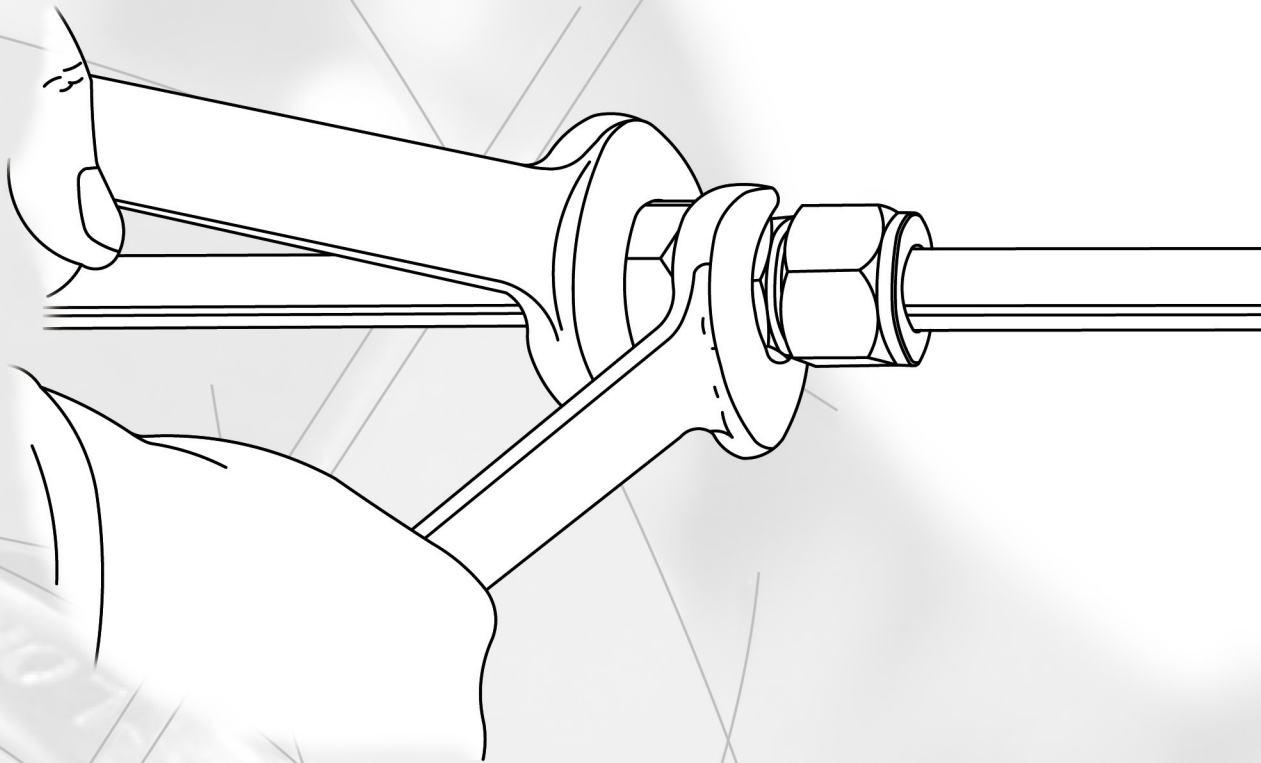




Hy-Lok Tube Fitting Installation Instruction



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HY-LOK CORPORATION

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1. Tube Fitting Trouble Shooting

I. Tubing Preparation

1. Tube

Hy-Lok Tube Fitting consists of 4 components such as Body, Front ferrule, Back ferrule and Nut. And the 5th component is Tube.

1.1 The way to handle and store the tube

Your carelessness for tube might affect tube's quality.
But your proper treatment and storage of tube will make it work perfect without any leak problems.

1) Surface damage :

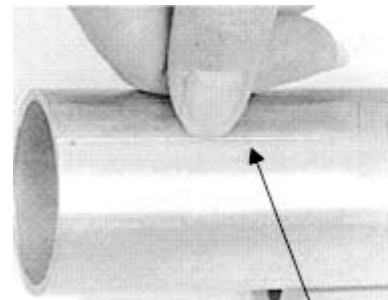
Damaging a surface scratched by sharp objects.

2) Out of round Tube :

Be pressed by a heavy load onto tube.

