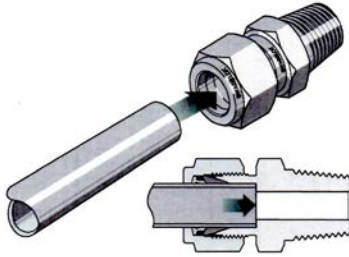


SWAGELOK Quick Guide

Initial Assembly of Tube Fittings

Up to 1 inch

1. Fully insert the tube into the fitting and against the shoulder. Rotate the Nut finger-tight.



2. Further tighten the nut until the tube will not turn by hand or move axially in the fitting.

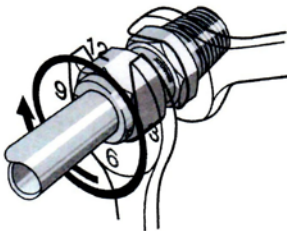
3. Mark the nut at the 6 o'clock position.

4. While holding the fitting body steady, tighten the nut **one and one-quarter turns** to the 9 o'clock position.

For 1/16, 1/8, and 3/16 inch; tighten the nut **three-quarters turn** to the 3 o'clock position.

5. Conduct Gap Gauge inspection.

6. Mark the tube at the back of the nut and mark a line across the nut and fitting body flats.



Initial Assembly of Tube Fittings

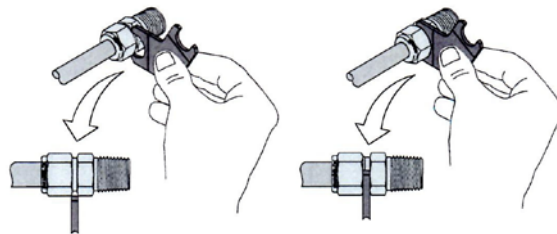
Over 1 inch

1. Pre-swage the ferrules onto the tube using a Swagelok Multihead Hydraulic Swaging Unit (MHSU).
2. Apply the lubricant packaged with the fitting lightly to the body threads and the rear surface of the back ferrule.
3. Insert the tube with pre-swaged ferrules into the fitting until the front ferrule seats against the fitting body; rotate the nut finger-tight.
4. Mark the nut at the 6 o'clock position.
5. While holding the fitting body steady, tighten the nut **one-half turn** to the 12 o'clock position.

Use the Swagelok MHSU gap inspection gauge to ensure that the fitting has been tightened sufficiently.

Gaugeability

On initial inspection, the Swagelok gap inspection gauge assures the installer or inspector that a fitting has been sufficiently tightened. Position the Swagelok gap inspection gauge next to the gap between the Nut and Body.



If the gauge **will not** enter the gap, the fitting is sufficiently tightened.

If the gauge **will** enter the gap, additional tightening is required.

Reassembly of Tube Fittings

All Sizes

Note: Always depressurize the system before disassembling a Swagelok tube fitting.

1. Prior to disassembly, mark the tube at the back of the nut; mark a line along the nut and fitting body flats.



Use these marks to ensure that you return the nut to the previously pulled-up position.

2. Insert the tube with pre-swaged ferrules into the fitting until the front ferrule seats against the fitting body.



Over 1 inch sizes: If needed, reapply lubricant lightly to the body threads and the rear surface of the back ferrule.

3. While holding the fitting body steady, rotate the nut with a wrench to the previously pulled-up position, as



indicated by the marks on the tube and flats. At this point, you will feel a significant increase in resistance. **Tighten the nut slightly.**

4. Remove the previous markings.

5. Re-Mark the tube at the back of the nut and mark a line across the nut and fitting body flats.



Note: Do not use the Swagelok gap inspection gauge with reassembled fittings.

Caps & Plugs



Caps

Same as Swagelok tube fitting initial installation and reassembly, up to 1 inch.



Plugs

While holding fitting body steady, tighten the plug **one-quarter turn** from the finger-tight position.

For 1/16, 1/8/ and 3/16 inch, tighten the plug one-eighth turn.

For over 1 inch tighten the plug one-quarter turn.

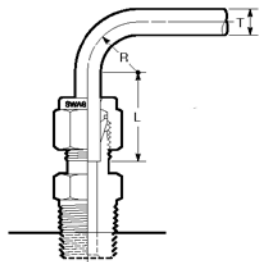
Minimum Straight Tube Length

Fittings near tube bends must have sufficient length of straight tubing to allow tube to be bottomed in the fitting.

T Tube OD.

L Required straight tube length (see table) (corresponds to straight tube length mark on hand bender)

R Radius of tubing bend



Straight tube length mark



Fractional, in.	
T Tube OD	L ^①
1/16	1/2
1/8	23/32
3/16	3/4
1/4	13/16
5/16	7/8
3/8	15/16
1/2	1 3/16
5/8	1 1/4
3/4	
7/8	1 5/16
1	1 1/2
1 1/4	2
1 1/2	2 13/32
2	3 1/4

① Required straight tube length.

Reassembly

You may disassemble and reassemble Swagelok plugs many times. Make subsequent connections by slightly tightening with a wrench after snugging the nut by hand.

Turns Comparison

Initial Assembly

Fittings 1/16", 1/8", 3/16" ----- 3/4

Fittings 1/4 inch to 1 inch -- 1 1/4

Fittings over 1 inch ----- 1/2

Caps 1/4 inch to 1 inch ----- 1 1/4

Plugs 1/4 inch to 1 inch ----- 1/4

Safety Precautions

- Do not bleed the system by loosening fitting nut or fitting plug.
- Do not assemble and tighten fittings when system is pressurized.
- Make sure that the tubing rests firmly on the shoulder of the tube fitting body before tightening the nut.
- Use the correct Swagelok gap inspection gauge to ensure sufficient pull-up upon initial installation.
- Always use proper thread sealants on tapered pipe threads.
- Do not mix materials or fitting components from various manufacturers – tubing, ferrules, nuts, and fitting bodies. (only Swagelok tube fittings and parts are to be used in the Carson refinery).
- Never turn fitting body. Instead, hold fitting body and turn nut.
- Avoid unnecessary disassembly of unused fittings.
- Use only long reducers in female Swagelok end connections.

SWAGELOK Quick Guide

rev 2 (12-1-2015)



Note order and orientation of fitting components. (Body, front ferrule, back ferrule, nut)

References:

An Installers Pocket Guide for Swagelok Tube Fittings

www.swagelok.com

MNT-INST-050 Swagelok Tubing - Installation & Reassembly Maintenance Procedure.doc

OPS-1015 Hammer testing, Tubing Fitting check, & Leak check.doc

SOJAs: PF3-SOJ-003 initial assembly
PF3-SOJ-014 reassembly