**SWAGELOK Quick Guide**

**Initial Assembly of Tube Fittings**

**Up to 1 inch**
1. Fully insert the tube into the fitting and against the shoulder.
2. Rotate the Nut finger-tight.
3. Further tighten the nut until the tube will not turn by hand or move axially in the fitting.
4. Mark the nut at the 6 o’clock position.
5. 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.*
6. Mark the tube at the back of the nut and mark a line across the nut and fitting body flats.

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

**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.

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.

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.

Turns Comparison

Initial Assembly

Fittings 1/16”, 1/8”, 3/16” ----- ¾
Fittings up to 1 inch -------- 1 ¼
Fittings over 1 inch --------- ½
Caps -------------------------- 1 ¼
Plugs -------------------------- ¼

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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