

# **Hy-Lok** Tube Fittings

**Tube Size from 1/16" thru 2" (2mm thru 38mm)**

Catalog No. H-200TF  
Jul. 2005



**HY-LOK CORPORATION**

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# Certificate

# Hy-Lok Tube Fittings

The American Society of Mechanical Engineers



## Certificate of Registration

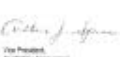
This Certificate of Registration attests to the supplier's conformance to the standard and the scope of activities indicated below.

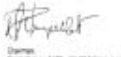
**SUPPLIER:**  
**Hy-Lok Corporation**  
 567 Shinpyung-Dong, Saha-Gu  
 Pusan, 604-030  
 Korea

**STANDARD:** ISO 9001 : 1994

**SCOPE:**  
 Design, development, manufacture and servicing of metallic tube and pipe fittings, instrument valves, manifold valves, ball valves, flanges, fasteners, tube clamps and other machined metal products

**AUTHORIZED:** October 14, 2003  
**EXPIRES:** October 14, 2005  
**CERTIFICATE NUMBER:** QSC 212

  
 Vice President  
 Quality Assurance

  
 Chairman  
 Committee on ASME ISO 9001

  
 Managing Director  
 Quality Assurance



The ASME ISO 9001 Registration Program is Accredited by the American National Standards Institute Program for Registration of Quality Systems (ANSI-IRIS) and the British Council for Accreditation (UKAS).




The American Society of Mechanical Engineers

## QUALITY SYSTEM CERTIFICATE

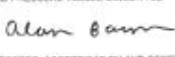
This certificate accredits the named company as having their quality system program verified for the scope of activity shown below in accordance with the applicable rules of the ASME Boiler and Pressure Vessel Code. The accreditation granted by this certificate is subject to the provisions of the agreement set forth in the application. Any material produced under this certificate will have been manufactured strictly in accordance with the provisions of the ASME Boiler and Pressure Vessel Code.

**COMPANY:**  
**HY-LOK CORPORATION**  
 567, SHINPYUNG-DONG, SAHA-GU  
 PUSAN 604-030  
 SOUTH KOREA

**SCOPE:**  
 MATERIAL ORGANIZATION MANUFACTURING AND SUPPLYING FERROUS & NONFERROUS MATERIAL AT THE ABOVE LOCATION INCLUDING QUALIFICATION OF NONACCREDITED MATERIAL ORGANIZATIONS, UTILIZATION OF UNQUALIFIED SOURCE MATERIAL, AND APPROVAL AND CONTROL OF SUPPLIERS

**AUTHORIZED:** OCTOBER 6, 2000  
**EXPIRES:** OCTOBER 6, 2003  
**CERTIFICATE NUMBER:** QSC-184

  
 Chairman of the Boiler and Pressure Vessel Committee

  
 Director, Accreditation and Certification



**HY-LOK CORPORATION**

## Design and Manufacture

Hy-Lok flareless 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 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.

## Construction and Tube End Dimensions

The construction and tube end dimensions of both fractional and metric sizes are shown below with the nut in finger tight position. These dimensions are applicable to all the fittings throughout this catalogue and also to all Hy-Lok ends used as end connections of Hy-Lok ball valves, needle valves, valve manifolds, check valves, and relief valves, etc.

## Easy Reference

Heads of tables are differentiated with color ;

