

Installation & Operation Manual

SolidSense II[®] Series Pressure Transducers

BROOKS[®]
INSTRUMENT

Beyond Measure

Essential Instructions

Read before proceeding!

Brooks Instrument designs, manufactures and tests its products to meet many national and international standards. These products must be properly installed, operated and maintained to ensure they continue to operate within their normal specifications. The following instructions must be adhered to and integrated into your safety program when installing, operating and maintaining Brooks Instrument products.

- To ensure proper performance, use qualified personnel to install, operate, update, program and maintain the product.
- Read all instructions prior to installing, operating and servicing the product. If this instruction manual is not the correct manual, please see back cover for local sales office contact information. Save this instruction manual for future reference.

⚠ WARNING: Do not operate this instrument in excess of the specifications listed in the Instruction and Operation Manual. Failure to heed this warning can result in serious personal injury and / or damage to the equipment.

- If you do not understand any of the instructions, contact your Brooks Instrument representative for clarification.
- Follow all warnings, cautions and instructions marked on and supplied with the product.

⚠ WARNING: Prior to installation ensure this instrument has the required approval ratings to meet local and national codes. Failure to heed this warning can result in serious personal injury and / or damage to the equipment.

- Install your equipment as specified in the installation instructions of the appropriate instruction manual and per applicable local and national codes. Connect all products to the proper electrical and pressure sources.
- Operation: (1) Slowly initiate flow into the system. Open process valves slowly to avoid flow surges. (2) Check for leaks around the flow meter inlet and outlet connections. If no leaks are present, bring the system up to the operating pressure.
- Please make sure that the process line pressure is removed prior to service. When replacement parts are required, ensure that qualified people use replacement parts specified by Brooks Instrument. Unauthorized parts and procedures can affect the product's performance and place the safe operation of your process at risk. Look-alike substitutions may result in fire, electrical hazards or improper operation.
- Ensure that all equipment doors are closed and protective covers are in place to prevent electrical shock and personal injury, except when maintenance is being performed by qualified persons.

⚠ WARNING: For liquid flow devices, if the inlet and outlet valves adjacent to the devices are to be closed for any reason, the devices must be completely drained. Failure to do so may result in thermal expansion of the liquid that can rupture the device and may cause personal injury.

European Pressure Equipment Directive (PED)

All pressure equipment with an internal pressure greater than 0.5 bar (g) and a size larger than 25mm or 1" (inch) falls under the Pressure Equipment Directive (PED).

- The Specifications Section of this manual contains instructions related to the PED directive.
- Products described in this manual are in compliance with EN directive 2014/34/EU.
- All Brooks Instrument Flowmeters fall under fluid group 1.
- Products larger than 25mm or 1" (inch) are in compliance with PED category I, II or III.
- Products of 25mm or 1" (inch) or smaller are Sound Engineering Practice (SEP).

European Electromagnetic Compatibility (EMC)

The Brooks Instrument (electric/electronic) equipment bearing the CE mark has been successfully tested to the regulations of the Electro Magnetic Compatibility (EMC directive 2014/30/EU).

Special attention however is required when selecting the signal cable to be used with CE marked equipment.

Quality of the signal cable, cable glands and connectors:

Brooks Instrument supplies high quality cable(s) which meets the specifications for CE certification.

If you provide your own signal cable you should use a cable which is overall completely screened with a 100% shield.

"D" or "Circular" type connectors used should be shielded with a metal shield. If applicable, metal cable glands must be used providing cable screen clamping.

The cable screen should be connected to the metal shell or gland and shielded at both ends over 360 Degrees.

The shield should be terminated to an earth ground.

Card Edge Connectors are standard non-metallic. The cables used must be screened with 100% shield to comply with CE certification.

The shield should be terminated to an earth ground.

For pin configuration : Please refer to the enclosed Instruction Manual.

ESD (Electrostatic Discharge)

⚠ CAUTION: This instrument contains electronic components that are susceptible to damage by static electricity. Proper handling procedures must be observed during the removal, installation or other handling of internal circuit boards or devices.

Handling Procedure:

1. Power to unit must be removed.
2. Personnel must be grounded, via a wrist strap or other safe, suitable means before any printed circuit card or other internal device is installed, removed or adjusted.
3. Printed circuit cards must be transported in a conductive container. Boards must not be removed from protective enclosure until immediately before installation. Removed boards must immediately be placed in protective container for transport, storage or return to factory.

Comments

This instrument is not unique in its content of ESD (electrostatic discharge) sensitive components. Most modern electronic designs contain components that utilize metal oxide technology (NMOS, SMOS, etc.). Experience has proven that even small amounts of static electricity can damage or destroy these devices. Damaged components, even though they appear to function properly, exhibit early failure.

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Introduction

This manual covers the Brooks® SolidSense II® Series pressure transducers as shown in Figure 1-1 below. Included herein is general information, operating specifications, installation, removal instructions and product warranty information.

This manual is organized into the following sections:

Section 1 - Introduction

Section 2 - Installation

Section A - Essential Instructions

Back Cover - Limited Warranty and Contacts

It is recommended that this manual be read in its entirety before attempting to operate the Brooks SolidSense II Series devices.



Figure 1-1 SolidSense II Pressure Transducer Sample Configurations

Intended Use

The Brooks SolidSense II Series pressure transducers meet the most rigid semiconductor and industrial high purity application requirements. With accuracy of 0.25% of full scale, SolidSense II pressure transducers are used to provide years of reliable pressure monitoring in a variety of applications. The SolidSense II Series pressure transducers have one of the smallest footprints in the industry for quick and easy installation in the tightest areas.

Notice and Caution Statements

Warning, caution and notice statements are located throughout this manual in the ANSI format.

A WARNING statement indicates a potentially hazardous situation which, if not avoided, could result in death or serious injury.

A CAUTION statement indicates a potentially hazardous situation which, if not avoided, MAY result in minor or moderate injury. It may also be used to alert against unsafe practices.

A NOTICE statement describes specific information that requires special attention.

Product Description Code

The following Product Description Code (PDC) identifies the SolidSense II pressure transducer in various configurations Reference Tables 1-1 thru 1-3. This code is used to order your SolidSense II pressure transducer. Call your Brooks Service and Support Representative if you need assistance.

Part Number	Cable Description	Cable Length	Transducer Electrical connector required	Transducer Output
EL0001965100	Cable W/ four pin female Bendix Connector to connect to transducer: Flying leads on Opposite end of Power connection	10 ft	4- Pin Male Bendix	0 – 10 Vdc
EL0001965104	Cable W/ four pin female Bendix Connector to connect to transducer: Flying leads on Opposite end of Power connection	10 ft	4- Pin Male Bendix	4-20 mA
EL0001965401	Cable W/ four pin female Bendix Connector to connect to transducer: four pin male Bendix Connector on Opposite end of Power connection	10 ft	4- Pin Male Bendix	0 – 10 Vdc, 4-20 mA
EL3000071002	Cable W/ four pin female Bendix Connector to connect to transducer: four pin male Bendix Connector on Opposite end of Power connection	5 ft	4- Pin Male Bendix	0 – 10 Vdc, 4-20 mA

Table 1-1 Optional Cables for SolidSense II - Standard

Table 1-2 Product Description Code for SolidSense II - Standard

Code Description	Code Option	Option Description				
I. Base Model Code	GF	Pressure Transducer				
	GI	Pressure Transducer with integrated display				
II. Body Type	D	Dead End				
	F	Flow Through				
III. Pressure / Vacuum Range *Refer to available combinations in Range/Unit (Table 1-4)	00	30				
	45	45				
	60	60				
	01	100				
	02	250				
	X1	150				
	X2	235				
	05	500				
	10	1000				
	25	2500				
	30	3000				
	15	1500 Torr Only				
	A	Absolute, psi				
	C	Compound, psi				
IV. Pressure / Vacuum Units (Full Scale Range ¹) *Refer to available combinations in Range/Unit (Table 1-4)	G	Gauge, psi				
	B	Absolute, Bar				
	P	Compound, Bar				
	S	Gauge, Bar				
	F	Absolute, KPa				
	R	Compound, KPa/MPa				
	K	Gauge, KPa				
	E	Absolute, MPa				
	D	Gauge, MPa				
	T	Absolute Torr (available for PSI 05, 10, & 15 only)				
V. Output	3	0.00 to 10.00 Vdc				
	4	4 to 20 mA				
	5	0.05 to 5.05 Vdc				
	6	0.2 to 5.2 Vdc				
	7	2 to 10 Vdc				
	8	No signal output (GI model with display only)				
VI. Electrical Connection			GFF	GFD	GIF	GID
	A	4 ft Pigtail with AMP® Connector (3-pin) - Current Output Only			X	X
	B	Bendix® Connector	X	X		
	D	15 Pin HD D-Sub Connector - Voltage Output Only	X	X		
	E	9 inch Pigtail with 15 Pin HD D-Sub Connector - Voltage Output Only	X	X	X	X
	G	4 ft Pigtail with AMP® Connector (4-pin) - Voltage Output Only			X	X
	H	6 inch Pigtail with Molex® Connector			X	X
	K	9-pin D-Sub - Voltage Output Only	X	X		
	L	10 ft (3m) Pigtail	X	X	X	X
	M	5 inch (0.127m) Pigtail with AMP® Connector (4-pin) - Voltage Output Only			X	X
	N	16.5 ft cable with Bendix® Type (Bayonet)	X	X	X	X
	P	6 ft (2m) Pigtail	X	X	X	X
	Q	12" Pigtail with M12 Connector	X	X	X	X
	R	8 inch Pigtail with AMP® Connector (4-pin)			X	X
	S	2m (79") Pigtail with 9-Pin D Connector - Current Output Only	X	X		
	V	18 inch Pigtail with 6-pin Molex® Connector			X	X
	W	2 inch Pigtail with AMP® Connector (4-pin) plus 1" strain relief ($\pm 1/8"$) at 20° angle from bottom dead center			X	X
	Y	18" Pigtail with 4 Pin AMP Connector	X		X	
	Z	36 inch Pigtail with Bendix® Connector (Bayonet)	X	X	X	X
	3	8 inch Pigtail with AMP® Connector (4-pin) - Analog Only	X	X	X	X
	4	Bendix 4 Pin (Bayonet) Connector	X	X		
			GFF	GFD	GIF	GID
VII. Fittings	4S*	Tube Weld Stub 1/4" O.D.		X		
	4T*	Duncan T, 1/4" Tube Weld Stub	X			
	CD	Surface Mount, 1.125" C-Seal, 0.5" longer gland		X		X
	CH	Surface Mount, 1.5" C-Seal, High Flow K1H		X		
	CS	Surface Mount, 1.125" C-Seal, Standard		X		X
	NT	1/4" NPT		X		
	SC	Surface Mount, 1.5" C-Seal		X		
	SF	Face Seal, swivel female 1/4"	X	X	X	X
	SM	Face Seal, swivel male 1/4"	X	X	X	X
	VF	Face Seal, fixed female 1/4"	X		X	
	VS	Face Seal, fixed male/swivel female on Duncan T 1/4"	X			

Sample Standard Model Code

I	II	III	IV	V	VI	VII
GF	F	02	C	4	P	SF

Table 1-3 Product Description Code for SolidSense II - ATEX

Code Description	Code Option	Option Description
I. Base Model Code	GF	Pressure Transducer
II. Body Type	D	Dead End
	F	Flow Through
III. Pressure / Vacuum Range <i>*Refer to available combinations in Range/Unit (Table 1-4)</i>	00	30
	45	45
	60	60
	01	100
	02	250
	X1	150
	X2	235
	05	500
	10	1000
	25	2500
	30	3000
	15	1500 Torr
IV. Pressure / Vacuum Units (Full Scale Range) <i>*Refer to available combinations in Range/Unit (Table 1-4)</i>	A	Absolute, psi
	C	Compound, psi
	G	Gauge, psi
	B	Absolute, Bar
	P	Compound, Bar
	S	Gauge, Bar
	F	Absolute, KPa
	R	Compound, KPa/MPa
	K	Gauge, KPa
	E	Absolute, MPa
	D	Gauge, MPa
	T	Torr
V. Output	4	4 to 20 mA
	5	0.05 to 5.05 Vdc
VI. Electrical Connection	P	2m Pigtail
	Q	12" Pigtail with M12 Connector
	L	3m Pigtail
	E	9 inch Pigtail w/15-pin (standard) D-sub Connectors
	N	16.5 foot cable with Bendix® Type (Bayonet)
VII. Fittings	4S	Tube Weld Stub 1/4" O.D. (GFD Only) [†]
	CS	Surface Mount, 1.125" C-Seal, Standard (GFD Only)
	CH	Surface Mount, 1.5" C-Seal, High Flow K1H (GFD Only)
	SC	Surface Mount, 1.5" C-Seal (GFD Only)
	NT	1/4" NPT (GFD only)
	VM	Face Seal, fixed male (x2 on Duncan T for GFF)
	VS	Face Seal, fixed male/swivel female on Duncan T (GFF Only)
	SM	Face Seal, swivel male (x2 on Duncan T for GFF)
	SF	Face Seal, swivel female (x2 on Duncan T for GFF)
	4T	Duncan T, 1/4" Tube Weld Stub (GFF Only)*
VIII. Explosion Proof	A	FM and ATEX approved

[†] Tube stubs (4S and 4T) are not suitable for compression joint.

