

Tubing Recommendations for Superior Sensor Pressure Ports

Purpose. This note provides practical guidance on selecting tubing inner diameter, material, and length for use with Superior Sensor pressure ports. Proper tubing choice helps optimize fit, reduce leakage risk, minimize dead volume, and maintain pneumatic response time.

Quick Reference

Parameter	Recommendation	Notes
Inner diameter	1/16 in (1.59 mm)	Preferred fit for the sensor port; helps reduce leakage risk and dead volume.
Larger tubing	Use a reduction coupling	Tubing with a larger inner diameter, such as 3/32 in, may be adapted with a reduction coupler.
Material for pressures below 15 psi	Silicone	More compliant and better able to conform to the port with lower mechanical stress.
Material for pressures at or above 15 psi	Polyurethane	Better suited to higher pressure operation when properly supported.
Tubing length	Keep as short as practical	Longer tubing increases pneumatic volume and slows response time. Note: Terminal pressure response is not impacted by tube length for Superior Sensor devices in the way that a flow - through sensors are impacted.

Diameter

Recommended tubing ID: For the best fit, use tubing with an inner diameter of 1/16 inch (about 1.59 mm). This size is preferred because it connects well with the port, reduces the chance of leaks, and minimizes dead volume, which can hinder dynamic response.

Using larger tubing: If the tubing's inner diameter is bigger, such as 3/32 in, use a reduction coupling to connect down to tubing compatible with the port diameter. With properly sized tubing, an external seal is not needed. Any convenient outer diameter can be used, as long as the tubing is mechanically supported and compatible with the application.

Material

Below 15 psi: Silicone tubing is typically recommended for pressures under 15 psi. Its flexibility allows it to easily conform to the port and reduces the risk of putting unnecessary stress on the sensor package.

15 psi and above: Polyurethane tubing is typically recommended for pressures of 15 psi or higher. It handles higher-pressure tasks better, but since it is stiffer than silicone, caution should be taken to prevent side loading, excessive bending, or unsupported tubing weight at the port connection.

Length and Response Time

Static measurement: Because these sensors are dead-ended instead of flow-through devices, tubing length does not cause a steady-state pressure drop the way it would in a flow-based pressure sensor.

Dynamic measurement: Tubing length remains important for response time. Longer tubing and increased internal volume raise the pneumatic settling time, causing the pressure at the sensor to take longer to reflect changes at the source. Smaller inner diameters and longer runs can further slow the dynamic response.

Application Boundaries

Final tubing selection depends on the application pressure, media, temperature range, and mechanical environment. Customers should verify chemical and sterilization compatibility, as well as long-term aging, for the intended use. Additionally, they should validate response time and mechanical robustness in the final system design.

Design Considerations

- Keep tubing as short as possible when a quick response is required.
- Avoid kinks, sharp bends, or restrictions that could disrupt pneumatic operation.
- Support tubing in high-vibration settings to lessen stress on the sensor port.
- In humid environments, avoid routing that could trap condensation near the port.
- For differential measurements, using matched tubing lengths can enhance symmetry in dynamic response.

For application-specific guidance, contact Superior Sensor Technology for help selecting tubing based on pressure range, media, package style, and response-time requirements.