

Barksdale

Installation And Maintenance Instructions

400 SERIES PRESSURE TRANSDUCERS

COMMON SPECIFICATIONS FOR ALL UNITS

Calibration Reference Conditions

Ambient Temperature: 75°F
Relative Humidity: 40 to 60%
Barometric Pressure: 29.92 in. Hg.

Performance Characteristics

Accuracy (LH&R): $\pm 0.25\%$, Best Straight Line (BSL)
Long Term Stability: Will repeat within $\pm 0.5\%$ FSO of original calibration curve for 1 year
Proof Pressure: 2 times rated pressure range, or 13,000 psi, whichever is less
Life, Cycling: Full scale pressure cycles: 10^6 to 300 psi, 10^7 to 1,000 psi, 10^8 to 7,500 psi
Thermal Hysteresis: $\pm 0.25\%$ FSO (maximum)
Vibration: 15 g's, 10 to 2000 Hz (MIL-STD-202, M204, Cond. B)
Shock: 50 g's, 11 ms (MIL-STD-202, M213, Cond. G)
Wetted Material: 300 series and 17-4 PH stainless steel. Models rated for 2000 psi and above use Viton O-rings
Pressure Connection: 1/4-18 NPT male, standard
Electrical Connection: 1 meter jacketed cable, standard
Pressure Cavity Volume: 0.075 inches maximum
Enclosure Rating: NEMA 3

MILLIVOLT OUTPUT MODELS 400 & 402

Excitation: 10 VDC (Nominal)
Output: 0 to 30 mV (400)
0 to 100 mV (402)
Zero Output: 0 mV ± 2 mV
Full Scale Output: 30 mV ± 1 mV (400)
(3 mV/V Ratiometric with Excitation Voltage)
100 mV ± 1 mV (402)
(10 mV/V Ratiometric with Excitation Voltage)
Resistance: 5000 ohms (nominal)
Temperature Range: Compensated: +30° to +160°F (-1° to 71°C)
Operating: 0° to 160°F (-18° to 71°C) standard
Temperature Error: $\pm 3.0\%$ of FSO max over compensated range (400)
 $\pm 1.0\%$ of FSO max over compensated range (402)
Weight: 4.6 oz (131 grams)
Wiring: Red (+Excite) Bendix Pin A
Green (+Output) Bendix Pin B
White (-Output) Bendix Pin C
Black (-Excite) Bendix Pin D

VOLTAGE OUTPUT MODELS 403-09-O (5 VDC OUTPUT) 403-10-P (10 VDC OUTPUT)

Excitation: 12 to 32 VDC operating (5 VDC output)
14 to 32 VDC operating (10 VDC output)
Output: 0.5 to 5.5 VDC
1 to 11 VDC
Zero Output: 0.5 VDC, $\pm 2.0\%$ of FSO
1.0 VDC, $\pm 2.0\%$ of FSO
Full Scale Output: 5.0 VDC, $\pm 1.0\%$
10 VDC, $\pm 1.0\%$
Protection: Reverse polarity protected
Minimum Load Resistance: 2000 ohms
Temperature Range: Compensated: +30° to +130°F (-1° to 54°C)
Operating: 0° to 160°F (-18° to 71°C)
Temperature Error: $\pm 1.0\%$ of FSO max over compensated range
Weight: 5.8 oz (166 grams)
Wiring: Red (+Excite) Bendix Pin A
White (+Output) Bendix Pin B
Black (Common) Bendix Pin C

CURRENT OUTPUT MODEL 405

Excitation: 12 to 67 VDC
Output: 4 to 20 mA
Zero Output: 4 mA, $\pm 2.0\%$ of FSO
Full Scale Output: 16 mA, $\pm 1.0\%$
Protection: Reverse polarity protected
Loop Resistance: See loop resistance chart on back page
Temperature Range: Compensated: +30° to +130°F (-1° to 54°C)
Operating: 0° to 160°F (-18° to 71°C)
Temperature Error: $\pm 1.0\%$ of FSO max over compensated range
Weight: 5.9 oz (167.5 grams)
Wiring: Red (+Excite) Bendix Pin A
Black (-Excite) Bendix Pin B

CALIBRATION

All models are tested to meet or exceed the published specifications. The calibration and testing were done using instrumentation and standards traceable to the National Institute of Standards and Technology (NIST). Also tested in accordance with MIL-STD-45662A.