Sample Standard Model Code

I	II	III	IV	V	VI	VII	VIII
GF	F	02	C	4	P	SF	A

SPECIFIC CONDITIONS OF USE: YES as shown below:

The equipment shall only be used in an area of not more than pollution degree 2, as defined in IEC 60664-1.

Provisions shall be made to prevent the rated voltage from being exceeded by transient disturbances of more than 140%.

The connector as well as the corresponding sealing which are provided by the end user in the end use application shall be in accordance with all applicable clauses of IEC 60079-7. A minimum degree of protection IP54 according to IEC 60529 shall be ensured. The connector has to be installed in a way that it is protected against an impact energy of more than 4J.

Table 1-4 Range/Unit Available Combinations

III. Pressure/ Vacuum Range Code	Select Range →	00	45	60	01	X1	X2	02	05	10	14	15	25	30
IV. Pressure / Vacuum Units (Full Scale Range)	A PSI (A)	30	-	60	100	-	-	250	500	1000	-	-	2500	3000
	C PSI (C)	30	45	60	100	150	235	250	500	1000	-	1500	2500	3000
	G PSI (G)	30	-	60	100	-	-	250	500	1000	-	-	2500	3000
	B BAR (A)	2	-	-	7	-	-	17	34	69	100	-	172	207
	P BAR (C)	2	-	-	7	-	-	17	34	69	-	-	172	207
	S BAR (G)	2	-	-	7	-	-	17	34	69	-	-	172	207
	F KPa (A)	207	-	-	-	-	-	-	-	-	-	-	-	-
	R KPa (C)	207	-	-	-	-	-	-	-	-	-	-	-	-
	K KPa (G)	207	-	-	-	-	-	-	-	-	-	-	-	-
	E MPa (A)	.29	-	-	.69	-	-	1.7	3.4	6.9	-	-	17.2	20.7
	R MPa (C)	-	-	-	.69	1	-	1.7	3.4	6.9	-	-	17.2	20.7
	D MPa (G)	-	-	-	.69	-	-	1.7	3.4	6.9	-	-	17.2	20.7
	T Torr (T)	-	-	-	-	-	-	-	500	1000	-	1500	-	-

(A)=Absolute, (C)=Compound, (G)=Gauge

SolidSense II Pressure Transducer Specifications

⚠ WARNING

Do not operate this instrument in excess of the specifications listed in this manual. Failure to heed this warning can result in serious personal injury and/or damage to the equipment.

⚠ CAUTION

It is the user's responsibility to select and approve all materials of construction. Careful attention to metallurgy, engineered materials and elastomeric materials is critical to safe operation.

Table 1-5 Specifications

Performance	Non-Display Version	Display Version
Temperature:	---	---
Operating:	-20°F to 180°F (-29°C to 82°C)	-20°F to 140°F (-29°C to 60°C)
Storage:	-40°F to 180°F (-40°C to 82°C)	-40°F to 167°F (-40°C to 75°C)
Compensated:	-4°F to 140°F (-20°C to 60°C) / 68°F to 140°F (20°C to 60°C) 0-10 Vdc version	
Burst Pressure:	400% full scale	
Design Pressure:	300% full scale up to 2000 psi, 250% full scale for higher ranges	
Proof Pressure:	200% full scale up to 2,000 psi, 150% full scale for higher ranges	
Accuracy:	0.25% full scale (BFSL)	
Response Time:	< 5 msec	
Zero and Span Temperature Coefficient (each):	---	
>100 PSI Ranges Full Scale:	+0.02% full scale/OF (-4°F to 140°F, -20°C to 60°C) +0.50% full scale (68°F to 140°F, 20°C to 60°C) 0 to 10 Vdc version	
<100 PSI Ranges Full Scale:	+0.04% full scale/OF (-4°F to 140°F, -20°C to 60°C) +1.00% full scale (68°F to 140°F, 20°C to 60°C) 0 to 10 Vdc version	
Mechanical		
Housing:	Stainless steel, polymer plastics	
Wetted Parts:	316L stainless steel, SEMI F20	
Surface Finish:	Compliant with SEMI F19	
Cleanliness:	Compliant to ASTM F1374-92 (2005)	
Internal Volume:	1.79cc	
Process Connections:	(See Product Configurations for available options)	
Approximate Shipping Weight:	0.70 lb. (0.32 kg)	
Electrical		
Supply Current:	Max. 10 mA	Max. 30 mA
Power Requirements:	10 to 30 Vdc for 4 to 20 mA output 11 to 30 Vdc for 0 to 5 Vdc output 13 to 32 Vdc for 0 to 10 Vdc output	15 to 30 Vdc for 4 to 20 mA output and no signal output 11 to 30 Vdc for 0 to 5 Vdc output 13 to 30 Vdc for 0 to 10 Vdc output
Optional Display	Non-Display Version	Display Version
Digits:	N/A	-xxx to 1xxx
Type:	N/A	7 Segment Red LED
Polarity:	N/A	Automatic (-) Display
Over Pressure Reading Trigger:	N/A	10% full scale \pm 5% full scale (Display reading: 1---)

Table 1-5 Specifications (Continued)

Electrical (Cont.)		
Display Accuracy:		$\pm 0.25\%$ of Rdg ± 1 Count for psi
(excluding transducer output)	N/A	$\pm 0.25\%$ of Rdg ± 5 Count for kPa
Character Size:	N/A	0.30" height
kPa/psi Switch:	N/A	Yes
Rotatable:	N/A	Continuous rotation covering 4 quadrants
Zero Pot:	N/A	Yes
Zero Pot Adj. Screwdriver:	N/A	1-1.2 mm flat type
Approvals and Compliance		
FM Approval:	Some GFD and GFF models are FM approved. Consult factory for more information	
EMC:	Compliant to EU Directive 2004/108/EC	
RoHS	Compliant to EU Directive 2002/95/EC	

GFD Configurations

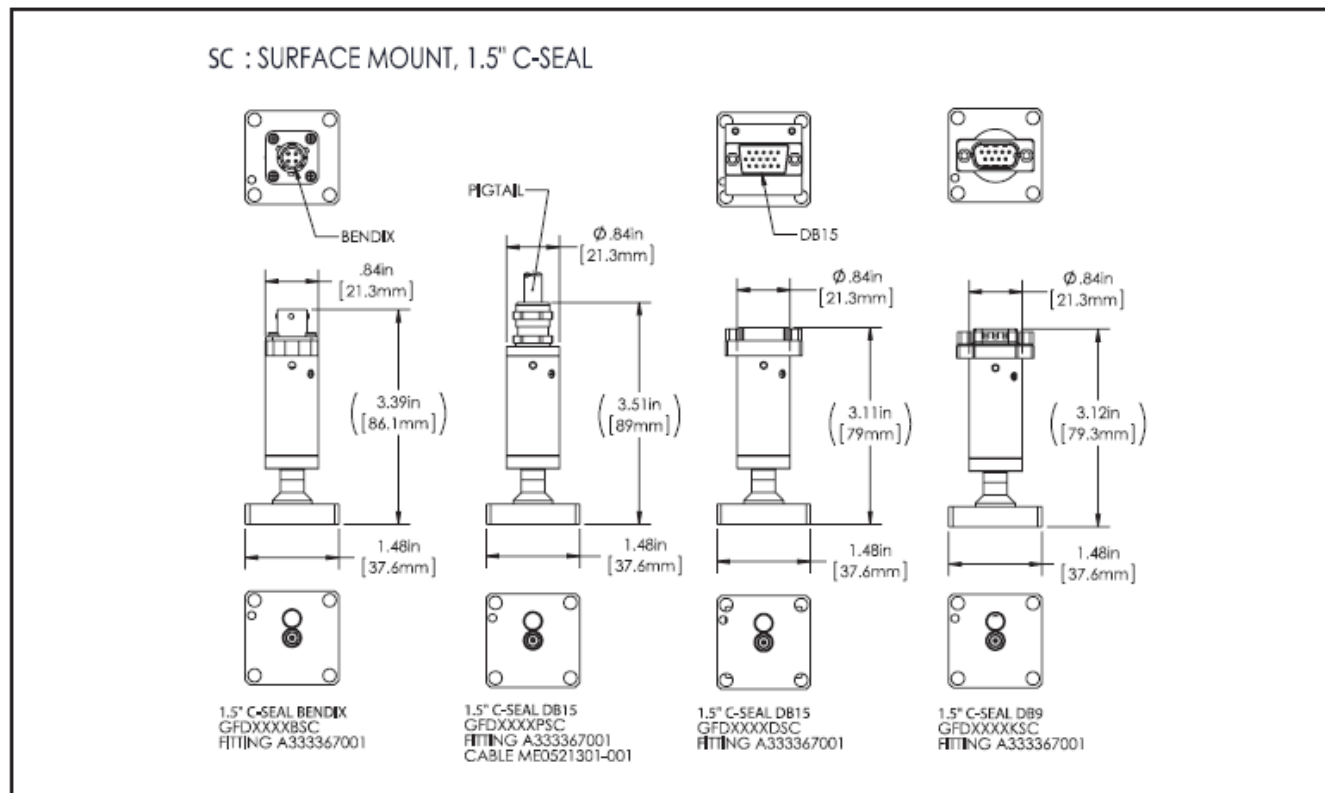


Figure 1-2 Dimensional Drawings - SolidSense II Series, SC: Surface Mount, 1.5" C-Seal