- Shows Metric
- Shows Fractional

Construction of Hy-Lok Fitting

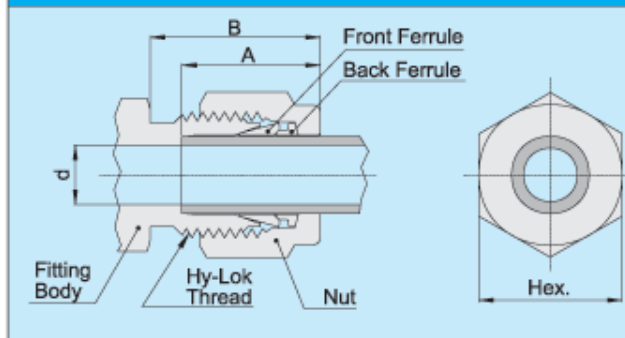


Table 1. Hy-Lok Fractional Tube End Dimensions Unit : mm

| Size No. | Tube O.D. | Hy-Lok Thread  | A     | B     | d     | Hex.  |
|----------|-----------|----------------|-------|-------|-------|-------|
| 1        | 1/16      | 10 - 32UNF     | 8.63  | 10.92 | 1.27  | 7.90  |
| 2        | 1/8       | 5/16 - 20UN    | 12.70 | 15.24 | 2.28  | 11.10 |
| 3        | 3/16      | 3/8 - 20UN     | 13.70 | 16.00 | 3.04  | 12.70 |
| 4        | 1/4       | 7/16 - 20UNF   | 15.24 | 17.78 | 4.80  | 14.20 |
| 5        | 5/16      | 1/2 - 20UNF    | 16.25 | 18.54 | 6.35  | 15.80 |
| 6        | 3/8       | 9/16 - 20UN    | 16.76 | 19.30 | 7.10  | 17.40 |
| 8        | 1/2       | 3/4 - 20UNEF   | 22.86 | 21.84 | 10.40 | 22.20 |
| 10       | 5/8       | 7/8 - 20UNEF   | 24.38 | 21.84 | 12.70 | 25.40 |
| 12       | 3/4       | 1 - 20UNEF     | 24.38 | 21.84 | 15.70 | 28.60 |
| 14       | 7/8       | 1 1/8 - 20UN   | 25.90 | 21.84 | 18.20 | 31.80 |
| 16       | 1         | 1 5/16 - 20UN  | 31.24 | 26.61 | 22.40 | 38.10 |
| 20       | 1 1/4     | 1 5/8 - 20UN   | 41.14 | 38.86 | 27.70 | 47.62 |
| 24       | 1 1/2     | 1 15/16 - 20UN | 50.03 | 45.21 | 34.00 | 57.15 |
| 32       | 2         | 2 5/8 - 20UN   | 67.73 | 62.73 | 46.00 | 76.20 |

Table 2. Hy-Lok Metric Tube End Dimensions Unit : mm

| Size No. | Tube O.D. | Hy-Lok Thread | A    | B    | d    | Hex. |
|----------|-----------|---------------|------|------|------|------|
| 2 M      | 2 mm      | 5/16 - 20UN   | 12.9 | 15.3 | 1.7  | 12.0 |
| 3 M      | 3 mm      | 5/16 - 20UN   | 12.9 | 15.3 | 2.4  | 12.0 |
| 4 M      | 4 mm      | 3/8 - 20UN    | 13.7 | 16.1 | 2.4  | 12.0 |
| 6 M      | 6 mm      | 7/16 - 20UNF  | 15.3 | 17.7 | 4.8  | 14.0 |
| 8 M      | 8 mm      | 1/2 - 20UNF   | 16.2 | 18.6 | 6.4  | 16.0 |
| 10 M     | 10 mm     | 5/8 - 20UN    | 17.2 | 19.5 | 7.9  | 19.0 |
| 12 M     | 12 mm     | 3/4 - 20UNEF  | 22.8 | 22.0 | 9.5  | 22.0 |
| 15 M     | 15 mm     | 7/8 - 20UNEF  | 24.4 | 22.0 | 11.9 | 25.0 |
| 16 M     | 16 mm     | 7/8 - 20UNEF  | 24.4 | 22.0 | 12.7 | 25.0 |
| 18 M     | 18 mm     | 1 - 20UNEF    | 24.4 | 22.0 | 15.1 | 30.0 |
| 20 M     | 20 mm     | 1 1/8 - 20UN  | 26.0 | 22.0 | 15.9 | 32.0 |
| 22 M     | 22 mm     | 1 1/8 - 20UN  | 26.0 | 22.0 | 18.3 | 32.0 |
| 25 M     | 25 mm     | 1 5/16 - 20UN | 31.3 | 26.5 | 21.8 | 38.0 |
| 28 M     | 28 mm     | M37 x 1.5P    | 36.6 | 36.6 | 21.8 | 46.0 |
| 32 M     | 32 mm     | M42 x 1.5P    | 42.0 | 41.6 | 28.6 | 50.0 |
| 38 M     | 38 mm     | M50 x 1.5P    | 49.4 | 47.9 | 33.7 | 60.0 |

**Note :** Dimensions A and B in table 1 and in table 2 are shown with Hy-Lok nut in finger tight position.



## Materials

Hy-Lok tube fittings are available as standard in stainless steel, brass and monel. Straight fittings are machined from cold finished bar stock and shaped bodies from forgings. Specifications for fitting materials and tubings are listed below. For special applications, contact your local distributors.