WARNING! READ BEFORE INSTALLATION

Fluid hammer and surges can destroy any pressure transducer and must always be avoided. A pressure snubber should be installed to eliminate the damaging hammer effects. Fluid hammer occurs when a liquid flow is suddenly stopped, as with quick closing solenoid valves. Surges occur when flow is suddenly begun, as when a pump is turned on at full power or a valve is quickly opened.

Liquid surges are particularly damaging to pressure transducers if the pipe is originally empty. To avoid damaging surges, fluid lines should remain full (if possible), pumps should be brought up to power slowly, and valves opened slowly. To avoid damage from both fluid hammer and surges, a surge chamber should be installed, and a pressure snubber should be installed on every transducer.

Symptoms of fluid hammer and surge's damaging effects:

1. Pressure transducer exhibits an output at zero pressure (large zero offset). If zero offset is less than 10% FS, user can usually re-zero meter, install proper snubber and continue monitoring pressures.
2. Pressure transducer output remains constant regardless of pressure.
3. In severe cases, there will be no output.

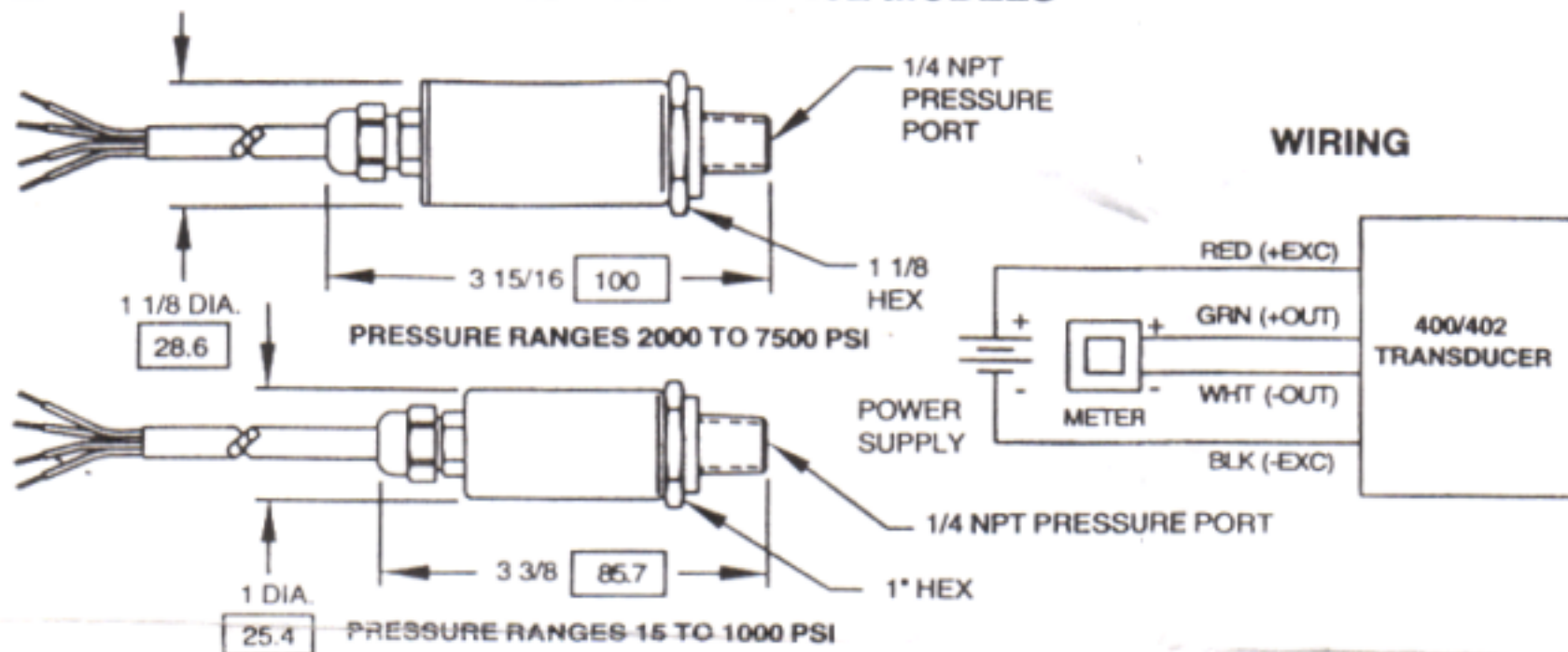
TORQUE REQUIREMENTS:

