

**I/A Series® Pressure Transmitters  
Safety Information**



# Transmitter Identification

A typical data plate is shown in Figure 1.

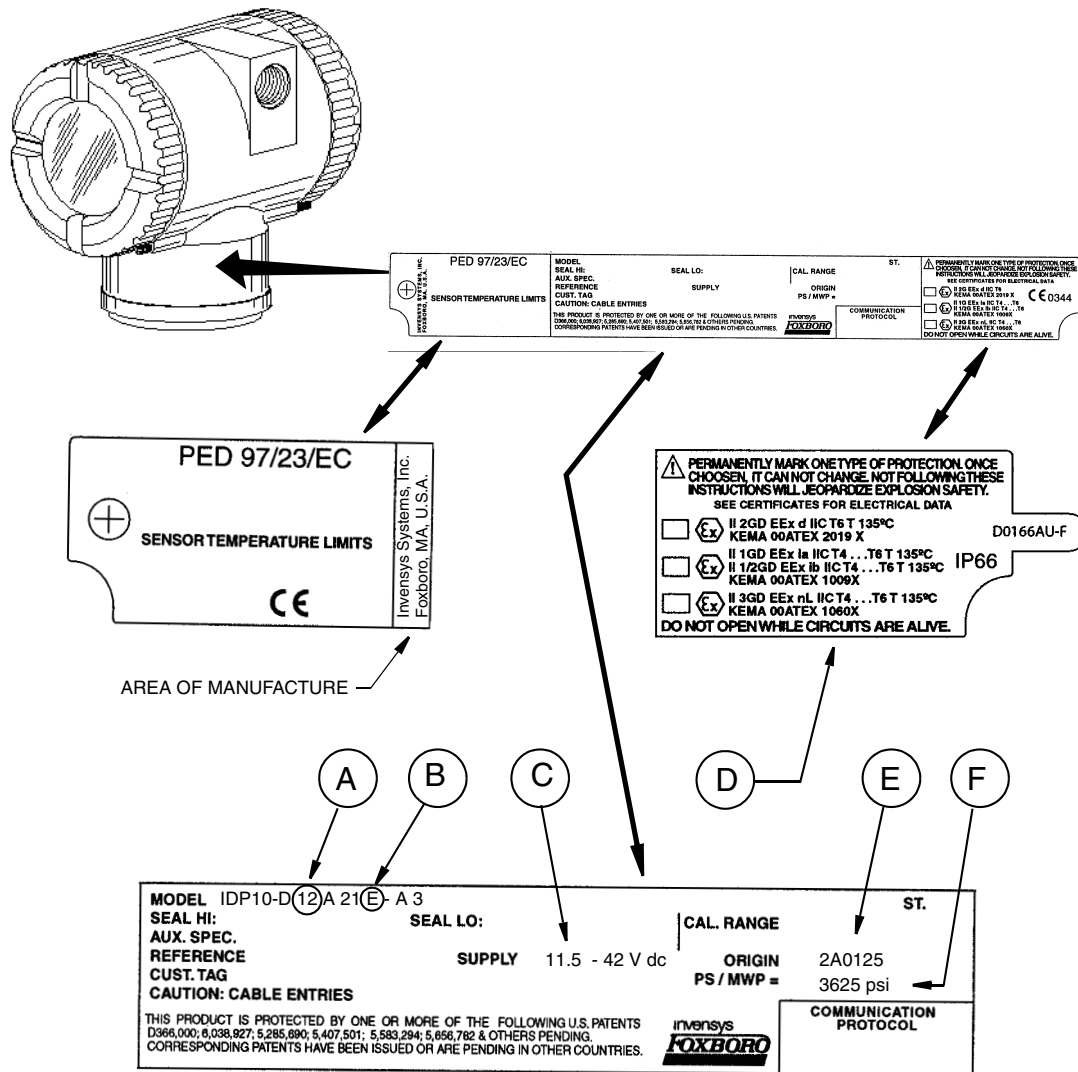


Figure 1. Sample Transmitter Identification

Review the model code on the data plate attached to your transmitter to determine its electrical, pressure, and hazardous location ratings.

## Supply Voltage

The proper supply voltage is printed on the data plate. See Item C on the example shown in Figure 1. Ensure that the proper electrical source is connected to the transmitter.

## Electrical Certification Rating

The electrical safety design code is printed on the data plate as part of the model code. See Item B on the example shown in Figure 1. See Table 1 to identify this code. The type of protection is also marked on the data plate. See Item D on the example shown in Figure 1.

### — NOTE —

These transmitters have been designed to meet the ATEX electrical safety descriptions listed in Table 1. For detailed information or status of testing laboratory approvals/certifications, contact Invensys Process Systems (IPS).