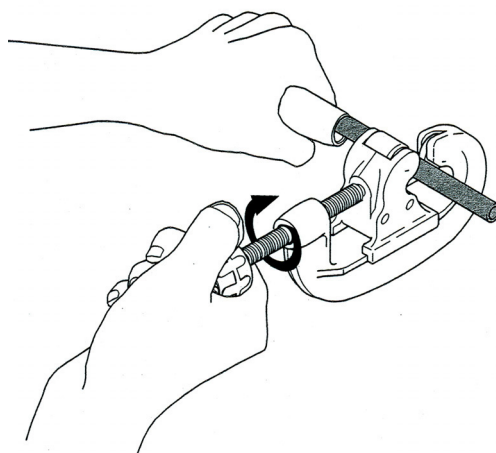
3) Dirt :

Be mingled by oil or dirt



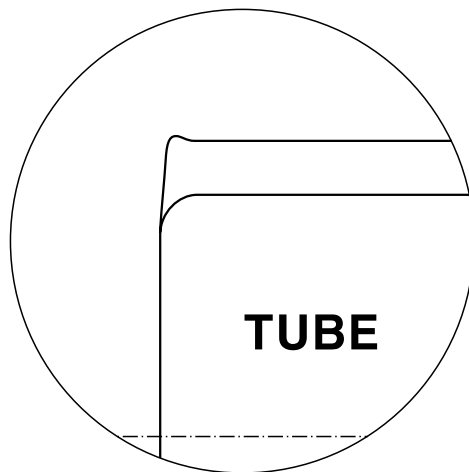
1.2 Tube Cutting

Use the appropriate 'Tube Cutter' to cut the tube and secure 90° Tube end.
If not, tube might have damage.



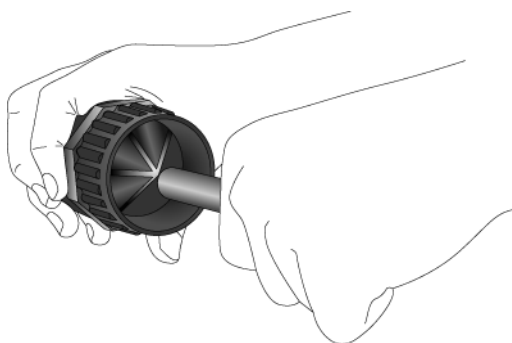
⚠ CAUTION

If the Cutting Wheel is too dull, the end of the tube part will crawl up.
So, tube's external diameter will be large.
Make sure you use sharp Cutting Wheel. (Refer to below sketch.)

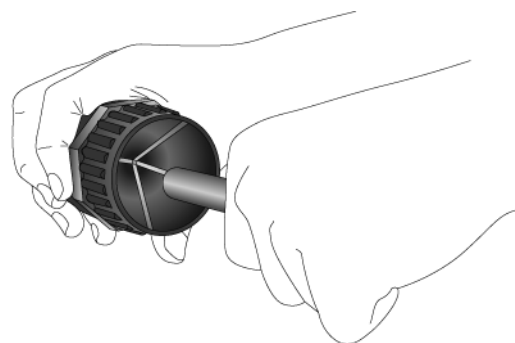


1.3 Tube Deburring

Remove the internal / external burr from tube by using Deburring tool.



Internal Deburring



External Deburring

⚠ CAUTION

After Deburring, remove the chips.
Do not put finger inside cutting tool or near cutting edges.

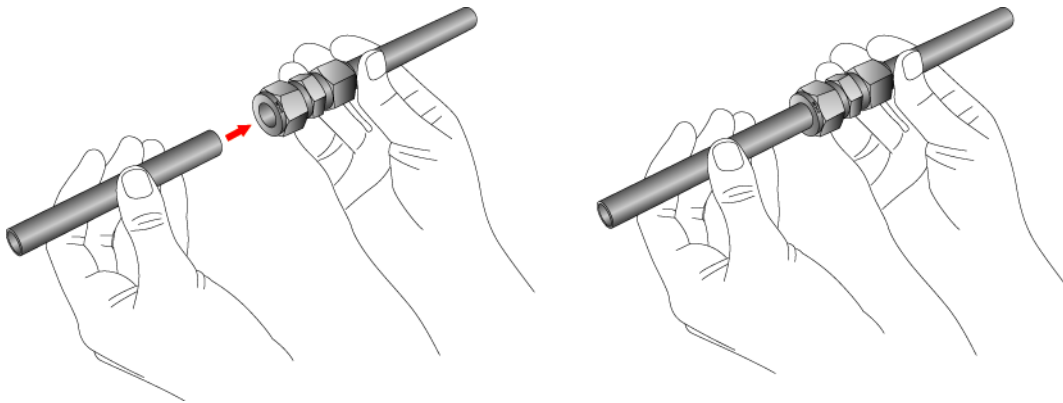
II. Tube Fitting Installation Instruction

1. Hy-Lok Tube Fitting Installation

Hy-Lok Tube Fitting is very easy to install by only using simple equipment.
The assembly process divides in 3 steps.

