Features

- No fill material
- RoHS compliant for sustainability programs
- Robust, thicker Inconel diaphragm is coated with Dymax®
- Available with a thermocouple temperature output
- 0-1,000 to 0-10,000 PSI pressure range capability
- HART™ digital communication available

Description

Dynisco’s Vertex melt pressure sensor innovation matches or exceeds the performance of the traditional sensor. The big differences are that Vertex is more robust, much faster, and significantly friendlier to the environment.

The direct measurement tip is a simple and elegant design with a more robust diaphragm. Direct measurement of the process reduces errors that are transferred by complicated internal support structures, transmission fill materials, or moving push rods. The diaphragm thickness is pressure range dependent and can be up to 7.5 times thicker than a traditional sensor. Add to these features, a diaphragm composition of Inconel 718 coated with the corrosion and abrasion resistant properties of Dymax® and experience the true definition of a robust sensor that has proven to increase the life of the sensor and significantly lowers the cost of ownership.

Vertex design innovation also extends to the speed of response of the sensor. Faster processes and controls demand faster sensing measurements. Vertex is many times faster than traditional sensors improving real time production.

Environmental regulations and community conscientiousness are driving sustainability policies and programs in large and small companies. Waste stream reduction and longer life cycles are good for the environment and the budget. There is no mercury, no NaK, no oil, no Gallium, no fill material what-so-ever. Vertex is also RoHS compliant.

Vertex sensors are designed to work with universal pressure indicators. HART digital communication is available for more extensive diagnostics and remote configuration. An optional Type J or K thermocouple is available to provide a melt temperature signal as well as a 4-20 mA temperature output. Vertex is equipped with a 1/2-20 UNF for installation in standard transducer mounting holes. An adaptor is also available to install 1/2-20 UNF units into a Button Seal application. A sealed welded shell and electrical connection are available if washdown capability is needed for food or medical applications (not available if thermocouple option TCx is selected).
**Specifications**

**PERFORMANCE CHARACTERISTICS**

- **Input, Excitation:** mV/V: 10-12VDC; mA; voltage 16-36VDC
- **Diaphragm Operating Temp. Range:** -40°F to +752°F (-40°C to +400°C)
- **Electronics Operating Temp. (Max):** 185°F (85°C)
- **Zero Shift (Electronics Temp.):** 0.012%/°F (0.022%/°C)
- **Span Shift (Electronics Temp.):** 0.012%/°F (0.022%/°C)
- **Hex/Transition Temp. (Max):** 300°F (150°C)
- **Zero Shift (Hex Temp.):** 0.022%/°F (0.039%/°C)
- **Overload Pressure Rating:** 1.5x FSP
- **Pressure Ranges (PSI):** 1.0M, 1.5M, 3M, 5M, 7.5M or 10M PSI, Bar, Kg/cm2, MPa, KPa
- **Internal Shunt Calibration (R-Cal):** mV/V: na; mA: ±6 to +12%; Voltage ±20%
- **Zero Balance Setting (±% FSO):** mV/V: 10%; mA: ±3%; Voltage ±3%
- **Span Shift (Electronics Temp.):** mV/V: 100 MΩ @50VDC; 80% FSO ±1% FSO
- **Zero Balance Adjustment (±% FS O):** 1.0%/100°F (2.0%/100°C)

**MECHANICAL & PACKAGING**

- **Diaphragm Wetted Parts:** Inconel 718, DyMax® coated
- **Mounting Torque:** 250 in-lbs recommended, 500 in-lbs max
- **Temp. Sensor (Optional):** Type J or Type K thermocouple (available on flex units only)
- **Ingress Protection:** IP54 (IP67 if welded and temperature sensor code is NTR)

**APPROVALS & CERTIFICATIONS**

- **CE:** Directive 2004/108/EC
- **ISO:** ISO9001:2008 production environment
- **RoHS 1:** Directive 2011/65/EU
- **RoHS 2:** Intrinsically Safe

**Ordering Guide**

- **Analog Output**
  - MV3: 3.33mV/V
  - MA4: 4-20mA
  - VT1: 0-10 VDC
  - VT2: 0-5 VDC
  - VT3: 1-11 VDC
  - VT4: 1-6 VDC
  - MPT: 4-20 mA pressure & temperature

- **Digital Communications**
  - NDC: No digital communications
  - HT1: HART (for MA4 and MPT Analog Outputs only)

- **Unit of Measure**
  - PSI = PSI
  - Bar = Bar
  - KG2 = Kg/cm²
  - MPA = MPA
  - KPA = KPa