*Table 1. ATEX Electrical Safety Specifications*

Testing Laboratory, Types of Protection, and Area Classification	Models	Electronic Version	Application Conditions	Electrical Safety Design Code
ATEX flameproof; II 2 GD EEx d IIC, Zone 1.	IAP20, IGP20, IDP10, IDP25, IDP50, IMV25, IMV30, IMV31	All	Temperature Class T6 at 85°C maximum ambient. See certificate KEMA 00ATEX2019 X for electrical data	D
	IAP10, IGP10, IGP25, IGP50	All	Temperature Class T6, T85°C, Ta = -40 to +75°C. See certificate SIRA 04ATEX1349 for electrical data.	
ATEX intrinsically safe; II 1 GD EEx ia IIC, Zone 0 and II 1/2 GD, EEx ib IIC, Zone 0/Zone 1.	IAP10, IAP20, IGP10, IGP20, IGP25, IGP50, IDP10, IDP25, IDP50	D	Temperature Class T4 at 80°C, T5 at 40°C, and T6 at 40°C. See certificate KEMA 00ATEX1009 X for electrical data.	E
ATEX intrinsically safe; II 1 GD EEx ia IIC, Zone 0 and II 1/2 GD, EEx ib IIC, Zone 0/Zone1.	IAP10, IAP20, IGP10, IGP20, IGP25, IGP50, IDP10, IDP25, IDP50, IMV25, IMV30, IMV31	T with Version 4 Electronic Module	Temperature Class T4 at 80°C, T5 at 40°C, and T6 at 40°C. See certificate KEMA 00ATEX1009 X for electrical data.	
		T with Version 5 Electronic Module	Temperature Class T4, T103°C, Ta = -40 to +80°C. See certificate SIRA 06ATEX2055X for electrical data.	

Table 1. ATEX Electrical Safety Specifications (Continued)

Testing Laboratory, Types of Protection, and Area Classification	Models	Electronic Version	Application Conditions	Electrical Safety Design Code
ATEX FISCO field device intrinsically safe; II 1 G EEx ia IIC, Zone 0.	IAP10, IAP20, IGP10, IGP20, IDP10	F	Temperature Class T4, Ta = -40 to +80°C. See certificate SIRA 04ATEX2335X for electrical data,	E
ATEX protection n; II 3 GD EEx nL IIC, Zone 2.	IAP10, IAP20, IGP10, IGP20, IGP25, IGP50, IDP10, IDP25, IDP50	D	Temperature Class T4 at 80°C, T5 at 40°C, and T6 at 40°C. See certificate KEMA 00ATEX1060 X for electrical data.	N
ATEX protection n; II 3 GD EEx nL IIC, Zone 2.	IAP10, IAP20, IGP10, IGP20, IGP25, IGP50, IDP10, IDP25, IDP50, IMV25, IMV30, IMV31	T with Version 4 Electronic Module	Temperature Class T4 at 80°C, T5 at 70°C, and T6 at 40°C. See certificate KEMA 00ATEX1060 X for electrical data.	
ATEX protection n; II 3 GD EEx nL IIC, Zone 2.	IAP10, IAP20, IGP10, IGP20, IGP25, IGP50, IDP10, IDP25, IDP50, IMV25, IMV30, IMV31	T with Version 5 Electronic Module	Temperature Class T4, T85°C, Ta = -40 to +80°C. See certificate SIRA 06ATEX4056X for electrical data.	
ATEX FNICO field protection n for II 3 G EEx nL IIC, Zone 2	IAP10, IAP20, IGP10, IGP20, IDP10	F	Temperature Class T4 at 80°C. See certificate SIRA 06ATEX4019X for electrical data.	
ATEX multiple certifications, ia and ib, and n. Refer to codes E and N for details.	IAP10, IGP10, IGP25, IGP50	D and T	See note (a)	M
ATEX multiple certifications, ia and ib, d, and n. Refer to codes E, D, and N for details.	IAP20, IGP20, IDP10, IDP25, IDP50	D	See note (a)	
ATEX multiple certifications, ia and ib, d, and n. Refer to codes E, D, and N for details.	IAP20, IGP20, IDP10, IDP25, IDP50, IMV25, IMV30, IMV31	T	See note (a)	
ATEX multiple certifications, ia and ib, d, and n. Refer to codes E, D, and N for details.	IAP10, IGP10, IGP25, IGP50	D and T	See note (a)	P

(a) User must permanently mark (check off in rectangular block on data plate) one type of protection only (ia and ib, d, or n). This mark cannot be changed once it is applied. See Item D on the example shown in Figure 1.

## Entity Parameters

### *For Electrical Safety Design Code E*

The entity parameters for the supply and output circuit (terminals + and -) in the type of explosion protection intrinsic safety EEx ia IIC, only for connection to a certified intrinsically safe circuit with the following maximum values are:

#### **Electronic Version D and Version T (with Version 4 Firmware)**

$$U_i = 30 \text{ V}$$

$$I_i = 110 \text{ mA}$$

$$P_i = \text{See table below}$$

Maximum Pi (W)	Temperature Class	Max. Ambient Temp. (°C)
0.8	T4	80
0.5	T5	89
0.7	T5	40
0.5	T6	40

#### **Electronic Version T (with Version 5 Firmware)**

$$U_i = 30 \text{ V}$$

$$I_i = 110 \text{ mA}$$

$$P_i = 800 \text{ mW}$$

#### **Electronic Version F**

$$U_i = 17.5 \text{ V}$$

$$I_i = 380 \text{ mA}$$

$$P_i = 5.32 \text{ W}$$

## PED Certification

IPS offers the PED (Harmonized Pressure Equipment Directive for the European Community) certification only with transmitters ordered with ATEX Electrical Safety Design Code selections. Transmitters with PED certification have a CE marking on the data plate that also carries the PED number 0575.

