Dynisco
Instruments

INSTRUCTIONS FOR

PT290 SERIES

MELT PRESSURE TRANSMITTER







Approvals: Factory Mutual (Explosion Proof)
Factory Mutual (Intrinsically Safe)
SIRA (Intrinsically Safe)
CE

The following models are covered in this manual:

PT290E

PT290S

PT291E

PT291S

PT292E

PT292S

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1. Introduction

The Dynisco PT290 Series pressure transmitters provide a means of pressure measurements of molten polymers at diaphragm temperatures up to 600° (315°C).

The transmitters are designed for applications where amplified pressure signals are necessary. This includes transmission in electrically noisy environments or long distance signal transmission.

The 290 Series transmitters combine Dynisco's capillary strain gage sensor with quality, reliable electronics to produce an amplified signal proportional to the measure pressure. The output is 4-20mA.

New built in zero and span adjustments are provided below the seal screws located at the side of the unit. The strain gage transducer element has no moving parts and requires minimum deflection of the sensing diaphragm (.001 to .002 inches) to obtain full scale output. The lack of mechanical connections minimizes inaccuracies.

2. Approvals

The PT290 Series transmitter was designed for use in hazardous areas. The units utilize a stainless steel shell with a welded conduit fitting for electrical termination (connectors also available). Units intended for installation in classified areas should bear the applicable approval agency label.

A. Factory Mutual Explosion-proof Approval
   Class 1, Division 1 Groups A, B, C and D.
B. Factory Mutual Intrinsically Safe Approval
   These units have Class 1, Division 1 Groups A, B, C and D approval when installed per Dynisco drawing #000099 (Appendix 1).
C. SIRA Intrinsic Safety Certification
   These units have EEx ia 11C T4 approval for installation in Zone 0, 1 or 2 when installed per Dynisco drawing #000098 (Appendix 2).
D. CE Approval – All models

NOTE: "E" Series is the standard and carries all approvals.
"S" Series carries FM-IS and SIRA certification

3. Model Identification

The following model identification chart lists the various models by output, mounting configuration, pressure rating, etc.

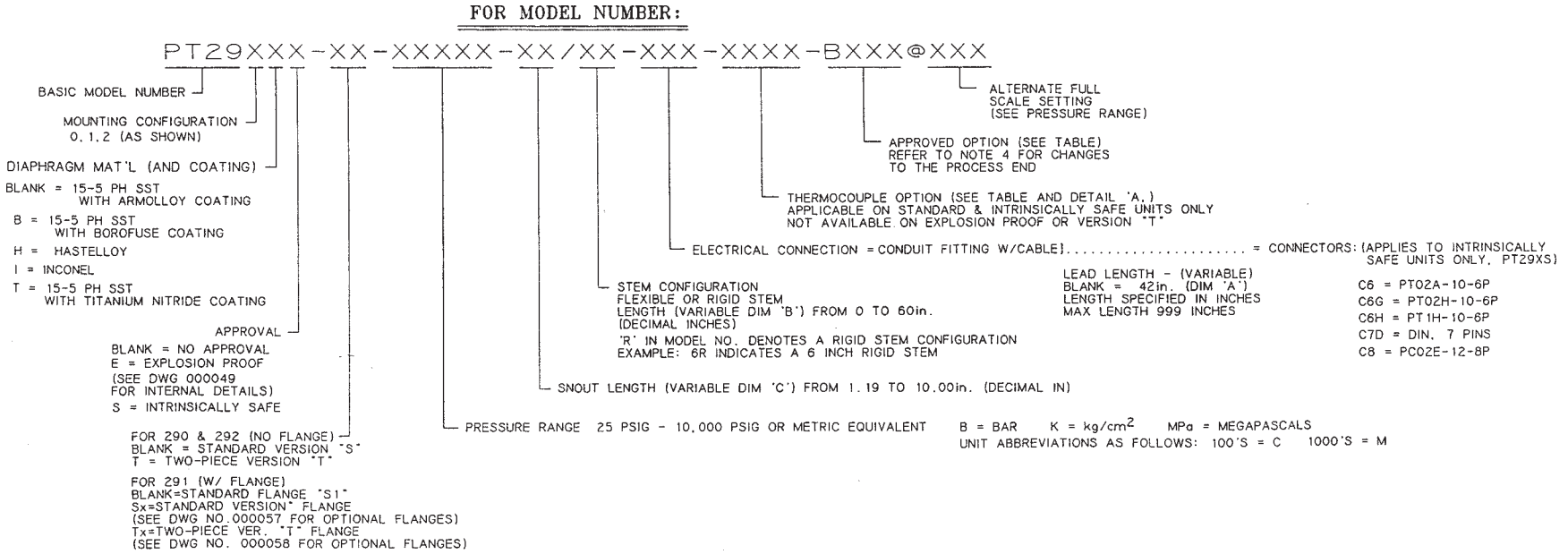


Fig. 1 PT29X Series Model Identification

4. Installation Guidelines

The PT290 Series Dynisco Melt Pressure transmitters will provide excellent service and superior performance if proper care is taken during handling, installation and use.

