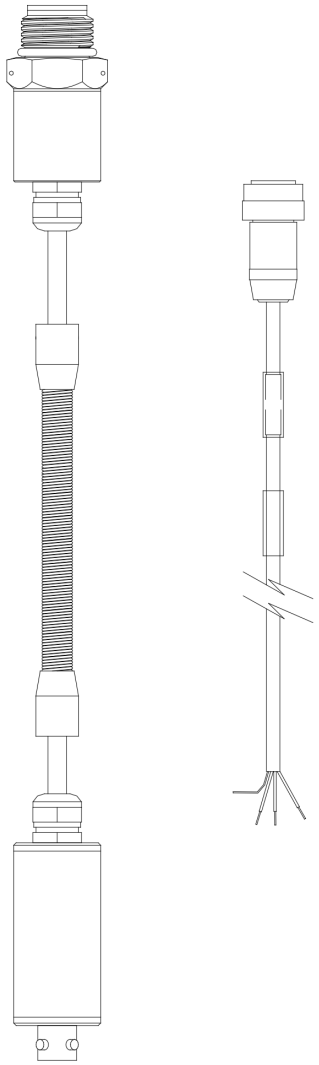
165855 Cylinder Pressure Transducer

Datasheet

Cordant™

166815 Rev. M



Description

The Cylinder Pressure System consists of the 165855 Cylinder Pressure Transducer and the 146824 Interconnect cable. It is intended for measuring the cyclic absolute pressure changes inside a reciprocating compressor cylinder. This transducer is an integral part of a Reciprocating Compressor Condition Monitoring and Asset Management System when utilized with our 3500/77M Cylinder Pressure Monitor and System 1 Plant Asset Management Software.

The Cylinder Pressure Transducer has a robust design for high reliability in harsh chemical environments. The unique, patent-pending design also allows the transducer to continue to provide an accurate pressure reading, even after being continually cycled over large pressure gradients for an extended period of time. The transducer can also withstand over-pressure situations caused by application upsets without diaphragm degradation, returning to normal operation when the operating pressure returns to the transducer's specified operating pressure range. The Cylinder Pressure Transducer is also designed to meet NEMA 4X and IP67 conditions for moisture ingression.

The wetted surface of the transducer is typically installed into an isolation valve or similar pressure indicator port on the compressor. A special adapter is usually required to provide a seal between the pressure indicator port and the transducer (such as the 166393 adapter). The electronics portion of the Cylinder Pressure Transducer is separated from the wetted surface by 1 metre of cable. The electronics must be secured on or near the compressor for optimal performance.

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Each pressure sensor will be shipped with pressure-temperature compensation data in order to optimize the measurement. Inputting the supplied data points into the 3500/77 Cylinder Pressure Monitor can minimize the operating temperature effects on the transducer.

Specifications

Cylinder Pressure Transducer System

Operation outside the specified limits will result in false or inaccurate readings.

Transducer Characteristics	
Measurement Range	0 to 100/ 250/ 500/ 1000/ 2500/ 5000/ 10,000 psia 0 to 6.8/ 17/ 34.5/ 69/172/ 345/ 689 bar
Proof (Over) Pressure	1.5X Full Scale
Burst Pressure	3X Full Scale (2X FS on 689 bar/ 10,000 psia units)
Full Scale Output	10 ± 0.3 Vdc
Zero	0.5 ± 0.1 Vdc
Power Supply	18 to 30 Vdc
Max. Current	< 15 mA
Compensated Temperature	-40 to 85° C -40 to 185° F
Thermal Zero Shift	-1.0 to +2.0 (for 6.8 and 17 bar/ 100 and 250 psia) %FS -0.5 to +1.5 (for all other pressure ranges) Note: Within compensated temperature range.
Thermal Sensitivity Shift	See Graphs and Figures on page 7.
Linearity, Hysteresis, Repeatability	£ ±0.3 %FS
Frequency response	0Hz to 5500 Hz ± 1 dB
Operating Temperature	-40 to 85 (electronics housing) °C -40 to 150 (sensor head) °C -40 to 185 (electronics housing) °F -40 to 302 (sensor head) °F
Overvoltage Category	II

Physical & Environmental

Outdoor Use: Standard installation for these sensors is in a protected enclosure with wiring protected in conduit. Splash boots can be added for additional protection if needed by customer's requirements.