## Pressure Rating

The maximum working pressure (PS or MWP) for the transmitter is printed on the data plate. See Item F on the example shown in Figure 1.

The data plate of flanged level transmitters and transmitters with flanged pressure seals are stamped with the MWP if the transmitter pressure range is the limiting factor. It is stamped

“Flange Rate” if the flange rating is the limiting factor. The MWP of the flanged seal is stamped on the seal data plate. See Figure 2.

MODEL CODE: FSFPS-A2S0E313B	MWP: 275 psig at 100°F
NOTICE: BREAKING CONNECTIONS VOIDS WARRANTY	
BE SURE FILL FLUID CAN MIX SAFELY WITH PROCESS	HIGH SIDE SEAL
HIGH SIDE FLUID, DC200, 10 cSt SILICONE TEMP RANGE -40 TO +450°F	
PROCESS WETTED MATERIAL 316 SS	

*Figure 2. Sample Seal Data Plate*

When using transmitters with threaded, in-line saddle weld, or sanitary pressure seals, compare the MWP of the transmitter on the transmitter data plate and the MWP of the seals on the seals data plates and **use the lesser value as the system MWP**.

The MWP on the seal data plates may not be given at your process temperature. Use the following information and industry standards as required to determine the actual pressure limits for your application.

### *Pressure Seal PSFLT*

*Table 2. Pressure Seal PSFLT Pressure Limits*

Process Connections Flange	Process Temperature <sup>(c)</sup>	Maximum Working Pressure	
		Carbon Steel <sup>(d)</sup>	316L Stainless Steel <sup>(e)</sup>
ANSI Class 150 <sup>(a)</sup>	100°F	285 psig	275 psig
	200°F	260 psig	240 psig
	300°F	230 psig	215 psig
	450°F	185 psig	183 psig
ANSI Class 300 <sup>(a)</sup>	100°F	740 psig	720 psig
	200°F	675 psig	620 psig
	300°F	655 psig	560 psig
	450°F	618 psig	498 psig
ANSI Class 600 <sup>(a)</sup>	100°F	1480 psig	1440 psig
	200°F	1350 psig	1240 psig
	300°F	1315 psig	1120 psig
	450°F	1235 psig	993 psig
DIN PN 10/16 <sup>(b)</sup>	50°C	16 bar	16 bar
	100°C	16 bar	16 bar
	150°C	14.5 bar	14 bar
	250°C	11 bar	10.5 bar

*Table 2. Pressure Seal PSFLT Pressure Limits (Continued)*

Process Connections Flange	Process Temperature <sup>(c)</sup>	Maximum Working Pressure	
		Carbon Steel <sup>(d)</sup>	316L Stainless Steel <sup>(e)</sup>
DIN PN 10/40 and PN 25/40 <sup>(b)</sup>	50°C	40 bar	40 bar
	100°C	40 bar	35 bar
	150°C	37.5 bar	33.5 bar
	250°C	32 bar	30 bar

(a)ANSI flanges per ASME/ANSI B16.5-1988

(b)DIN flanges per BS4504.

(c)Flange temperature/pressure ratings only; seal temperature ratings may be lower; refer to Table 9.

(d)ASME/ANSI Material Group 1.1; linear interpolation acceptable.

(e)ASME/ANSI Material Group 2.2; linear interpolation acceptable.

### Pressure Seals PSFPS and PSFES

*Table 3. Pressure Seal PSFPS and PSFES Pressure Limits*

Process Connection Flange	Process Temperature <sup>(c)</sup>	Maximum Working Pressure	
		Carbon Steel <sup>(d)</sup>	316L Stainless Steel <sup>(e)</sup>
ANSI Class 150 <sup>(a)</sup>	100°F	285 psig	275 psig
	200°F	230 psig	240 psig
	400°F	200 psig	195 psig
	500°F	170 psig	170 psig
	600°F	140 psig	140 psig
ANSI Class 300 <sup>(a)</sup>	100°F	740 psig	720 psig
	200°F	675 psig	620 psig
	400°F	635 psig	515 psig
	500°F	600 psig	480 psig
	600°F	550 psig	450 psig
ANSI Class 600 <sup>(a)</sup>	100°F	1480 psig	1440 psig
	200°F	1350 psig	1240 psig
	400°F	1270 psig	1030 psig
	500°F	1200 psig	955 psig
	600°F	1095 psig	905 psig
DIN PN 10/16 <sup>(b)</sup>	50°C	16 bar	16 bar
	100°C	16 bar	16 bar
	150°C	14.5 bar	14 bar
	200°C	13 bar	12 bar
	300°C	9 bar	9 bar



*Table 3. Pressure Seal PSFPS and PSFES Pressure Limits (Continued)*

Process Connection Flange	Process Temperature <sup>(c)</sup>	Maximum Working Pressure	
		Carbon Steel <sup>(d)</sup>	316L Stainless Steel <sup>(e)</sup>
DIN PN 10/40 and PN 25/40 <sup>(b)</sup>	50°C	40 bar	40 bar
	100°C	40 bar	35 bar
	150°C	37.5 bar	33.5 bar
	200°C	35 bar	32 bar
	300°C	28 bar	28 bar

(a)ANSI flanges per ASME/ANSI B16.5-1988

(b)DIN flanges per BS4504.