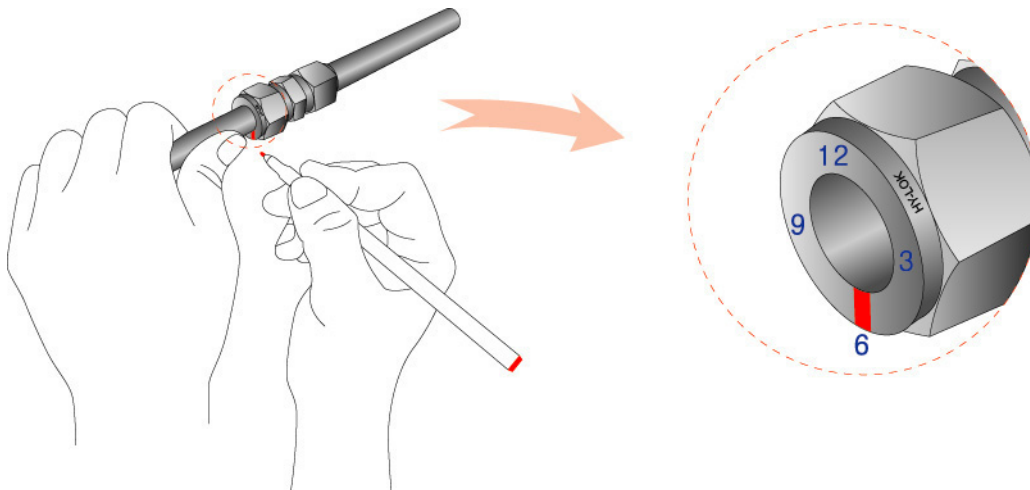
Step 1

Insert the tubing into Hy-Lok Tube Fitting and make sure the tubing rests firmly on the shoulder of the fitting and nut is finger tightened.



Step 2

Before tighten the nut, mark the nut at the 6 o'clock position.



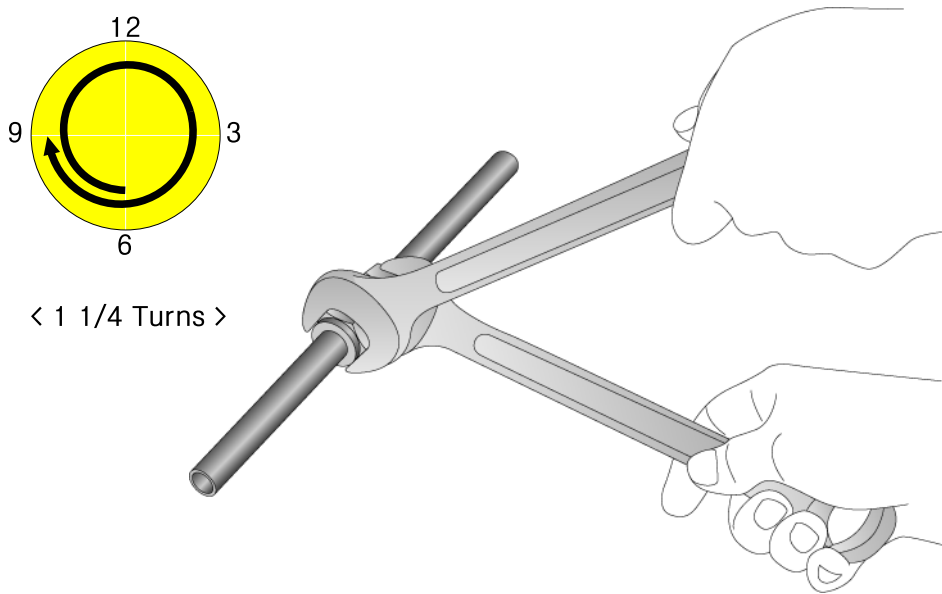
Step 3

While fixing the fitting using wrench, tighten the nut 1–1/4 turns.*

The mark on the nut 1 turn and continue tightening till the mark is located 9 o'clock position.