Weight	250 g (0.55 lbm) Sensor Head 150 g (0.33 lbm)
Dimensions	See diagram
Materials	Gold plated, per MIL-G-45204 Type III Grade A, C-276 welded to a 316L stainless steel body. (patent pending)
Humidity	95% condensing on exposed surfaces excluding connector
Body	Designed to meet IP67
Operating Temperature	Dependent upon O-ring material Hifluor: -26°C to 150 °C (-15 °F to 302 °F) Ethylene Propylene: -40°C to 150 °C (-40 °F to 302 °F)
Pressure Media	Fluid media compatible with C-276 and either Hifluor or Ethylene Propylene o-ring material (common media below)
Pollution Degree	2
Maximum Use Altitude	2000 meters above sea level

Sensor, adapters, isolation valves, or sealing rings that are not compatible with process gases will corrode and fail. This failure may result in gas leaks, fire, explosion, or projectiles. To prevent corrosion and failure, verify that all components are compatible.

O-rings

The o-ring utilized must be compatible with the type of gas or fluid that the transducer will be operated in. Consult your local representative for additional assistance.

Hifluor (black)	Hydrogen sulfide, sulfuric acid, butane, fuel oil, petroleum oil, turbine oil, propane, propylene, butylenes, and natural gas.
Ethylene Propylene (purple)	Ammonium hydroxide, anhydrous ammonia
Mounting Torque	68 N-m (50 lbf-ft)

Ordering Information

For the detailed listing of country and product-specific approvals, refer to the *Approvals Quick Reference Guide (108M1756)*.

For additional technical documentation, please log in to bntechsupport.com and access the Bently Nevada Media Library.

165855 Cylinder Pressure Transducer

All transducers have 7/8-14 UNF thread.

165855-AA-BB

A: Pressure Range Option	
1 1	0 to 6.8 bar (0 to 100 psia) w/ armor
1 2	0 to 17 bar (0 to 250 psia) w/ armor
1 3	0 to 34.5 bar (0 to 500 psia) w/ armor
1 4	0 to 69 bar (0 to 1,000 psia) w/ armor
1 5	0 to 172 bar (0 to 2,500 psia) w/ armor
1 6	0 to 345 bar (0 to 5,000 psia) w/ armor
1 7	0 to 689 bar (0 to 10,000 psia) w/ armor
B: Hazardous Areas Location Approval	
0 1	Multiple Approvals (CSA, ATEX, and IECEx)

146824 Cylinder Pressure Transducer Cable

146824-AAAA

A: Length Option	
0010	10 ft (3 m)
0025	25 ft (7.6 m)
0050	50 ft (15.2 m)
0100	100 ft (30.5 m)
0200	200 ft (61.0 m)
0300	300 ft (91.4 m)
0400	400 ft (121.9 m)
0500	500 ft (152.4 m)
1000	1,000 ft (304.8 m)

