model SW mounted to an actuator
## HAZARDOUS LOCATIONS LISTINGS

<table>
<thead>
<tr>
<th>Class I (-4)</th>
<th>Flammable gases or vapors are or may be present in sufficient quantities to produce explosive or ignitable mixtures.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Division I (-4A)</td>
<td>Gases or vapors are or may be in the atmosphere in normal operations.</td>
</tr>
<tr>
<td>Group A (-2)</td>
<td>Containing acetylene.</td>
</tr>
<tr>
<td>Group B (-2)</td>
<td>Containing hydrogen, ethylene oxide &amp; propylene oxide or gases or vapors of equivalent hazard.</td>
</tr>
<tr>
<td>Group C (-2)</td>
<td>Containing ethyl-ether vapor, ethylene or cyclopropane.</td>
</tr>
<tr>
<td>Group D (-2)</td>
<td>Containing gasoline, hexane, naptha, benzine, butane, propane, alcohol, acetone, lacquer solvent or natural gas.</td>
</tr>
<tr>
<td>Division II (-4B)</td>
<td>Gases or vapors are not normally present. They may be present due to leakage, accidents or maintenance. It is possible for one atmosphere to contain the same items as listed for Groups of Division I of this class.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Class II (-5)</th>
<th>Combustible dust may be present in sufficient quantities to produce an explosive atmosphere.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Division I (-5A)</td>
<td>Dust in suspension. Dust is or may be present in the atmosphere due to normal operating conditions.</td>
</tr>
<tr>
<td>Group E (-2)</td>
<td>Containing metal dust, including aluminum, magnesiums and their commercial alloys, and other metals of similar hazardous characteristics.</td>
</tr>
<tr>
<td>Group F (-2)</td>
<td>Containing carbon black, coal or coke dust.</td>
</tr>
<tr>
<td>Group G (-2)</td>
<td>Containing flour, starch or grain dust.</td>
</tr>
<tr>
<td>Division II (-5D)</td>
<td>Dust not normally in suspension. Possibly containing the same items as listed for Groups of Division I of this class.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Class III (-6)</th>
<th>Ignitible fibers are present, but not necessarily present in air in quantities sufficient to produce ignitable mixtures.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Division I (-6A)</td>
<td>Easily ignitable fibers or materials producing combustible flyings are handled, manufactured or used.</td>
</tr>
<tr>
<td>Division II (-6B)</td>
<td>Easily ignitable fibers are stored or handled.</td>
</tr>
</tbody>
</table>

### NEMA STANDARDS FOR INDUSTRIAL ENCLOSURES

| Type 1 | General purpose - indoor. |
| Type 2 | Drip-proof - indoor. Protects against limited amounts of falling liquids and dirt. |
| Type 3 | Dust-tight, rain-tight and sleet resistant - outdoor. Protects against windblown dust, rain sheet and external ice formation. |
| Type 3R | Same as Type 3, except not dust-tight. |
| Type 3S | Same as Type 3, but provides for operation of external mechanism when ice-laden. |
| Type 4 | Watertight and dust-tight - indoor and outdoor. Protects against windblown dust and rain, splashing water and hose-directed water. |
| Type 4X | Same as Type 4 except also corrosion resistant. |
| Type 5 | Dust-tight - indoor. Protects against dust and falling dirt. |
| Type 6 | Submersible, watertight and dust-tight - indoor and outdoor. Protects against water entry during occasional temporary submersion to a limited depth. |
| Type 6P | Same as Type 6 except for prolonged submersion. |
| Type 7 | Class I indoor hazardous locations. Explosion-proof, may be A, B, C or D. |
| Type 8 | Class I indoor or outdoor hazardous locations - oil immersed equipment, may be A, B, C or D. |
| Type 9 | Class II indoor hazardous locations. Explosion-proof, may be E, F or G. |
| Type 10 | Mining Enforcement Safety Administration. Explosion-proof in methane or natural gas. |
| Type 11 | Corrosion resistant and drip-proof - oil-immersed - indoor. |
| Type 12 | Dust-tight and drip-tight - indoor, non-corrosive dripping liquids. |
| Type 12K | Same as Type 12 except enclosures have knockouts. |
| Type 13 | Oil-tight and dust-tight - indoors, non-corrosive spray of water, oil and coolant. |
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