



High Temperature Melt Pressure Transducer

Operation manual



1. GENERAL INFORMATION

1.1 General information

This manual refers to the following products:

MPT,HPT, RPT,XPT and must be kept near the equipment for easy reading and consultation. It must be read, understood, and strictly follow in order to avoid and prevent accidents and/or malfunctions.

Dwel will not be liable for any injury to people and/or damage to property deriving from disregard of this manual.

1.2 Copyright

Any re production of this document, even partial or for internal use, requires Dwel's approval.

1.3 Correct use

Dwel Melt pressure sensors with amplified or non-amplified electrical output are designed and built to measure the pressure and temperature variable of melted plastic at different temperatures according to the filling fluid used.

The correct temperature range is:

- Up to 315°C, for oil filled sensors
- Up to 400°C, for mercury filled sensors
- Up to 538°C, for NaK filled and liquid alloy filled sensors.

If the sensors are used as a safety component in accordance with the Machinery Directive, the equipment builder must take all necessary precautions to ensure that any malfunctions of the Melt pressure sensor do not injury to people and/or damage to property.

2. SPECIFICATIONS

Items	Transducer	Transmitter
Pressure range	0~50bar to 2000bar	0~35bar to 2000bar
Accuracy	$\pm 0.2\%FS$, $\pm 0.5\%FS$, $\pm 1.0\%FS$	
Repeatability	$\pm 0.2\%FS$, $\pm 0.4\%FS$, $\pm 0.8\%FS$	
Voltage	10VDC(6~12VDC)	24VDC(9~36VDC)
Output signal	3.0mV/V, 3.33mV/V	4~20mA, 0~10V
Max. temperature	315°C for oil filled, 400°C for mercury filled, 538°C for NaK and alloy filled	
Zero shift due to temperature change	$\leq 20 \text{ psi}/100^\circ\text{C}$ $\leq 0.15\text{MPa}/100^\circ\text{C}$	
Insulated resistance	$\geq 500M\Omega$	
Calibration	80% $\pm$ 1%FS	
Thread sizes	1/2-20UNF, M14x1.5, M18x1.5, M22x1.5 etc	

3. TRANSPORTATION AND STORAGE

3.1 The product is typically packaged individually. When storing, please ensure it is placed back into its original packaging to maintain protection.

3.2 A protective cap is fitted over the sensing diaphragm at the threaded end of the rigid rod. This cap must remain securely tightened during storage and should only be removed during installation. Do not touch or press the diaphragm with sharp or pointed objects, as this may cause damage.

3.3 For long-term storage, the following conditions must be met:

- Ambient temperature: -20°C to 85°C; Relative humidity: 0% to 100% RH
- The product must be kept away from rain, water seepage, or leakage.
- Exposure to vibration and shock should be minimized.

4. INSTALLATION, MOUNTING AND MAINTENANCE

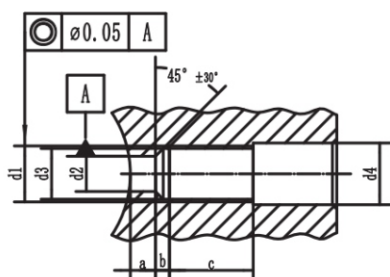
Correct installation of the melt pressure sensor is crucial to ensure reliable operation and a long service life. The melt pressure sensor's special location and the type of material in which it works demand extreme care when mounting it in the machine.

Following advice for extending the sensors lifetime:

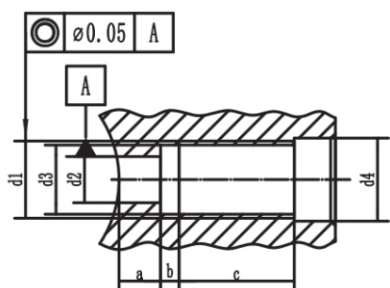
- Avoid impacts or abrasions to the sensing diaphragm. Always use the protective cap when the transducer is removed from its mounting position.
- The sensor seat must be precisely prepared using appropriate tools to ensure correct depth and axial alignment of the drilled and tapped hole. Pay close attention to coaxial alignment, misalignment greater than 0.2 mm can damage the transducer during installation. It is essential that hole depth guarantee the absence of chambers or air pockets in which extrusion material may be trapped. To prevent contact with the extrusion screw or with tools used to clean the extrusion chamber, the front diaphragm must not extend from the inner wall of the extruder.
- Before assembling the transducer in machines already in operation, make sure that the housing is clean. Remove any residual with the suitable cleaning device.
- Only remove the sensor when the machine is empty (no pressure) but still at operating temperature.
- Clean the sensor using solvents compatible with the material being processed. Avoid any mechanical contact with the diaphragm, as this can affect its performance or cause permanent damage.