Graphs and Figures

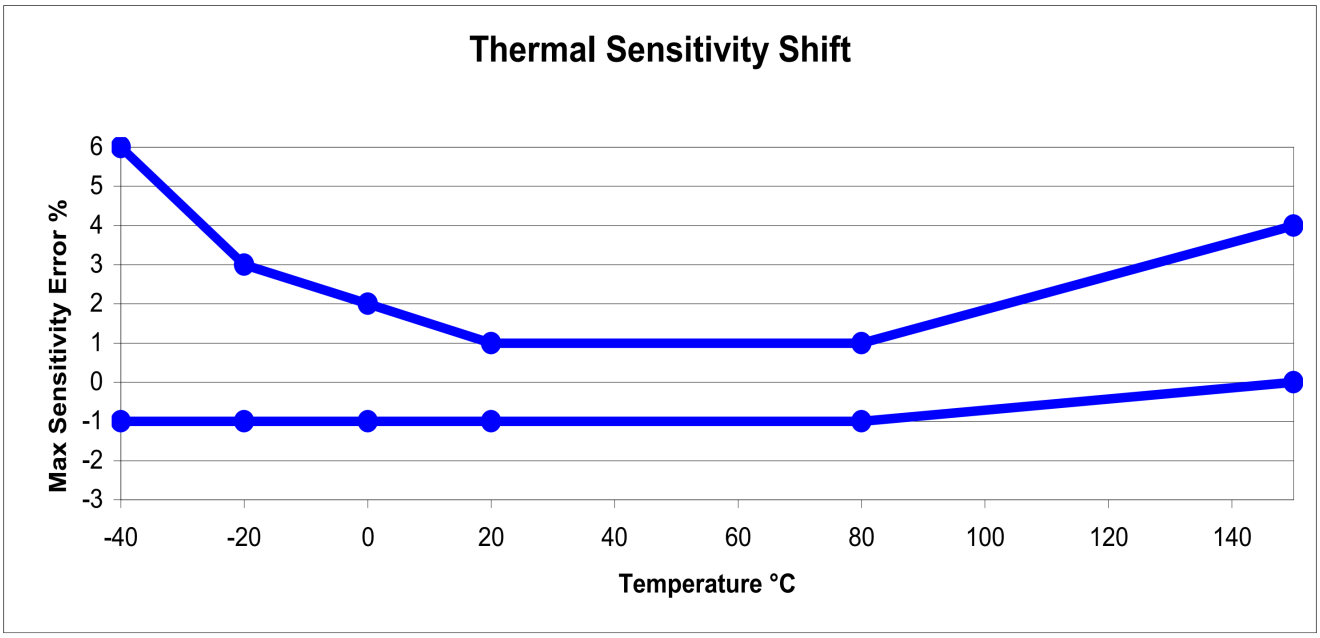
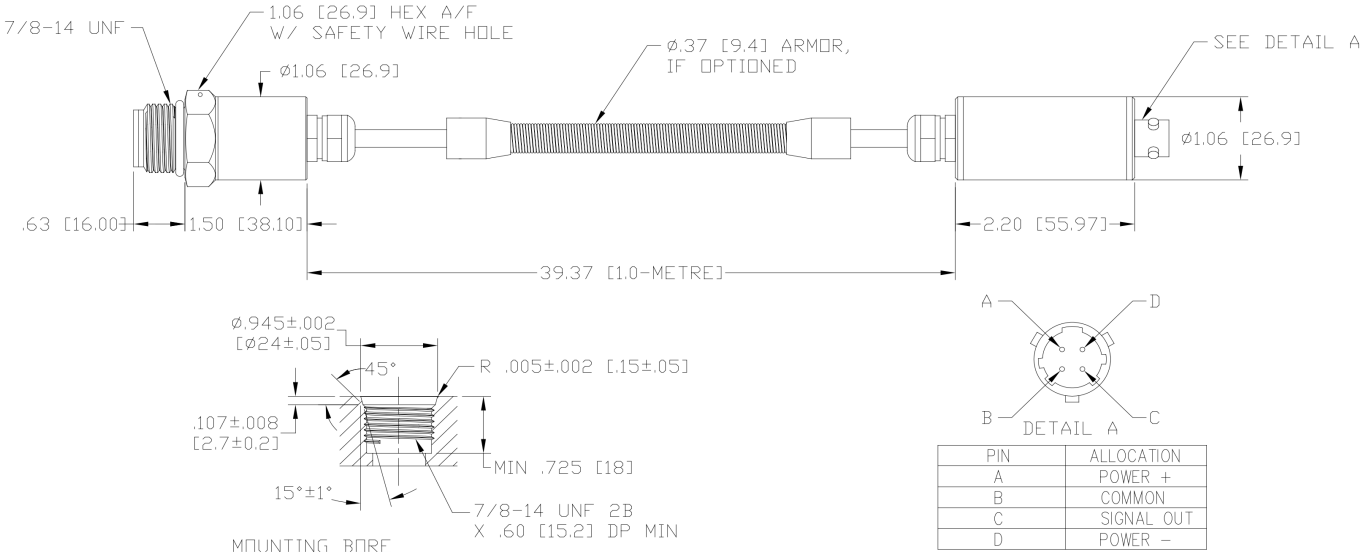


Figure 1: Typical Thermal Sensitivity Shift



PIN	ALLOCATION
A	POWER +
B	COMMON
C	SIGNAL OUT
D	POWER –

Figure 2: 165855-AA Cylinder Pressure Transducer and Bore per SAE J1926