Apply pipe compound sparingly to male pipe threads only. Avoid pipe strain on Transducer housing by properly supporting and aligning piping. Apply wrench to the hex flats of fittings only, then tighten the connection. Adequate support of piping and proper mounting of the pressure transducer should be made to avoid excessive shock and vibration.

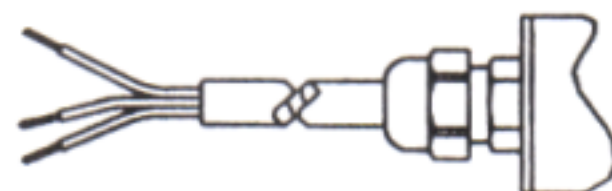
TORQUE TO 125 - 150 pound inches.

CAUTION: For steam service, install a condensate loop (pigtail or steam siphon tube) between the steam line and the pressure transducer.

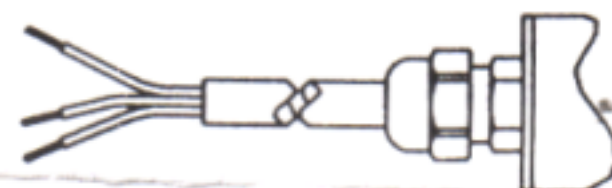
MILLIVOLT TRANSDUCERS - 400 AND 402 MODELS



ELECTRICAL CONNECTOR OPTIONS



Jacketed Cable
(1 meter long) NEMA 3
Supplied as standard when
H2 appears in catalog number



Shielded Jacketed Cable
(1 meter long) NEMA 3
To order: replace H2 in
catalog number with H3

ADDITIONAL OPTIONS (402, 403, 405 MODELS)



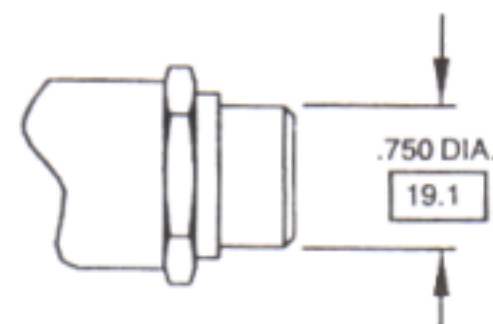
Bendix Connector
NEMA 3
4 Pin (PT02A-8-4P)
To order: replace H2 in
catalog number with T2



Bendix Connector
NEMA 3
6 Pin (PT02E-10-6P)
To order: replace H2 in
catalog number with T3