(c)Flange temperature/pressure ratings only; seal temperature ratings may be lower; refer to Table 9.

(d)ASME/ANSI Material Group 1.1; linear interpolation acceptable.

(e)ASME/ANSI Material Group 2.2; linear interpolation acceptable.

### *Pressure Seals PSFAR and PSFAD*

*Table 4. Pressure Seals PSFAR and PSFAD Pressure Limits*

Process Connection Flange	Process Temperature <sup>(b)</sup>	Pressure Rating in psig <sup>(a)</sup>			
		Class 150	Class 300	Class 600	Class 1500
ANSI Carbon Steel	-20°F	285	740	1480	3705
	100°F	285	740	1480	3705
	200°F	260	675	1350	3375
	300°F	230	655	1315	3280
	400°F	200	635	1270	3170
	500°F	170	600	1200	2995
	580°F	146	560	1120	2785
ANSI Stainless Steel	-20°F	275	720	1440	3600
	100°F	275	720	1440	3600
	200°F	240	620	1240	3095
	300°F	215	560	1120	2795
	400°F	195	515	1030	2570
	500°F	170	480	955	2390
	580°F	146	456	915	2280

(a)The maximum working pressure with the nonmetallic ptfе and PVC lower housings is 150 psig regardless of the higher allowable flange pressure range.

(b)Flange temperature/pressure ratings only; seal temperature rating may be lower depending on mounting and fill fluid; refer to Table 9.

## Pressure Seals *PSTAR* and *PSTAD*

*Table 5. Pressure Seals PSTAR and PSTAD Pressure Limits*

Process Temperature	Bolting Code “S”		Bolting Code “C”	
	2 and 3 inch	4 inch	2 and 3 inch	4 inch
20°F	1250	750	2500	1500
100°F	1250	750	2500	1500
200°F	1075	645	2150	1290
300°F	975	585	1950	1170
400°F	900	540	1800	1080
500°F	835	500	1670	1000
580°F	803	481	1606	963

Seal temperature rating may be lower depending on mounting and fill fluid; refer to Table 9.

The pressure rating is dependent on the diaphragm size and the bolting material. The diaphragm size and bolting material are identified in the pressure seal model number which is located on the pressure seal. See following example:

PSTAR-B32USSS1SAC14C  
 └───┬─── DIAPHRAGM SIZE (IN)  
 └───┬─── BOLTING CODE

## Pressure Seals *PSISR* and *PSISD*

The maximum working pressure is equivalent to a nominal 3- or 4-inch Schedule 40 pipe as defined by ASME/ANSI standards.

## Pressure Seals *PSSCR* and *PSSCT*

The maximum working pressure of the seal process connection varies with the clamping device used. Refer to Tri-Clover Tri-Clamp standards to determine the pressure limits of the clamping system that you are using.

## *PSSSR* and *PSSST* (Sanitary Tank Spud) Seals

The maximum working pressure of mini tank spud seal is 1.55 MPa at 120°C (225 psi at 250°F). That of the standard tank spud seal is 1.38 MPa at 120°C (200 psi at 250°F).

## Origin Code

The origin code identifies the area of manufacture and the year and week of manufacture. See Item E on the example shown in Figure 1. In the example, 2A means the product was manufactured in the Measurement and Instrument Division, 01 identifies the year of manufacture as 2001, and 25, the week of manufacture in that year.

## Operating Temperature Limits

The operating temperature limits of the electronics are  $-40^{\circ}\text{C}$  and  $+85^{\circ}\text{C}$  ( $-40^{\circ}\text{F}$  and  $+185^{\circ}\text{F}$ ). The limits are  $-40^{\circ}\text{C}$  and  $+75^{\circ}\text{C}$  ( $-40^{\circ}\text{F}$  and  $+167^{\circ}\text{F}$ ) for IAP10, IGP10, IGP25, and IGP50 Transmitters with ATEX flameproof certification. Ensure that the transmitter is operated within this range.

The sensor body operating temperature limits are determined by the sensor fill fluid. The cover material, sensor diaphragm material and fill fluid are specified by two characters in the model code on the data plate. See Item A on the example shown in Figure 1. Also see Table 6 and Table 7 to interpret this part of the code and Table 8 to determine the sensor body temperature limits. In the example IDP10-D12A21E-A3, the number 12 identifies the fill fluid in Table 6 as silicone. Table 8 identifies silicone as having temperature limits of  $-46$  and  $+121^{\circ}\text{C}$  ( $-50$  and  $+250^{\circ}\text{F}$ ).

