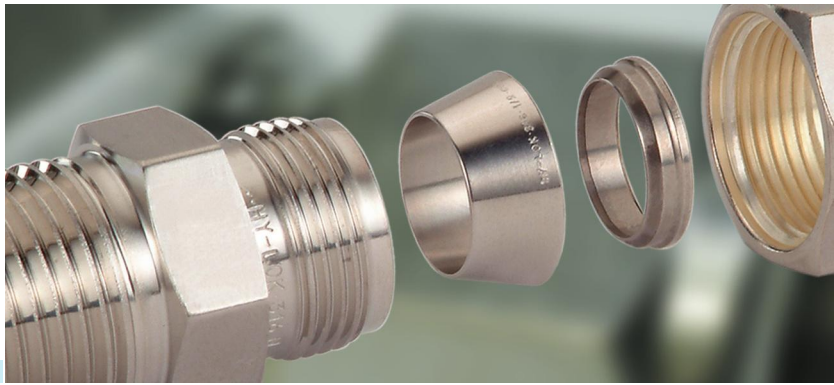
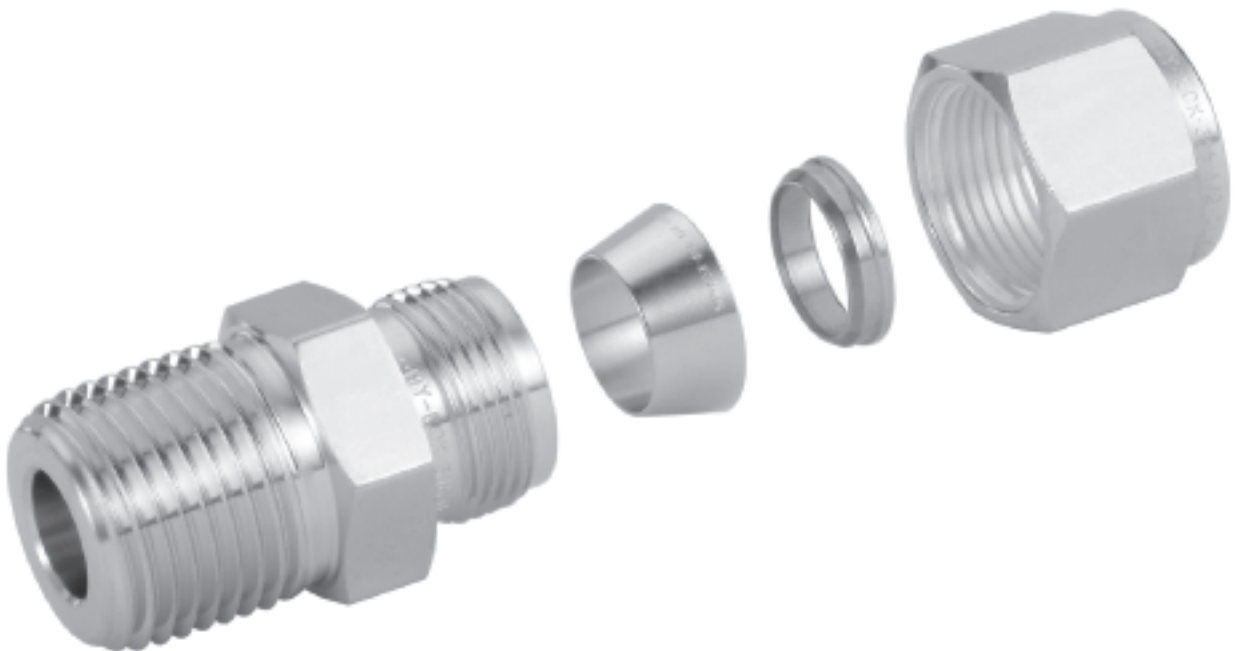




www.hy-lok.com



Hy-Lok Tools for Two Ferrule Tube Fittings



- ECE R110 compliance 1/8"(3mm) to 1"(25mm), for NGV application.
- EIHP compliance 1/8"(3mm) to 1"(25mm), for hydrogen application.



