

Installation Manual

4-20mA - Melt Pressure Transmitters
 Models: 4-20mA (MT., MK., MF., MN..)



MELT PRESSURE TRANSMITTER - Installation Guidelines

1. HOLE LOCATION

The best position to mount the transmitter is in front of the screw where the polymer is in a good molten state and shear stress is minimized. For reclaimed extrusion lines, care must be taken that the transmitter is situated far enough from hopper to ensure all pellets are melted. Partially melted pellets can damage the tip. Transmitter Housing should be installed such that it doesn't get beyond 150F. Care must be taken if transmitter is mounted on the top of extruder. Heat rises and will heat the housing. If you can touch the housing, it is probably fine. If necessary, flex armour style may be recommended to get housing away from heat.

2. DRILLING MOUNTING HOLE

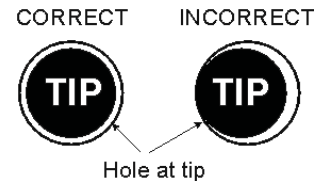
Follow outlines in the DRILL KIT MANUAL. Some points to take care.

a. MOUNTED HOLES CONCENTRICITY:

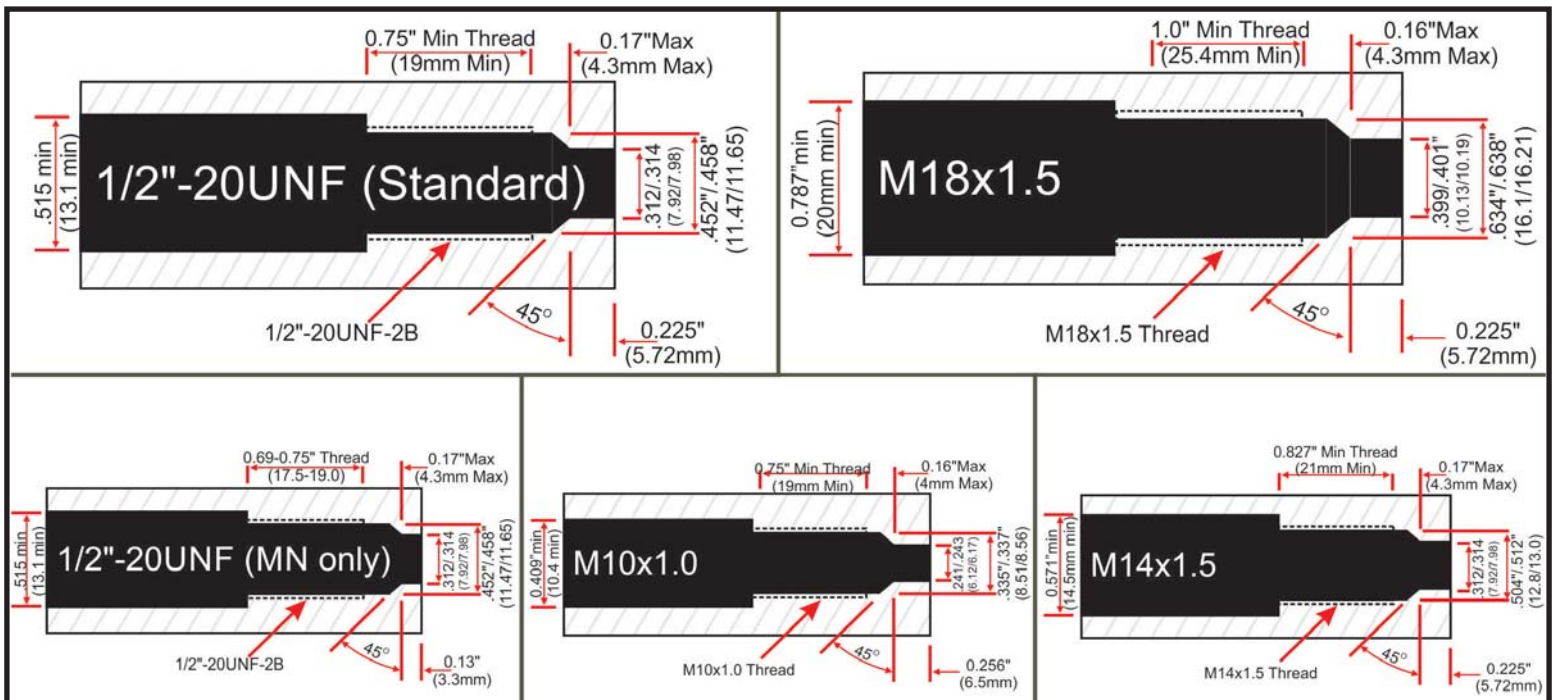
The transmitter tip must be mounted in the center of the hole (within 0.002"). If the tip is not in the center, the transmitter tip can be deformed during installation or removal. This can increase the error, or even cause the tip to fail prematurely.