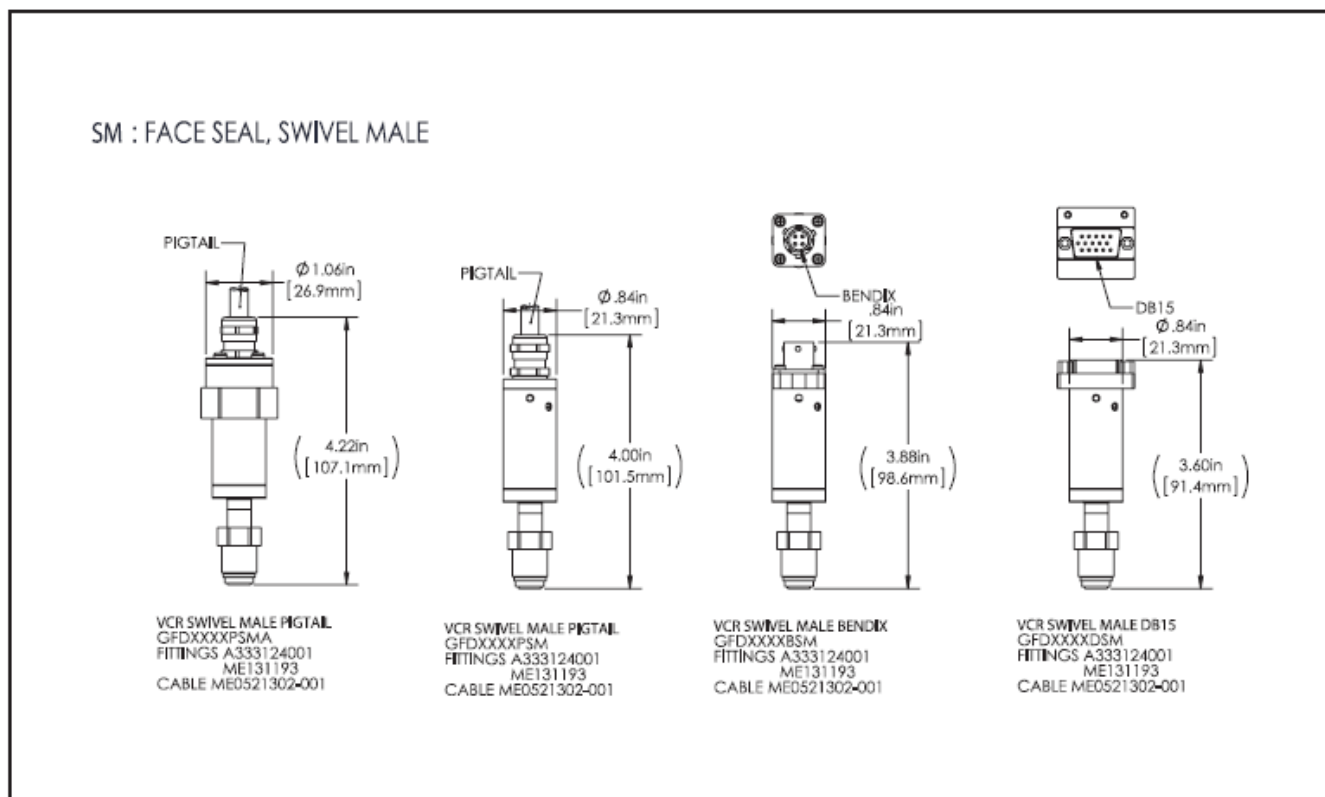


Figure 1-3 Dimensional Drawings - SolidSense II Series, SM: Face Seal, Swivel, Male

GFD Configurations

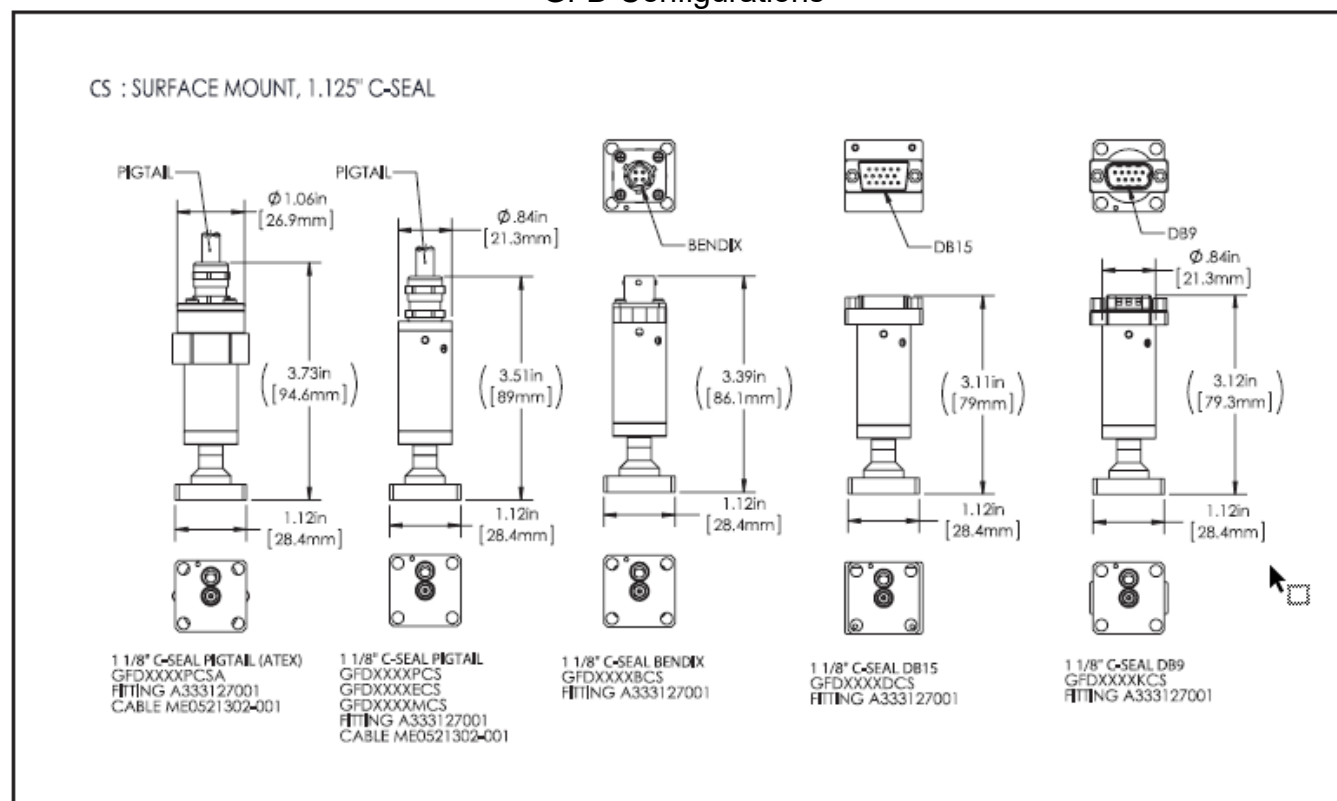


Figure 1-4 Dimensional Drawings - SolidSense II Series, CS: Surface Mount, 1.125" C-Seal

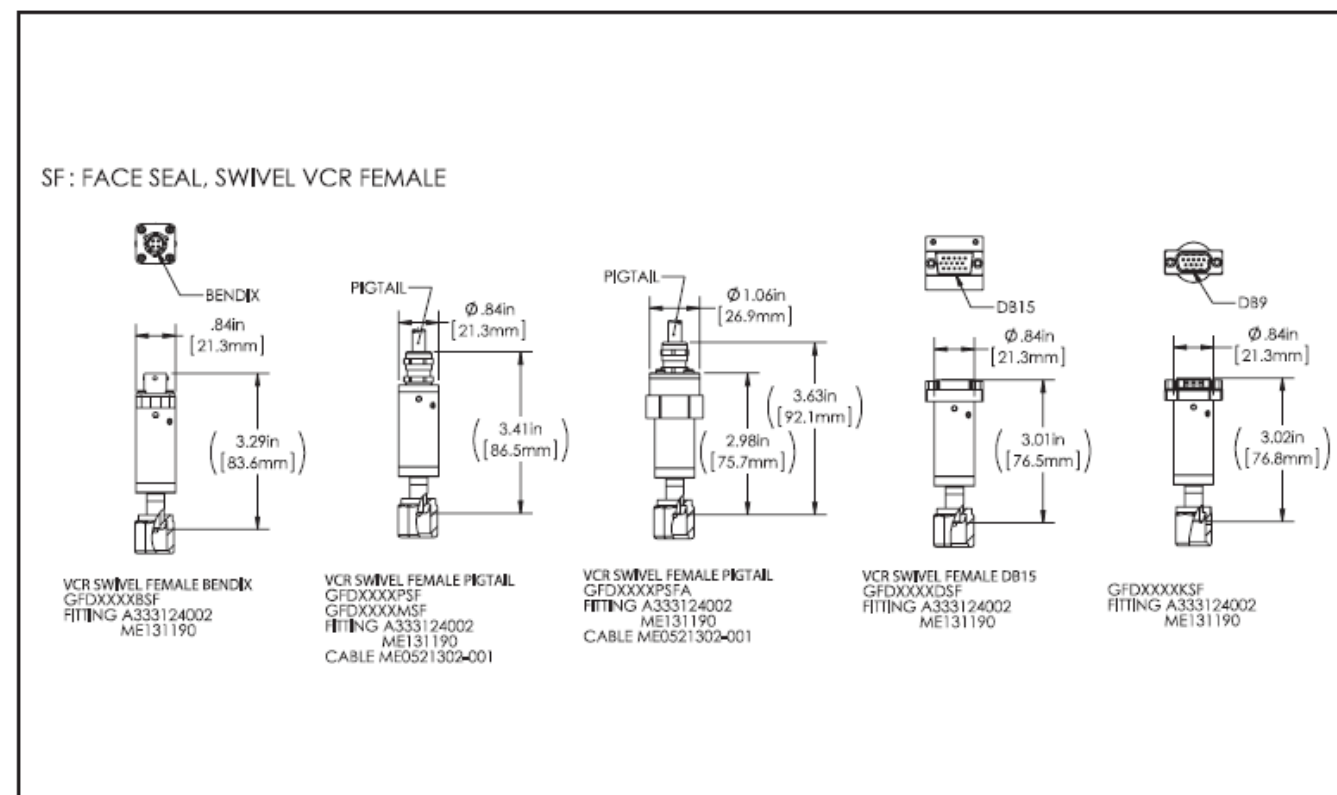


Figure 1-5 Dimensional Drawings - SolidSense II Series, SF: Face Seal, Swivel, VCR, Female

