



Gneuss Measurement Technology

Melt Pressure Transducer Care & Maintenance for Extrusion

Gneuss has committed years of development to advanced sensors designed to offer higher accuracy, robust components for challenging environments, and known for excellent reliability. It is not enough to assume that without prescribed installation, preparation, and calibration of these devices, recommended maintenance is not of importance to realize longer life and anticipated accuracy.

Melt pressure transducers benefit extruder performance, material quality, process control, production safety, and protect machinery. Maintaining an optimal operating environment for the transducer is critical for precise measurement and consistent operation of the sensor.

- 1) **Storage of a Transducer:** Typical instrument storage is required, preferably in the original packaging, always utilizing a Gneuss tip protector (available from Gneuss at no additional charge), and never toss or drop these units in any case. Although Gneuss sensors incorporate improved vibration protection, generally most melt pressure transducers are not impervious to excessive shock.
- 2) **Transducer Installation:** A melt pressure transducer can also be damaged immediately upon insertion into an improperly machined hole. By applying torque to a transducer in a too-small or eccentric hole, can easily crush the tip diaphragm area, and as a result, the unit will no longer function. Gneuss offers an available *Boring Drill Kit*, to make sure the hole is the uniform size. Industry standard threads are ½-20 UNF & M18 A/B, and incorporate a 45 degree seating surface that allows the sensor to be self-sealing.
- 3) **Mounting Hole Preparation:** It is important that the transducer mounting hole has been cleaned and all plastic residues removed. It is recommended that all transducers be removed from the barrel before any barrel cleaning to avoid being damaged. Regarding special applications with frequent material changes or cool downs, Gneuss offers the patented *DAP series heated tip* sensors, which limit the potential for sensor damage of the membrane resulting from removal or frozen melt. Abrasion incurred from installing a transducer into a mounting hole with an incorrect thread gage will not only prevent a necessary seal, but the sensor will not function properly, even measuring a side load.
- 4) **Mounting Hole Cleaning:** To properly clean the hole, it is recommended that the technician use a quality *Gneuss Hole Cleaning Kit*, available for properly cleaning the seating surfaces and threads. To confirm the hole is satisfactory, by temporarily installing a rupture disc coated with machinist's blue (ink), when removed will indicate a burr or imperfection indicating further attention. Once the hole is ready for installation, it is recommended to apply *Gneuss GTL-1 anti-seize lubricant* specially formulated for high temperatures, thoroughly covering the sensor tip and threads.

- 5) **Sensor Torque Requirements:** After hand-tightening of the transducer, it is recommended that final torque be applied utilizing a certified torque wrench in measurement of inch-pounds. Final torque should be between 200 and 500 inch-pounds. If exceeding this torque limit or failing to measure torque will likely increase the threat of damage to the instrument. Other problems can result such as measuring a side load, unexpected positive pressure, or increased error range.
- 6) **Remote Mounting Applications:** If the electronics housing of the sensor is to be subjected to ambient temperatures exceeding 125C, it is recommended that the flexible *G-Armor* capillary “F” option model be selected, which this configuration will locate the housing away from the heat source to avoid temperature influence on the electronics. The “F” model includes a sensor mounting bracket (at no additional charge). Further, it is not recommended that flexible capillary models are unsecured, hang freely, or openly lie on the floor.
- 7) **Transducer Care:** Before re-installing a melt pressure transducer, it is best that the transducer is cleaned when it is still warm. Do not clean the sensor with a wire brush or corrosive cleaning compounds, and should only be wiped clean with a non-abrasive clean cloth. Pre-installation testing is always recommended by connecting to a *Gneuss DMV 4000* pressure digital display, to provide a voltage check of the output signal, or calibration.
- 8) **Transducer Electrical Connections:** Please refer to available Gneuss Measurement Technology Operating Instructions for proper electrical connections, wiring diagram, and calibration for *DA, DAI, DTA, DTAI, DAP, DAIP, and DAIX models*. These are available at www.gneuss.com or please contact Gneuss, Inc. at 704-841-7251.
- 9) **Transducer Removal:** The melt pressure transducer should only be removed while the machine is close to operating temperature and the polymer is liquid. Removal from a cold extruder will cause diaphragm damage from polymer adhesion. (The *Gneuss DAP* series sensors are less likely to be effected in these cases).
- 10) **Diaphragm Considerations:** In applications where corrosive or abrasive materials can shorten the life of the sensor, improvement options relating to the diaphragm are available from Gneuss. The advanced *G-Coating* is standard on all Gneuss sensors, and provides robust and durable wear protection for most applications. Other diaphragm material upgrade options available for critical applications are Inconel, Hastalloy, etc.