Table 3. Typical Material Specification

| Fitting Material | Bar Stock                                                                                | Forging                                        | Tubing                                                                                |
|------------------|------------------------------------------------------------------------------------------|------------------------------------------------|---------------------------------------------------------------------------------------|
| S.Steel Type 316 | ASTM A479<br>ASME SA479<br>ASTM A276<br>Project 70 - ASTM A276<br>ASTM A479<br>JIS G4303 | ASTM A182 F316<br>ASME SA182 F316<br>JIS G3214 | ASTM A269<br>ASTM A213<br>ASTM A249<br>ASME SA213<br>MIL - T - 8504<br>MIL - T - 8506 |
| Brass            | ASTM B16 Alloy 360<br>ASTM B453 Alloy 345<br>QQ - B626 Alloy 360                         | ASTM B124 Alloy 377<br>QQ - B626 Alloy 377     | ASTM B68<br>ASTM B75<br>ASTM B88<br>ASME SB75                                         |
| Monel 400        | QQ - N - 281 Alloy 405<br>QQ - N - 286 Alloy K500<br>ASTM B164                           | QQ - N281 - Alloy 400<br>ASTM B164             | ASTM B165                                                                             |

(1) Project 70 is a trade mark of Carpenter Technology Corporation.

(2) Monel is a trademark of international Nickel.

(3) Shaped body may be constructed from plate stock.

## Pressure Ratings

Hy-Lok tube fittings are rated to the maximum working pressure of tubing recommended for use with Hy-Lok tube fitting. The maximum working pressure of tubings are listed in **MAWP Table** on the following pages.

**Note** : Material strength and allowable working pressure decrease as the temperature increases.

## Temperature Ratings

The following temperature ratings are applicable.

- 316 Stainless Steel : -321°F to 1200°F  
(-196°C to 649°C)
- Brass : -65°F to 400°F  
(-54°C to 204°C)
- Monel : -65°F to 800°F  
(-54°C to 427°C)

## Tubing

Variety of tubing materials and wide range of wall thickness can be used with Hy-Lok fittings. However, it is essential to specify, select, and handle the tubing with care in order to ensure reliable, safe, leak tight installation using Hy-Lok tube fittings.

Some general rules are shown below.

1. The tubing material must be compatible with process fluid.
2. Temperature, pressure, vibration and shock conditions must be considered when selecting the wall thickness. Further, extremely thick wall may not be properly deformed and extremely thin wall may be collapsed by ferrule action.
3. The metal tubing must be softer than the fitting materials. When tubing and fitting are of the same material, the tubing must be fully annealed.
4. For leak tight installation, the tubing surface finish must be smooth and free from weld seam, scratches and draw marks.
5. The tubing with high tolerance in ovality or O.D. may not fit in the fitting or may cause improper performance.
6. Best performance is achieved when the tubing ends are squarely cut and deburred properly.

The followings are the recommended tubing specifications for best performance with Hy-Lok fittings.

## Stainless Steel Tubing

Fully annealed seamless type 304, 316 to ASTM A269 or equivalent with hardness Rockwell Rb80 or less.

## Copper Tubing

Seamless soft annealed temper O60 with hardness 60 max. to ASTM B75, or seamless water tubing type K or type L annealed temper O06 with hardness 50 max. in coils or annealed tempr O50 with hardness 55 max. in straight lengths to ASTM B88, or equivalent.

## Monel Tubing

Fully annealed seamless Alloy 400 to ASTM B165 or equivalent with hardness Rb75 max.

## Gas Service

Gases have very small molecules and can escape through minute leak paths due to surface imperfections. These imperfections can be coined out when heavy wall tubing is used as it resists the ferrule action more than thin wall does. The minimum wall thickness for gas service is shown below.