4.1 Installation hole

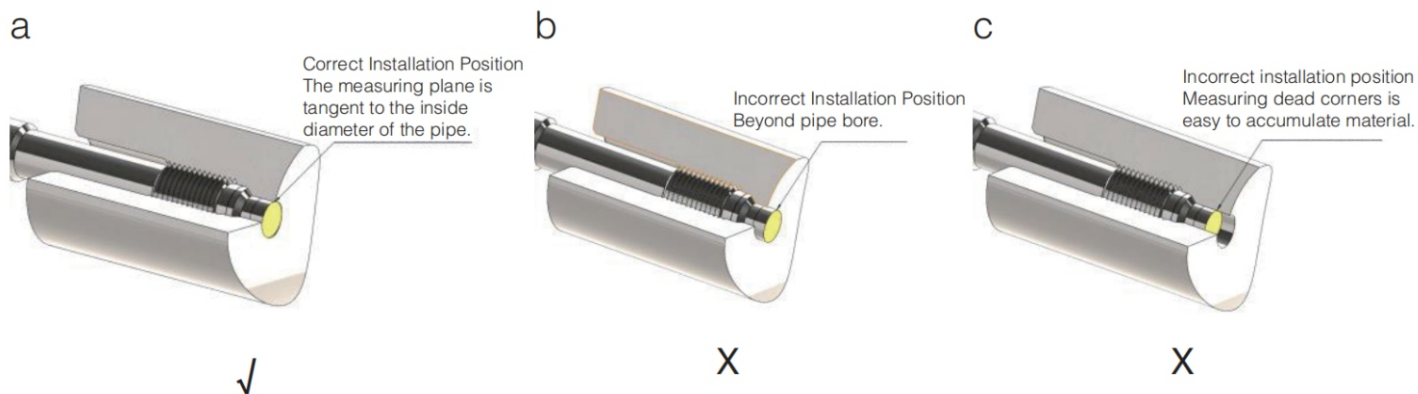
Before installing the sensors, ensure that the mounting hole is machined to the correct dimensions as specified below, and that it is free from any burrs or surface imperfections



d1	d2	d3	d4	a	b	c
1/2-20UNF	Φ8	Φ11.5	Φ14	5.7	3.2	19
M18×1.5	Φ10	Φ16.5	Φ20	6	4	25
M10×1	Φ6.2	Φ9.1	Φ14	6.7	3.2	19
M14×1.5	Φ8	Φ12.5	Φ15	5.7	3.2	19
G1/4	Φ8	Φ11.7	Φ14	5.7	3.2	19
M12×1.5	Φ8	Φ10.5	Φ14	5.7	3.2	19



d1	d2	d3	d4	a	b	c
G3/8	Φ10	Φ15	Φ18	9	4	25
G3/4	Φ18.1	Φ24.5	Φ28	12	5	35
M22×1.5	Φ16	Φ20.5	Φ24	10	5	40
M20×1.5	Φ14	Φ18.5	Φ22	5.7	3	35

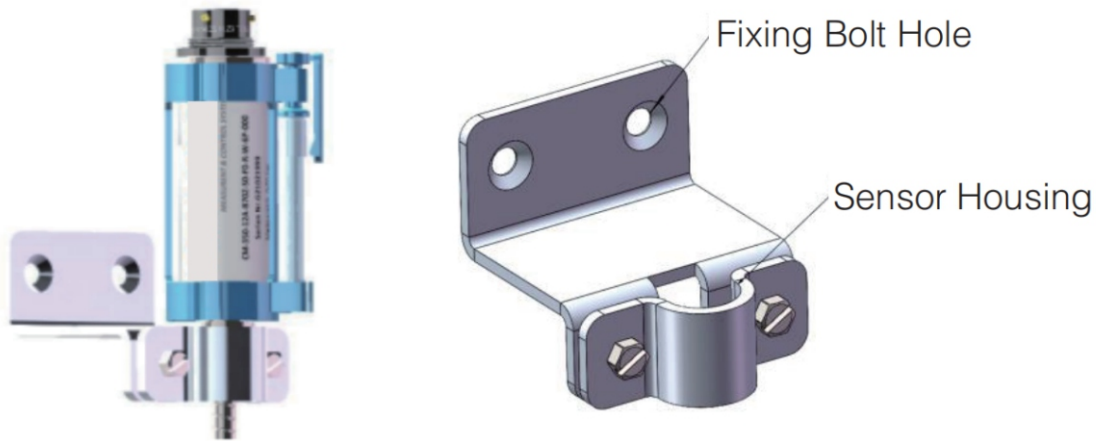


4.2 Installation procedure

1. Before installation the sensor, be sure the technical parameters printed on sensors are correct, mainly including installation thread, pressure range, output signal, power supply requirements.
2. Make sure the installation hole drilling size is correct, if the product is installed in the previously used installation hole, professional cleaning tools should be used to ensure that the installation hole is completely clean without any plastic residue.
3. Remove the protective cap from the sensor probe.
4. Apply high temperature anti-sticking grease on the surface of the sensor thread. If a gasket needs to be installed for plane sealing, apply high-temperature anti-sticking grease to the gasket and glue the gasket to the sensor.
5. Put the sensor into the mounting hole by hand first, and then use the wrench to tighten on the hexagonal. If the product is installed in the mounting hole previously used, it is recommended to complete the installation under the condition of heating to the plastic melting point. The recommended maximum mounting torque is 40 Nm.