The tip of the transducer consists of a stainless steel diaphragm which must be protected from severe abrasives, dents and scores.

The most common causes of transducer damage are: installation in improperly machined or plugged mounting holes and cold starts.

Please read the appropriate sections of the manual prior to installation and use.

IMPORTANT

- Do not remove protective cap until ready to install.
- Prior to initial installation, verify correct machining of mounting hole.
- When re-installing, make sure mounting hole is clear of hardened plastic.
- Transducer should be removed at operating temperature (no pressure in system).

5. Mounting and Installation

To prevent galling on the threaded PT292, the transducer threads should be lubricated with a high temperature anti-seize compound.

In a properly machined mounting hole, an adequate seal should be obtained with 100 inch-pounds of mounting torque.

When re-installing the transducer, the mounting hole must be free of hardened plastic. It is recommended that the barrel/manifold be at operating temperature.

Use mounting hardware, P/N 200941.

Different mounting configurations are available. Refer to the correct mounting configuration for proper installation.

Refer to the diagrams below for dimensions and recommended mounting hole.

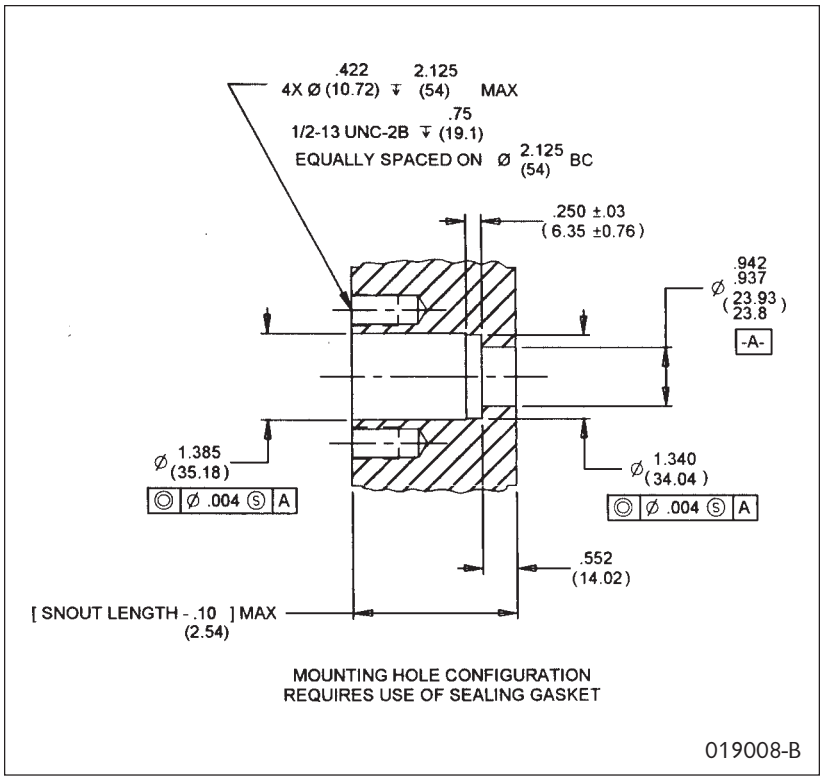


Fig. 2 PT 290 and 291

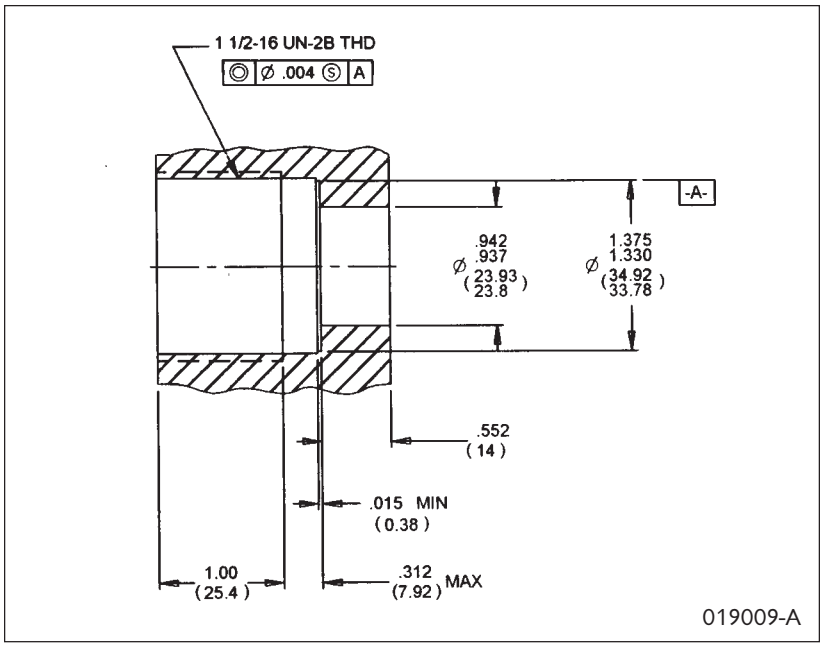
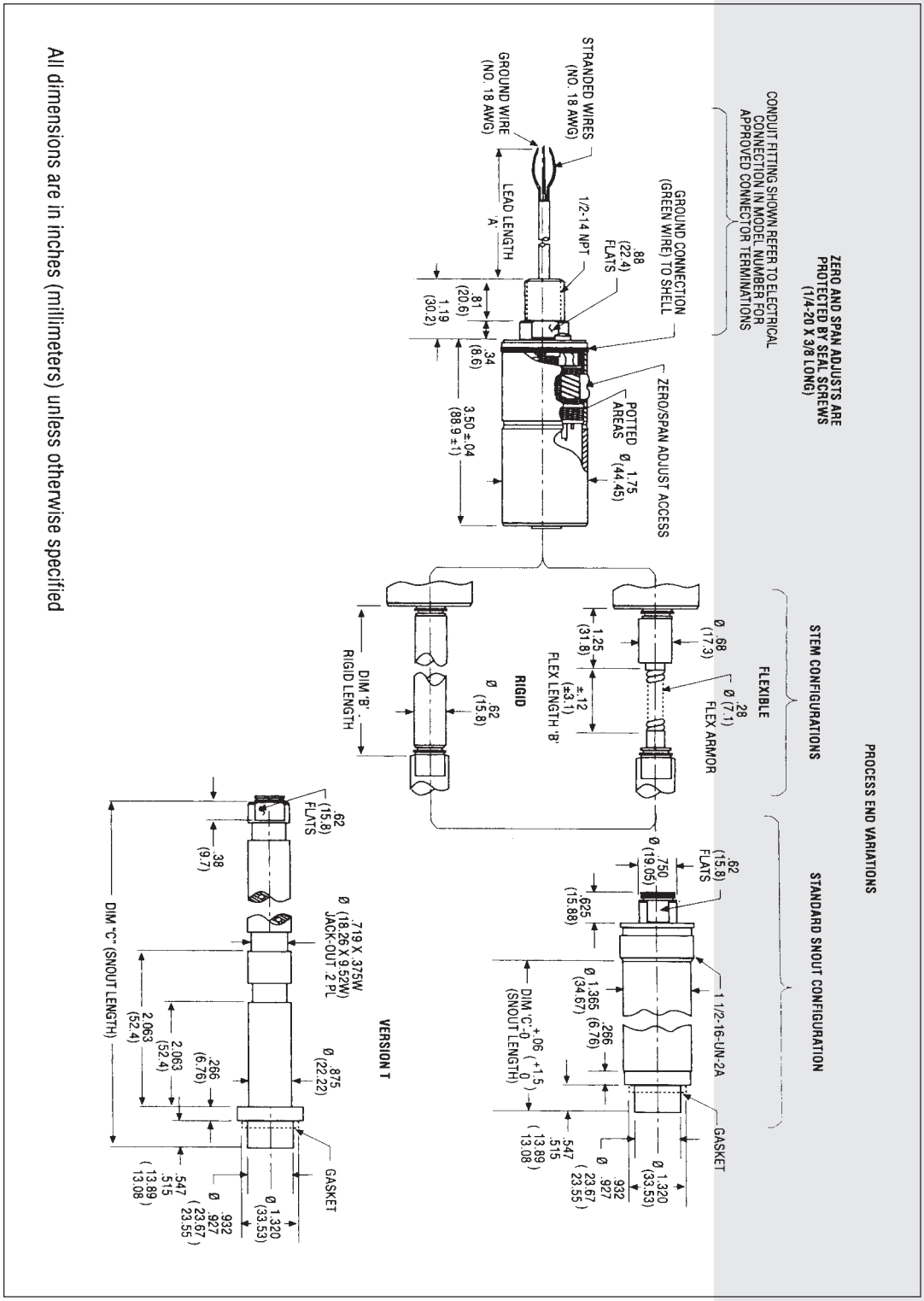