### Fractional Tubing

| Tubing O.D. | Nominal Min. Wall Thickness | Tubing O.D. | Nominal Min. Wall Thickness |
|-------------|-----------------------------|-------------|-----------------------------|
| 1/8"        | .028"                       | 3/4"        | .065"                       |
| 3/16"       | .028"                       | 7/8"        | .083"                       |
| 1/4"        | .028"                       | 1"          | .083"                       |
| 5/16"       | .035"                       | 1 1/4"      | .109"                       |
| 3/8"        | .035"                       | 1 1/2"      | .134"                       |
| 1/2"        | .049"                       | 2"          | .180"                       |
| 5/8"        | .065"                       |             |                             |

### Metric Tubing

| Tubing O.D. | Nominal Min. Wall Thickness | Tubing O.D. | Nominal Min. Wall Thickness |
|-------------|-----------------------------|-------------|-----------------------------|
| 3mm         | 0.8mm                       | 18mm        | 1.5mm                       |
| 6mm         | 0.8mm                       | 20mm        | 1.8mm                       |
| 8mm         | 1.0mm                       | 22mm        | 2.0mm                       |
| 10mm        | 1.0mm                       | 25mm        | 2.2mm                       |
| 12mm        | 1.0mm                       | 28mm        | 2.8mm                       |
| 14mm        | 1.2mm                       | 32mm        | 3.0mm                       |
| 16mm        | 1.5mm                       | 38mm        | 3.5mm                       |

## Temperature Derating

The working pressure varies depending upon the temperature. The working pressure at various temperatures can be obtained by multiplying the working pressure at ambient temperature (-20°F to 100°F or -29°C to 37°C) by the temperature derating factor in the table shown below.

| Table 4. Temperature Derating Factors |       |       |        |           |
|---------------------------------------|-------|-------|--------|-----------|
| Temperature(°F)                       | 316SS | 304SS | Copper | Monel 400 |
| 100                                   | 1.00  | 1.00  | 1.00   | 1.00      |
| 200                                   | 1.00  | 0.84  | 0.80   | 0.88      |
| 300                                   | 1.00  | 0.75  | 0.78   | 0.82      |
| 400                                   | 0.96  | 0.69  | 0.50   | 0.79      |
| 500                                   | 0.90  | 0.65  | -      | 0.79      |
| 600                                   | 0.85  | 0.61  | -      | 0.79      |
| 700                                   | 0.82  | 0.59  | -      | 0.76      |
| 800                                   | 0.79  | 0.56  | -      | 0.76      |
| 900                                   | 0.78  | 0.54  | -      | -         |
| 1000                                  | 0.76  | 0.52  | -      | -         |
| 1100                                  | 0.62  | 0.47  | -      | -         |
| 1200                                  | 0.37  | 0.31  | -      | -         |

## Example

To obtain the working pressure of 316SS 3/8" O.D. x 0.035" wall tube at 1,200°F

- Working pressure of the above tubing at ambient temperature : 3,300 psig
- Temperature derating factor at 1,200°F : 0.37
- Working pressure at 1,200°F : 1,221 psig (from 3,300 psig multiplied by 0.37)

## Tube Bends near Fitting

For leak tight installation, tube bends must not be too close to the fitting. the following is the recommended minimum straight length of tube measured from the tube end to the bend.

| Tube O.D.   | 1/8"   | 1/4"   | 3/8"   | 1/2"   | 3/4"   | 1"     | 1 1/4" | 1 1/2"   | 2"     |
|-------------|--------|--------|--------|--------|--------|--------|--------|----------|--------|
| Min. Length | 23/32" | 13/16" | 15/16" | 13/16" | 1 1/4" | 1 1/2" | 2"     | 2 13/32" | 3 1/4" |

Also, the bending radius should not be too short of bending radius may affect the working pressure and may cause insufficient flow. Minimum bending radius is usually recommended by the tube bender manufacturer.

## Tube Selection and Handling

Hy-Lok fittings perform best when good quality tubing is used. Tubing should be considered a fitting component. Tubing selection by relying only on ASTM or other equivalent specifications is not enough. Here are some points to be considered.

1. Materials and manufacturing method
2. Material hardness
3. Surface finish
4. Outside diameter and its tolerance
5. Wall thickness and its tolerance
6. Ovality
7. Concentricity
8. Packing and transportation

Always try to use good quality tubing for best performance.

