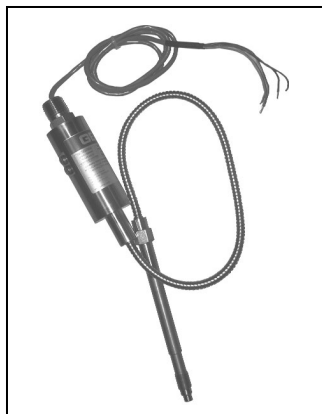




The MF and WF series melt pressure transmitters measure pressure in high temperature locations by hydraulic transmission of the pressure signal to a strain gauge element. MF and WF transmitters are FM-approved Explosionproof for Class I, Division 1, Groups A, B, C, and D locations and Dust-Ignitionproof for Class II, Division 1, Groups E, F, and G locations.

Following these instructions will ensure the maximum lifetime possible for the transmitter.

Contents

- The Transmitter Mounting Hole
- Transmitter Installation
- Wiring and Calibration Instructions
- Proper Care and Handling

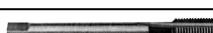
The Transmitter Mounting Hole

Machining the Mounting Hole (see diagram, p. 4)

The transmitter mounting hole must be accurately machined in order to:

- prevent tip damage upon installation;
- ensure reliable output; and
- increase transmitter life span.

To simplify the machining process, drill kits are available for 1/2-20 and M18x1.5 mounting holes.

Drill Kit Code	KF12	KF18
Thread Type	1/2-20 UNF-2B	M18x1.5
1	 Ø 9/32" [7.6 mm]	Ø 9.75 mm
2	 Ø 5/16" [7.95 mm]	Ø 10.1 mm
3	 Ø 17/32" [13 mm]	Ø 20 mm
4	 Ø 29/64" [11.5 mm] with pilot guide	Ø 16 mm with pilot guide
5	 1/2-20 UNF-2B coarse	M18x1.5 coarse
6	 1/2-20 UNF-2B fine	M18x1.5 fine

- 1) Drill the starter hole using tool 1.
- 2) Ream out the hole with tool 2.
- 3) Make a second wider hole to the distance of (a+b+c) from the inside surface (tool 3)
- 4) Form the sealing seat at a distance of (a) from the inner surface (tool 4)
- 5) Start forming the thread with the coarse thread tap (tool 5)
- 6) Finish the thread using the fine thread tap to a distance of (a+b) (tool 6)

Refer to the last page of the manual for diagrams and details on mounting hole dimensions.

Check the Dimensions

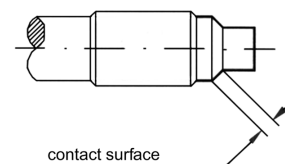
To prevent transmitter damage, the dimensions of the mounting hole must be verified before installation.

Particular care should be taken to align and center the threads with respect to the hole (concentric within .002" [.05 mm]). To prevent interference or damage due to buildup of extruded material, the hole must not be too deep or too shallow.

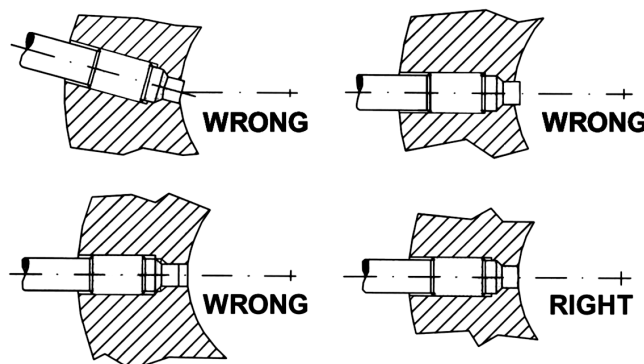
The closure shaft (SC12 for 1/2-20 holes, SC18 for M18x1.5 holes) can be used to confirm mounting hole dimensions as follows:

- 1) Paint the end of the shaft with the appropriate ink.
- 2) Lubricate the threads to avoid excessive friction.
- 3) Insert the shaft, and screw it down against the bottom of the hole.
- 4) Remove the shaft and examine it.

The ink should be intact on all surfaces except the 45° contact surface.



Correct Installation



Transmitter Installation

Installation Steps

1. Make sure the mounting hole is correctly machined. If installing the transmitter into a previously used hole, make sure the hole is thoroughly cleaned to remove any plastic residue.
2. Remove the protective cap from the transmitter tip.
3. Lubricate the threads with a high-temperature anti-seize, such as *Neverseaz* by Bostik, or *C5A* by Felpro.
4. Thread the transmitter into the hole hand-tight, then 1/4 turn with a wrench. Recommended tightening torque is 150 inch-pounds (13.6 N-m); maximum torque is 500 inch-pounds (56.5 N-m).