*Table 6. Interpretation of Model Code for IDP10, IAP20, IGP20, IDP25, IDP50, IMV25, and IMV30 Transmitters*

Code	Cover Material	Sensor Diaphragm Material	Fill Fluid
10	Steel	Co-Ni-Cr	Silicone
11	Steel	Co-Ni-Cr	Fluorinert
12	Steel	316 ss	Silicone
13	Steel	316 ss	Fluorinert
16	Steel	Hastelloy C	Silicone
17	Steel	Hastelloy C	Fluorinert
20	316 ss	Co-Ni-Cr	Silicone
21	316 ss	Co-Ni-Cr	Fluorinert
22	316 ss	316 ss	Silicone
23	316 ss	316 ss	Fluorinert
2G	316 ss	316 ss, gold-plated	Silicone
24	316 ss	Monel	Silicone
25	316 ss	Monel	Fluorinert
26	316 ss	Hastelloy C	Silicone
27	316 ss	Hastelloy C	Fluorinert
34	Monel	Monel	Silicone
35	Monel	Monel	Fluorinert
46	Hastelloy C	Hastelloy C	Silicone
47	Hastelloy C	Hastelloy C	Fluorinert
48	Hastelloy C	Tantalum	Silicone
49	Hastelloy C	Tantalum	Fluorinert
78	pvdf Insert	Tantalum	Silicone
79	pvdf Insert	Tantalum	Fluorinert

*Table 6. Interpretation of Model Code for  
IDP10, IAP20, IGP20, IDP25, IDP50, IMV25, and IMV30 Transmitters (Continued)*

Code	Cover Material	Sensor Diaphragm Material	Fill Fluid
F1	N/A - Used with pressure seal		Silicone
F2			Fluorinert
F3			Silicone
F4			Fluorinert
S1			Silicone
S2			Fluorinert
S3			Silicone
S4			Fluorinert
S5			Silicone
S6			Fluorinert
SA			Silicone
SB			Inert
SC			Silicone
SD			Inert
SE			Silicone
SF			Inert

*Table 7. Interpretation of Model Code for  
IAP10, IGP10, IGP25, and IGP50 Transmitters*

Code	Process Connector Material	Sensor Diaphragm Material	Fill Fluid
20	316L ss	Co-Ni-Cr	Silicone
21	316L ss	Co-Ni-Cr	Fluorinert
22	316L ss	316L ss	Silicone
23	316L ss	316L ss	Fluorinert
24	15-5 ss	15-5	None
26	Inconel X-750	Inconel X-750	None
28	13-8Mo ss	13-8Mo ss	None
30	316L ss	Hastelloy C	Silicone
31	316L ss	Hastelloy C	Fluorinert
32	Hastelloy C	Hastelloy C	Silicone
33	Hastelloy C	Hastelloy C	Fluorinert
TA	316L ss	316L ss	Neobee
T2	316L ss	316L ss	Neobee
T3	316L ss	316L ss	Neobee
TB	316L ss	Hastelloy C	Neobee

*Table 7. Interpretation of Model Code for IAP10, IGP10, IGP25, and IGP50 Transmitters (Continued)*

Code	Process Connector Material	Sensor Diaphragm Material	Fill Fluid
T4	316L ss	Hastelloy C	Neobee
T5	316L ss	Hastelloy C	Neobee
M1	316L ss	316L ss	Neobee
M6	316L ss	316L ss	Neobee
M9	316L ss	316L ss	Neobee
PX	316L ss	316L ss	Neobee
PZ	316L ss	316L ss	Neobee
PA	316L ss	316L ss	Silicone
PB	316L ss	316L ss	Silicone
PC	316L ss	316L ss	Silicone
PD	316L ss	316L ss	Silicone
PE	316L ss	Hastelloy C	Silicone
PF	316L ss	Hastelloy C	Silicone
PG	316L ss	Hastelloy C	Silicone
PH	316L ss	Hastelloy C	Silicone
PJ	316L ss	Hastelloy C	Silicone
D1	N/A - Used with pressure seal		Silicone
D2			Fluorinert
S3			Silicone
S4			Fluorinert
SC			Silicone
SD			Inert

*Table 8. Sensor Body Operating Temperature Limits for Models Listed in Tables 6 and 7*

Limiting Factor	Temperature Limits
Silicone Fill Fluid	-46 and +121°C (-50 and +250°F)
Fluorinert Fill Fluid	-29 and +121°C (-20 and +250°F)
Neobee Fill Fluid	-18 and +204°C (0 and 400°F) <sup>(a)</sup>
pvdF Inserts	-7 and +82°C (20 and 180°F)

(a)At process connection

For transmitters with pressure seals, the temperature limits at the seals are shown in Table 9. The pressure seal fill fluid code is found in the pressure seal model code as shown in the following examples (fill fluid code position is underlined and bolded):

PSFLT	PSFLT-B2S0153
PSFPS and PSFES	PSFPS-A2S01334E
PSFAR	PSFAD-D232SSS2SBC13M
PSFAD	PSFAD-D232SSS2SBC1
PSTAR	PSTAR-B32USSS1BCC34F
PSTAD	PSTAR-B32USSS1BCC3
PSISR	PSISR-A23JSSS1SC14M
PSISD	PSISD-A23JSSS1SC1
PSSCR	PSSCR-D21S354H
PSSCT	PSSCT-B21S55
PSSSR	PSSSR-B4S2354H
PSSST	PSSST-B4S255