b. RECESSING OF THE TIP

The transmitter tip should be installed within 0.08" to 0.1" of the interior of the extruder barrel. Any further, and this can create a cavity for polymers to collect, harden and then interfere with the pressure reading. Some materials (such as nylons and polycarbonates) will actually shrink and pull the diaphragm towards to interior of the extruder. This sometimes causes the diaphragm to be ripped off. These materials should be recessed to approx 0.005".



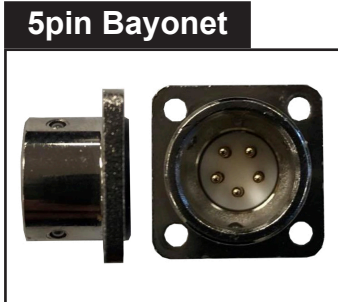
MOUNTING HOLE DETAILS



3. TRANSDUCER INSTALLATION

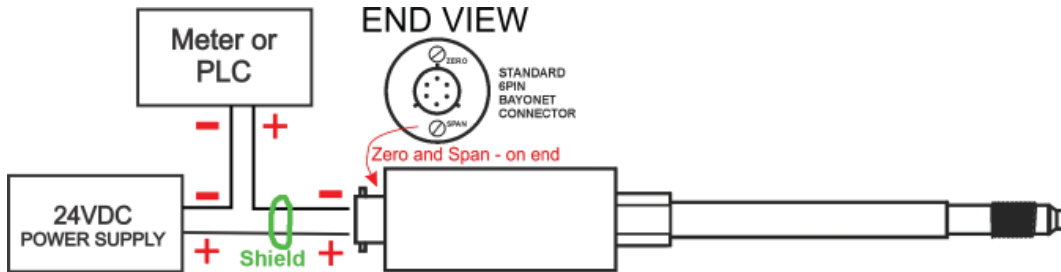
Use a high temp anti seize compound to make it easier to remove transducer.
 Mounting torque - 100-200inch/lbs (max 500inch/lbs)
 Polymer must be in a molten state when transducer is installed.

WIRING : MELT PRESSURE TRANSMITTERS



4-20mA – 5 PIN	
PIN	4-20mA(2wire)
1	SIGNAL (+)
2	n/a
3	SIGNAL (-)
4	n/a
5	RCAL

Standard 4-20mA DC, 2 wire Transmitter Wiring



ELECTRICAL INSTALLATION

1. WIRING DIAGRAM

See drawings above

2. CABLE+GROUND (26AWG, 6WIRE, SHIELD)

Shield may have to be connected to ground in a high noise environment. Do not connect ground to the meter.

4. ELECTRICAL HOOKUP

Care must be taken to avoid electrical noise interference from motors, heaters etc..
 Grounding - Transmitters are naturally grounded - so do not ground the shield (unless the machine is not grounded)
 Twisted Pairs - Reduces problems from induced currents.

5. PERFORM ZERO and SPAN CALIBRATION

Follow instrument guidelines.

****IMPORTANT FOR THE FOLLOWING STEPS: ENSURE PRESSURE IS 0psi AND THE TEMPERATURE IS AT OPERATIONAL TEMPERATURE (OR SLIGHTLY LOWER). IF THIS IS NOT FOLLOWED, THE INDICATOR READINGS WILL BE OFF.WAIT 30 MIN BEFORE MOVING ON - THIS IS IMPORTANT FOR GETTING THE HIGHEST ACCURACY POSSIBLE****

ZERO ADJUSTMENT

To compensate for pressure drift caused by temp changes.
 At operating temperature with no pressure on transmitter, adjust the pressure indicating device to read "0"

MELT PRESSURE TRANSDUCER - Operational Guidelines

A. AVOID COLD STARTS

If the extruder is not heated up properly, the polymer can be in a solid state by the transmitter.
If the extruder is then started, the diaphragm can be ripped off.

B. TRANSMITTER REMOVAL

The transmitter should only be removed or replaced while the machine is at operating temperature and the polymer is in a liquid state. Removal of the transmitter from a cold extruder may cause the polymer to adhere to the diaphragm, and pull off or damage the diaphragm. A transmitter should never be installed into a mounting hole where there is solid polymer. If the diaphragm is forced against a solid, the transmitter can easily be overloaded and left with a very high zero offset - too high to be rezeroed by the zero potentiometer on the instrument or even damage the tip altogether.