Fig. 3 PT292

5C. Outline Drawings



All dimensions are in inches (millimeters) unless otherwise specified

Fig. 4 PT290 Outline Drawing

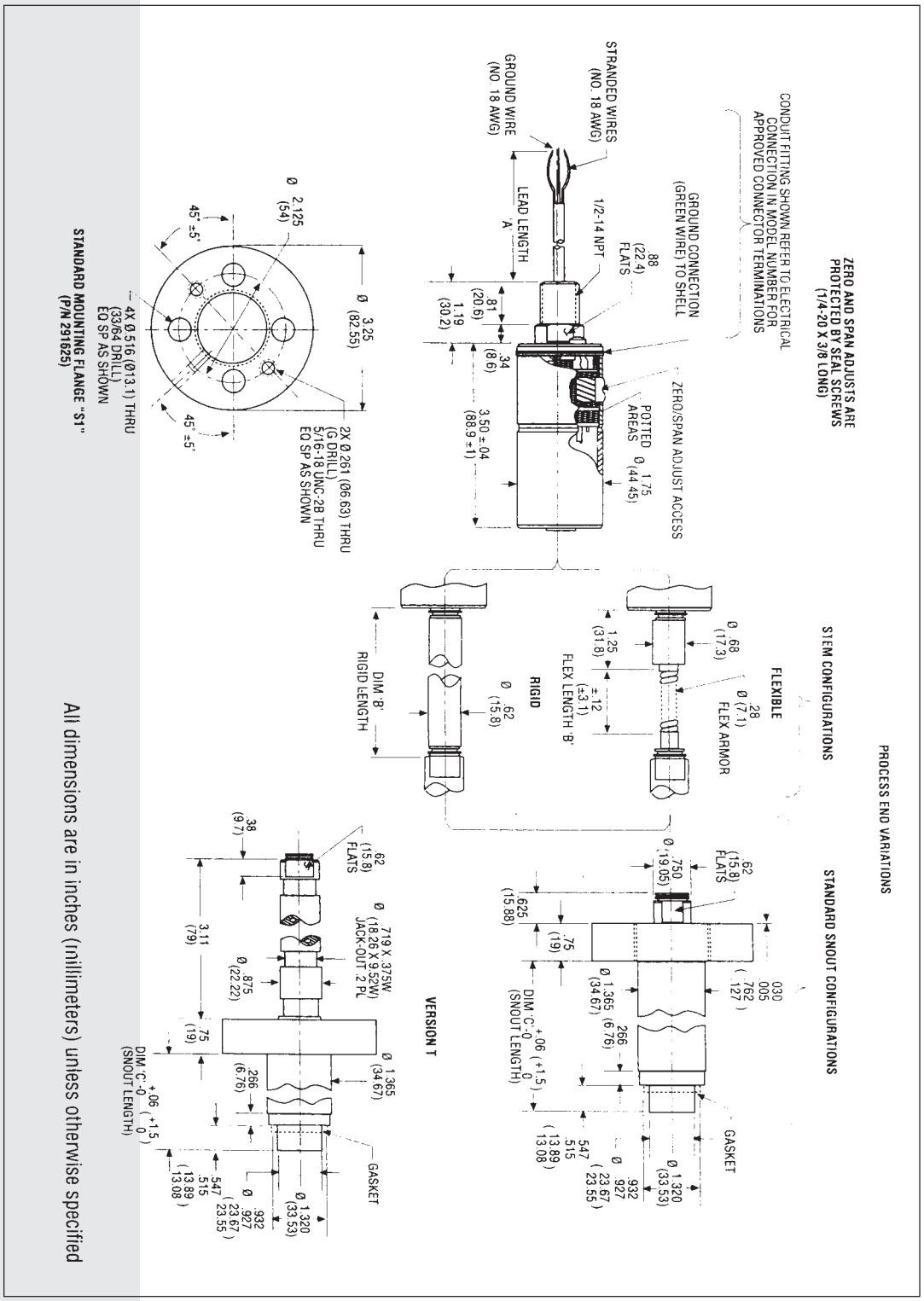
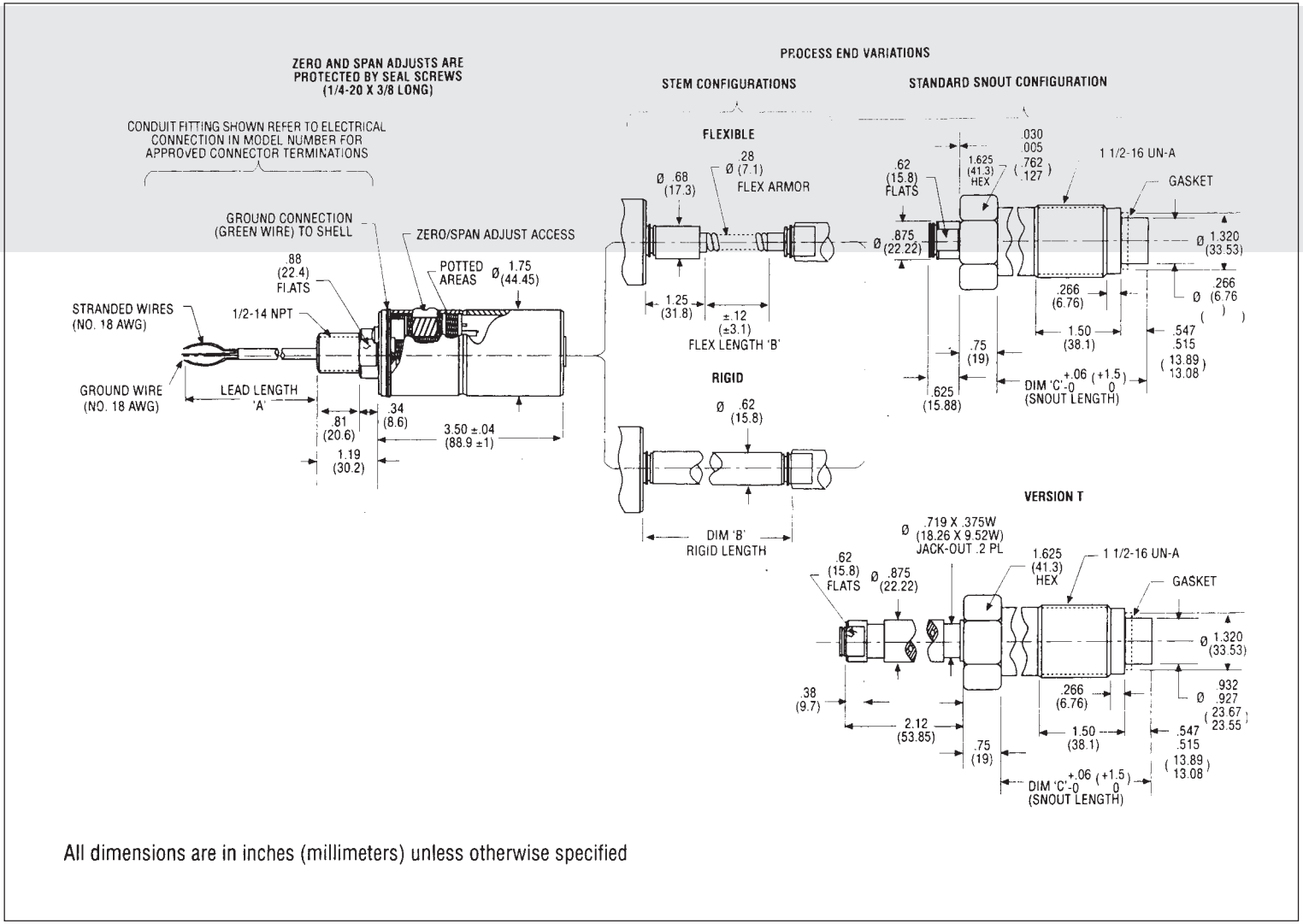