*Table 9. Seal Fill Fluid and Operating Temperature Limits*

Code	Fill Fluid	Temperature Limits	
		Direct Connected <sup>(a,b)</sup> PSFLT, PSFAD, PSTAD, PSISD, PSSCT, PSSST	Remote Connected <sup>(b)</sup> PSFPS, PSFES, PSFAR, PSTAR, PSISR, PSSCR, PSSSR
1	DC200, 10cS, Silicone	-40 and +204°C (-40 and +400°F)	-40 and +232°C (-40 and +450°F)
2	FC77 Fluorinert	-59 and +82°C (-75 and +180°F)	-59 and +82°C (-75 and +180°F)
3	DC200, 3cS, Silicone	-40 and +149°C (-40 and +300°F)	-40 and +149°C (-40 and +300°F)
4	DC704 (HTF) Silicone	0 and +204°C (32 and 400°F)	0 and +304°C (32 and 580°F)
5	Neobee	-18 and +204°C (0 and 400°F)	-18 and +204°C (0 and 400°F)

(a) Limited to 204°C (400°F) maximum regardless of fill fluid due to transmitter maximum temperature limits.

(b) PSFAR, PSFAD, PSTAR, PSTAD, PSISR, and PSISD seals with ptfе gaskets are limited to 60°C (140°F).

## Process Wetted Materials

Refer to Table 6 to determine if the process cover and sensor diaphragm material are suitable for the process. For transmitters with pressure seals, the seal wetted material is as follows:

### *Pressure Seals PSFLT, PSFPS, and PSFES*

*Table 10. Pressure Seal PSFLT, PSFPS, and PSFES Wetted Materials*

Material Code	Material
S	316L ss
C	Hastelloy C
T	Tantalum

The process wetted material code is found in the pressure seal model number which is located on the pressure seal. See following example:

PSFLT-B2S0153  
 └──SEAL WETTED MATERIAL

*Pressure Seals PSFAR, PSFAD, PSTAR, PSTAD, PSISR, and PSISD*

*Table 11. Pressure Seal Lower Housing Materials*

Material Code	Material
S	316L ss
K	Carbon Steel
C	Hastelloy C
T	Tantalum Plate
E	Titanium Grade 4
L	Inconel 600
M	Monel 400
N	Nickel 200
G	Glass Filled ptfe
P	Polyvinyl Chloride

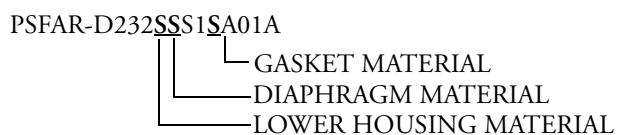
*Table 12. Pressure Seal Diaphragm Materials*

Material Code	Material
S	316L ss
C	Hastelloy C276
T	Tantalum
E	Titanium Grade 2
L	Inconel 600
M	Monel 400
N	Nickel 200

*Table 13. Pressure Seal Gasket Materials*

Material Code	Material
S	Organic Fiber with Nitrile Binder
3	Silver Plated 316 ss
T	ptfe
B	Buna N
V	Viton
G	Grafoil
T	Silver Plated Hastelloy C

The material codes are found in the pressure seal model number which is located on the pressure seal. See following example:



## Pressure Seals PSSCR

*Table 14. Pressure Seal PSSCR Diaphragm Materials*

Material Code	Material
S	316L ss
C	Hastelloy C276

The diaphragm material code is found in the pressure seal model number which is located on the pressure seal. See following example:



The housing material is 316 ss.  
The gasket is provided by the user.

## Pressure Seals PSSCT

The housing material is 316 ss.  
The diaphragm material is 316L ss.  
The gasket is provided by the user.

## Pressure Seals PSSSR and PSSST

The housing material is 316 ss.  
The diaphragm material is 316L ss.  
The gasket material is EPDM.

# Warnings

## General Warning

**— ⚠ WARNING —**

1. Transmitters must be installed to meet all applicable local installation regulations, such as hazardous location requirements, electrical wiring codes, and mechanical piping codes. Persons involved in the installation must be trained in these code requirements to ensure that the installation takes maximum advantage of the safety features designed into the transmitter.



2. A plug is supplied with each transmitter with 1/2 NPT conduit connection. It is intended to provide moisture ingress protection of the unused housing conduit entry. The plug must be wrench tight to achieve this level of protection. Thread sealant is required. Explosion-proof applications may require a certified plug. Housings with M20 / PG 13.5 threaded conduit connections are provided with an ATEX certified plug. Thread sealant is required to provide moisture ingress protection.

---

## ATEX Warnings

### — **WARNING** —

Apparatus marked as Category 1 equipment and used in hazardous areas requiring this category must be installed in such a way that, even in the event of rare incidents, the versions with an aluminum alloy enclosure can not be an ignition source due to impact and friction.

---

### — **WARNING** —

Install ATEX certified transmitters in accordance with the requirements of standard EN 60079-14.

---

### — **WARNING** —

To install a transmitter labeled with multiple approvals, select and permanently mark the certification label in the tick block to distinguish the installed approval type from the unused approval types. Once installed, the transmitter **cannot** be reinstalled using any other approval type. Not following these instructions will jeopardize explosion safety.