The mark on the nut turns 1–1/4 and it is 9 o'clock position.

You will be sure that the fitting has been properly tightened.



* **Note** : For 1/16, 1/8, 3/16 inch, 2,3 and 4 mm size, tighten 3/4 turn only.

CAUTION

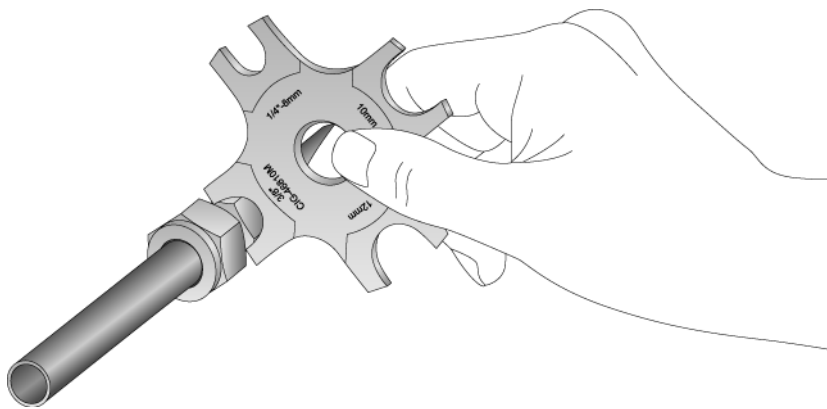
Do not turn fitting instead of nut.

It might cause scratch on sealing surface and it makes leak problem.

2. Gap Inspection

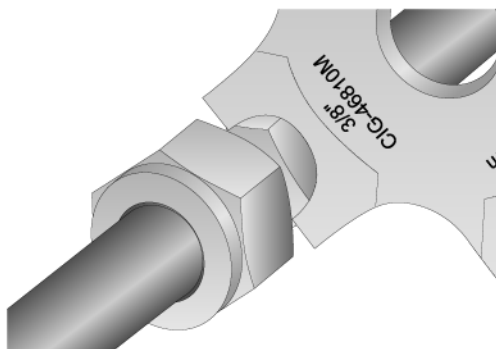
Gap Inspection helps operator or inspector to check if the fitting turns 1-1/4 exactly.

2.1 When fitting is assembled for the first time, use Inspection Gauge.



2.2 If Inspection Gauge doesn't be inserted between nut and body hex, this mean fitting is sufficiently tightened.

2.3 If Inspection Gauge fits between nut and body hex, this mean fitting is not sufficiently tightened. Thus, tighten the nut till Inspection Gauge doesn't fit them.



No Go
< Sufficiently tightened >



Go
< Insufficiently tightened >

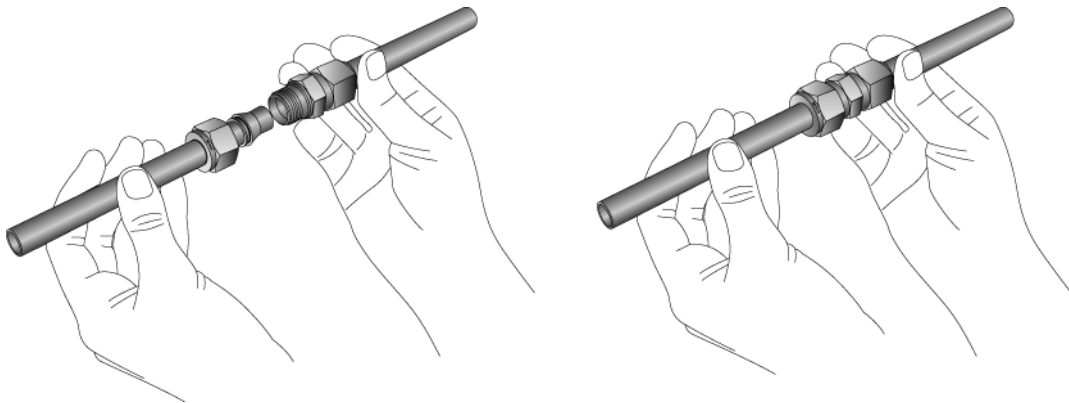
⚠ CAUTION

If you do Re-Assembling or Pre-Swaging, please do not use Inspection Gauge.