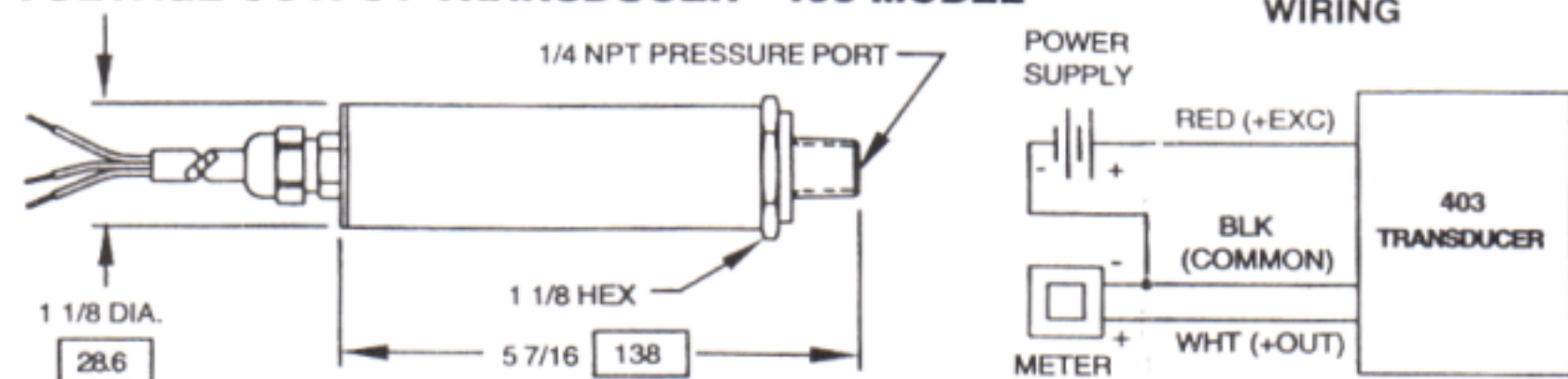
Mating Connectors (not provided):
T2: Bendix PT06E-8-4S(SR)
T3: Bendix PT06E-10-6S(SR)
or equivalent

PRESSURE PORT OPTION

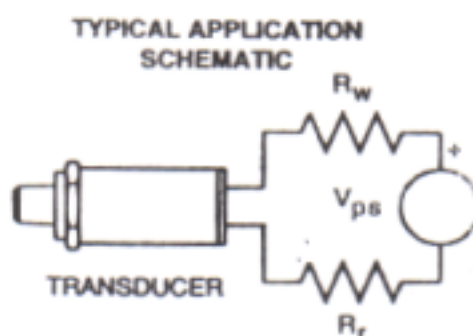
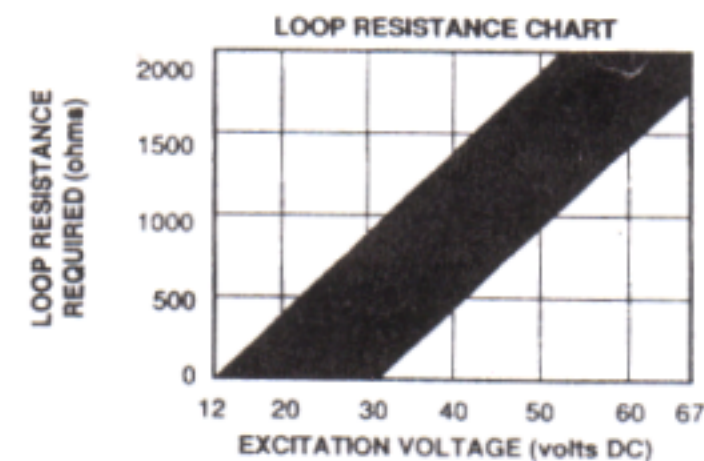
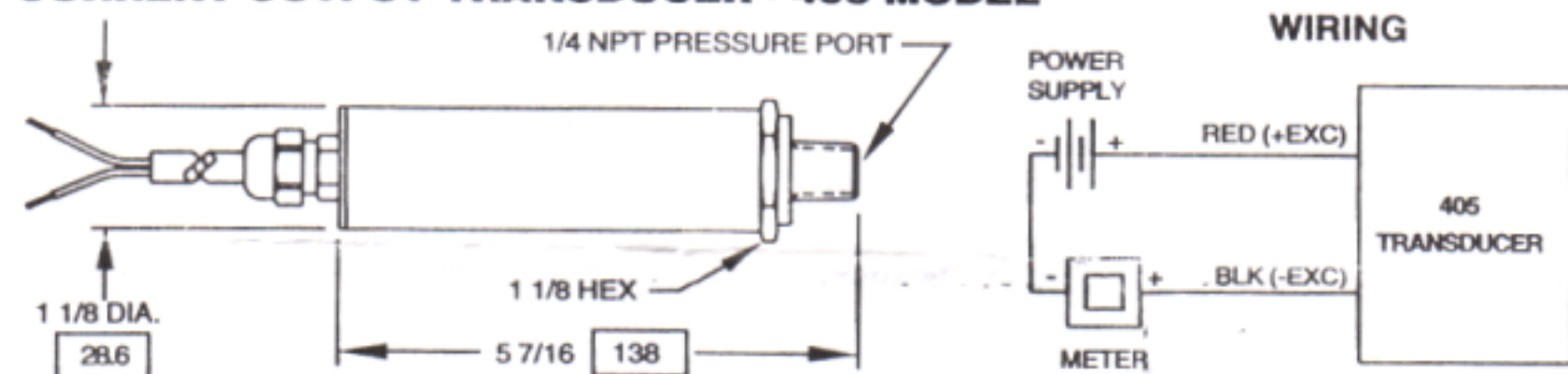