Tubings must be handled with great care in transportation and in storage. To avoid damage to the tubing surface. Copper tubings must not be crushed or lose its circularity. If necessary, the tubing must be covered and tubing ends must be plugged to be kept from dirt.

### Maximum Allowable Working Pressure Table

- Working pressure calculated in accordance with ASME B31.3, Chemical Plant and Petroleum Refinery Piping Code, 1993 Edition

**Table 5. Stainless Steel Tubing**

Fully annealed 304 or 316 high quality seamless stainless steel tube to ASTM A269 or equivalent.  
Hardness : Rb80 or less

| Stainless Steel Fractional Tubing |                               |       |       |       |        |       |        |        |        |       |       |       |       |       |       |       |
|-----------------------------------|-------------------------------|-------|-------|-------|--------|-------|--------|--------|--------|-------|-------|-------|-------|-------|-------|-------|
| Tube<br>O.D.<br>(Inches)          | Tube Wall Thickness in Inches |       |       |       |        |       |        |        |        |       |       |       |       |       |       |       |
|                                   | 0.010                         | 0.012 | 0.014 | 0.016 | 0.020  | 0.028 | 0.035  | 0.049  | 0.065  | 0.083 | 0.095 | 0.109 | 0.120 | 0.134 | 0.156 | 0.188 |
| 1/16"                             | 5,600                         | 6,800 | 8,100 | 9,400 | 12,000 |       |        |        |        |       |       |       |       |       |       |       |
| 1/8"                              |                               |       |       |       |        | 8,500 | 10,900 |        |        |       |       |       |       |       |       |       |
| 3/16"                             |                               |       |       |       |        | 5,400 | 7,000  | 10,200 |        |       |       |       |       |       |       |       |
| 1/4"                              |                               |       |       |       |        | 4,000 | 5,100  | 7,500  | 10,200 |       |       |       |       |       |       |       |
| 5/16"                             |                               |       |       |       |        |       | 4,000  | 5,800  | 8,000  |       |       |       |       |       |       |       |
| 3/8"                              |                               |       |       |       |        |       | 3,300  | 4,800  | 6,500  |       |       |       |       |       |       |       |
| 1/2"                              |                               |       |       |       |        |       | 2,600  | 3,700  | 5,100  | 6,700 |       |       |       |       |       |       |
| 5/8"                              |                               |       |       |       |        |       |        | 2,900  | 4,000  | 5,200 | 6,000 |       |       |       |       |       |
| 3/4"                              |                               |       |       |       |        |       |        | 2,400  | 3,300  | 4,200 | 4,900 | 5,800 |       |       |       |       |
| 7/8"                              |                               |       |       |       |        |       |        | 2,000  | 2,800  | 3,600 | 4,200 | 4,800 |       |       |       |       |
| 1"                                |                               |       |       |       |        |       |        |        | 2,400  | 3,100 | 3,600 | 4,200 | 4,700 |       |       |       |
| 1 1/4"                            |                               |       |       |       |        |       |        |        |        | 2,400 | 2,800 | 3,300 | 3,600 | 4,100 | 4,900 |       |
| 1 1/2"                            |                               |       |       |       |        |       |        |        |        |       | 2,300 | 2,700 | 3,000 | 3,400 | 4,000 | 4,900 |
| 2"                                |                               |       |       |       |        |       |        |        |        |       |       | 2,000 | 2,200 | 2,500 | 2,900 | 3,600 |