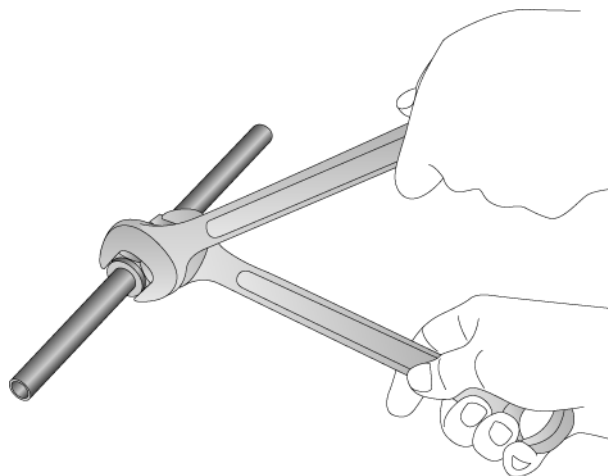
3. Re-Assembling

Hy-Lok Tube Fitting is possible to disconnect and re-assemble many times. The same reliable, leak-proof tightening can be obtained every time the connection is made.

- 3.1 Insert tubing with Pre-Swaged ferrules into fitting body until front ferrule seats, then finger-tighten the nut.



- 3.2 The nut is tightened by fingers. Then, tighten the nut using spanner till it is positioned 9 o'clock. At this point, an increase in resistance will be encountered. Then, tighten slightly more.



⚠ CAUTION

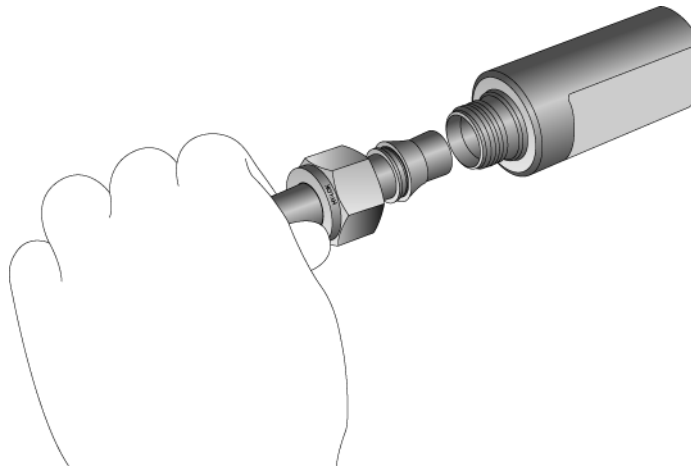
When the fitting is Re-Assembled, please do not use Inspection Gauge.

III. Pre-Swaging

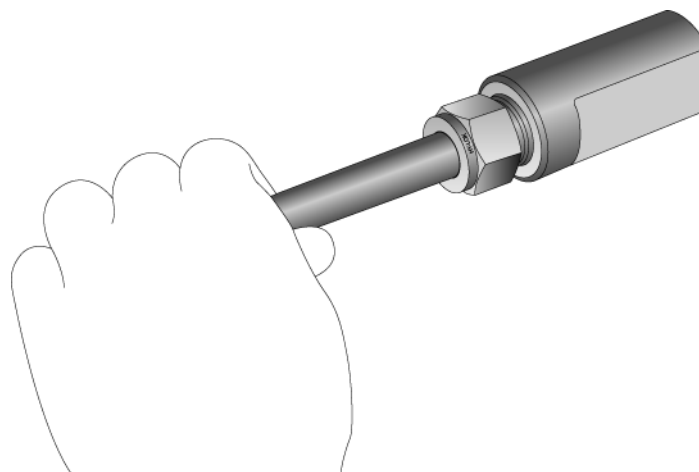
1. Manual Pre-Swaging

When installing tube fittings in limited space or where the fitters can't reach well for 1-1/4 turn, it may be advantageous and easy to use a Pre-Swaging tool.