Cleaning the transmitter seat

It is always necessary to clean the mounting hole before inserting the transmitter. The cleaning tool is a hard metal scraping tool, designed for removing polymer residue left during previous operations.



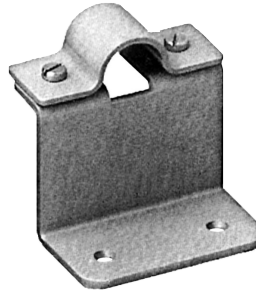
The cleaning operation must be performed while the material in the fluid state.

1. Insert the tool into the seat, and screw in the scraper holder incrementally, normally 1/4 turn each.
2. Rotate the scraper pilot clockwise until there is not resistance to its movement.
3. Repeat the operation until the hole is completely clean.

The maximum torque that can be placed on the scraper is 15 N-m (1.5 kgm). Should the blockage in the hole require greater force, the drill kit must be used (see first section, "Machining the Mounting Hole").

The cleaning tool is available for 1/2-20 UNF mounting holes (CT12) and M18x1.5 mounting holes (CT18).

Mounting Bracket



Transmitters with flexible armor require fixed housing placement to prevent interference with measurements. A mounting bracket (code SF18) is recommended to keep the housing firmly in place. The bracket must be in a location

free from vibration, where the ambient temperature does not exceed 130°F (55°C).

Rigid stem units do not require extra housing support.

Extruder start-up

Once the transmitter is installed, bring the system up to its operating temperature. Wait until all the material is at the same temperature and fully molten to avoid any solid material damaging the transmitter.

Removal

If it is required to continue work without the transmitter installed, closure shafts with identical mechanical dimensions are available.

Shafts are available for 1/2-20 UNF holes (SC12) and M18x1.5 holes (SC18). Both versions are rated up to 30000 psi (2000 bar).



Proper Care & Handling

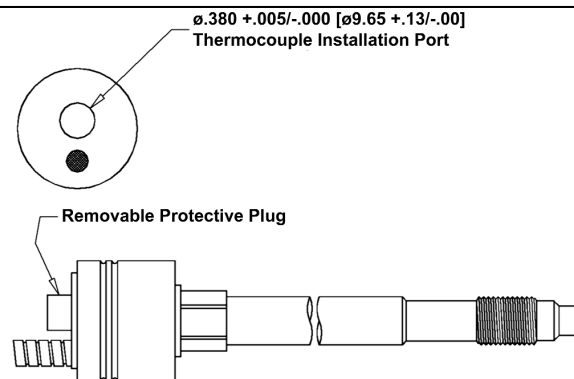
The most delicate part of the transmitter is the "process diaphragm", the tip that makes direct contact with the process fluid. The process diaphragm should always be protected from mechanical shock or abrasion.

Follow these guidelines to prolong transmitter life:

1. Remove the transmitter *only* while the extruder is empty, not under pressure, *and at operating temperature*. An attempt to remove the transmitter from a cold extruder may cause diaphragm damage due to polymer adhesion.
2. To help protect the process diaphragm from damage or abrasion, it is recommended that the transmitter always be covered with its protective cap while not in the machine.
3. Molten polymer should be cleaned from the transmitter with a clean, dry cloth while the tip is still hot. Solidified polymer can be removed using solvents or a fluidized bed cleaning system. *Tools such as wire wheels or abrasive cloths should **never** be used to clean the process diaphragm.*
4. Before installing the transmitter into a machine that has already been used, ensure that the mounting hole is perfectly clean. If necessary, remove any plastic residue using the appropriate cleaning tools. Forcing the transmitter tip against solidified polymer will overload the transmitter and create a high zero offset.
5. The transmitter mounting hole must be correctly machined to prevent transmitter damage. (See first section, "Transmitter Mounting Hole," for complete details.)

MF2/WF2 Installation

Installation of a thermocouple probe in this port is optional. Any customer-installed thermocouple must be installed in accordance with the NEC requirements for Class I, Division 1, Groups A, B, C, and D hazardous locations using national recognized test laboratory (NRTL) accepted equipment. Also, the thermocouple must be approved for use in hazardous locations per the same NEC requirements. The maximum thermocouple sheath diameter is .093". Consult factory for recommended thermocouple sheath length.