HY-LOK CORPORATION

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Design and Manufacture

Hy-Lok two ferrule tube fittings have been designed and manufactured with great care to meet the specifications required for a wide range of applications in chemical, petro-chemical, oil refineries, power generation, shipbuilding, pulp and papers, micro-electronics, etc. Each Hy-Lok tube fitting consists of four parts; body, front ferrule, back ferrule, and nut. The two-ferrule design, front and back, compensates for any tolerances in tube O.D., wall thickness, material hardness and always ensures outstanding leak-tight connections.

Hy-Lok two ferrule tube fittings are manufactured under Hy-Lok Corporation's strict quality control program which enabled Hy-Lok to obtain ASME Quality System Certificate and ISO 9001.

Torque and Distortion during Installation

When the nut is tightened, the back and front ferrules move axially. This axial movement does not allow any torque transfer from the fitting to the tubing, and the mechanical properties of tubing are maintained.

During makeup, the back ferrule moves in such a controlled manner that the tubing is not overstressed and the tubing I.D. is not excessively reduced, resulting in safe operation under high pressure or vibration. The front ferrule does not force the body to expand, which allows the nut to be back off easily for disassembly and allows multiple remakes.



Gap Gauge for Gap Inspection CIG



Multiple Size

Part No.	Tube O.D. in / mm
CIG 46810M	1/4(6mm) 3/8 1/2(12mm) 10mm

Part No.	Tube O.D.	
	in	mm
CIG - 1	1/16	-
CIG - 2M 3M 2	1/8	2, 3
CIG - 4M 3	3/16	4
CIG - 6M 4	1/4	6
CIG - 8M 5	5/16	8
CIG - 6	3/8	-
CIG - 10M	-	10
CIG - 12M 8	1/2	12
CIG - 14M 15M 16M 10	5/8	14, 15, 16
CIG - 18M 12	3/4	18
CIG - 20M 14	7/8	20
CIG - 25M 16	1	25
CIG - 28M	-	28
CIG - 35M	-	35
CIG - 38M	-	38

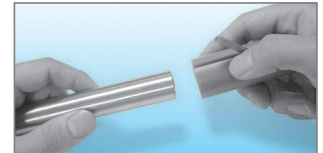
Tube Marker CTDM

The strong point of Hy-Lok tube marker.

1. Lightweight easy to carry.
2. No damage of the tube surface when inserting and detaching the tube.
3. The visible line on the tube insures that the tubing is fully bottom thereby reducing any chance of leakage.



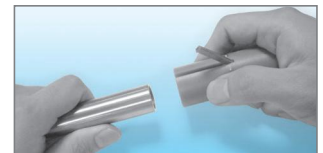
Instruction of Use



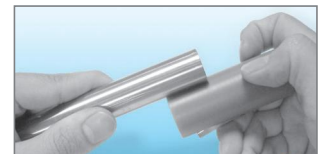
1. Insert the tubing into the tube marker.



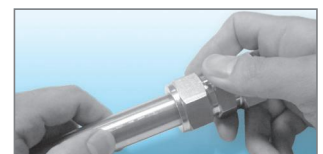
2. After inserting the tubing, press the marker lever and rotate the tube marker.



3. Release the marker lever and removing the tubing.



4. Be position the tube on the cutting plane of the product and confirm whether the line on the tube is visible or not.



5. Insert the tubing into the Hy-Lok two ferrule tube fittings and confirm that the line made by the tube marker is not visible. The tube is now properly inserted and the fitting can be tightened.