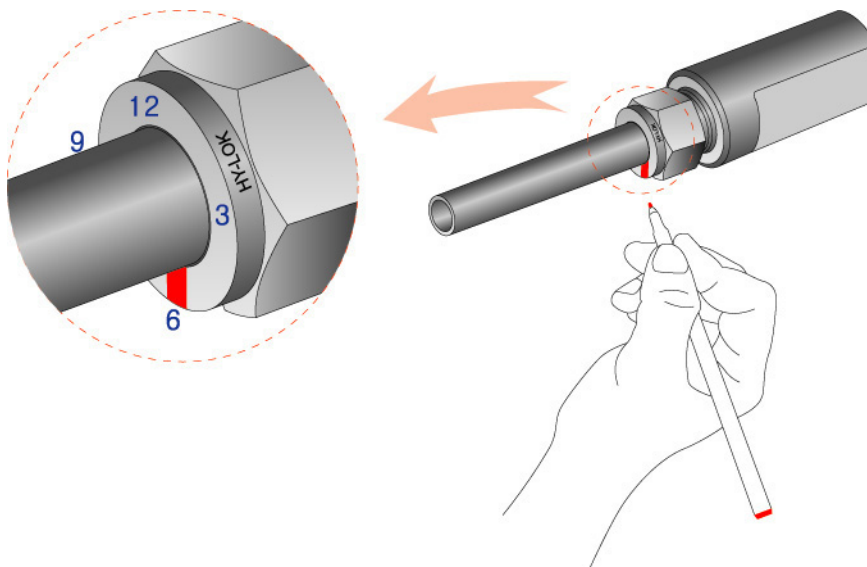
- 1.1 Be sure the Nut and Ferrule seats correctly onto the Pre-Swaging tool.
Insert tube into Nut and Ferrule Set then finger tight onto the Pre-Swaging tool.
Make sure that the tubing rests firmly on the shoulder of the fitting.



- 1.2 Nut shall be finger tightened while the tube contacts the shoulder.



1.3 Before tighten the nut, mark the nut at the 6 o'clock position.

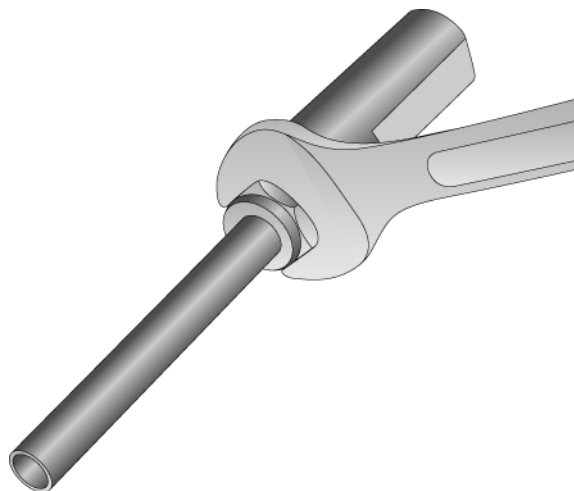
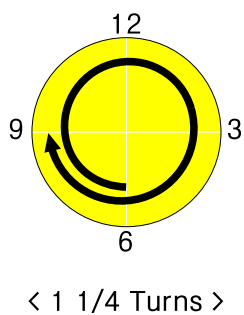


1.4 While fixing the fitting using wrench, tighten the nut 1-1/4 turns.

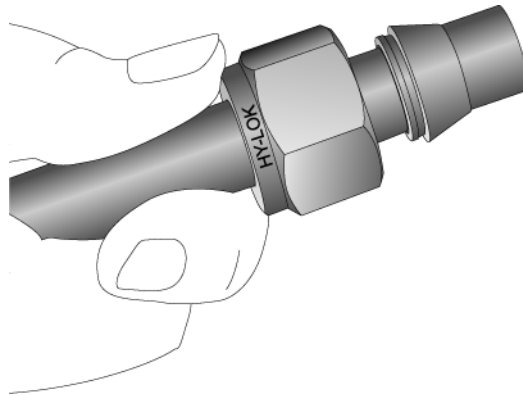
The mark on the nut 1 turn and continue tightening till the mark is located 9 o'clock position.

The mark on the nut turns 1-1/4 and it is 9 o'clock position.

You will be sure that the fitting has been properly tightened.



- 1.5 Loosen the nut and tubing with Pre-Swaged ferrules are removed from the Pre-Swaging tool.