GFD Configurations

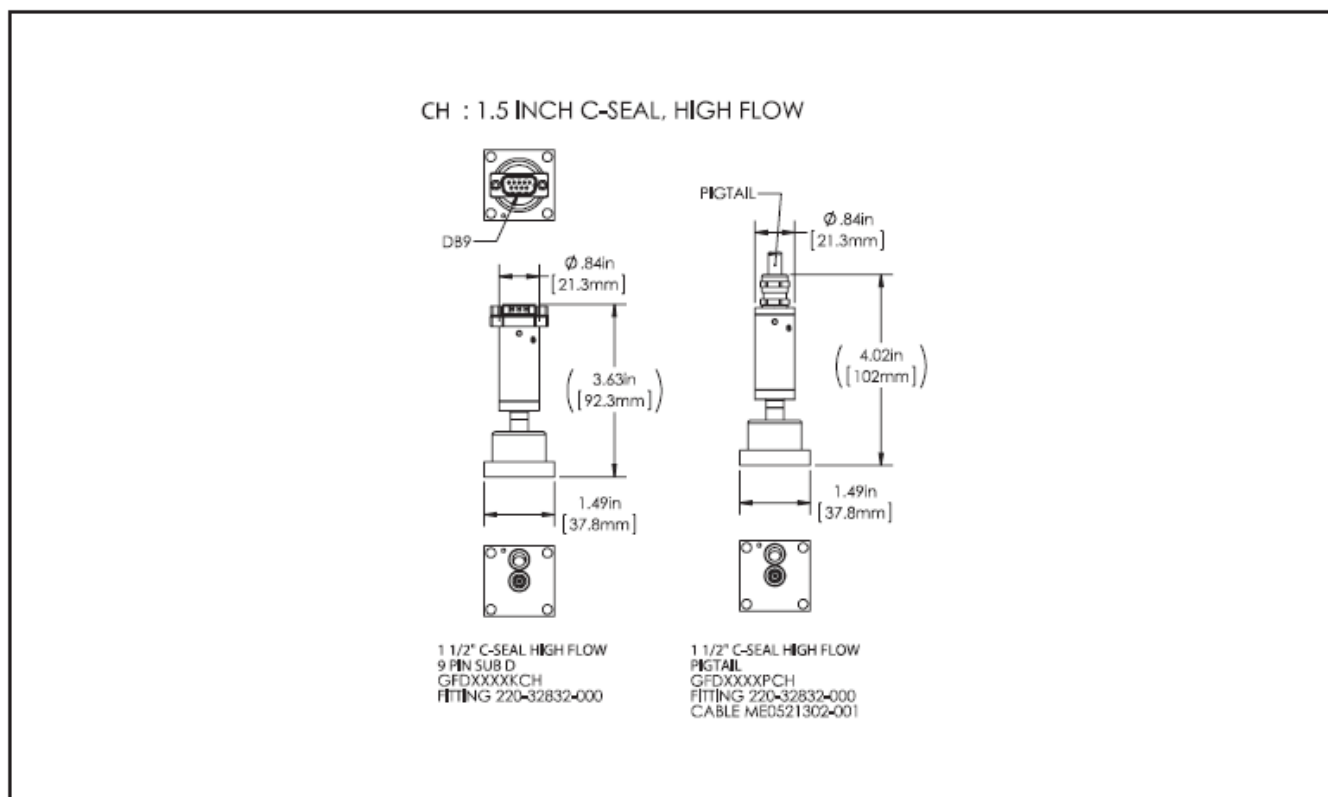


Figure 1-6 Dimensional Drawings - SolidSense II Series, CH: 1.5" C-Seal, High Flow

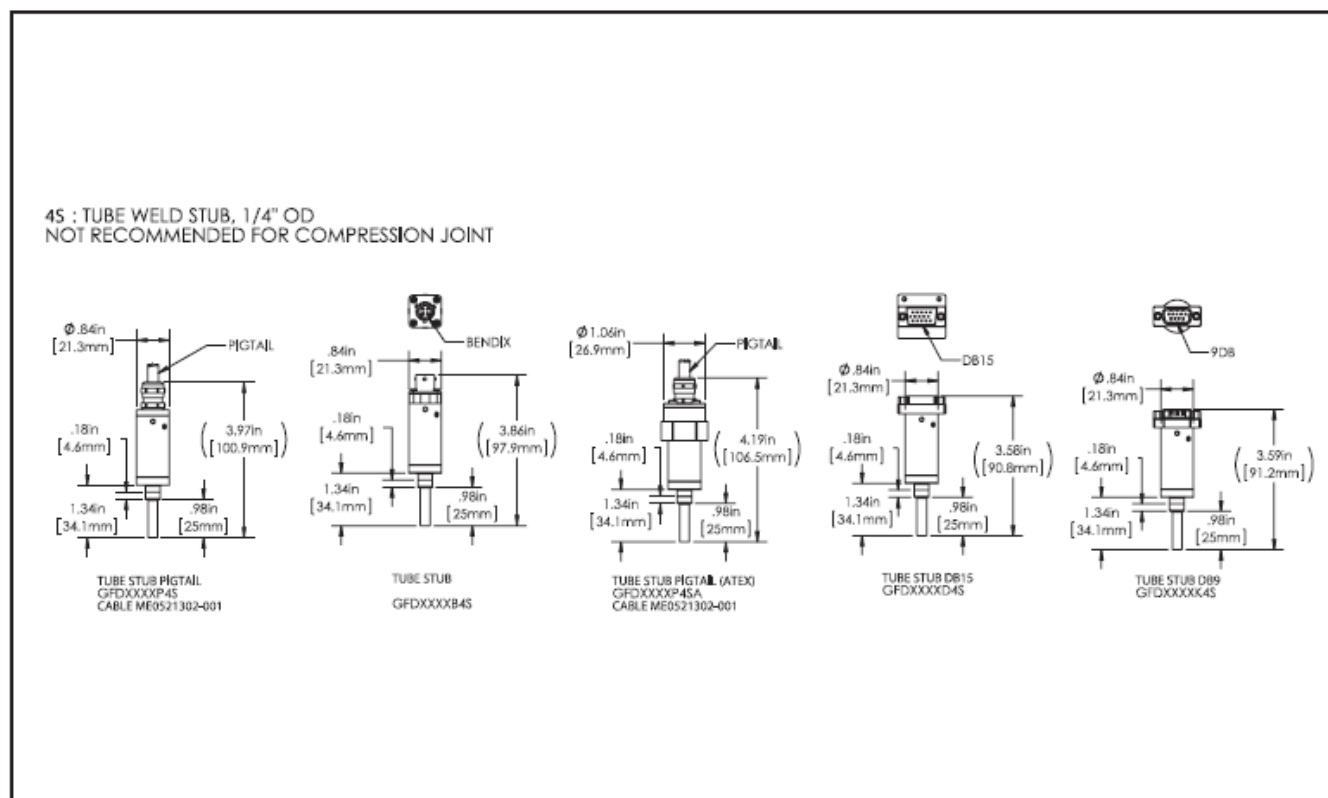


Figure 1-7 Dimensional Drawings - SolidSense II Series, 4S: Tube Weld Stub, 1/4" OD

GFD Configurations

CD : SURFACE MOUNT, LONGER GLAND, 1.125" C-SEAL

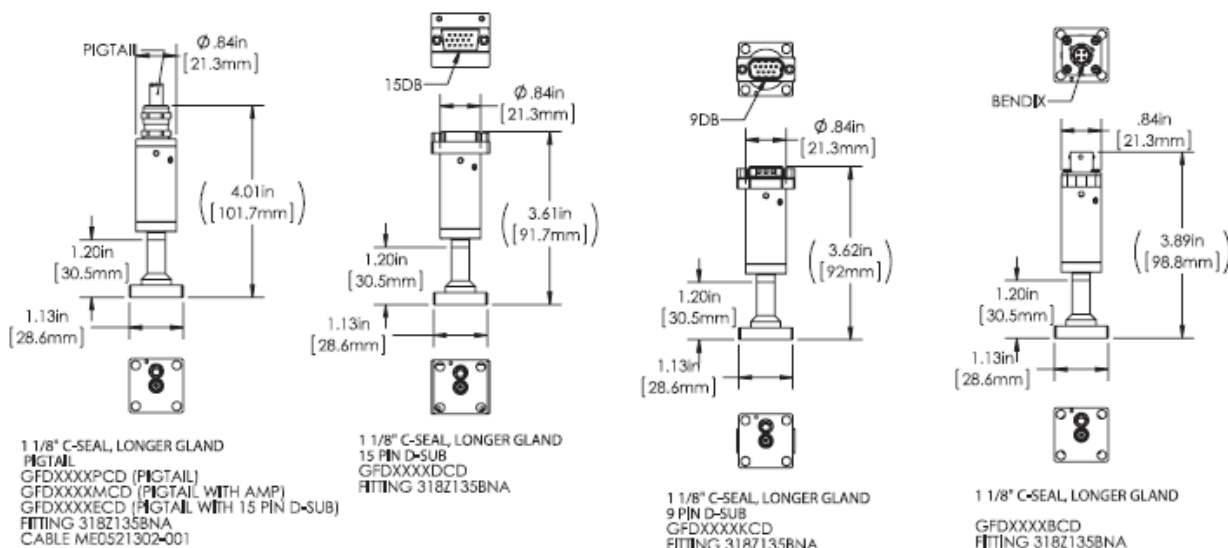


Figure 1-8 Dimensional Drawings - SolidSense II Series, CD: Surface Mount, Longer Gland, 1.125" C-Seal

NT : 1/4" MALE NPT

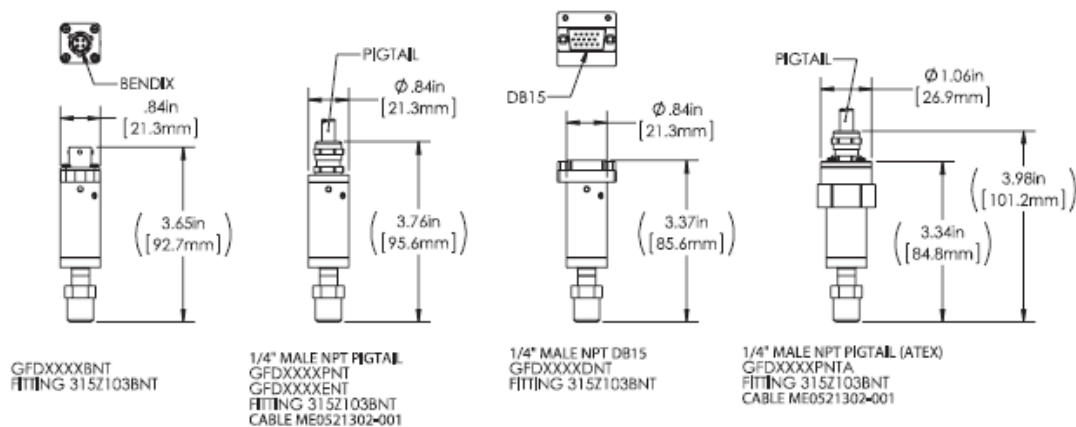


Figure 1-9 Dimensional Drawings - SolidSense II Series, NT: 1/4" Male NPT

GFF Configurations

SM : FACE SEAL, SWIVEL MALE

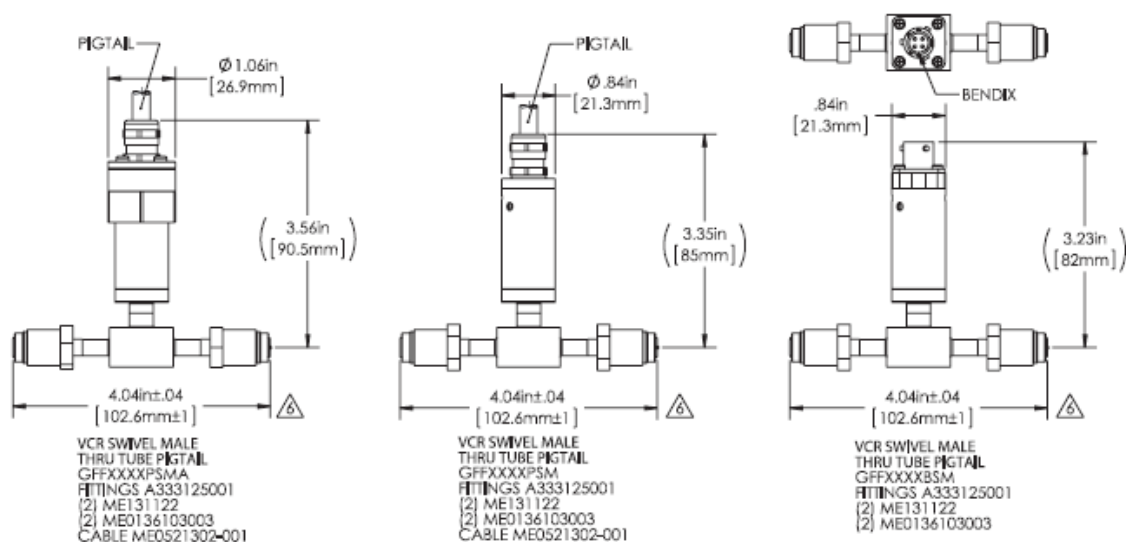


Figure 1-10 Dimensional Drawings - SolidSense II Series, SM: Face Seal, Swivel Male