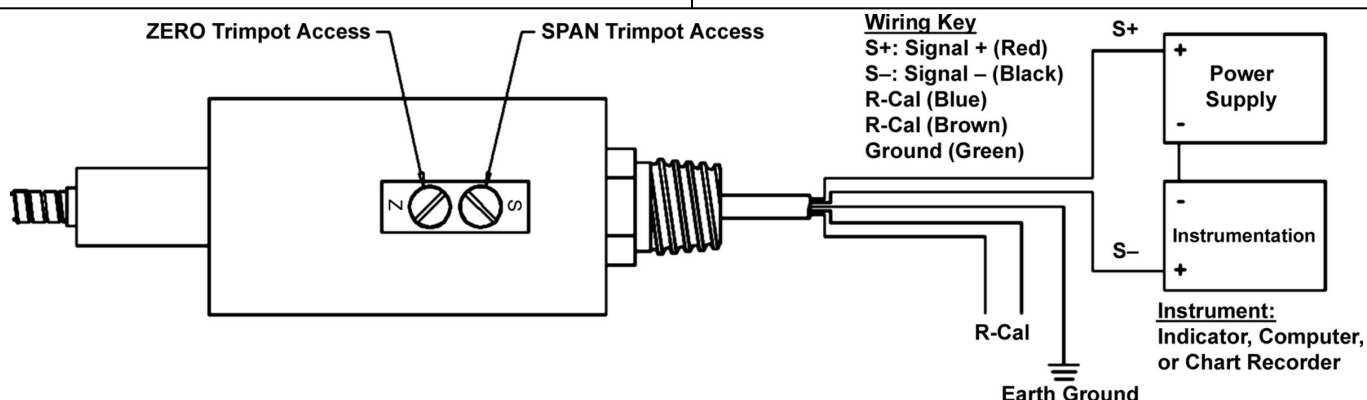
Wiring & Calibration

Wiring

The MF or WF Explosionproof Transmitter has a 5-wire NPT conduit connector. The power supply/instrument end of the cable should be wired as shown below. All electrical connections are per the Wiring Diagram and all state and local laws pertaining to Class I, Div. 1, Groups A, B, C, and D, and Class II, Div. 1, Groups E, F, and G Hazardous Locations.

Power Supply and Instrument Loading Requirements

Transmitter Output	4–20 mA
Power Supply Input	12–30 VDC (24 VDC recommended)
Max. Power Supply Current	10 A

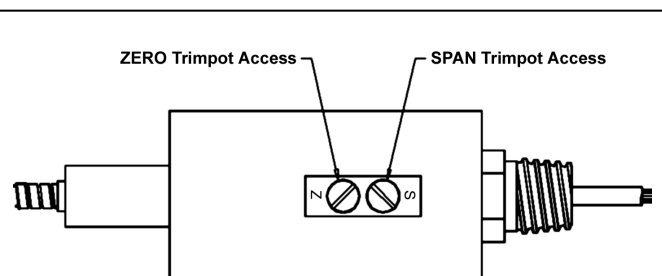


Transmitter Calibration

Calibration procedure

A readout or measuring instrument can be calibrated to provide precise pressure indication in the desired engineering units.

1. Bring the system to operating temperature without



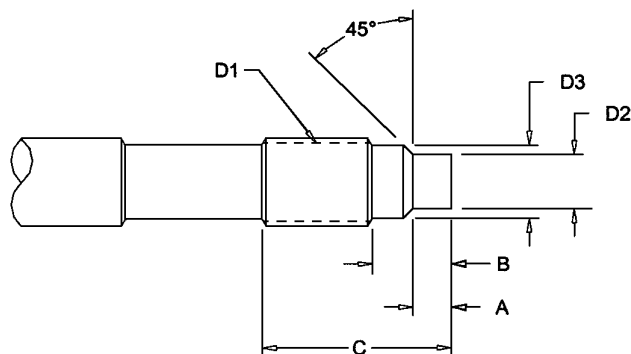
WARNING: The trimpt access screws must remain in the transmitter at all times while the device is in a hazardous location. Bring the environment to non-hazardous conditions before removing access screws to adjust zero.

applying pressure to the transmitter. A zero shift due to temperature will be observed. *This zero shift is normal and does not affect the span or linearity.*

2. The zero shift is corrected for by adjusting the zero trimpt until the readout indicates the correct zero-pressure value (4 mA output). Refer to diagram to right for trimpt locations. *Span is factory-set to 20 mA and does not require adjustment.*
3. Perform calibration procedure according to instrument instructions. Full-scale pressure is set by using the R-Cal, which is factory-set at 80% of full-scale pressure. R-Cal output is achieved by shorting the blue and brown wires.
 - a. Zero the indication on the instrument to compensate for the zero drift due to temperature.
 - b. Perform calibration of the instrument to display the calibration value (approx. 80% of full-scale output).
 - c. If instrument no longer indicates the zero correctly, repeat steps a & b.