Fractional

Part No.	Tube O.D	
	in	mm
CTDM - 4	1/4	6.35
CTDM - 5	5/16	7.93
CTDM - 6	3/8	9.52
CTDM - 8	1/2	12.70
CTDM - 10	5/8	15.87
CTDM - 12	3/4	19.05
CTDM - 14	7/8	22.22
CTDM - 16	1	25.40

Metric

Part No.	Tube O.D
CTDM - 6M	6
CTDM - 8M	8
CTDM - 10M	10
CTDM - 12M	12
CTDM - 15M	15
CTDM - 16M	16
CTDM - 18M	18
CTDM - 20M	20
CTDM - 22M	22
CTDM - 25M	25

All dimensions are in millimeters unless otherwise specified. Dimensions are for reference only, subject to change.

Hy-Lok Two Ferrule Tube Fittings

Preswaging Tool

CJ



Fractional

Part No.	Tube O.D	
	in	mm
CJ - 1	1/16	1.58
CJ - 2	1/8	3.17
CJ - 3	3/16	4.76
CJ - 4	1/4	6.35
CJ - 5	5/16	7.93
CJ - 6	3/8	9.52
CJ - 8	1/2	12.70
CJ - 10	5/8	15.87
CJ - 12	3/4	19.05
CJ - 14	7/8	22.22
CJ - 16	1	25.40

Metric

Part No.	Tube O.D
CJ - 2M	2
CJ - 3M	3
CJ - 4M	4
CJ - 6M	6
CJ - 8M	8
CJ - 10M	10
CJ - 12M	12
CJ - 15M	15
CJ - 16M	16
CJ - 18M	18
CJ - 20M	20
CJ - 22M	22
CJ - 25M	25

■ For Hy-Lok two ferrule tube fittings installations in close quarters, the Hy-lok preswaging tool is a convenient accessory.

Tee Wrench

CTW



Tube Deburring Tools

CTDT



Multiple Size

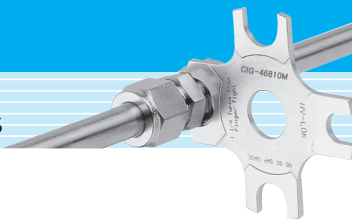
Part No.	Size < Tee or Cross >
CTW-4	1/4 in. and 6mm
CTW-6	5/16 and 3/8 in. and 8mm
CTW-8	1/2 in. and 12mm

■ The tee wrench provides positive backup support when installing Hy-Lok union tees and crosses.

Part No.	Size
CTDT	The inside and outside diameters of 3/16 to 1 1/2in 4 to 38mm tubing

■ When stainless steel, steel and hard alloy tubes are cut by tube cut by tube cutter or tube sawing guide, the tube ends are deburred by Hy-Lok tools.

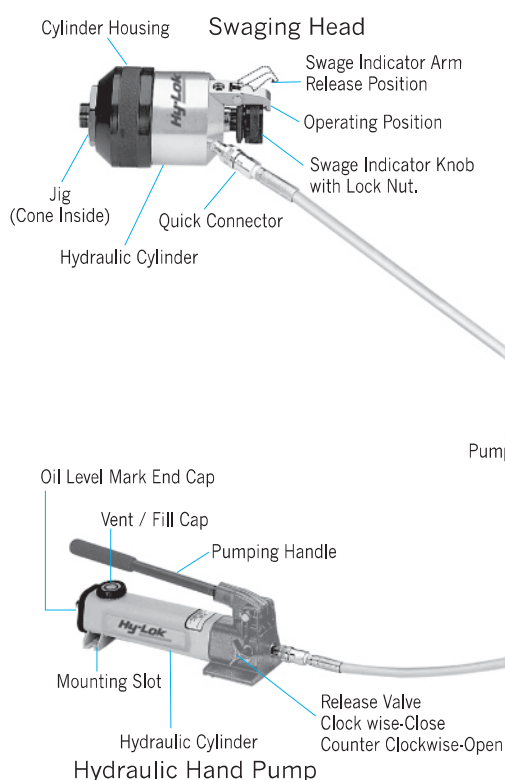
All dimensions are in millimeters unless otherwise specified. Dimensions are for reference only, subject to change.