Fig. 5 PT291 Outline Drawing

All dimensions are in inches (millimeters) unless otherwise specified



All dimensions are in inches (millimeters) unless otherwise specified

Fig. 6 PT292 Outline Drawing

Thermocouple Table for Intrinsically Safe Models Only
PT290 S, PT291 S, PT292 S

THERMOCOUPLE OPTIONS		
CODE	TYPE	FLEX LENGTH DIM 'D'
TC	J	3in (76mm)
TC1	DUAL J	3in (76mm)
TC2	J	18in (457mm)
TC3	J	30in (762mm)
TC4	J	36in (914mm)
TC5	J	60in (1524mm)
TC6	K	3in (76mm)
TC7	DUAL K	3in (76mm)
TC8	T	3in (76mm)
TC10	J	30in (762mm)
TC11	DUAL E	3in (76mm)
TC12	K	60in (1524mm)
TC13	DUAL J	18in (457mm)
TC15	K	20in (508mm)
TC16	J	6in (152mm)
TC17	K	30in (762mm)
TC18	DUAL J	30in (762mm)
TC19	E	3in (76mm)
TC20	J	24in (610mm)
RTD1	3 WIRE 100 ohm	3in (76mm)
RTD2		18in (457mm)
RTD3		36in (914mm)
RTD4		60in (1524mm)
RTD5		30in (762mm)

NOTES:

1. ALL DIMENSIONS ARE IN INCHES (MILLIMETERS)
2. WETTED SURFACES AND FLANGES ARE 17-4 PH. OTHER PARTS ARE 303 OR 304 TYPE STAINLESS STEELS. DIAPHRAGM MATERIAL AND COATING IS AS TABULATED.
3. THE APPARATUS MUST BE CAPABLE OF WITHSTANDING AN A/C TEST VOLTAGE OF 500 VOLTS R.M.S. APPLIED BETWEEN INPUT TERMINALS AND EARTH OR FRAME OF THE APPARATUS, FOR 1 MINUTE.
4. GASKET: ALUMINUM FOR RANGES < AND EQUAL TO 3,000 PSIG, P/N 494602. 1.185 (30.1) OD, .950 (24.1) ID, .125 (3.18) THK.
   303 STAINLESS STEEL FOR RANGES 0-10M, P/N 634004. 1.25 (31.8) OD, 1.00 (25.4) ID, .056 (1.42) THK.
   OR HASTELLOY FOR RANGES 0-10M, P/N 634002.