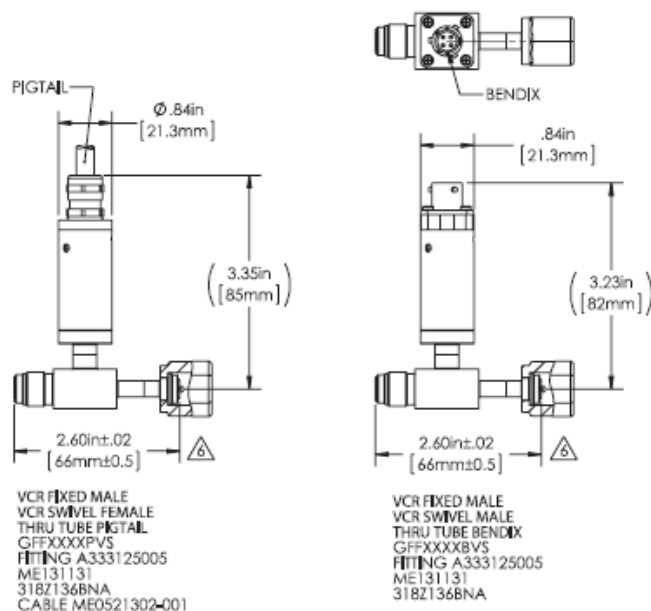
VS : FACE SEAL, FIXED MALE / SWIVEL FEMALE
ON DUNCAN TEE

Figure 1-11 Dimensional Drawings - SolidSense II Series, VS: Face Seal, Fixed Male/Swivel Female

GFF Configurations

4A : MICRO-FIT TEE 3/8" BRANCH X 1/4" RUN

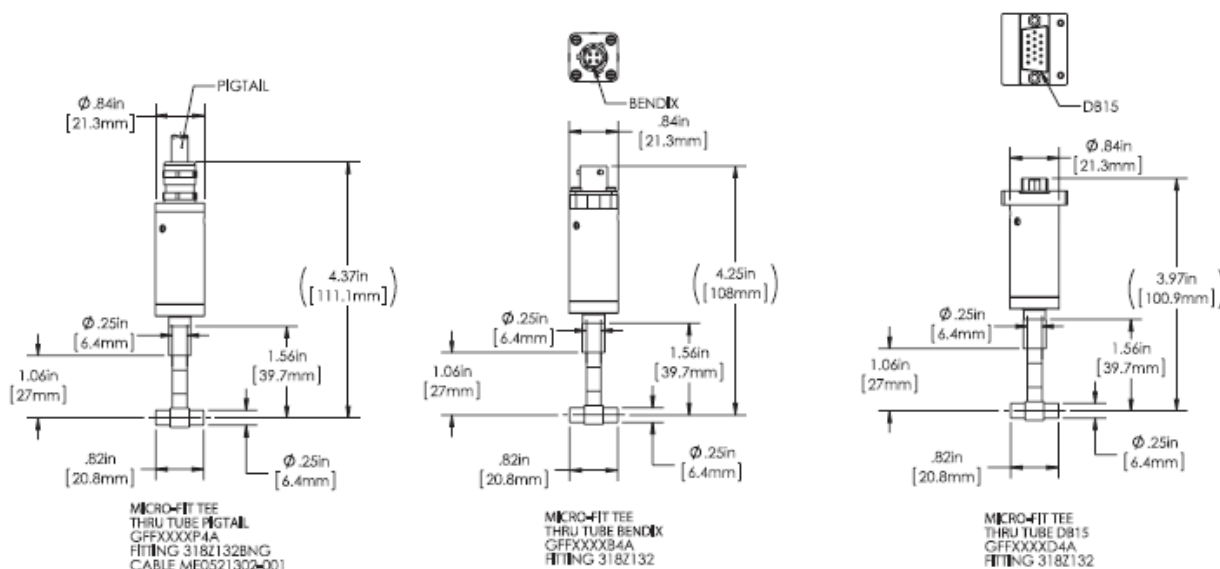


Figure 1-12 Dimensional Drawings - SolidSense II Series, 4A: Micro-Fit Tee, 3/8" Branch X 1/4" Run

VM : FACE SEAL, FIXED MALE

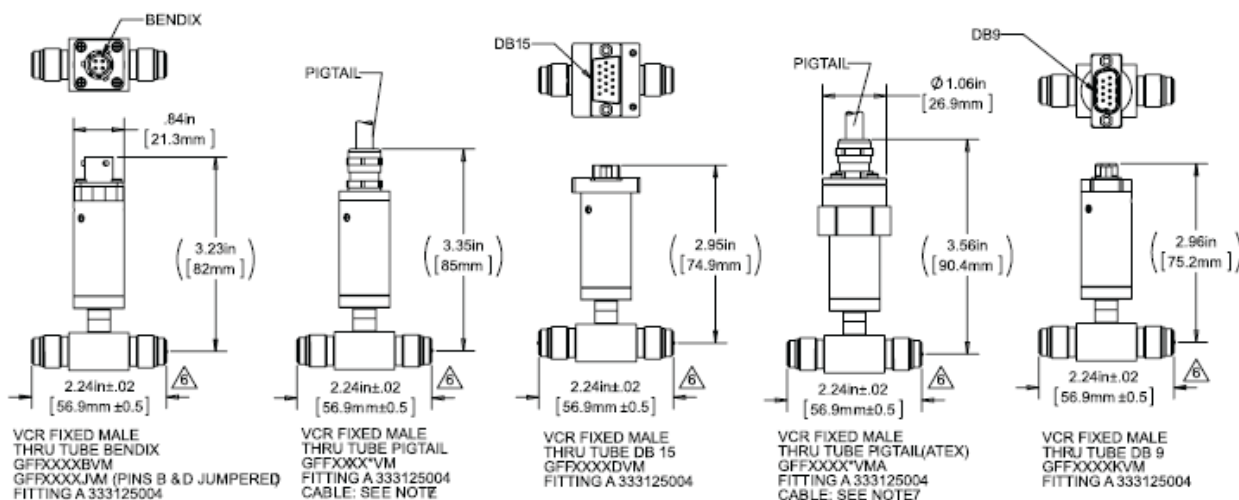


Figure 1-13 Dimensional Drawings - SolidSense II Series, VM: Face Seal, Fixed Male

GID & GIF Integrated Display Configurations

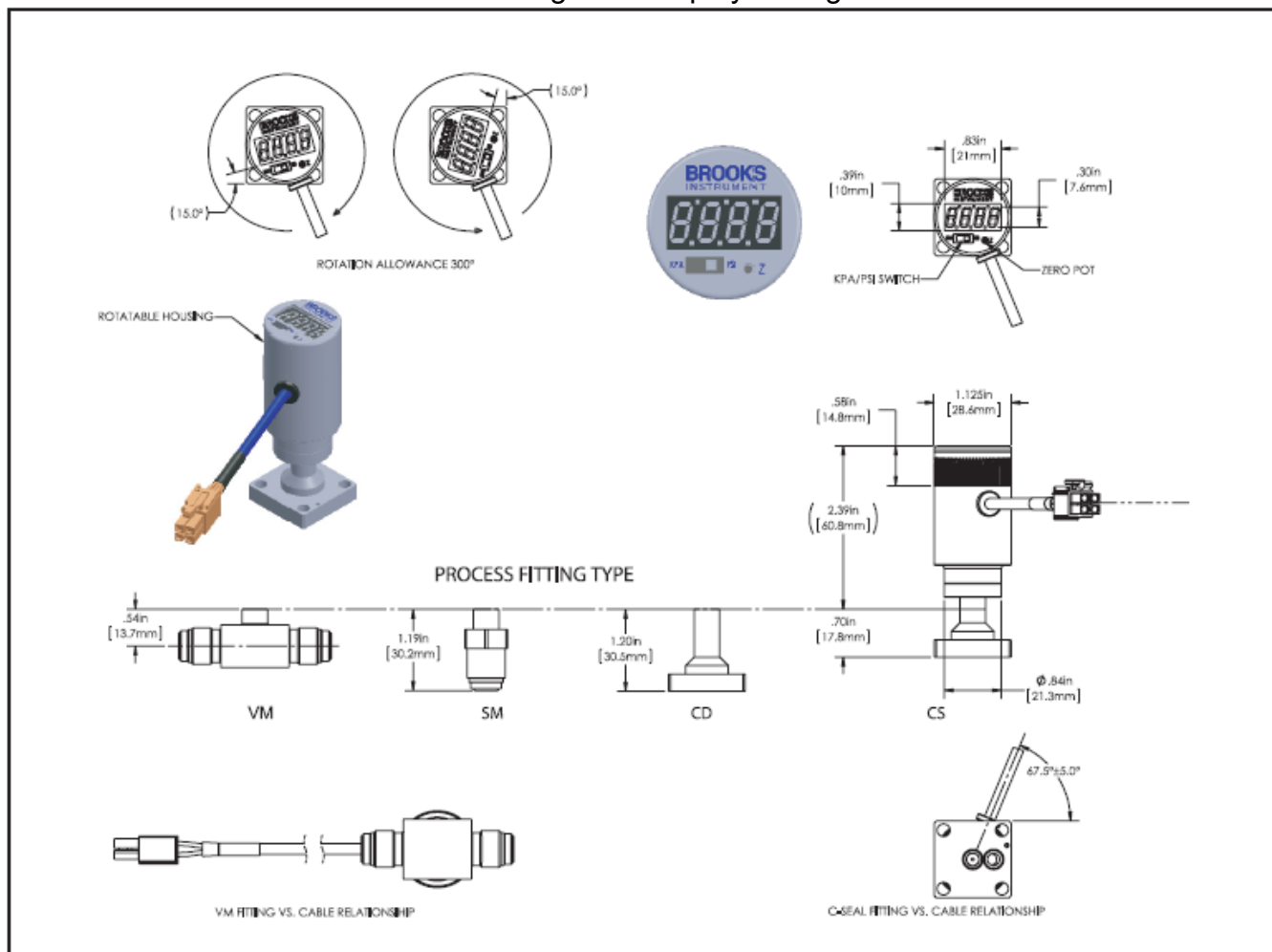


Figure 1-14 Dimensional Drawings - SolidSense II Series, Single End (GID) and Flow Through (GIF) Integrated Display Models