Operating Procedures

1. Assemble front ferrule, back ferrule and nut onto jig.
2. Insert the prepared tube into pre-assembled nut and ferrules and hand-tighten the nut. Pumping until arm release (manual), or just press. "start" switch(auto).
3. Unthread nut from swaging jig. Remove pre-swaged tube and insert it into fitting body. Make sure the ferrule seats in the fitting. (The detailed instructions are provided for each of EZY-MAT TOOL.)

EZY - MAT 1 (Manual)



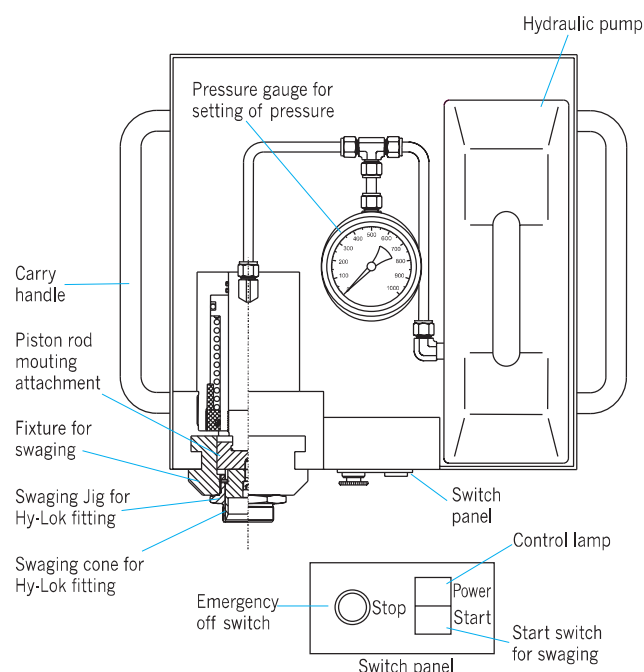
EZY - MAT 2 (Auto)

220V version

Hydraulic pump : 0.35 kW-2.0 ℓ /min.
 Operating pressure : 0~600bar.
 Connection : 220V/1~/50/60 Hz/2.5 A.
 Dimension : 400x400x230 mm.
 Weight : 30kg.

110V version

Hydraulic pump : 0.35 kW-2.0 ℓ /min.
 Operating pressure : 0~600bar.
 Connection : 110V/1~/50/60 Hz/6.5 A.
 Dimension : 400x400x230 mm.
 Weight : 30kg.



How to Order

EZY - MAT TOOL

Part No.	Applicable Fitting Size	Operation
EZY - MAT 1	1/2" to 2" (12mm to 38mm)	Manual
EZY - MAT 2	1/2" to 2" (12mm to 38mm)	Auto

JIG and DIE

Basic Part No.	Size Designator	Remark
PS - CSJ - *	See below - *	for Jig
PS - CSD - *	See below - *	for Die

Note * : To complete part number, basic part No. must be followed by size designator. For fractional size, designate size in sixteenth and then add T, e.g. 20T for 1 1/4 inches. For metric size, designate size in millimeters and then add M, e.g. 28M for 28mm.

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Installation Instructions

Tube Preparation

1. Check if tubing O.D., wall thickness, ovality, hardness and their tolerances are within specs for your application. Also check if surface is free from scratches and dirt.
2. Make a square cut, (Always use proper tube cutter. Improper tube cutter can cause excessive tube deformation at the tube end.)
3. Remove burrs from inner and outer edges of tubing.

Installation Instructions for Hy-Lok two ferrule tube fittings of 1 inch or 25mm and Under

Hy-Lok two ferrule tube fittings are supplied fully assembled / finger tight and are readily usable. A leak tight and mechanically safe installation is easily made by turning the nut 1 1/4 turns or 3/4 turn for smaller sizes.