---

## Explosionproof/Flameproof and Enclosure Warning

### — **WARNING** —

1. To prevent possible explosion and to maintain explosionproof/flameproof and dust-ignitionproof protection, plug unused openings with a certified metal pipe plug. For 1/2 NPT connections, both the plug and conduit must be engaged a minimum of five full threads. For M20 and PG 13.5 connections, the certified plug provided and the conduit must be engaged a minimum of seven full threads.
  2. The threaded housing covers must be installed. Turn covers to seat O-ring into the housing and then continue to hand tighten until the cover contacts the housing metal-to-metal.
  3. If the electronics housing is removed for any reason, it must be hand tightened fully. Then engage the set screw until it bottoms out and **back it off 1/8th turn**. Fill the set screw recess with red lacquer (Foxboro Part number X0180GS or equivalent). The housing then may be rotated up to one full turn in a counterclockwise direction for optimum access to adjustments.
-

## Intrinsically Safe and Type n Warning

— **! WARNING** —

Since IPS does not specify live maintenance, to prevent ignition of flammable atmospheres, disconnect power before servicing unless the area is certified to be nonhazardous.

## Type n Warning

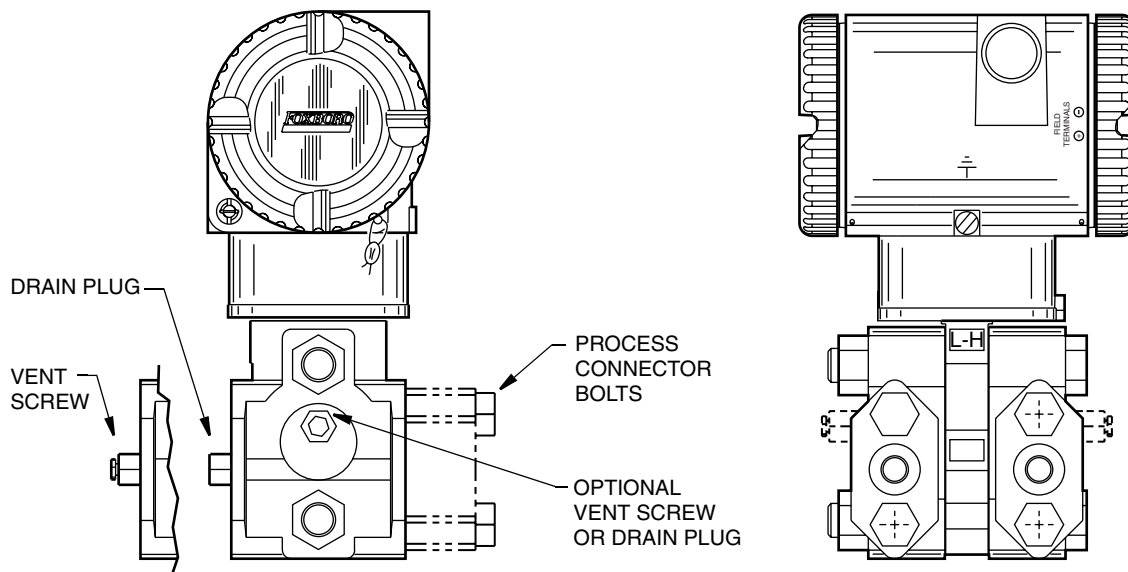
— **! WARNING** —

On transmitters certified for ATEX protection n, CSA Class I, Division 2, or FM nonincendive for Class I, Division 2, the threaded housing covers must be installed.

## Pressure Warnings

— **! WARNING** —

When installing your transmitter, tighten process connector bolts to a torque of 61 N•m (45 ft•lb) and drain plugs and optional vent screws to 20 N•m (15 ft•lb). See Figure 3.