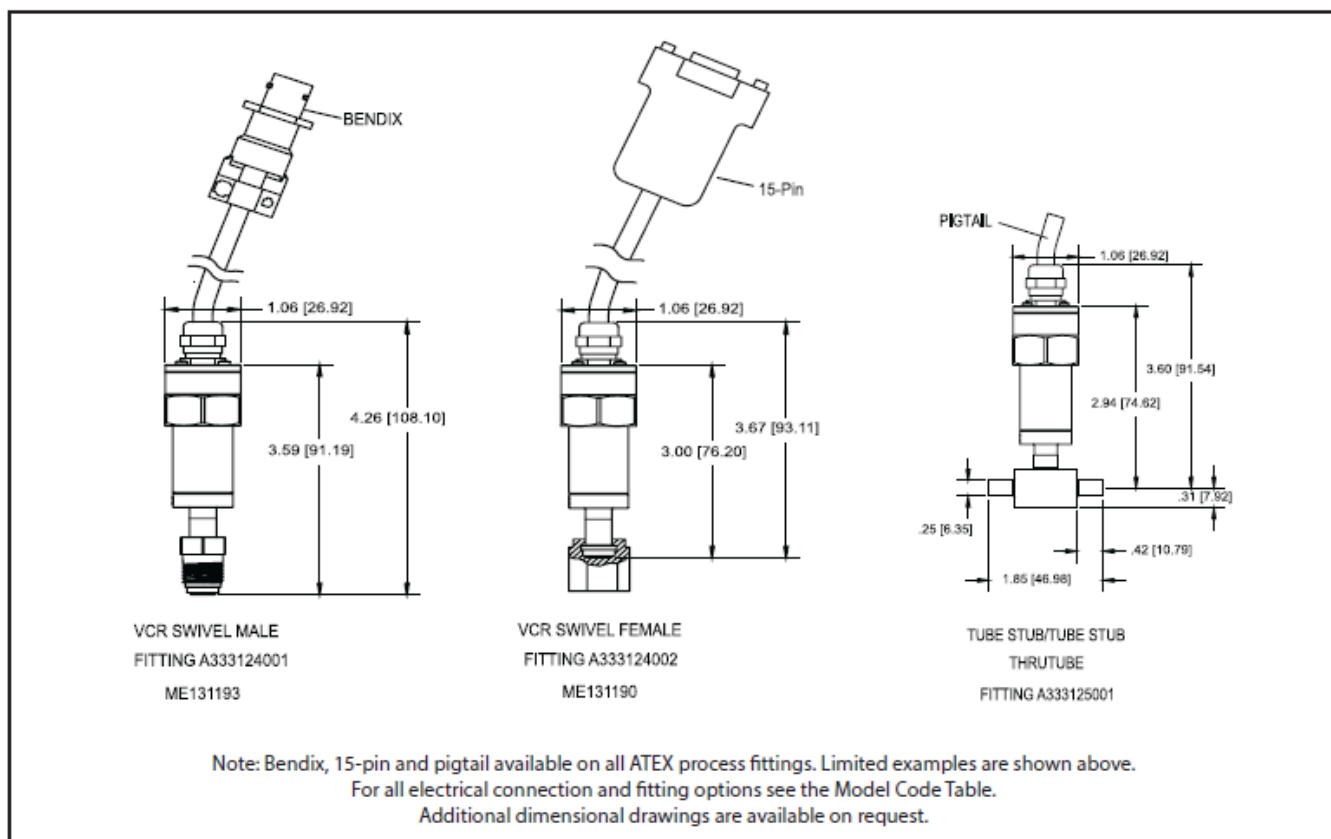


Figure 1-15 Dimensional Drawings - SolidSense II ATEX Pressure Transmitter (Option)

For more details on the SolidSense II ATEX compliant pressure transmitters, visit our website at www.BrooksInstrument.com/Products for the data sheet: DS-PR-SolidSense II ATEX-PT-eng or contact your nearest Brooks Customer Service Center for assistance.

General

This section provides installation instructions for the Brooks® SolidSense II pressure transducers. Refer to Section 1 of this manual for dimensions.

Receipt of Equipment

When the equipment is received, the outside packing case should be checked for damage incurred during shipment. If the packing case is damaged, the local carrier should be notified at once regarding his liability. A report should be submitted to the nearest Brooks Instrument location listed on the Global Service Network page on our website:

BrooksInstrument.com/GlobalSupportCenters

Remove the envelope containing the packing list. Carefully remove the instrument from the packing case. Make sure spare parts are not discarded with the packing materials. Inspect for damaged or missing parts.

Recommended Storage Practice

If intermediate or long-term storage of equipment is required, it is recommended that the equipment be stored in accordance with the following:

- a. Within the original shipping container.
- b. Ambient temperature 21°C (70°F) nominal, 79°C (175°F) maximum -29°C (-20°F) minimum.
- c. Relative humidity 45% nominal, 60% maximum, 25% minimum.

Return Shipment

Prior to returning any instrument to the factory for any reason, visit our website for instructions on how to obtain a Return Materials Authorization Number (RMA #) and complete a Decontamination Statement to accompany it: BrooksInstrument.com/Service. All instruments returned to Brooks also require a Material Safety Data Sheet (MSDS) for the fluid(s) used in the instrument. Failure to provide this information will delay processing of the instrument.

Instrument must have been purged in accordance with the following:

WARNING

Before returning the device purge thoroughly with a dry inert gas such as Nitrogen before disconnecting gas connections. Failure to correctly purge the instrument could result in fire, explosion or death. Corrosion or contamination may occur upon exposure to air.

Transit Precautions

To safeguard against damage during transit, transport the device to the installation site in the same container used for transportation from the factory, if circumstances permit.

Removal from Storage

Upon removal of the device from storage, a visual inspection should be conducted to verify its “as-received” condition. If the device has been subject to storage conditions in excess of those recommended (refer to “2-3 Recommended Storage Practice” on p. 2-1), if applicable, it should be subjected to a pneumatic pressure test in accordance with applicable vessel codes.

Mechanical Connections

CAUTION

Failure to follow these procedures may adversely affect the product's performance and could void the product warranty. Inspect but DO NOT unwrap any parts until installation. Contact your Brooks representative with any problems.

1. The SolidSense II pressure transducer is double-bagged for cleanroom service and should remain packaged until installation. DO NOT remove the pressure transducer from the protective bag unless you are in a clean environment.

- a. Remove the pressure transducer from the box and carry it into the gray area.
- b. Remove the outer protective bag and discard.
- c. Carry the pressure transducer (sealed in inner bag) into the clean room.

CAUTION

HANDLE CAREFULLY! This SolidSense II pressure transducer is a precision instrument and works by measuring stress. Therefore, the less stress placed on the SolidSense II pressure transducer during installation and handling, the greater its accuracy and life span will be.

2. Install the SolidSense II pressure transducer.

- a. Prepare the connection fitting in place on the gas line. Any other fitting components, such as stainless steel gaskets, should be blown clean with filtered gas before use.
- b. Maintain a flow of at least 1 slpm (0.05 scfm) of inert gas during installation to minimize tubing and pressure transducer contamination from environmental moisture and particles. The recommended purge gas is electronic-grade Nitrogen.
- c. Open the inner bag and remove the pressure transducer. Remove any fitting protection caps and seat the pressure transducer on the mating connections.
- d. For connections compatible with VCR® fittings: Tighten by hand. Then turn the fitting 1/8 turn past finger-tight using a wrench also see Figure 2 -8.

⚠ CAUTION

DO NOT overtighten fittings. Refer to specific technical guidelines that are supplied through the fitting manufacturer.

3. Prepare the SolidSense II pressure transducer for use.
 - a. Verify integrity of the seal by appropriate helium leak-testing procedures.
 - b. Turn the gas flow ON then OFF, 10 times to remove any particles generated during installation. (The flow rate used should at least equal the process flow specifications.)
 - c. Mechanical Installation is complete. Complete the electrical wiring connections as noted in the next section.

Electrical Connections**⚠ NOTICE**

Grounding of the cable braid and drain wire are necessary in order to comply with CE immunity requirements. A shielded cable is permanently connected to the SolidSense II pressure transducer.

⚠ WARNING

Explosion Hazard. Do not disconnect equipment when flammable or combustible atmosphere is present.
Explosion Hazard. Do not disconnect while circuit is live unless area is known to be non-hazardous.

⚠ NOTICE

Special conditions to use - ATEX Model:
The customer connection end of the cable including the Brooks provided Bendix connector or 15-pin connector shall be assembled to equipment which is installed in a suitable enclosure providing a degree of protection of at least IP54 according to EN 60529.

Electrical Wiring diagrams are shown in Figures 2-1 through 2-6. Connect the cable braid and drain wire to an earth ground to help reduce inductive signal interference. Table 2-1 specifies the minimum resistance for the output circuit.

Table 2-1 Electrical Specifications - Minimum Resistance for Output Circuit

Electrical Specifications				
Output Signal	Input Voltage	Output Imp.	Load Resistor	Max.Noise (Zero-Peak)
4-20 mA	10-30 V	N/A	N/A	0.2% FS
0.05-5.05 V	11-30 V	100 ohms max.	5K ohms typical	10 mV
0.00-10.00 V	13-32 V	100 ohms max.	10K ohms typical	10 mV
0.2-5.2 V	11-30 V	100 ohms max.	5K ohms typical	10 mV
2-10 V	13-32 V	100 ohms max.	10K ohms typical	10 mV

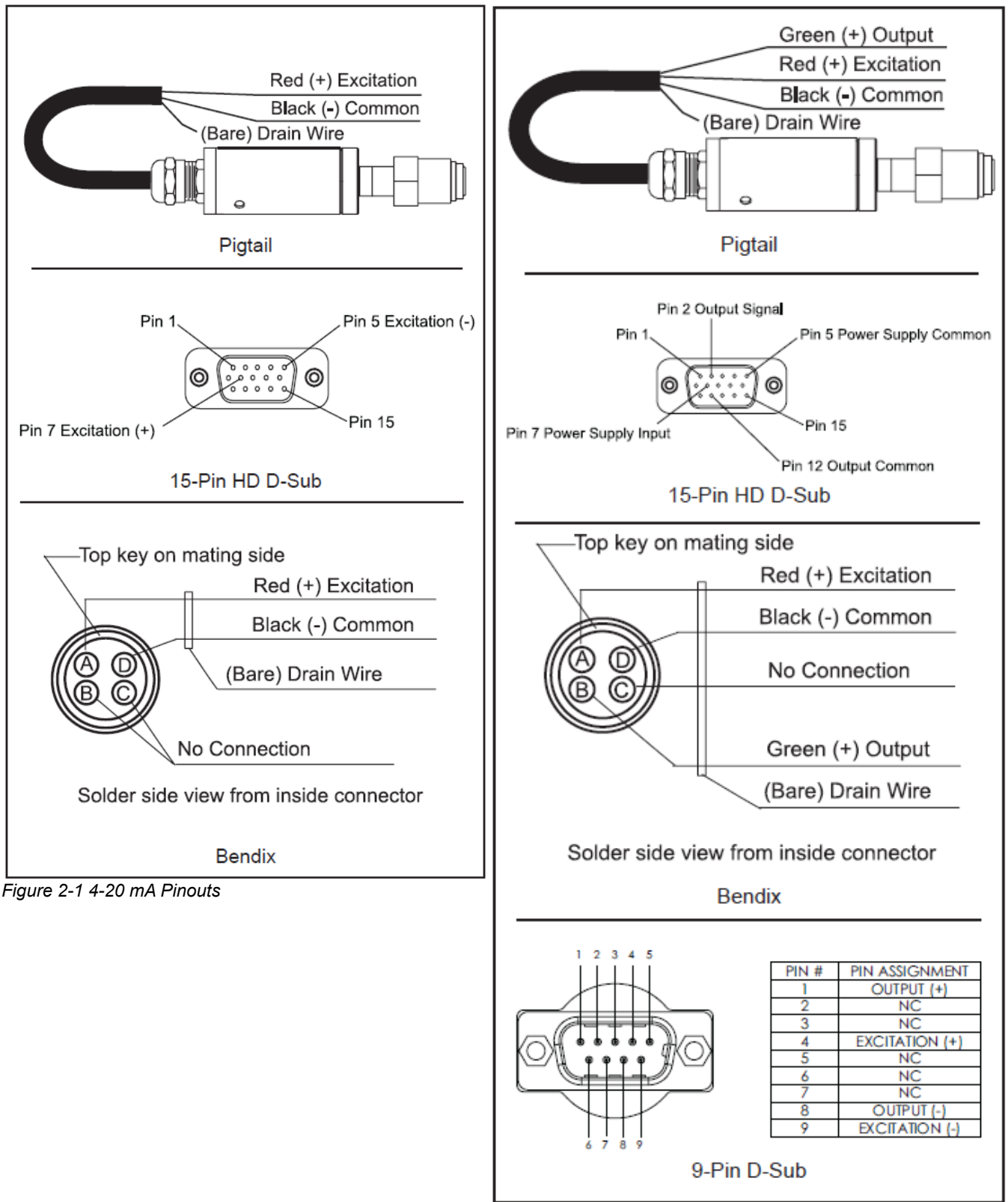


Figure 2-1 4-20 mA Pinouts

Figure 2-2 Voltage Output Pinouts

The SolidSense II pressure transducer can be wired directly to a 12 or 24 Vdc LR056. The pigtail cable is connected as shown in Figure 2-3.