7/16-20 UNF INTERNAL PORT
To order: add -P1 suffix to
catalog number

VOLTAGE OUTPUT TRANSDUCER - 403 MODEL



CURRENT OUTPUT TRANSDUCER - 405 MODEL



$R_t = R_w + R_r =$ Required total loop resistance
 $R_w =$ External wiring resistance (wire + resistor)
 $R_r =$ Internal resistance of user's receiver
 $V_{ps} =$ System power supply voltage
 $R_t = 50(V_{ps} - 12)$ maximum
 $R_t = 50(V_{ps} - 30)$ minimum
 NOTE: R_t must not exceed 2000 ohms.

RETURN REQUESTS/INQUIRIES

Direct all warranty and repair requests/inquiries to Barksdale, Inc. Customer Service Department. Call 213-589-6181, FAX: 213-589-3463

BEFORE RETURNING ANY PRODUCT(S) TO BARKSDALE, YOU MUST OBTAIN AN AUTHORIZED RETURN (AR) NUMBER FROM OUR CUSTOMER SERVICE DEPARTMENT (IN ORDER TO AVOID PROCESSING DELAYS). The assigned AR number should then be marked on the outside of the return package and on any correspondence.

FOR WARRANTY RETURNS, please have the following information available BEFORE contacting Barksdale:

1. P.O. number under which the product was PURCHASED.
2. Model number of the product under warranty.
3. Repair instructions and/or specific problems you are having with the product.

FOR NON-WARRANTY REPAIRS OR CALIBRATION, consult Barksdale for current repair/calibration charges. Have the following information available BEFORE contacting Barksdale:

1. Your P.O. number to cover the COST of the repair/calibration.
2. Model number of product.
3. Repair instructions and/or specific problems you are having with the product.

Barksdale's policy is to make running changes, not model changes, whenever an improvement is possible. That way our customers get the latest in technology and engineering.

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WARRANTY

STANDARD WARRANTY: Barksdale warrants that the Products will be free from defects in title, and so far as of its own manufacture, will conform, in the manner herein provided, to the applicable specifications which are made a part hereof, and will be free from defects in material and workmanship, and should any part of it be found, when properly installed, maintained and used under specified service conditions, within three years after date of notification of completion at Barksdale plant or shipment by Barksdale, whichever is the earlier, to have been defective or nonconforming with the specifications, Barksdale will repair or replace said part f.o.b. its factory, provided the original part is returned to its factory transportation prepaid and Barksdale inspection reveals it to have been defective or nonconforming within the terms of this warranty. No device or part shall be returned without giving prompt notice of nonconformance or defect to Barksdale and obtaining its prior written authorization. Barksdale shall in no event be held liable for damage or delay caused by nonconformance or a defect in material or workmanship, and no allowance will be made for repairs or alterations unless made with its written approval. Purchaser, or any user claiming through purchaser, assumes all liability for the consequences of the use or misuse thereof by itself, or its employees, or by other.

Equipment and accessories not of our manufacture are warranted only to the extent of the original manufacturer. Barksdale shall not be liable for damage of any kind resulting from erosive, corrosive or other harmful action of any gases, liquids, or any other substance handled by the Products. The foregoing is in lieu of all other warranties by, and obligations or liabilities of, Barksdale, or its representatives, whether express, implied or statutory; and SINCE THE PRODUCTS ARE THE SUBJECT OF SPECIFICATIONS, AS AFORESAID, NO WARRANTY OF MERCHANTABILITY OR FITNESS FOR PURPOSE IS APPLICABLE.