

# Installation Manual

## STRAIN GAUGE (mV/V) - Melt Pressure Transducers

Models: (mV/V) - MP., MK., MF., MN..)



## MELT PRESSURE TRANSDUCER - Installation Guidelines

### 1. HOLE LOCATION

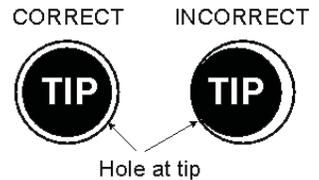
The best position to mount the transducer is in front of the screw where the polymer is in a good molten state and shear stress is minimized. For reclaimed extrusion lines, care must be taken that the transducer is situated far enough from hopper to ensure all pellets are melted. Partially melted pellets can damage the tip. Transducer Housing should be installed such that it doesn't get beyond 150F. Care must be taken if transducer 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:

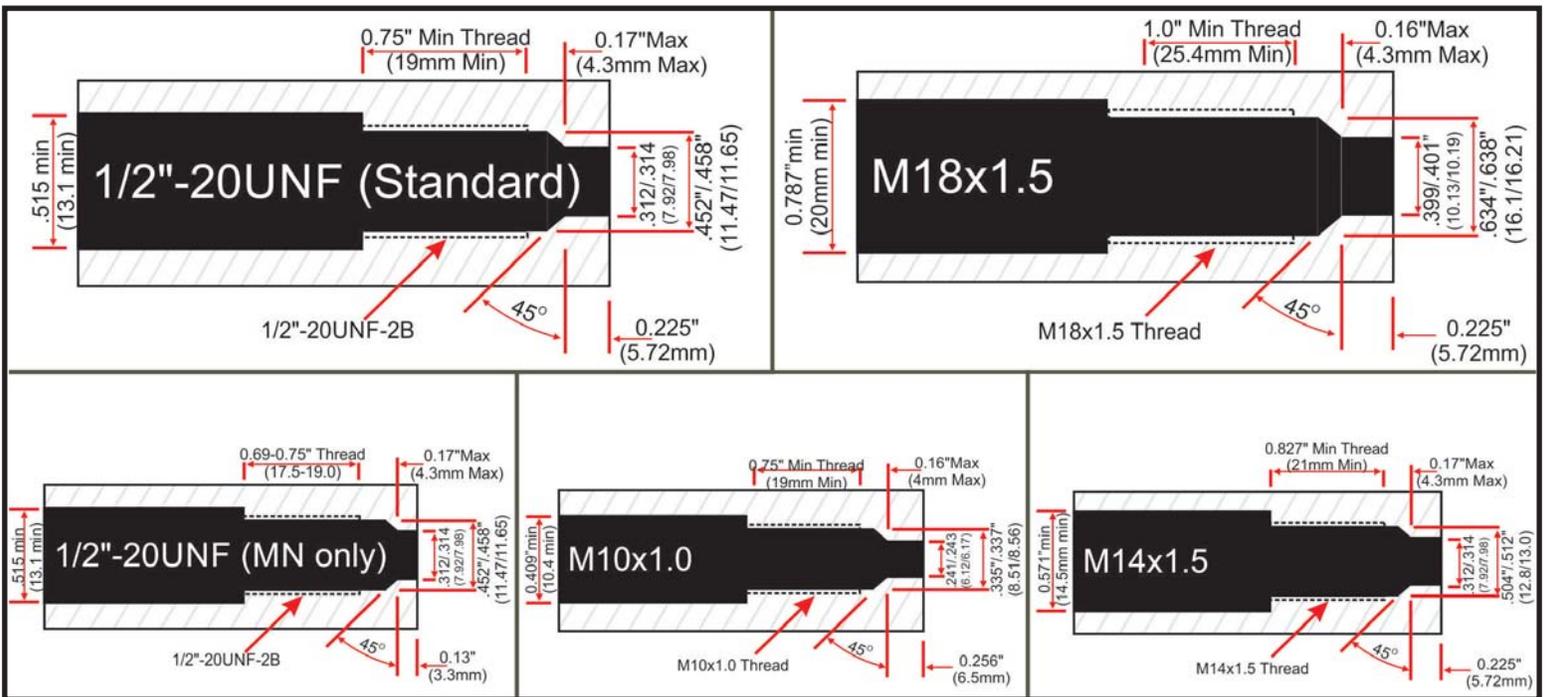
The transducer tip must be mounted in the center of the hole (within 0.002"). If the tip is not in the center, the transducer tip can be deformed during installation or removal. This can increase the error, or even cause the tip to fail prematurely.