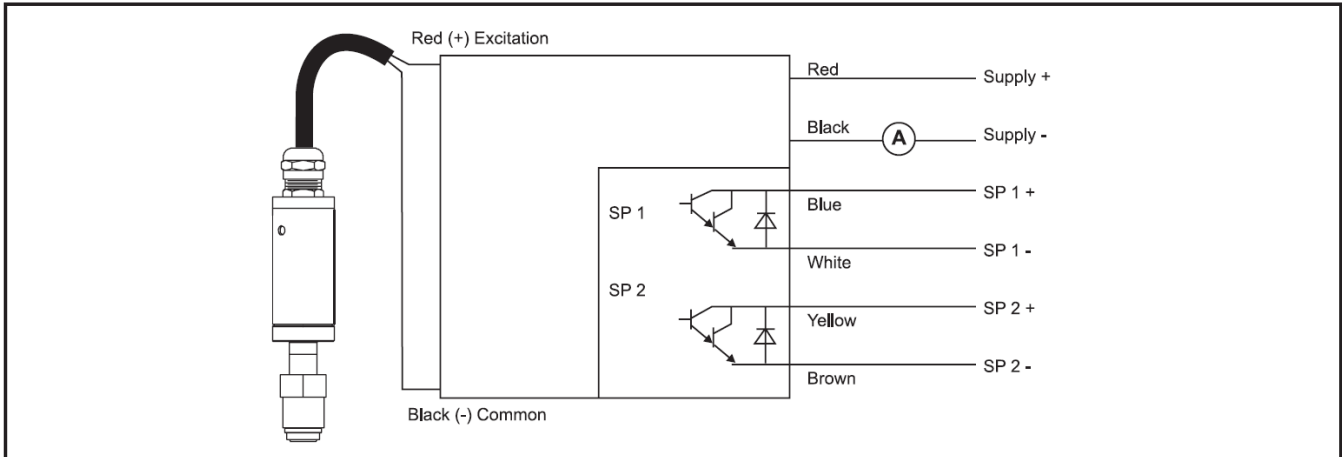


Figure 2-3 4-20 mA Output Device Wiring to LR056

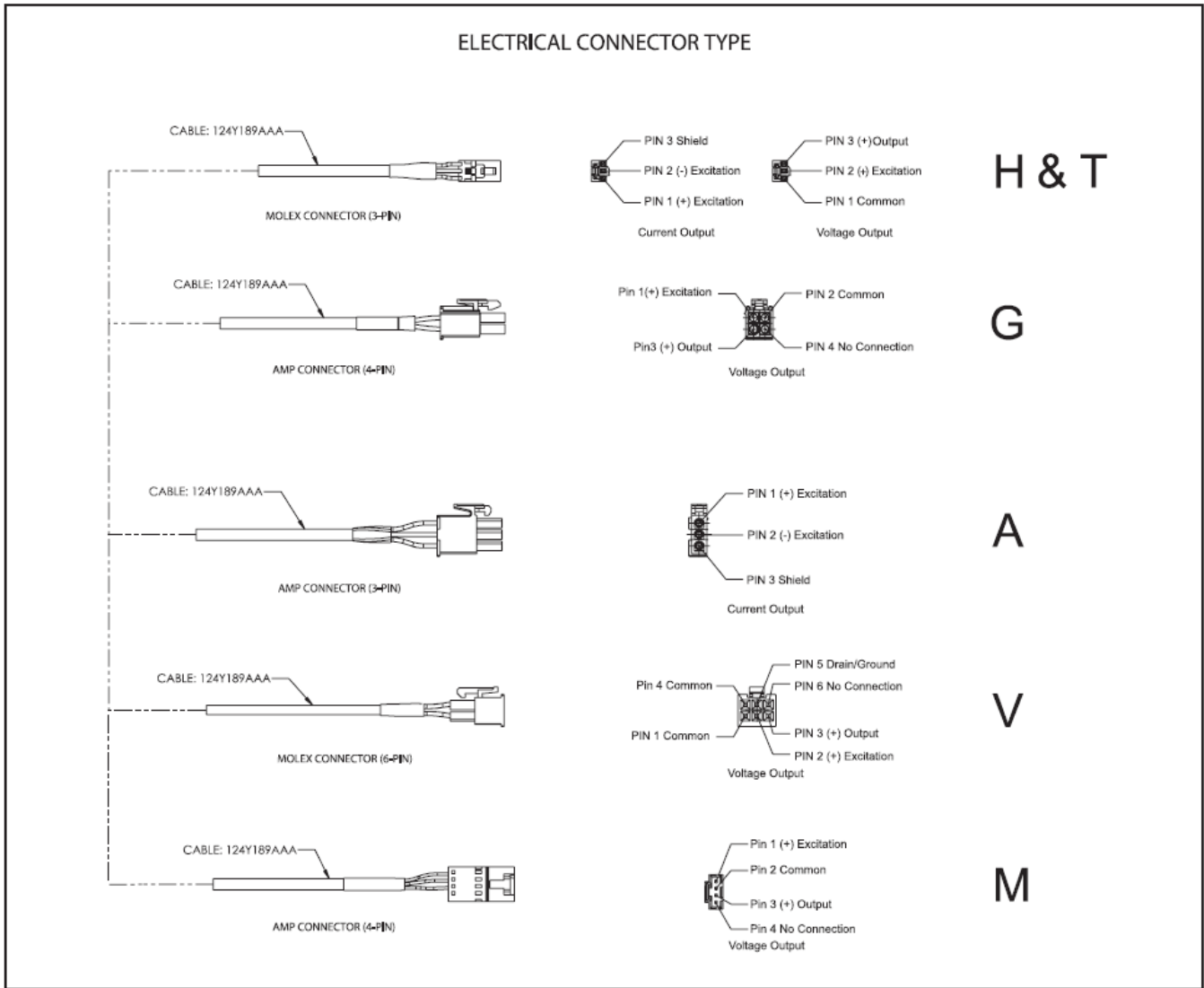


Figure 2-4 Integrated Display Electrical Connections

Non-Incendive Field Wiring 4-20 mA

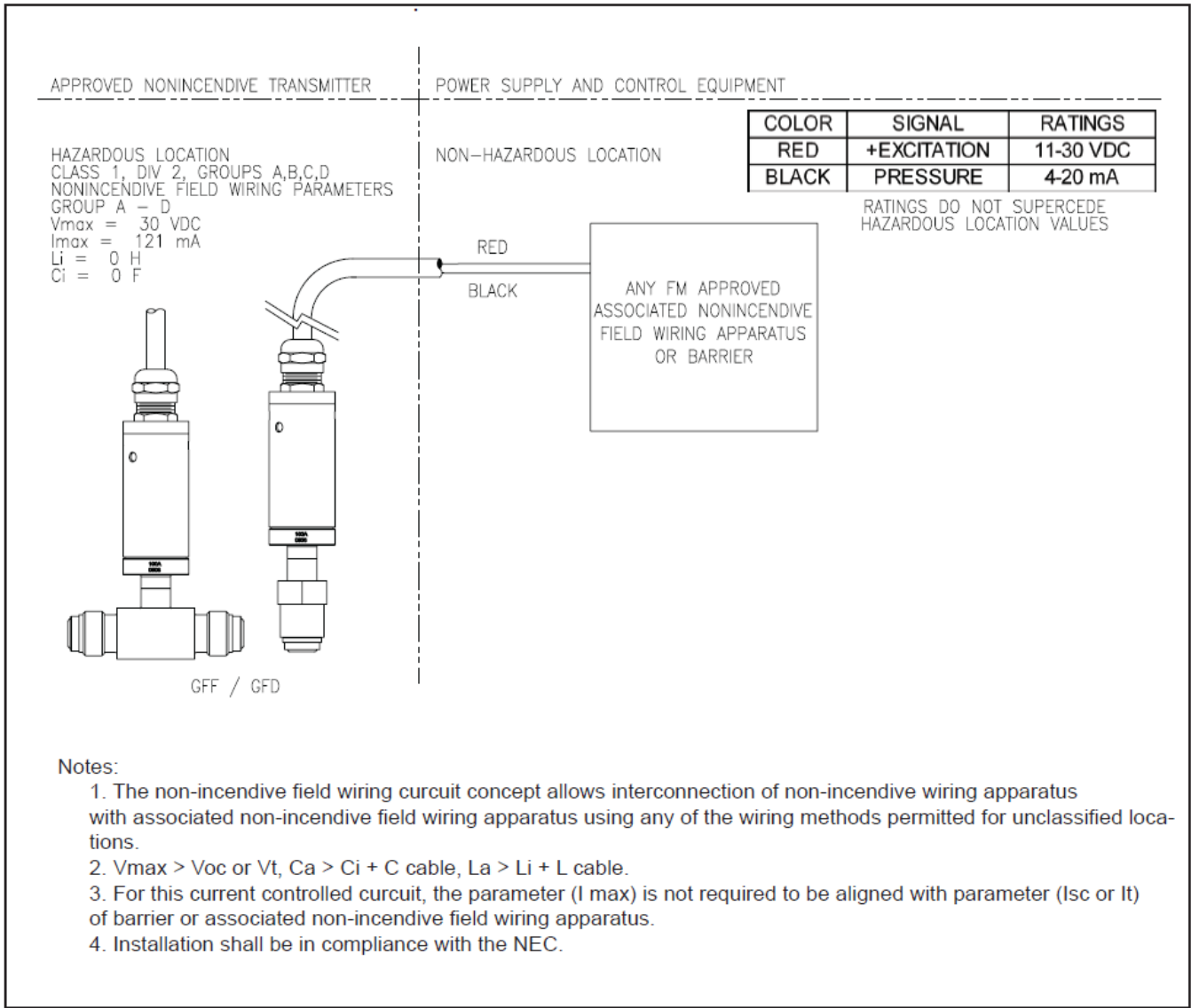


Figure 2-5 Non-Incendive Field Wiring for 4-20 mA

Non-Incendive Field Wiring 0-5 Vdc

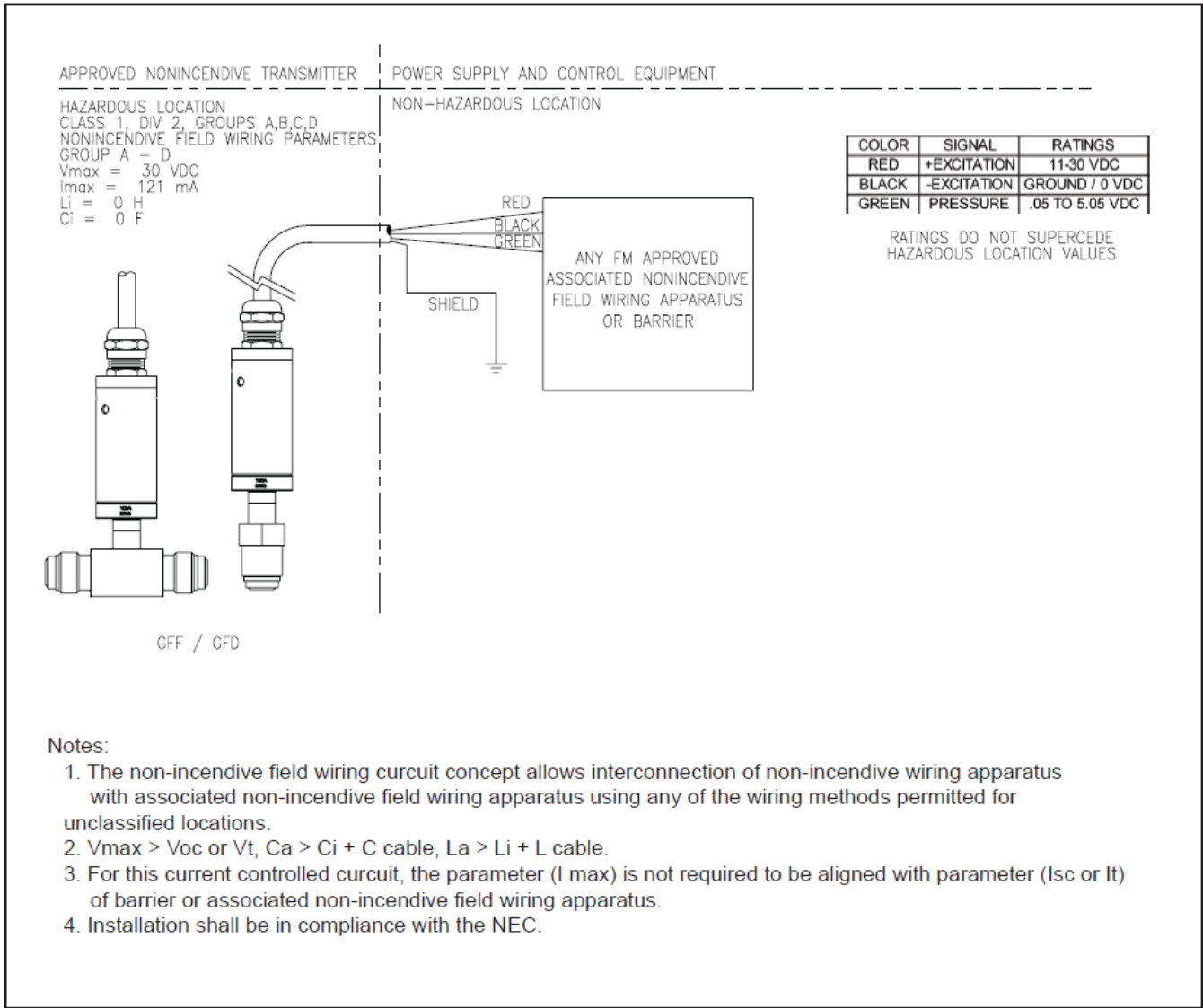


Figure 2-6 Non-Incendive Field Wiring for 0-5 Vdc

Zero Adjustment

The SolidSense II pressure transducer is factory calibrated and does not normally need a field adjustment. If a field adjustment becomes necessary, adjust the zero as noted below.

Zero Adjustment (SolidSense II Standard Pressure Transducers)

On standard SolidSense II pressure transducer models, the zero adjustment screw is located on the body as shown in Figure 2-7.

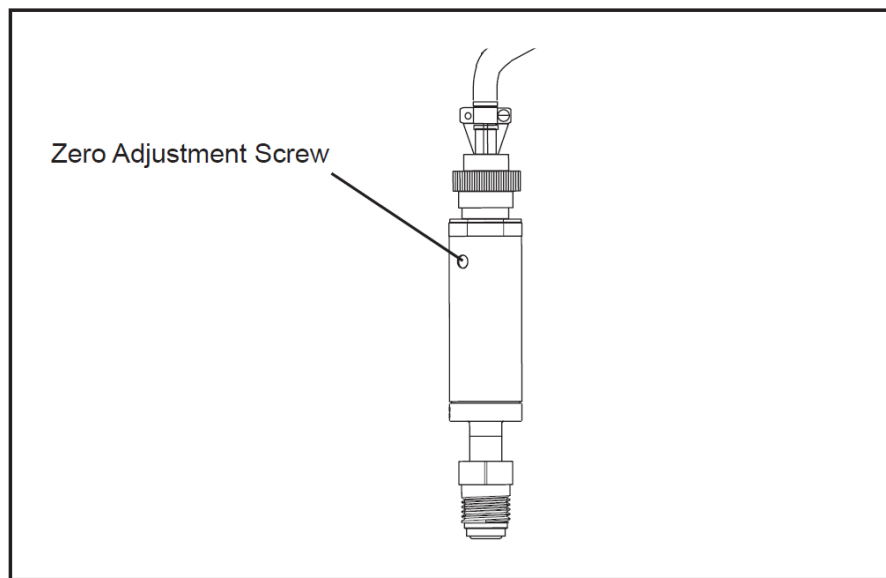


Figure 2-7 Location of the Zero Adjustment Screw on the Standard SolidSense II Pressure Transducers

Position the SolidSense II pressure transducer with the electrical connector facing pointing upward. Using a small, flat-bladed screw driver, turn zero adjustment screw in a clockwise direction to increase the signal. Turn the screw in a counterclockwise direction to decrease the signal.

Zero Adjustment (ATEX SolidSense II Pressure Transmitters Only)

On ATEX SolidSense II pressure transmitters, the zero adjustment screw is located underneath the access cover nut as shown in Figure 2-8(A-B). Unscrew the access cover by turning it in a counterclockwise direction with the electrical connector pointing upward. The cover should drop down after five complete revolutions.

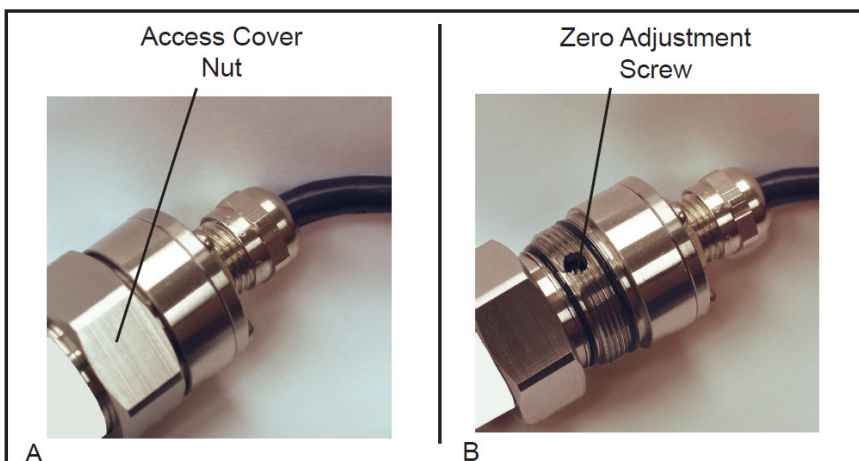


Figure 2-8 Location of the Zero Adjustment Screw on the ATEX SolidSense II Pressure Transmitters

Tighten the VCR nut with a wrench an additional 1/8 turn if using SST or nickel seals or 1/4 turn if using copper seal. Do not use the device housing, access cover nut (ATEX devices), or cable nut at the top of the device as a mechanical lever when tightening the VCR nut. Use only a nut or other stationary point on the system/tool gas line fitting as a leverage point to prevent torque transfer between the device and system fitting.

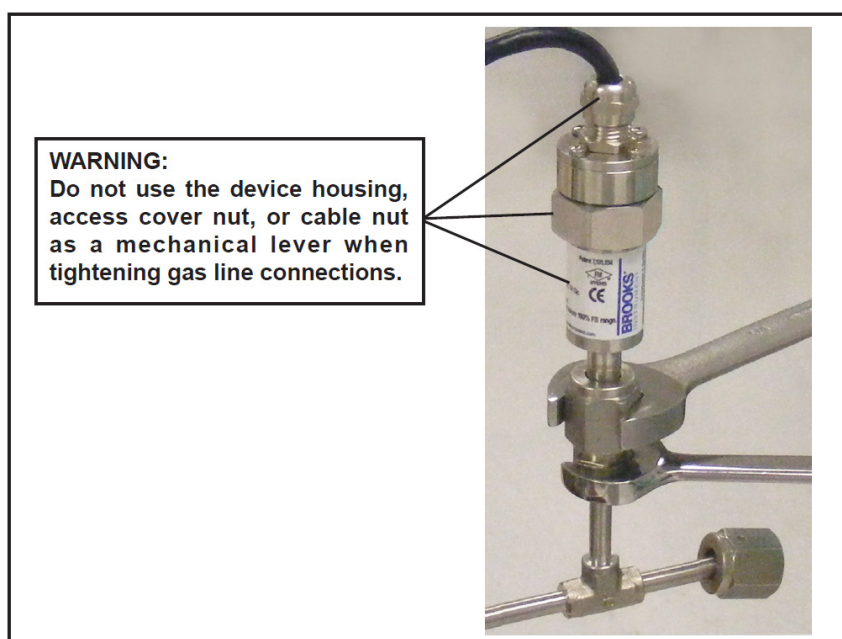
Integrated Display Operation