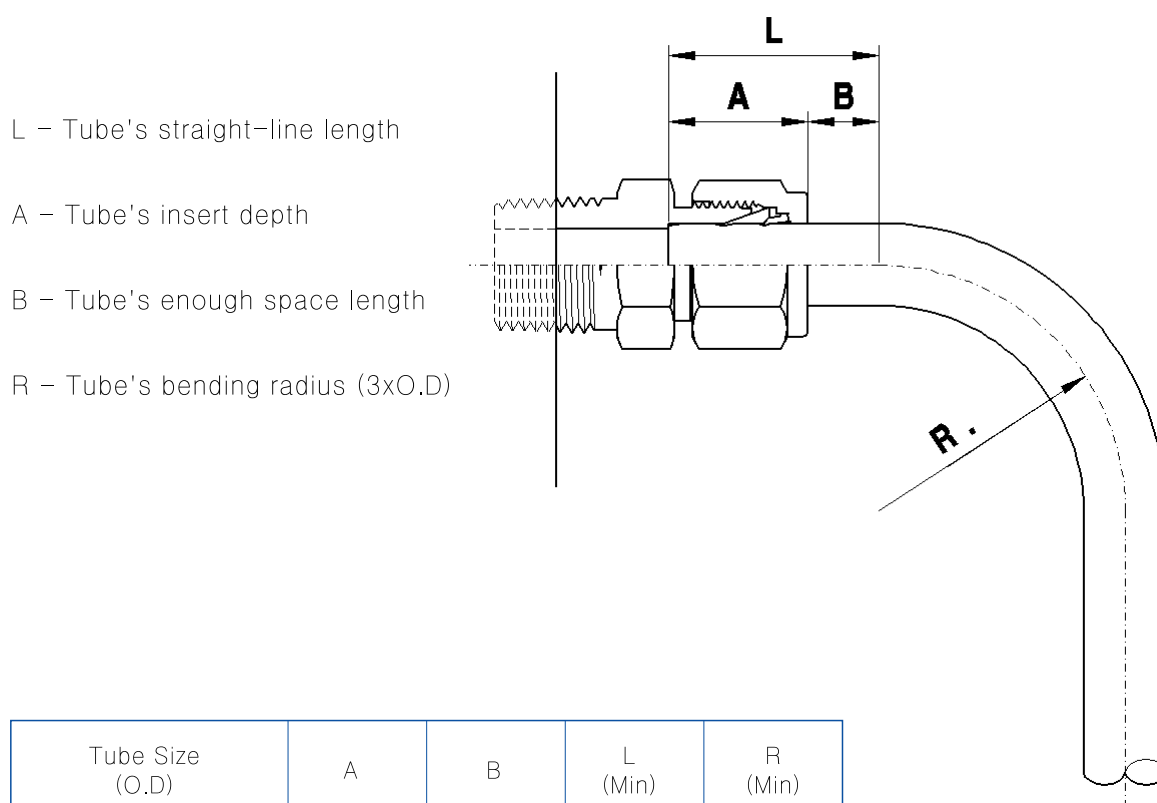
- 1.6 Connect the Pre-Swaged Tubing / Nut / Ferrule Set into Fitting body according to Re-Assembly procedure.

IV. Tube Bending

1. The Minimum Length Between Tube Fitting and Tube Bending

Leave a length of straight tube, and make sure that the bended area does not enter the fitting.

See below recommended length of straight tube.

