



Series A-1000 Fitting Line

Specifications - Installation and Operating Instructions

The **Series A-1000** quality tube fittings have been designed and manufactured to provide reliable leak-free connections in a wide variety of applications. A reliable leak-free tubing system will be achieved by combining the proper selection and handling of tubing with the proper tube fitting selection and installation. The following information is provided to assist in the tube selection process.

Material

The tubing material chosen must be compatible with the system's contained media, pressure and temperature, as well as with the environment in which it will be installed. Also, the tubing and fittings materials should be similar for optimum sealing action to occur (stainless fittings for stainless tube, brass fittings for copper tube, carbon steel fittings for carbon steel tube, etc.). The mixing and contact of dissimilar materials may leave the system susceptible to galvanic corrosion and/or not allow proper tube fitting makeup to be achieved.

Pressure and Flow

The size of the tube's outside diameter (O.D.) and the necessary wall thickness are determined by the system's pressure and flow requirements. Table A details the suggested tubing sizes and wall thickness for use with instrumentation tube fittings. If no pressure is shown on the table for a particular size, the tube is not recommended for use with instrumentation tube fittings. The tubing system should not be utilized above the tube's maximum allowable working pressure.

Temperature

The system's operating temperature may affect the initial choice of tubing material and may also affect the maximum allowable working temperature for the given tube size (see Table B for temperature stress factors).

Light Gas Service

To provide a successful connection for light gas service, the tubing must have a thick enough wall to provide resistance for the setup action of the ferrules to further compensate for the tube's potential surface condition.

Handling and Installation

Surface scratches and gouges on tubing are a source of potential leaks. Some precaution when handling the tubing can help reduce surface scratches and maintain the surface finish as originally intended by the manufacturer. Tubing should never be dragged across rocks, blacktop, pavement, or tubing storage racks as scratches and gouges can occur. Sharp blades should always be used in the tube cutters or hacksaws used to cut the tubing so as to provide a clean, square cut. Dull cutting blades can cause internal and external hanging burrs, and cause the tubing to become oval and affect proper insertion within the fitting. As a good handling practice, tubing should always be deburred prior to tube fitting installation to help assure easy and complete tube insertion. Additionally, for bent tube assemblies, it is important to bend tubing prior to installing tube fittings, and to provide a sufficient straight length of tubing after the bend to allow the tube to be fully inserted into the fitting. Also, to eliminate weight stress from the tubing upon the fitting and to provide additional system support for vibration and thermal shock resistance, the tubing should always be supported by tube hangers, clamps or trays.

Safety

To help ensure the safe and reliable performance of tube fitting products, complete system design must be considered prior to the installation of the tubing and tube fittings. Determining the design compatibility of materials, media, flows, temperatures and pressures; as well as implementing proper installation, operation and maintenance of the system are the responsibilities of the systems' owners, designers and users.

Dwyer Instruments, Inc. Safety Reminders

All Dwyer Instruments, Inc. products are designed and manufactured with safety in mind. The following is a limited list of general safety tips as reminders of good safety practices:

- Do not install, tighten, or loosen a tube fitting while the system is under pressure.
- Do not loosen a tube fitting, nut or plug to relieve or bleed system pressure.
- Always use a back-up wrench to hold the tube fitting body steady when tightening or loosening tube fitting nuts.
- There is no need to disassemble a new tube fitting prior to use.
- Use proper thread lubricants and sealants on tapered pipe threads.
- Very soft, pliable plastic tubing requires a tube insert.
- Tube fittings and tubing material should be similar (stainless steel fittings on stainless steel tubing, etc.) with the tubing material being fully annealed.
- Do not weld tube fittings that are assembled. Prior to welding remove the nut and ferrules and protect the seat and thread area of the tube fitting by covering with a plug or another nut.

Lifetime Limited Warranty

Dwyer Instruments, Inc. guarantees all tube fittings and components to be free from defects in materials and workmanship. To initiate a warranty claim, suspected defective product must be returned to Dwyer Instruments, Inc. with the nature of potential defect documented for factory evaluation. Any product with a determined defect in material or workmanship will be replaced with equivalent product at no charge.

This warranty comprises the sole and entire warranty pertaining to items provided here under. There is no other warranty, guarantee express or implies representation of any kind whatsoever. All other warranties including, but not limited to, merchantability and fitness for purpose, whether expressed, implied, or arising by operation of law, course of dealing, or trade usage are hereby disclaimed. There are no warranties which extend beyond the description on the face hereof: and this warranty does not apply in cases of abuse, mishandling, or normal use depreciation. In no event, whether alleged to arise from breach of contract, expressed or implied warranty, by operation of law, negligence or otherwise, will Dwyer Instruments, Inc. be liable for any incidental, consequential, lost property, or other special damages of any kind whatsoever. The exclusive, only remedy under this warranty is the replacement of determined defective parts as set forth above.

Dwyer Instruments, Inc. standard terms and conditions of sale apply with the exception of item #8 which is superceded by the above Lifetime Limited Warranty for the specific A-1000 fittings shown on the previous/following pages.

STAINLESS STEEL TUBING - TABLE A																
Maximum Allowable Working Pressure (PSIG)																
Tube O.D. [Size (in)]	Wall Thickness of Tube (Inches)															
	.010	.012	.014	.016	.020	.028	.035	.049	.065	.083	.095	.109	.120	.134	.156	.188
1/16	5600	6850	8150	9500	12100											
1/8						8550	11000									
3/16						5450	7000	10300								
1/4						4000	5100	7500	10300							
5/16							4050	5850	8050							
3/8							3300	4800	6550	6250						
1/2							2450	3500	4750	5200						
5/8								2950	4000	4250	6050					
3/4								2400	3300	3600	4950	5800				
7/8								2050	2800	3150	4200	4850				
1									2400	2450	3650	4200	4700			
1-1/4											2850	3300	3650	4150	4900	
1-1/2											2350	2700	3000	3400	4000	4900
2											2000	2200	2500	2900	3600	

Stress Factors For Determining Tubing Pressure Ratings at Elevated Temperatures - TABLE B		
Temperature		Stainless Steel 316
°F	°C	
100	38	1.00
200	93	1.00
300	149	1.00
400	200	.97
500	260	.90
600	316	.85
700	371	.82
800	427	.80*
900	482	.78*
1000	538	.73*
1200	649	.37*




* The precipitation of chromium carbides potentially resulting in intergranular corrosion may occur when exposed to operating temperatures.

Dwyer® Tube Fittings

INSTALLATION INSTRUCTIONS

- Dwyer® tube fittings come individually bagged and completely assembled for immediate use. There is no need for disassembly prior to use. Simply remove the tube fitting from its bag, insert the tube until it bottoms in the Dwyer® tube fitting body and then hand tighten the Dwyer® nut. See Figure #1.
- While holding the fitting body stable with a back up wrench scribe the nut for a reference point and wrench tighten the nut 1-1/4 turns for sizes 1/4" - 1" and 3/4 turn for sizes 1/16" - 3/16". See figures #2 and #3.

[Note: For all sizes, tighten plugs (P), machined ferrule and at port connector (PC) and the Dwyer end of the AN adapter (ANF) only 1/4 of a turn.]

MADE IN USA