

1 1/4" Reduced Footprint Flaretek® Fitting Heated Flare

Assembly procedures

PRODUCT SPECIFICATIONS

OD tube size	1 1/4"
Wall thickness	1.9 mm (0.075")
Temperature	24°C (75°F)
PVDF nut FL(X)-1S	517 kPa (75 psig)
PFA nut FL(X)-3S	517 kPa (75 psig)
FluoroLine® PFA tubing	552 kPa (80 psig)
Torque	13.6 N•m (120 in•lbs)*
Body material	PFA

*This value is the required torque applied to the nut. See torque wrench calculation.

NOTE: Entegris does not provide protection for overpressurized components.

NOTE: For side load and tensile pull information, please consult the factory.


Chemical Compatibility

Refer to Entegris' Fluid Handling Systems catalog for chemical compatibility information.

FLARETEK® FITTING CONNECTION

The flaring process provides a permanent expansion (flare) of the tubing end, allowing insertion of the Flaretek fitting body.

Proper tube flaring and Flaretek fitting assembly results in a secure tubing connection.

 **WARNING! Improper fitting assembly could result in connection failure. Please follow assembly instructions carefully.**

Entegris recommends these procedures for flaring standard wall Entegris 1 1/4" PFA tubing only (0.075" wall thickness).

NOTE: The tubing cools rapidly so please read and understand all instructions before flaring your tubing.

TUBING PREPARATION

1. Cut the tubing end squarely (0.070" maximum squareness tolerance) using an Entegris tubing cutter (part number 213-30).
2. Insert the cut end of tubing through the non-threaded end of the nut.

⚠ WARNING! If you do not put the nut on the tube now you will not be able to put it on after you complete the flare.

HEAT FLARING INSTRUCTIONS

1. Using an Entegris hot air gun, set the hot air gun on "high." Hold the PFA tubing ½" to ¾" above the heater and slowly rotate the tubing 360° for two minutes or until a fine, clear line appears around the tubing. (See Figure 1).

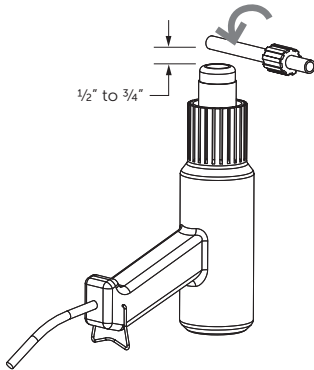


Figure 1.

NOTE: It is very important to fully rotate the tubing over the heat source so all surface areas receive an equal amount of heat. Uniform heating is essential to making a good flare.

2. Remove the PFA tubing from the heat source. Immediately push the flaring mandrel (part number 213-163) into the tubing until the end of the tubing reaches the tube stop (see Figure 2).
3. Firmly hold the tubing onto the mandrel for one minute.

4. Let the flared tubing continue to cool on the mandrel for two minutes.

NOTE: A water bath can be used to cool the tubing.

5. The flaring process is now complete and the tubing may be removed from the mandrel.

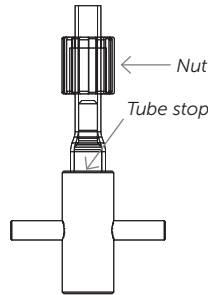


Figure 2.

FLARETEK FITTING ASSEMBLY INSTRUCTIONS

1. Push the flared tubing end onto the Flaretek fitting body until the end of the fitting body contacts the flare shoulder of the tube (see Figure 3). The maximum gap between the tube end and fitting shoulder should be approximately 0.08"
2. Tighten the nut onto the fitting body until handtight.
3. Using the wrench (part number 213-200), tighten nut an additional ¼-turn or 13.6 N•m (120 in•lbs) torque.

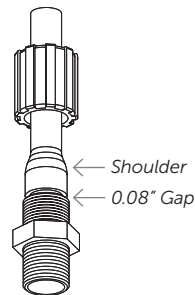


Figure 3.

TROUBLESHOOTING – FLARETEK TUBING FITTING ASSEMBLY

PROBLEM	POSSIBLE CAUSE	SOLUTION
After flaring the tubing, one side of the expanded portion of the tubing is wrinkled and shorter than its original length.	The tubing was not heated evenly. The wrinkled areas were overheated.	The wrinkles can be avoided by rotating and moving the tubing through the heat source with more uniformity. Cut off the flared tubing end and reflare.
The tubing kinks when pushing it onto the flaring mandrel.	The tubing was not heated properly before flaring.	½" to ¾" of the tubing needs to be heated. Closely follow the recommended heating times. Cut off the flared tubing end and reflare.
When the flared tubing is pushed onto the fitting body the tubing is more than 0.08" away from the threaded area of the fitting body.	The tubing was not pushed onto the flaring mandrel all the way or the tubing was removed from the mandrel before it was cool. OR Mandrel is worn out.	Tubing may need longer heating time or longer cooling time on the flaring mandrel. Cut off the flared tubing end and reflare. OR Replace mandrel.
The flared tubing will not fit onto the fitting body.	The tubing was removed from the mandrel before it was cool.	Reheat and reflare the undersized flared tubing end. Allow adequate cooling time prior to removing from the flare mandrel. OR Cut off the flared tubing end and reflare. Be sure the tubing is cool before removing it from the mandrel.
Changes need to be made to a line after chemical has been run through the system. There is potential for vapor explosion in the line or hazard to the operator.		Heated flaring should only be attempted with tubing that has not been exposed to chemical.

When using an Entegris flare fitting wrench, the torque reading must be adjusted on the torque wrench to compensate for the wrench extension length.

$$G = (L \times T) \div (L + E)$$

G = Torque wrench reading (in•lbs)

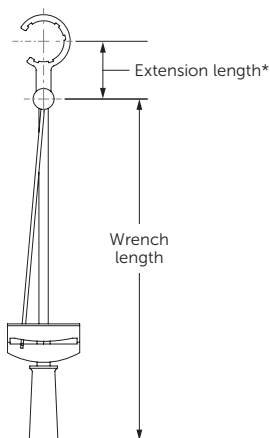
L = Torque wrench length (inches)

T = Torque desired (in•lbs)

E = Extension length (e.g. 3.10")

Example: wrench length = 12.0"
extension length = 3.10"
torque desired = 120 in•lbs

$$(12 \times 120) \div (12 + 3.1) = 95.36 \text{ in}\cdot\text{lbs}$$



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