| Stainless Steel Metric Tubing |                                             |                 |        |                 |        |                 |       |                 |                 |       |                 |       |                 |       |       |       |
|-------------------------------|---------------------------------------------|-----------------|--------|-----------------|--------|-----------------|-------|-----------------|-----------------|-------|-----------------|-------|-----------------|-------|-------|-------|
| Tube<br>O.D.<br>(mm)          | Tube Wall Thickness in Millimeters (Inches) |                 |        |                 |        |                 |       |                 |                 |       |                 |       |                 |       |       |       |
|                               | 0.71<br>(0.028)                             | 0.89<br>(0.035) | 1.00   | 1.25<br>(0.049) | 1.50   | 1.65<br>(0.065) | 2.0   | 2.11<br>(0.083) | 2.41<br>(0.095) | 2.50  | 2.77<br>(0.109) | 3.00  | 3.05<br>(0.120) | 3.50  | 4.00  | 4.50  |
| 3                             | 10,800                                      | 13,800          | 15,300 |                 |        |                 |       |                 |                 |       |                 |       |                 |       |       |       |
| 4                             | 7,900                                       | 10,100          | 11,500 | 14,400          |        |                 |       |                 |                 |       |                 |       |                 |       |       |       |
| 6                             | 5,000                                       | 6,500           | 7,400  | 9,400           | 11,500 | 12,700          |       |                 |                 |       |                 |       |                 |       |       |       |
| 8                             |                                             | 4,700           | 5,800  | 6,800           | 8,400  | 9,300           |       |                 |                 |       |                 |       |                 |       |       |       |
| 10                            |                                             | 3,700           | 4,200  | 5,300           | 6,500  | 7,300           |       |                 |                 |       |                 |       |                 |       |       |       |
| 12                            |                                             | 3,000           | 3,400  | 4,400           | 5,300  | 5,900           | 6,600 | 7,000           |                 |       |                 |       |                 |       |       |       |
| 16                            |                                             |                 | 2,500  | 3,200           | 3,900  | 4,300           | 5,300 | 5,700           | 6,600           | 6,800 |                 |       |                 |       |       |       |
| 18                            |                                             |                 |        | 2,800           | 3,400  | 3,800           | 4,700 | 5,000           | 5,800           | 6,000 | 6,700           |       |                 |       |       |       |
| 20                            | For gas service, applying                   |                 |        | 2,500           | 3,000  | 3,400           | 4,200 | 4,400           | 5,100           | 5,300 | 6,000           |       |                 |       |       |       |
| 22                            | tube wall thickness only                    |                 |        | 2,300           | 2,800  | 3,000           | 3,800 | 4,000           | 4,600           | 4,800 | 5,400           |       |                 |       |       |       |
| 25                            | on outside of shade baundary                |                 |        | 2,000           | 2,400  | 2,700           | 3,300 | 3,500           | 4,000           | 4,200 | 4,700           | 5,100 | 5,200           |       |       |       |
| 38                            |                                             |                 |        |                 |        |                 |       |                 |                 | 2,300 | -               | 2,900 | -               | 3,400 | 3,900 | 4,400 |

- Allowable stress of 20,000psi(137,800kPa) between -20°F and 100°F(-29°C and 37°C)based on ultimate tensile strength 75,000psi(516,700kPa)
- Based on minimum wall thickness and maximum O.D. allowable by ASTM A269
- For welded tubing, the following derating rate to be applied for weld integrity. (ASME B31.3 - 1993 Edition, Table A - 1B)
  - for double welded tubing : 0.85
  - for single welded tubing : 0.80
- To determine bar, multiply psig by 0.0689 and to determine kPa by 6.89

**Note :**

- All calculations are based on maximum outside diameter and minimum wall thickness without allowance for corrosion and erosion
- Care should be taken for temperature rating if tubing is coated or plated.
- Figures shown are not for design purpose but for reference only and the accuracy of information here is not liability of our company.



**Table 6. Copper Tubing**

High quality soft annealed seamless copper tube to ASTM B - 75 or equivalent.

Hardness : Rb 60 or less

| Copper Fractional Tubing |                               |       |       |       |       |       |       |       |       |       |
|--------------------------|-------------------------------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
| Tube<br>O.D.<br>(Inches) | Tube Wall Thickness in Inches |       |       |       |       |       |       |       |       |       |
|                          | 0.010                         | 0.012 | 0.028 | 0.035 | 0.049 | 0.065 | 0.083 | 0.095 | 0.109 | 0.120 |
| 1/16"                    | 1,700                         | 3,800 | 5,400 | 6,000 |       |       |       |       |       |       |
| 1/8"                     |                               |       | 2,700 | 3,400 |       |       |       |       |       |       |
| 3/16"                    |                               |       | 1,800 | 2,300 | 3,400 |       |       |       |       |       |
| 1/4"                     |                               |       | 1,300 | 1,600 | 2,500 | 3,500 |       |       |       |       |
| 5/16"                    |                               |       |       | 1,300 | 1,900 | 2,700 |       |       |       |       |
| 3/8"                     |                               |       |       | 1,000 | 1,600 | 2,200 |       |       |       |       |
| 1/2"                     | For gas service, applying     |       |       | 800   | 1,100 | 1,600 | 2,200 |       |       |       |
| 5/8"                     | tube wall thickness only      |       |       |       | 900   | 1,200 | 1,600 | 1,900 |       |       |
| 3/4"                     | on outside of shade boundary  |       |       |       | 700   | 1,000 | 1,300 | 1,500 | 1,800 |       |
| 7/8"                     |                               |       |       |       | 600   | 800   | 1,100 | 1,300 | 1,500 |       |
| 1"                       |                               |       |       |       | 500   | 700   | 900   | 1,100 | 1,300 | 1,500 |