#### b. RECESSING OF THE TIP

The transducer 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".

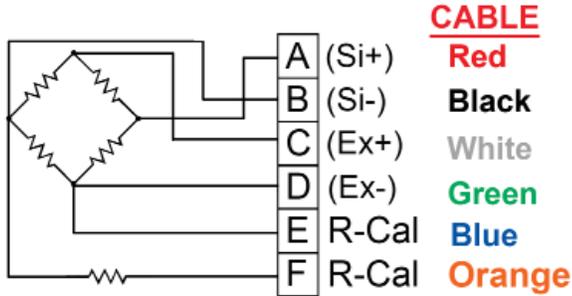
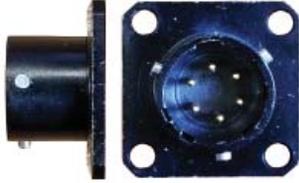
## MOUNTING HOLE DETAILS



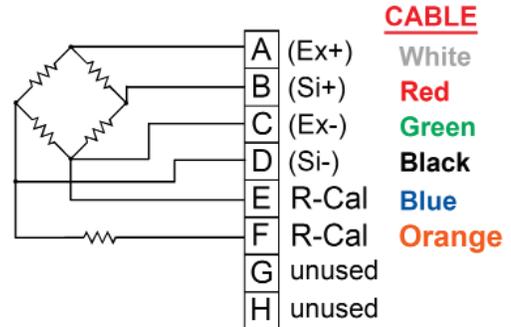
## 3. TRANSDUCER INSTALLATION

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.

### TRANSDUCER WIRING : 6pin BAYONET



### TRANSDUCER WIRING : 8pin THREADED



## 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.

### 3. ELECTRICAL HOOKUP

Care must be taken to avoid electrical noise interference from motors, heaters etc..  
 Grounding - Transducers 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

Ensure Indicator range and transducer range are the same

Follow instrument guidelines.

#### FOR MPI MODELS - MP9410, MP9610, MPT9610

1. Ensure pressure is 0psi, and to be performed at ambient temperature.
2. First ZERO transducer
  - Press **RETURN** + **AC** keys (1sec) - it should now read 0psi
3. Perform CALIBRATION
  - Press **RETURN** + **CAL** keys (1sec) - release **CAL** key only
  - continue to hold **RETURN** key until **PV** flashes 80% of full scale (ie. 8000psi for 10000psi transducer).
  - after releasing all keys - should see "0000" - indicates successful calibration.

## 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 transducer.  
If the extruder is then started, the diaphragm can be ripped off.

### **B. TRANSDUCER REMOVAL**

The transducer should only be removed or replaced while the machine is at operating temperature and the polymer is in a liquid state. Removal of the transducer from a cold extruder may cause the polymer to adhere to the diaphragm, and pull off or damage the diaphragm. A transducer should never be installed into a mounting hole where there is solid polymer. If the diaphragm is forced against a solid, the transducer 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 transducer.

### **C. TIP CLEANING**

If the transducer 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 transducer hole.

Cleaning kits are available from MPI for 1/2-20UNF and M18x1.5 transducer 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 transducer 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 transducer or cables.

## TROUBLESHOOTING

### **1. INDICATOR FULL SCALE**

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

### **2. INDICATOR UNSTABLE READING**

Check continuity of cables  
Check wire connections on indicator are tight  
Indicator and/or transducer-electronics - ambient temperature too high

### **3. INDICATOR READS ONLY "0"**

Check tip of transducer for damage.  
If tip damaged - return to MPI

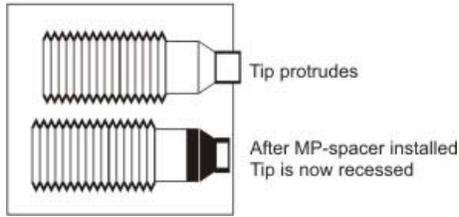
### **4. INDICATES WRONG PRESSURE**

Check Indicator and Transducer have the same range  
Perform Calibration.  
If still reading the wrong pressure - return to MPI

### **5. TRANSDUCER DOES NOT CALIBRATE :**

Check if melt pressure is at 0psi

## TRANSDUCER / 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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