- **Pressure Range**
  - R16 or T16 = 1000 PSI; 70 Bar; 70 Kg/cm²; 7 MPa; 7000 KPa
  - R17 or T17 = 1500 PSI; 100 Bar; 100 Kg/cm²; 10 MPa; 10000 KPa
  - R20 or T20 = 3000 PSI; 200 Bar; 200 Kg/cm²; 20 MPa; 20000 KPa
  - R21 or T21 = 5000 PSI; 350 Bar; 350 Kg/cm²; 35 MPa; 35000 KPa
  - R22 or T22 = 7500 PSI; 500 Bar; 500 Kg/cm²; 50 MPa; 50000 KPa
  - R23 or T23 = 10000 PSI; 700 Bar; 700 Kg/cm²; 70 MPa; 70000 KPa

- **Process Connection**
  - UNF = 1/2-20 UNF
  - F25 = Standard Small Flange

**Accuracy** Defined as the combined error expressed as a percentage of full scale output. Combined error includes linearity BFSL, hysteresis, and repeatability at ambient temperature, as defined in ISA-S37

**Ingress Protection**

- **Option Code**

  - **Compliance Specials**
    - NCC = No Compliance Certification (CE included)
    - ISE = Intrinsically Safe (IS) ATEX, (for MA4 and MPT Analog Outputs only)

- **Temperature Sensor**
  - NTR = No Temperature Sensor
  - TCJ = Thermocouple J-type with 3 inch flex (IP54 only)
  - TCK = Thermocouple K-type with 3 inch flex (IP54 only)

- **Snout Length**
  - S03 = 3 inch (7.6 cm)
  - S06 = 6 inch (15.2 cm)
  - S09 = 9 inch (22.9 cm)
  - S12 = 12 inch (30.5 cm)

- **Flex Length**
  - NFL = No Flex Length
  - F18 = 18 inches (45.7 cm)
  - F30 = 30 inches (76.2 cm)
  - F48 = 48 inches (121.9 cm)

- **Electrical Connection**
  - 6PN = 6 pin bayonet style o-ring sealed (IP54 only)
  - 3AC = 3-wire conduit -42 inches, welded (for MA4 Analog Output only)
  - 5AC = 5 wire conduit -42 inches, welded (for MA4 and MPT Analog Output only)
  - 6AC = 6 wire conduit -42 inches, welded (for MV3 Analog Output only)
  - 6PW = 6 pin bayonet style, welded
  - 3PW = 3 pin bayonet style, welded (for MA4 and MPT Analog Output only)
  - 8CN = 8 pin threaded style (PC) o-ring sealed (IP54 only)
  - 8CW = 8 pin threaded style (PC), welded (for MA4 and MPT Analog Output only)

- **Option Code Options not shown in ordering guide may be available. Consult factory for available options.**

**Option Code**

<table>
<thead>
<tr>
<th>Option Code</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>6PN</td>
<td>6 pin bayonet style o-ring sealed (IP54 only)</td>
</tr>
<tr>
<td>3AC</td>
<td>3-wire conduit -42 inches, welded (for MA4 Analog Output only)</td>
</tr>
<tr>
<td>5AC</td>
<td>5 wire conduit -42 inches, welded (for MA4 and MPT Analog Output only)</td>
</tr>
<tr>
<td>6AC</td>
<td>6 wire conduit -42 inches, welded (for MV3 Analog Output only)</td>
</tr>
<tr>
<td>6PW</td>
<td>6 pin bayonet style, welded</td>
</tr>
<tr>
<td>3PW</td>
<td>3 pin bayonet style, welded (for MA4 and MPT Analog Output only)</td>
</tr>
<tr>
<td>8CN</td>
<td>8 pin threaded style (PC) o-ring sealed (IP54 only)</td>
</tr>
<tr>
<td>8CW</td>
<td>8 pin threaded style (PC), welded (for MA4 and MPT Analog Output only)</td>
</tr>
</tbody>
</table>

**Process Connection**

- **UNF** = 1/2-20 UNF
- **F25** = Standard Small Flange

**Note:** Other process connections are available. Contact factory for available options.

**Accuracy**

- MM1 = ±0.25% accuracy, BFSL
- HH1 = ±0.15% accuracy, (for MA4 and MPT Analog Outputs only)

**Digital Communications**

- No digital communications
- HT1 = HART (for MA4 and MPT Analog Outputs only)

**Unit of Measure**

- PSI = PSI
- Bar = Bar
- KG2 = Kg/cm²
- MPA = MPA
- KPA = KPa

**Pressure Range**

- R16 or T16 = 1000 PSI; 70 Bar; 70 Kg/cm²; 7 MPa; 7000 KPa
- R17 or T17 = 1500 PSI; 100 Bar; 100 Kg/cm²; 10 MPa; 10000 KPa
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- R23 or T23 = 10000 PSI; 700 Bar; 700 Kg/cm²; 70 MPa; 70000 KPa