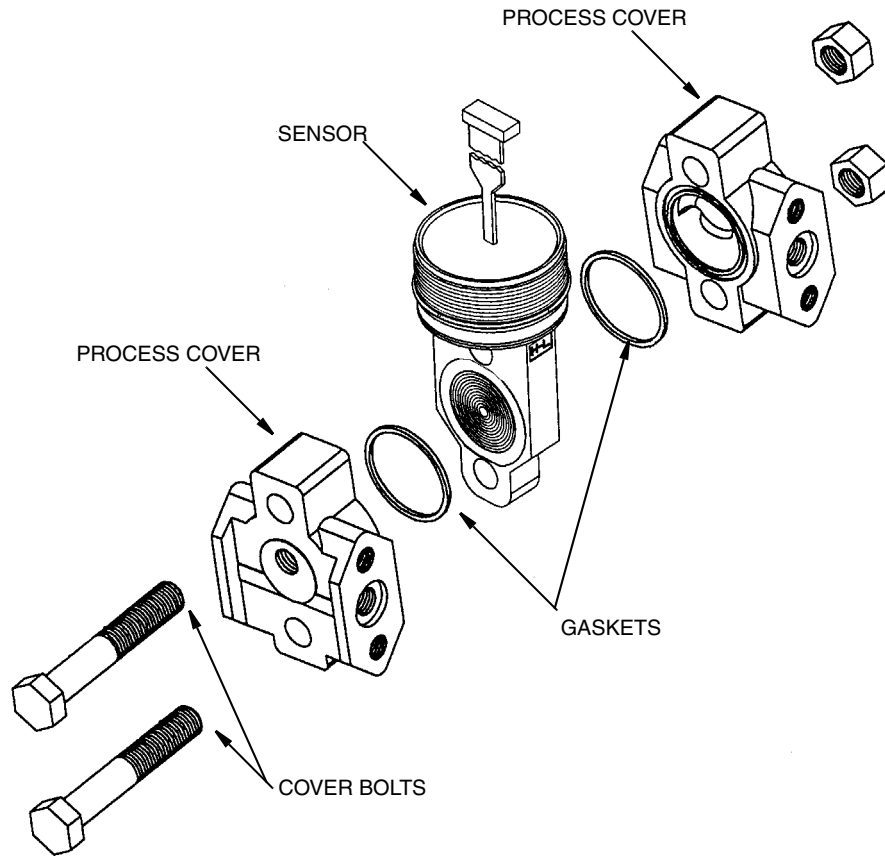


*Figure 3. Pressure Connections*

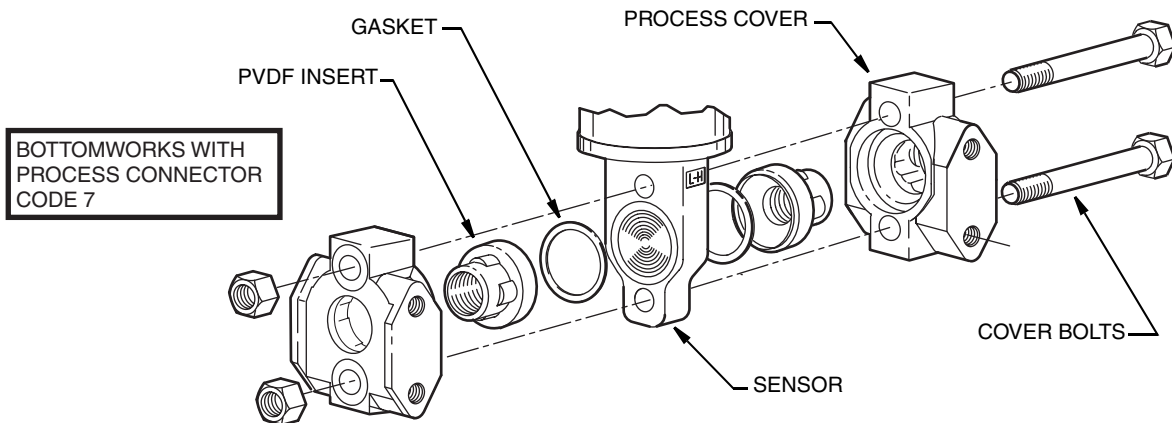
— **! WARNING** —

If a sensor is replaced or process covers are rotated for venting, replace the gaskets and torque the cover bolts (see Figure 4 and 5) to 100 N•m (75 ft•lb) in several even increments. Torque values are 66 N•m (50 ft•lb) when optional 316 ss bolts are specified (option B1). A pressure test is required. Perform a hydrostatic test with a liquid following proper hydrostatic test procedures. Pressure test the process cover

assembly by applying a hydrostatic pressure of 150% of the maximum static and overrange pressure rating to both sides of the process cover/sensor assembly simultaneously through the process connections. Hold pressure for one minute. There should be no leakage of the test fluid through the gaskets.



*Figure 4. Sensor Replacement*



*Figure 5. Sensor Replacement (pvdf Inserts)*

## Process Fluid Warning

—  **WARNING** —

If process containing parts are to be disassembled:

1. Make sure that process fluid is not under pressure or at high temperature.
2. Take proper precautions concerning leakage or spillage of any toxic or otherwise dangerous fluid. Follow any Material Safety Data Sheet (MSDS) recommendations.

## Seal Fill Fluid Warning

—  **WARNING** —

Even though the volume of seal fluid is small, be sure that the fill fluid can mix safely with the process fluid.

## Parts Replacement Warning

—  **WARNING** —

This product contains components that have critical safety characteristics. Do **not** substitute components. Replace components only with identical factory supplied components. Component substitution may impair the electrical safety of this equipment and its suitability for use in hazardous locations.

### ISSUE DATES

JUL 2001  
AUG 2001  
SEP/OCT 2003  
MAY 2009

Vertical lines to the right of text or illustrations indicate areas changed at last issue date.



IPS Corporate Headquarters  
5601 Granite Parkway Suite 1000  
Plano, TX 75024  
[www.ips.invensys.com](http://www.ips.invensys.com)

Foxboro Global Client Support  
Inside U.S.: 1-866-746-6477  
Outside U.S.: 1-508-549-2424 or  
contact your local Foxboro  
representative.  
Facsimile: 1-508-549-4999

Invensys, Foxboro, I/A Series, and IPS Logo are trademarks of  
Invensys plc, its subsidiaries, and affiliates.  
All other brand names may be trademarks of their respective  
owners.

Copyright 2001-2009 Invensys Systems, Inc.  
All rights reserved