5B. Transducer Mounting and Installation (All Other Models)

Thermocouple or RTD Assembly Removal & Installation:

1. To remove, loosen set screw on side of snout. Without twisting, pull the thermocouple probe or RTD stem carefully out of snout.
2. To install, align slot on probe stem with pressure capillary tube and press into snout carefully until top of probe shoulders against snout. Lock in place with set screw.

NOTE: The pressure seal on flange mounted units is made at the lower o-ring or gasket, not at the flange. Recommended mounting torque:

PT292: 100-125 inch-pounds at operating temperature

6. WIRING

The PT290 Series transmitters are equipped with a (4-20 mA) output. Wiring is accomplished per the diagrams below. Wiring to be per National Electric Code.

Models designated PT29X incorporate a current modulating amplifier that has been designed to be used in a series loop configuration. The transmitter power supply and output are supplied over the same pair of wires.

Electrical Termination:

CONDUIT/LEADS		CONNECTOR
Red	+ Signal/Power	A = Signal/Power +
Black	- Signal/Power	B = Signal/Power -
Green	Case Ground	

NOTE: Transmitter incorporates over-voltage protection and reverse polarity protection and will not operate if inputs are reversed.

Input Voltage:	12-36 VDC	
Load Resistance:	1200	ohms maximum at 36 VDC
	600	ohms maximum at 24 VDC
	0	ohms maximum at 12 VDC

7. WARRANTY AND SERVICE

This equipment is sold subject to the mutual agreement that it is free from defects of material and construction. Our liability in connection with it shall be limited to the replacement or repair, without charge at our factory, of any material or construction defect that becomes apparent within two years from the date that the products are shipped. We are not liable for damages of any kind arising from the installation or use of our products or both.

Damaged transducers should be returned to:

DYNISCO INSTRUMENTS

38 Forge Parkway

Franklin, MA 02038

Attn: Repair Dept. RA #_____

Please call for a Return Authorization Number before returning product to Dynisco.

Questions concerning warranty, repair cost, and delivery should be directed to the Dynisco Repair Department, telephone number 508-541-9400 or E-mail: repair@dynisco.com

For technical assistance, call:

800-221-2201

Appendix 1 - 000099

NOTES:

1. INSTALLATION MUST BE IN ACCORDANCE WITH THE NATIONAL ELECTRICAL CODE (NFPA 70, ARTICLE 504) AND ANSI/ISA RP 12.6.
2. PROTECTIVE ASSOCIATED APPARATUS MUST BE INSTALLED IN ACCORDANCE WITH MANUFACTURERS INSTALLATION DRAWING.
3. ANY FMRC APPROVED SINGLE OR DUAL CHANNEL BARRIER WITH ENTITY PARAMETERS OF V_{oc} OR $V_t \leq 25V$, I_{sc} OR $I_t \leq 100mA$, $C_a > 0.017uf$, $L_a > 0mH$ OR PROTECTIVE BARRIER PEPPERL/FUCHS Z111/Ex.
4. ANY FMRC APPROVED SINGLE OR DUAL CHANNEL BARRIER WITH ENTITY PARAMETERS OF V_{oc} OR $V_t \leq 40V$, I_{sc} OR $I_t \leq 100mA$, $C_a > 0.017uf$, $L_a > 0mH$ OR ONE OF THE FOLLOWING PROTECTIVE BARRIERS:
   MTL2441B OR PEPPERL/FUCHS Z30/Ex OR
   PEPPERL/FUCHS Z31Ex OR
   PEPPERL/FUCHS KHD3-ICR/Ex130 200 Y71688 OR
   OR PEPPERL/FUCHS KHD2-STC3-Ex1.P OR
   PEPPERL/FUCHS KHD2-STC3-Ex1.