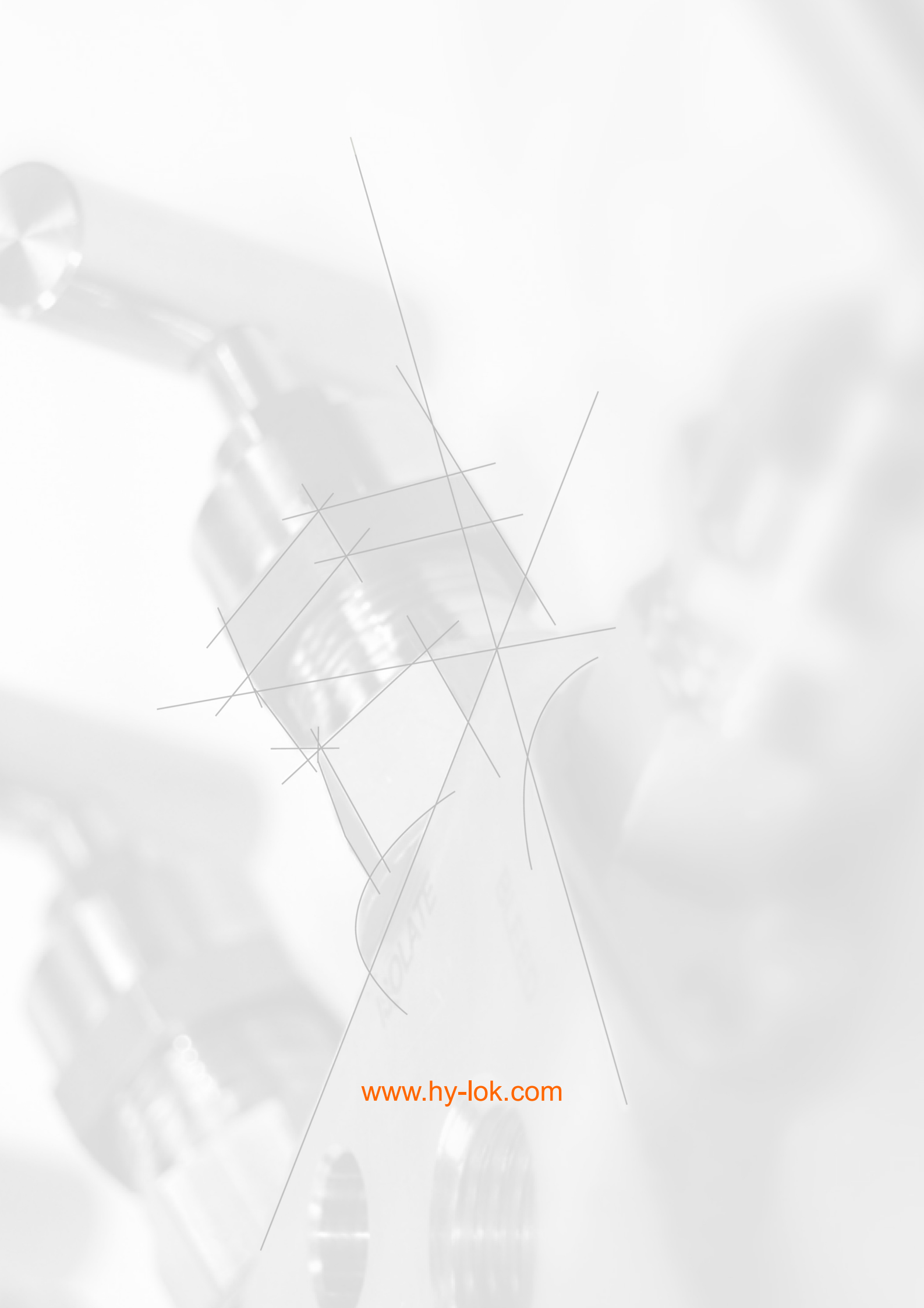


Tube Size (O.D)		A	B	L (Min)	R (Min)
1/4"	6mm	15	5	20	15
5/16"	8mm	16	6	22	25
3/8"	10mm	17	7	24	30
1/2"	12mm	23	7	30	38
5/8"	16mm	24	8	32	48
3/4"	20mm	26	8	34	60
1"	25mm	31	9	40	76

V. Trouble Shooting

1. Tube Fitting Trouble Shooting

Trouble	Possible Cause	Recommended Corrective Measures
1. Tubing will not fit into fitting	Burrs on tubing from tube cutting operation	Deburr tubing. Use Deburring tool and make clean on tube ends.
	Tubing end is transformed into out of round	Cut-off the tubing ends deformed. Then, insert it into the fitting.
	Tubing out of round from bending improperly	Make sure you have enough straight-line of tubing before bending.
	Tubing end raised due to dull tube cutter wheel	Replace new cutter for cutting. Use Deburring tool.
2. Fitting cannot be pulled up proper amount of turns	Dirt or other contaminants on threads and seal surface	Remove all contamination on thread and seal surface before assembly.
	Galled threads on nut or body damaged on those parts.	Replace complete fitting.
3. Tubing leaks at fitting after initial installation	Fitting was not turned 1-1/4 properly	Check for sufficient pull-up with a Gap Inspection Gauge.
	Tubing not bottomed in fitting body	Cut-off swaged tubing and replace them.
	Tubing has deep longitudinal scratched or is nicked or otherwise damaged	Replace tubing or cut-off the damaged section of tubing. Then reconnect it.
	Fitting body was turned instead of nut Galling seal surface of body and front ferrule	Always connect fittings by turning the nut while keep holding body.



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