| Copper Metric Tubing |                                             |                 |       |                 |       |                 |       |                 |                 |       |                 |       |                 |
|----------------------|---------------------------------------------|-----------------|-------|-----------------|-------|-----------------|-------|-----------------|-----------------|-------|-----------------|-------|-----------------|
| Tube<br>O.D.<br>(mm) | Tube Wall Thickness in Millimeters (Inches) |                 |       |                 |       |                 |       |                 |                 |       |                 |       |                 |
|                      | 0.71<br>(0.028)                             | 0.89<br>(0.035) | 1.0   | 1.25<br>(0.049) | 1.5   | 1.65<br>(0.065) | 2.0   | 2.11<br>(0.083) | 2.41<br>(0.095) | 2.5   | 2.77<br>(0.109) | 3.0   | 3.05<br>(0.120) |
| 3                    | 3,465                                       | 4,400           | 4,900 |                 |       |                 |       |                 |                 |       |                 |       |                 |
| 4                    | 2,520                                       | 3,230           | 3,670 | 4,610           |       |                 |       |                 |                 |       |                 |       |                 |
| 6                    | 1,610                                       | 2,070           | 2,350 | 3,020           | 3,670 | 4,060           |       |                 |                 |       |                 |       |                 |
| 8                    |                                             | 1,510           | 1,710 | 2,790           | 2,680 | 2,990           |       |                 |                 |       |                 |       |                 |
| 10                   |                                             | 1,190           | 1,350 | 1,710           | 2,090 | 2,320           |       |                 |                 |       |                 |       |                 |
| 12                   |                                             | 970             | 1,100 | 1,410           | 1,710 | 1,900           | 2,350 | 2,500           |                 |       |                 |       |                 |
| 16                   |                                             |                 | 810   | 1,030           | 1,260 | 1,390           | 1,710 | 1,810           | 2,100           | 2,190 |                 |       |                 |
| 18                   | For gas service, applying                   |                 |       | 915             | 1,100 | 1,220           | 1,510 | 1,600           | 1,840           | 1,930 | 2,160           |       |                 |
| 20                   | tube wall thickness only                    |                 |       | 810             | 990   | 1,090           | 1,350 | 1,420           | 1,650           | 1,710 | 1,920           |       |                 |
| 22                   | on outside of shade boundary                |                 |       | 740             | 900   | 990             | 1,200 | 1,290           | 1,480           | 1,550 | 1,730           |       |                 |
| 25                   |                                             |                 |       | 640             | 780   | 870             | 1,060 | 1,120           | 1,290           | 1,350 | 1,490           | 1,640 | 1,670           |

- Allowable stress of 6,000psi (41,300kPa) between -20°F and 100°F (-29°C and 37°C) based on ultimate tensile strength 30,000psi (206,700kPa)
- Based on minimum wall thickness and maximum O.D. allowable by ASTM B75
- To determine bar, multiply psig by 0.0689 and to determine kPa by 6.89.

**Table 7. Monel 400 Tubing**

Fully annealed seamless Monel 400 to ASTM B165 or equivalent.