Figure 2-9 Proper Wrench/Leverage Points for SolidSense II Devices

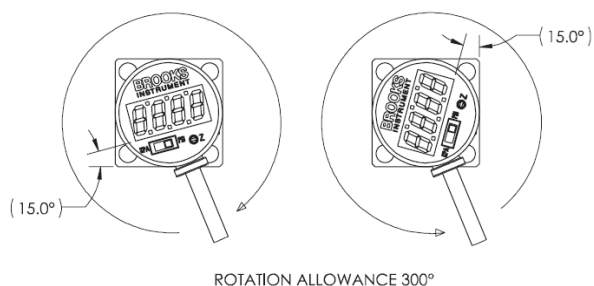
Zero Adjustment (Integrated Display SolidSense II Pressure Transmitters Only)

On the Integrated Display SolidSense II transmitters, the zero adjust screw is located on the top face adjacent to the display switch as noted in Figure 2-10.



Figure 2-10 Location of the Zero Adjustment Screw on the Integrated Display SolidSense II Pressure Transmitters

Display Rotation
Rotate Display by hand only.



CAUTION: Not to apply excessive force past stop position.

Integrated Display Accuracy and Overload 3 digit display will display 999 psi Accuracy of Display: .25% rdg. ± 1 count Display will show 1- in overload condition (too high of pressure).



LIMITED WARRANTY

Visit www.BrooksInstrument.com for the terms and conditions of our limited warranty.

BROOKS SERVICE AND SUPPORT

Brooks is committed to assuring all of our customers receive the ideal flow solution for their application, along with outstanding service and support to back it up. We operate first class repair facilities located around the world to provide rapid response and support. Each location utilizes primary standard calibration equipment to ensure accuracy and reliability for repairs and recalibration and is certified by our local Weights and Measures Authorities and traceable to the relevant International Standards.

Visit www.BrooksInstrument.com to locate the service location nearest to you.

START-UP SERVICE AND IN-SITU CALIBRATION

Brooks Instrument can provide start-up service prior to operation when required.

For some process applications, where ISO-9001 Quality Certification is important, it is mandatory to verify and/or (re)calibrate the products periodically. In many cases this service can be provided under in-situ conditions, and the results will be traceable to the relevant international quality standards.

SEMINARS AND TRAINING

Brooks Instrument can provide seminars and dedicated training to engineers, end users and maintenance persons.

Please contact your nearest sales representative for more details.

Due to Brooks Instrument's commitment to continuous improvement of our products, all specifications are subject to change without notice.

TRADEMARKS

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