ALWAYS CLEAN and CHECK TIP RECESSION before reinserting transmitter.

C. TIP CLEANING

If the transmitter is removed from the barrel and it is still warm, the tip can be carefully cleaned with a clean soft cloth.

D. HOLE CLEANING

Mounting holes should always be cleaned prior to installation. Any burrs or hardened polymer material may cause the diaphragm to be damaged during installation.

As the inner extruder barrel wears, it can reduce the size of the transmitter hole.

Cleaning kits are available from MPI for 1/2-20UNF and M18x1.5 transmitter holes and this will help ensure hole is maintained at the right size..

E. CHECK TIP RECESSION BEFORE REINSERTING

As the extruder barrel wears, the transmitter tip will get closer and closer to the inner barrel wall. If it is allowed to be flush with the extruder inner barrel wall, it will wear at the same rate as the inner wall. MPI recommends maintaining a minimum 0.02" recession. Copper shims can be made to push the tip away from inner wall.

F. KEEP TRANSDUCERS DRY

Do not allow oil or water to come in contact with transmitter or cables.

TROUBLESHOOTING

1. INDICATOR FULL SCALE

Check continuity of cables
Make sure transmitter tip is not bottoming out

2. INDICATOR UNSTABLE READING

Check continuity of cables
Check wire connections on indicator is tight

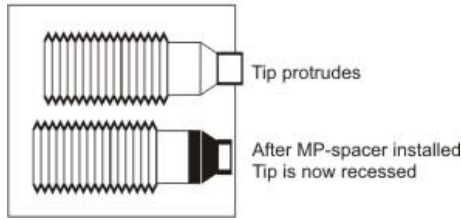
3. INDICATOR READS ONLY "0"

Check tip of transmitter for damage.
If still the same after calibration - return to MPI

4. INDICATES WRONG PRESSURE

Perform Calibration. - **AFTER 30min of warm up time.**
If still the same after calibration - return to MPI

TRANSMITTER / RUPTURE DISK - TIP SPACERS



STOCK LIST - TIP SPACER	
THICKNESS	1/2" -20 UNF
0.025" (0.64mm)	MP-SPACER-025
0.032" (0.81mm)	MP-SPACER-032
0.045" (1.14mm)	MP-SPACER-045
0.063" (1.60mm)	MP-SPACER-063
0.090" (2.29mm)	MP-SPACER-090

MOUNTING HOLE DRILL KITS



STOCK LIST - DRILL KITS	
MP-DRILL-1/2	1/2" -20 UNF
MP-DRILL-5/8	5/8" -11 UNC
MP-DRILL-M10	M10x1.0
MP-DRILL-M18	M18x1.5
MP-DRILL-M14	M14x1.5

MPI melt pressure transducer and transmitter mounting hole drill kits are used to make the highly precise holes that are required for proper pressure sensor and extruder rupture disk operation. Our drilling kits include tools for tip hole drilling, 45° seat surface, and thread tapping.

Drilling kits are available for the following threads: 1/2-20UNF, 5/8-11NC, 3/4-16UNF, M18x1.5, and M14x1.5. Custom thread options are also available.

Please note that the drilling should be performed with zero pressure in the system.

MOUNTING HOLE CLEANING KITS



STOCK LIST - DRILL KITS	
MODEL	THREAD
MP-CLEAN-1/2	1/2" -20 UNF
MP-CLEAN-5/8	5/8" -11 UNC
MP-CLEAN-3/4	3/4" -16 UNF
MP-CLEAN-M18	M18x1.5
MP-CLEAN-M14	M14x1.5

MPI melt pressure transducer/transmitter mounting hole cleaning kits are used to clean plastic residue from dirty or plugged holes before installing pressure sensors or extruder rupture disks. Hardened plastic residue is one of the leading causes of failures of melt pressure sensors or extruder rupture disks. The hardened plastic residue can damage the fragile diaphragm on the tip of the pressure sensors and extruder rupture disks, and can make them ineffective.

Cleaning kits include tools for tip hole cleaning, 45° seat surface, and thread cleaning. Please note that the cleaning should be performed when the polymer is molten, with zero pressure in the system.

Cleaning kits are available for the following threads: 1/2-20UNF, 5/8-11NC, 3/4-16UNF, M18x1.5, and M14x1.5. Custom thread options are also available.

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