4.3 Brackets

Models with flexible sheathing require precise fastening of the protective housing of the measurement point. We recommend bracket for fastening. Remember that the fastening point must be vibration-free (vibrations affect the measurement), avoid in strong magnetic environment and be exposed to rain or affected by water seepage/leakage, temperatures must not exceed 85°C.



4.4 Calibration procedure

Bring the system to work temperature with the transducer installed and connected to the measurement instrument without any pressure applied, then zero reset can be processed.

Melt pressure sensor (mV/V signal output) : Reset zero and calibrate on the display instrument only.

Melt pressure transmitter(with amplified output mA or Voltage):

- **"Z" point screw zero reset(MPT series).** For transmitters with "Z" screw on the top of sensor housing, take off the screw on "Z" position, press button to reset zero. (Please do not touch "S" point.)
- **Short-circuit zero reset remotely(HPT, RPT series).** Short pin D & F for 3 to 5 seconds to reset zero. Refer to "electrical connection" to find the definition of zero short-circuit wires.
- **Magnetic pen auto-zero(HPT, RPT series).** Put magnetic pen on marked spot 3~5 seconds then remove.

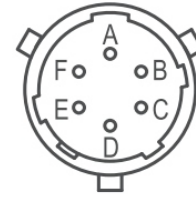
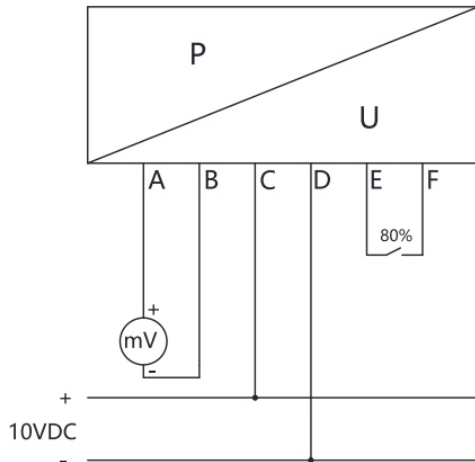
4.5 Removal

Sensor disassembly must be done under heated conditions (plastic melting point) without any pressure applied. When removing the sensor, apply force only to the shaft (hexagonal section). Do not apply any force to the sensor head to avoid damage. To continue the production line after removing sensors, the closing rods (DT12) with identical mechanical dimensions are recommended to block the hole.

After removing the sensor, use a soft cloth to quickly wipe the material on the diaphragm, sealing surface and thread.

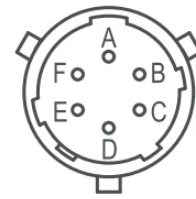
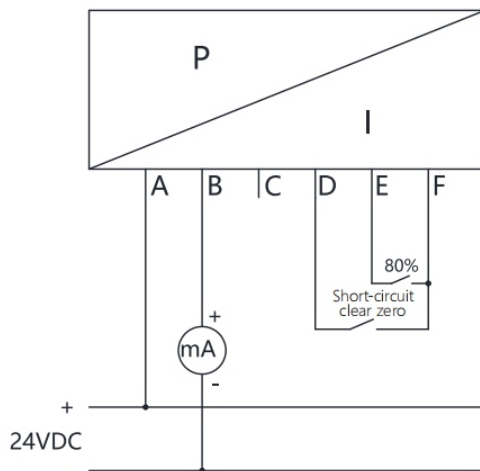
5. ELECTRICAL CONNECTION

3.33mV/V output



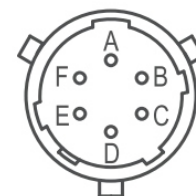
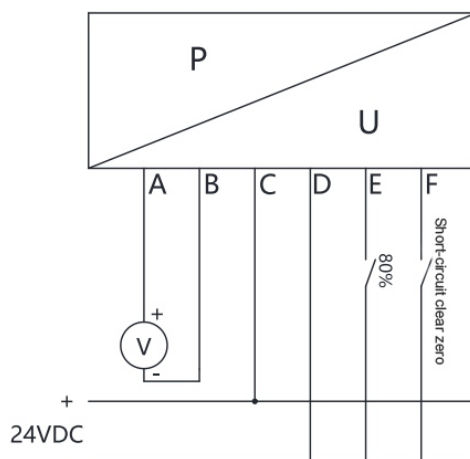
Binding post	definition	Cable color
A	signal+	red
B	signal-	black
C	Power+	white
D	Power-	green
E	80%+	blue
F	80%-	orange

4~20mA output



Binding post	definition	Cable color
A	signal+	red
B	signal-	black
C		white
D	Short-circuit clear zero+	green
E	80%+	blue
F	Short-circuit clear zero-/80%-	orange

0~10V output



Binding post	definition	Cable color
A	signal+	red
B	signal-	black
C	Power+	white
D	Power-/80-/ Short-circuit clear zero-	green
E	80%+	blue
F	Short-circuit clear zero+	orange