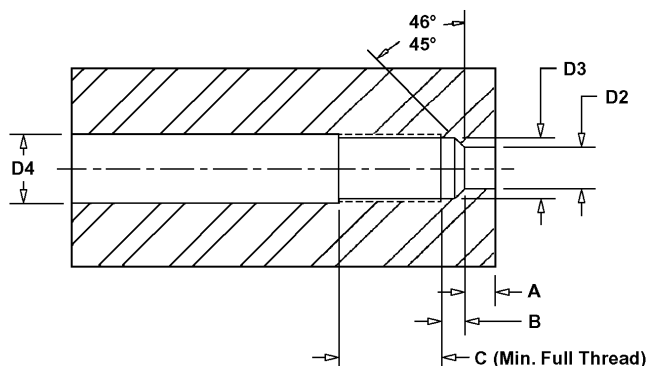
Mounting Hole & Transducer Mechanical Dimensions

Tip Dimensions



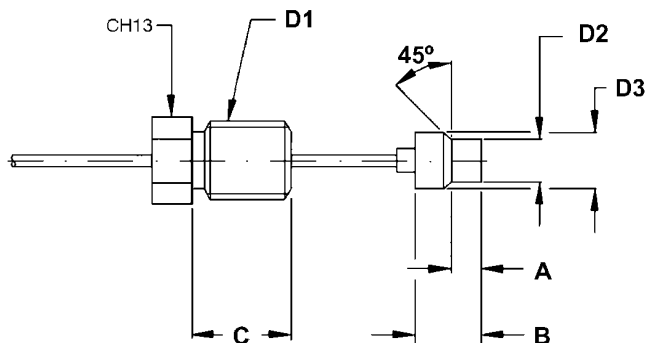
D1	1/2-20 UNF	M10x1.0	M14x1.5	M18x1.5
D2	.307/.305" [7.80/7.75mm]	.236/.234" [5.99/5.94mm]	.307/.305" [7.80/7.75mm]	.394/.392" [10.01/9.96mm]
D3	.414/.412" [10.52/10.46mm]	.336/.334" [8.53/8.48mm]	.475/.470" [12.07/11.94mm]	.630/.627" [16.00/15.92mm]
A	.219/.209" [5.56/5.31mm]	.256/.246" [6.50/6.25mm]	.236/.226" [5.99/5.74mm]	.236/.226" [5.99/5.74mm]
B	.450" [11.43mm]	.430" [10.92mm]	.480" [12.19mm]	.590" [14.98mm]
C	1.07" [27.2mm]	1.06" [26.9mm]	1.28" [32.5mm]	1.34" [34.0mm]

Mounting Hole Dimensions



D1	1/2-20 UNF	M10x1.0	M14x1.5	M18x1.5
D2	.313 ±.001" [7.95 ±.03mm]	.241 ±.001" [6.12 ±.03mm]	.319 ±.001" [8.10 ±.03mm]	.398 ±.001" [10.10 ±.03mm]
D3	.454 ±.004" [11.53 ±.10mm]	.344 ±.004" [8.74 ±.10mm]	.478 ±.004" [12.14 ±.10mm]	.634 ±.004" [16.10 ±.10mm]
D4	.515" [13mm] minimum	.515" [13mm] minimum	.630" [16mm] minimum	.790" [20mm] minimum
A	.225" [5.72mm] minimum	.263" [6.68mm] minimum	.240" [6.10mm] minimum	.240" [6.10mm] minimum
B	.17" [4.3mm] maximum	.11" [2.8mm] maximum	.16" [4.0mm] maximum	.16" [4.0mm] maximum
C	.75" [19mm]	.75" [19mm]	.75" [19mm]	.99" [25mm]

Exposed Capillary



Tip Dimensions (see diagram, left)

D1	1/2-20 UNF
D2	.307/.305" [7.80/7.75mm]
D3	.414/.412" [10.52/10.46mm]
A	.125/.120" [3.18/3.05mm]
B	.318/.312" [8.08/7.92mm]
C	.81" [20.6mm]

Mounting Hole Dimensions (see diagram, above)

D1	1/2-20 UNF
D2	.313 ±.001" [7.95 ±.03mm]
D3	.454 ±.004" [11.53 ±.10mm]
D4	N/A
A	.130" [3.30mm] minimum
B	.15" [4.3mm] maximum
C	N/A

Order Codes for Tools & Accessories

MOUNTING BRACKET		SF 18
CLEANING TOOL KIT		CT
1/2-20 UNF	12	
M18x1.5	18	

DUMMY PLUG		SC
1/2-20 UNF	12	
M18x1.5	18	

DRILL KIT		KF
1/2-20 UNF	12	
M18x1.5	18	

GEFRAN reserves the right to make any kind of design or functional modification at any moment without prior notice.



GEFRAN ISI, Inc. 8 Lowell Ave., Winchester, MA 01890, USA

Tel. 1-781-729-5249 — Fax 1-781-729-1468 — Internet: <http://www.gefran.com>



MAN-003
Rev. C — 04/03