NON-HAZARDOUS AREA

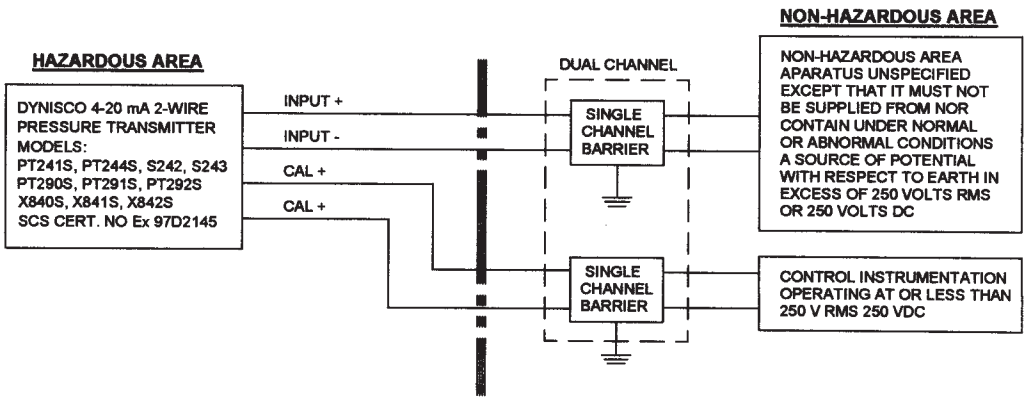
TABLE 1, GROUP IIA				
BARRIER	CERTIFICATE N°	C (nF)	L (mH)	L/R
MTL 2441B	BAS N° Ex 92C2462	904	33.6	440
P+F ZG30/Ex	BAS N° Ex 84B2198	904	28	368
P+F ZG31/Ex	BAS N° Ex 84B2313	904	33.6	440
P+F KHD3-ICR/Ex 130	BAS N° Ex 89C2003	904	33.6	440
P+F KHD2-STC3-Ex 1.P	BAS N° Ex 89C2093	904	33.6	440
P+F KHD2-STC-Ex1	BAS N° Ex 89C2093	904	33.6	440

TABLE 2, GROUP IIB				
BARRIER	CERTIFICATE N°	C (nF)	L (mH)	L/R
MTL 2441B	BAS N° Ex 92C2462	339	12.6	165
P+F ZG30/Ex	BAS N° Ex 84B2198	339	10.5	138
P+F ZG31/Ex	BAS N° Ex 84B2313	339	12.6	165
P+F KHD3-ICR/Ex 130	BAS N° Ex 89C2003	339	12.6	165
P+F KHD2-STC3-Ex 1.P	BAS N° Ex 89C2093	339	12.6	165
P+F KHD2-STC-Ex1	BAS N° Ex 89C2093	339	12.6	165

TABLE 3, GROUP IIC				
BARRIER	CERTIFICATE N°	C (nF)	L (mH)	L/R
MTL 2441B	BAS N° Ex 92C2462	113	4.2	55
P+F ZG30/Ex	BAS N° Ex 84B2198	113	3.5	46
P+F ZG31/Ex	BAS N° Ex 84B2313	113	4.2	55
P+F KHD3-ICR/Ex 130	BAS N° Ex 89C2003	113	4.2	55
P+F KHD2-STC3-Ex 1.P	BAS N° Ex 89C2093	113	4.2	55
P+F KHD2-STC-Ex1	BAS N° Ex 89C2093	113	4.2	55

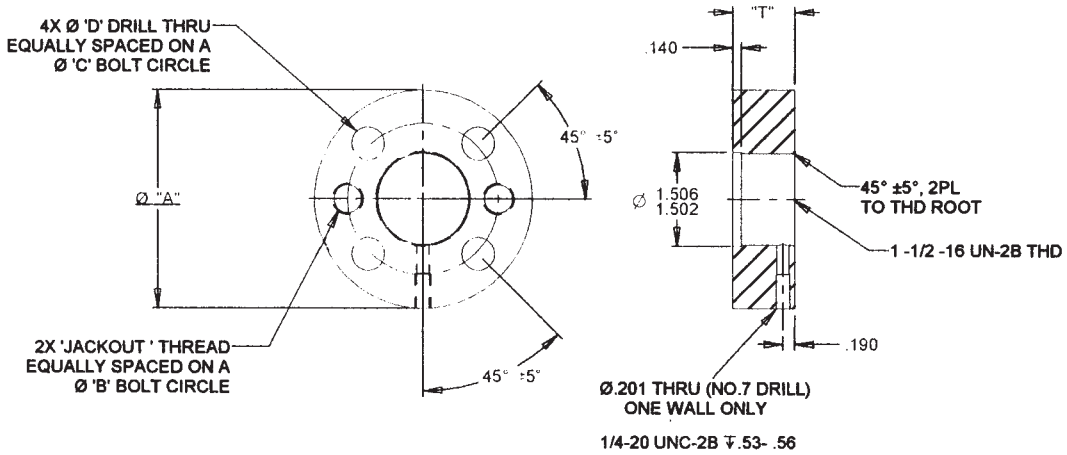
NOTES:

