Tubing Selection Guide

Although Parker's MPI™ Fittings have been engineered and manufactured to consistently provide high levels of reliability, no system's integrity is complete without considering the critical link: **tubing.**

This section is intended to help you properly select and order quality tubing, both annealed and medium-pressure cold drawn - 1/8 hard (unannealed).

Parker believes that proper tubing selection and installation are key to building leak-free, reliable tubing systems.

Parker's MPI™ Fittings have been designed to operate on a wide variety of "medium pressure" applications (6,000 to 15,000 psi).

General Selection Criteria

The data tables in this section will help you select the tubing that best satisfies the needs of the application.

The most important consideration in the selection of suitable tubing for any application is the compatibility of the tubing materials with the media to be contained.

System Pressure

The system operating pressure is another important factor in determining the type, and more importantly, the size of tubing to be used. In general, high pressure installations require strong materials such as stainless steel.Tube fitting assemblies should never be pressurized beyond the recommended working pressure.

Maximum Allowable Working Pressure Tables

Table 1 lists 316 stainless steel along with its associated general applications and recommended temperature ranges.

Tubing Compatibility

Table 1

Tubing Material	General Application	Recommended Temperature Range
Stainless Steel	High Pressure, High Temperature, Generally Corrosive Media	-425°F to 1200°F (1) (-255°C to 650°C)

(1) For operating temperatures above 800°F (425°C), consideration should be given to media. 300 Series Stainless Steels are susceptible to carbide precipitation which may lead to intergranular corrosion at elevated temperatures.

All temperature ratings based on maximum rated temperatures per ASME/ANSI B31.3 Chemical Plant and Petroleum Refinery Piping Code, 1999 Edition. The information listed in **Table 1** is general in scope. For specific applications, please contact Parker's Instrumentation Connectors Division, Product Engineering Department (256) 881-2040.

Tables 2 and 3 list the maximum suggested working pressure of various tubing sizes, according to material. Acceptable tubing diameters and wall thicknesses are those for which a rating is listed. Combinations which do not have a pressure rating are not recommended for use with MPI™ Fittings.

Medium Pressure Tubing

MPI™ Fittings are designed to work with stainless steel, seamless, cold drawn - 1/8 hard, (unannealed) tubing. Tensile strength is approximately 40% higher than that of annealed tubing.

Table 2

316 Stainless Steel (Seamless/Unannealed)			
Tube O.D. Size (in.)	Tubing Size	Working Pressure psi	Material*
1/4	1/4" O.D. x 1/8" I.D.	15,000	316 SS
3/8	3/8" O.D. x 1/4" I.D.	12,000	316 SS
9/16	9/16" O.D. x .359" I.D.**	10,000	316 SS

NOTE: Tubing working pressures calculated based on an allowable stress of 35,000 psi and a minimum tensile strength of 105,000 psi.

*Consult the factory for pressure tables regarding other materials.

**.359/.312 I.D. limited to 10,000 psi working pressure when used with MPI™ Fittings.

Instrumentation Grade Tubing

Table 3

316 Stainless Steel (Seamless/Annealed)								
Tube O.D. Size (in.)	WALL THICKNESS							
	.065	.083	.095	.109	.120	.134	.156	.188
1/4	10,300	13,300						
3/8	6,600	8,600	10,000	11,700				

NOTE: Tubing working pressures calculated based on an allowable stress of 20,000 psi.