1. Insert prepared tubing into Hy-Lok two ferrule tube fittings until tubing end is firmly seated on the body shoulder making sure the nut is finger-tight. (Do not force the tubing into fitting if it does not go in easily. It may be burred or oval, or there may be foreign materials inside the fitting.)



2. Mark the nut at 6 o'clock position for identification of starting point.
3. Tighten the nut 1 1/4 turns* with a wrench keeping the fitting body steady with a back-up wrench. When the nut is tightened 1 1/4 turns, the mark at 6 o'clock position before tightening will be now at 9 o'clock position.

Note*: Only 3/4 turn from finger - tight is required for 1/16", 1/8", 3/16", 2mm, 3mm, and 4mm sizes.

High Pressure Applications

Even though Hy-Lok two ferrule tube fittings are designed to accept the tube variations specified in ASTM or equivalent specifications, it is more desirable to have a common starting point, or snug position, for high pressure applications. Making sure that the tubing end is fully seated, tighten the nut until the tubing can not be rotate by hand. 1 1/4 turns (or 3/4 turn for small size fittings) from snug position will ensure reliable leak tight installation.

Reassembling Instructions

Hy-Lok two ferrule tube fittings can be disassembled and reassembled many times and leak tight performance can be obtained each time.

1. Insert tubing which is preswaged with ferrules into fitting body.
2. Hand tighten the nut and further tighten the nut with a wrench to the original position keeping the body steady with a back-up wrench. When a sharp rise in resistance is felt at the original position, snug slightly with a wrench.

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

Installation of Hy-Lok two ferrule tube fittings larger than 1" : or 25mm

EZY-MAT TOOL, Hy-Lok Corporation's Hydraulic Preswaging Machine, designed for use all Hy-Lok two ferrule tube fittings ranging 1/2"~2" (12mm~38mm).

Hy-Lok Hydraulic Preswaging Unit for Multi - Size Tubes - EZY - MAT TOOL

EZY-MAT TOOL is easy to learn and to operate. With the manual model, the hand pumping requires very little effort the swage indicator arm lets you know when to stop pumping. With the automatic model, preswaging is accomplished by pressing and releasing the start button according to the instruction.

EZY-MAT TOOL can be used for various tube sizes by replacing jig and cone. Two manual models(or just one automatic model) are required for all sizes ranging from 1/2 inch to 2 inch(or 12mm to 38mm).

The tool is compact, lightweight and easy to use.

EZY-MAT TOOL reduces make-up torque, and reduces assembly time in the field and prevents the fitting from deformation and damage.

All dimensions are in millimeters unless otherwise specified, Dimensions are for reference only, subject to change.

DOs

- DO use Hy-Lok two ferrule tube fittings for best performance.
- DO send us tubing for testing if the wall thickness is thinner or heavier than recommended.
- DO deburr tubing properly prior to installation.
- DO use correct tube cutter to avoid excessive deformation.
- DO ensure tubing is firmly seated on the shoulder of fitting body.
- DO tighten nut according to the installation instructions.
- DO use SURE RING where Hy-Lok needs be installed in close corners or in awkward places.
- DO ensure components are clean and free from dirt prior to installation or remake.

DON'Ts

- DON'T mix metric and fractional size of fitting or tubing.
- DON'T mix components of different materials.
- DON'T force tubing into fitting if it does not fit easily. Check tubing.
- DON'T turn fitting body, turn nut while holding body with back-up wrench.
- DON'T over tighten. It will not improve seal integrity and may cause material fatigue and remake difficult.
- DON'T bleed system pressure by loosening the nut.

SAFETY in FITTING SELECTION

For proper, safe, trouble-free installation, operation and maintenance of fluid systems, material compatibility, pressure/temperature ratings, and application details must be considered in the selection of fittings. Improper selection or intermixing components of other manufactures may cause personal injury or property losses. It is the responsibility of system designer and user to select and use the products for their specific applications.



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