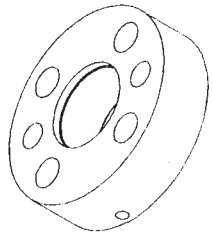
1. THE ELECTRICAL CIRCUIT IN THE HAZARDOUS AREA MUST BE CAPABLE OF WITHSTANDING AN AC TEST VOLTAGE OF 500 VOLTS R.M.S. TO EARTH OR FRAME OF THE APPARATUS FOR ONE MINUTE.
2. THE CAPACITANCE AND INDUCTANCE OR INDUCTANCE / RESISTANCE (L/R) RATIO OF THE HAZARDOUS AREA CABLES MUST NOT EXCEED THE VALUES SHOWN ON TABLES 1,2 & 3.
3. NON-HAZARDOUS AREA EQUIPMENT SHALL COMPRISE ONE OF THE FOLLOWING DUAL CHANNEL BARRIERS:
   A) PEPPER & FUCHS ZG30/Ex
   B) MTL 2441B
   OR
   TWO OF THE FOLLOWING SINGLE CHANNEL BARRIERS:
   PEPPERL/FUCHS ZG31Ex OR
   PEPPERL/FUCHS KHD3-ICR/Ex130 200 Y71688 OR
   PEPPERL/FUCHS KHD2-STC3-Ex 1.P OR
   PEPPERL/FUCHS KHD2-STC3-Ex 1.
4. THE INSTALLATION MUST COMPLY WITH THE NATIONAL INSTALLATION REQUIREMENTS (E.G. IN THE UK, BS EN 60079-14:1997).
5. IF TWO OR MORE SEPARATE 'IS' CIRCUITS ARE TO BE KEPT SEPARATE WITHIN A MULTICORE ,THEN TYPE A OR B CABLES MUST BE USED, OR SEPARATE CABLES TO BE USED.
6. CABLE SCREENS ARE TO BE EARTHED AT ONE END ONLY.
7. SYSTEM LABEL TO BE AFFIXED AT THE INTERFACE OF 'IS' OR 'NON-IS' CIRCUITS OR ADJACENT TOTHE PRINCIPAL APPARATUS.
   SIRA SYST. Ex 98E2139.



000057

	ITEM P/N	MATERIAL P/N	OUTER DIAMETER ∅ "A"	BOLT CIRCLE ∅ "B"	BOLT CIRCLE ∅ "C"	THRU HOLE Ø "D"	JACK-OUT THREAD	THICKNESS DIM 'T'
S1	291625	175325	3.250	2.125	2.125	33/64	5/16-18	0.75
S2	291682	175325	3.220	2.250	2.250	17/32	1/2-13	1.00
S3	291685	175325	3.250	2.250	2.250	17/32	5/16-18	0.75
S4	291620	175350	3.500	3.000	2.500	17/32	5/16-18	1.00
S8	185603	175350	3.500	2.500	2.500	9/16	5/16-18	0.75
S9	291606	175350	3.500	2.500	2.500	17/32	1/2-13	1.00
S10	291696	175325	3.250	2.125	2.520	33/64	5/16-18	1.00





Notes:

△ 1. MATERIAL: 17-4 PH SST, COND H1075. RAW MATERIAL P/N PER ABOVE TABLE.

2. ALL THREADS ARE UN-2B, UNLESS OTHERWISE SPECIFIED.

Appendix 4 - Type "T" Split Flanges

	ITEM P/N	JACK-OUT THREAD	DIM "E"	DIM "S"	"ORDERED" SNOUT LENGTH	FLANGE THICKNESS	DIM "L" ASSEMBLY LENGTH
T1	291623	291606	4.050	0.31	4.847	1.00	5.010
T2	291614	291606	4.250	0.31	5.047	1.00	5.250
T3	291618	291625	4.050	0.31	4.847	0.75	4.800
T4	291601	291606	3.750	0.31	4.547	1.00	4.750
T5	291600	291625	1.250	N/A	2.047	0.75	2.000
T6	291610	291625	5.050	N/A	5.847	0.75	5.800
T7	291616	291606	4.050	0.31	4.847	1.00	5.050

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DYNISCO INSTRUMENTS

38 Forge Parkway

Franklin, MA 02038

Tel.: 508-541-9400

Fax: 508-541-9436

PT290 Series Manual P/N 974092
8/01 Rev. C
ECO #25914

Dynisco
Instruments

WARRANTY REGISTRATION CARD

MODEL NUMBER _____

SERIAL NUMBER _____

DATE PURCHASED _____

PURCHASED FROM: _____

NAME _____

COMPANY _____

DIVISION _____

STREET _____

CITY _____ STATE _____ ZIP _____

COUNTRY _____

TELEPHONE _____ FAX _____

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