**Process Connection**

- UNF = 1/2-20 UNF
- F25 = Standard Small Flange

**Accuracy** Definida como a taxa de erro combinado expressado como porcentagem do sinal completo de saída. O erro combinado inclui linearidade BFSL, histerese e repetibilidade em temperatura ambiente, de acordo com a definição de ISA-S37.
MECHANICAL DIMENSIONS

DETAIL 'A'
ELECTRICAL HOUSING, O-RING SEALED

- PT02A-10-6P CONNECTOR SHOWN
- PT02E-12-8P 8 PIN CONNECTOR OPTIONAL
- ZERO / SPAN FUNCTIONS [ SEAL SCREWS ]
- NOT APPLICABLE TO mV/V UNITS

- ALL O-RING CONNECTORS
- FLEX LENGTH
- SST BRAIDED HOSE [2.77 [68.4] COVERED CABLE]
- SST BRAIDED ARMOR COVERED LEADS
- CUSTOMER T/C OPTIONAL SEE ORDERING GUIDE
- SSI CAMSS HOSE [0.48 [12.2]
- COVERED CABLE
- MALE T/C CONNECTOR
- FEMALE T/C CONNECTOR
- SST BRAIDED ARMOR
- COVERED LEADS
- CUSTOMER T/C OPTIONAL
- SEE ORDERING GUIDE

DETAIL 'B'
1/2 - 20 UNF-2A PROCESS CONNECTION

- 1/2-20 UNF-2A
- 414 [10.5]
- 412 [10.2]
- 407 [10.2]
- 363 [9.3]
- 352 [8.9]
- 11.05
- 11.05
- 10.5 [268.3]
- 28.5
- 1.12
- 5.07 [128.3]

NOTES:
1. DIMENSIONS ARE IN INCHES [ MILLIMETERS ]
2. DIMENSIONS ARE NOMINAL AND FOR REFERENCE ONLY
3. NOT ALL CONFIGURATIONS & OPTIONS ARE SHOWN, CONSULT FACTORY.

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DOC072015
**ELECTRICAL CONNECTIONS**

**CONNECTOR OPTIONS**

<table>
<thead>
<tr>
<th>Connector Type</th>
<th>6 PIN</th>
<th>8 PIN</th>
</tr>
</thead>
<tbody>
<tr>
<td>PT</td>
<td>Bendix PT02-10-6P</td>
<td>Bendix PT02-12-8P</td>
</tr>
<tr>
<td>PC</td>
<td>Bendix PC02-12-8P</td>
<td>Bendix PC02-12-8S</td>
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</tbody>
</table>

**NOTES:**

1. Dimensions are in inches [millimeters].
2. Dimensions are nominal and for reference only.
3. Not all configurations & options are shown. Consult factory.

**SIGNAL**

<table>
<thead>
<tr>
<th>SIGNAL</th>
<th>TERMINAL DESCRIPTION</th>
<th>CONNECTOR LEAD OR DYNISCO CABLE WIRE COLOR</th>
<th>6-PIN</th>
<th>8-PIN</th>
</tr>
</thead>
<tbody>
<tr>
<td>SIG+</td>
<td>Red</td>
<td>A</td>
<td></td>
<td></td>
</tr>
<tr>
<td>SIG-</td>
<td>Black</td>
<td>B</td>
<td></td>
<td></td>
</tr>
<tr>
<td>PWR+</td>
<td>Orange</td>
<td>F</td>
<td></td>
<td></td>
</tr>
<tr>
<td>PWR-</td>
<td>Blue</td>
<td>E</td>
<td></td>
<td></td>
</tr>
<tr>
<td>PWR+</td>
<td>Orange</td>
<td>G</td>
<td></td>
<td></td>
</tr>
<tr>
<td>PWR-</td>
<td>Blue</td>
<td>H</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**ANALOG OUTPUT MV3**

**ANALOG OUTPUT ST**

**INGRESS PROTECTION = IP67** if temperature sensor code is "NTR"

**INGRESS PROTECTION = IP54** if temperature sensor code is not "NTR"

**"O-RING SEALED CONNECTORS" (O-RING SEALED DESIGN)**

**"WELDED CONNECTORS" (WELDED DESIGN)**

**"CONDUIT ENDPLATE" (WELDED DESIGN)**

**CONTACTS**

- 5 or 6 wire (3°C, 5°C)
- 6 wire (6°C)

**NOTES:**

1. Dimensions are in inches [millimeters].
2. Dimensions are nominal and for reference only.
3. Not all configurations & options are shown. Consult factory.

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VERTEX 5