Hardness : Rb75

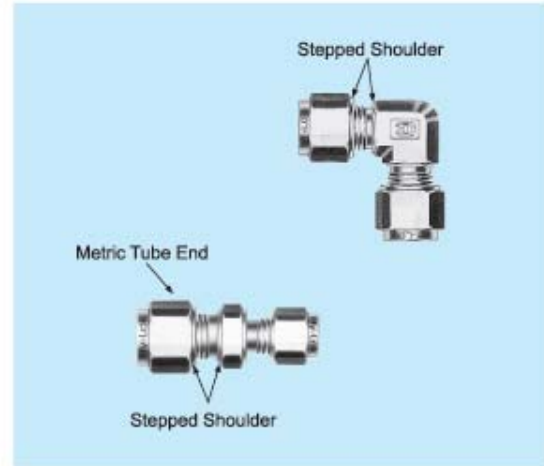
| Monel 400 Fractional Tubing |                               |       |       |        |       |       |       |       |       |       |
|-----------------------------|-------------------------------|-------|-------|--------|-------|-------|-------|-------|-------|-------|
| Tube<br>O.D.<br>(Inches)    | Tube Wall Thickness in Inches |       |       |        |       |       |       |       |       |       |
|                             | 0.010                         | 0.012 | 0.028 | 0.035  | 0.049 | 0.065 | 0.083 | 0.095 | 0.109 | 0.120 |
| 1/8"                        |                               |       | 7,900 | 10,100 |       |       |       |       |       |       |
| 1/4"                        |                               |       | 3,700 | 4,800  | 7,000 | 9,500 |       |       |       |       |
| 3/8"                        | For gas service, applying     |       |       | 3,100  | 4,400 | 6,100 |       |       |       |       |
| 1/2"                        | tube wall thickness only      |       |       | 2,300  | 3,200 | 4,400 |       |       |       |       |
| 3/4"                        | on outside of shade boundary  |       |       |        | 2,200 | 3,000 | 4,000 | 4,600 |       |       |
| 1"                          |                               |       |       |        |       | 2,200 | 2,900 | 3,400 | 3,900 | 4,300 |

- Allowable stress of 18,700psi (128,800kPa) between -20°F and 100°F (-29°C and 37°C) based on ultimate tensile strength 70,000psi (482,300kPa)
- Based on minimum wall thickness and maximum O.D. allowable by ASTM B165
- To determine bar, multiply psig by 0.0689 and to determine kPa by 6.89

### Identification of Hy-Lok Metric Tube

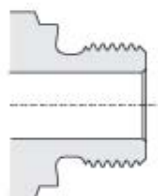
#### Fittings from Fractional

These two are similar in appearance. To avoid any confusion and for ready identification, the stepped shoulders are machined on the body and on the hex nut of metric size tube fittings as shown. The metric tube nut must not be used on fractional body, and vice versa



### ISO Parallel and Tapered Pipe Thread

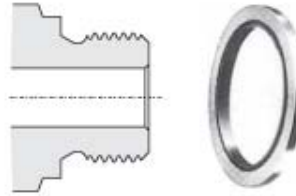
International Standards Organization(ISO) standardized the nomenclature of some international pipe threads. ISO 228/1 is a parallel thread and ISO 7/1 is a tapered thread. With 228/1 parallel thread, the seal is usually made by metal - to - metal contact against the female port or with a gasket. Shown below are two different seals. There are several different descriptions as listed below.



ISO Parallel with  
Metal Gasket Seal

A metal (usually copper) gasket performs the sealing between the reverse bevel of the fitting and the surface surrounding the female threads.

REFERENCE  
SPECIFICATIONS:  
1. BS 2779 (BSPP)  
2. DIN-ISO 228/1  
3. JIS B0202  
4. ISO 228/1

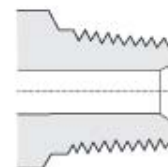


ISO Parallel with  
Bonded Washer Seal

No reverse angle is used. Instead, a self centering taper is used at hex to center a composite washer (usually metal and elastomer) to seal the surface surrounding the female thread.

ISO 7/1 tapered thread looks similar to NPT thread. However, ISO 7/1 has 55° thread angle while NPT has 60°, and ISO 7/1 pitch is measured in millimeters while NPT pitch is measured in inches. There are several different descriptions as listed on the right.

REFERENCE  
SPECIFICATIONS:  
1. BS 21 (BSPT)  
2. DIN-2999  
3. JIS B0203  
4. ISO 7/1



ISO Tapered  
(Thread Sealant Required)



## Ordering Information

## Hy-Lok Tube Fittings

Hy-Lok fittings part numbers are easily understandable and basically composed of 3 groups as shown below.

| Designator | First                          | Second      | Third              |
|------------|--------------------------------|-------------|--------------------|
| Group      | ① ⑪                            | ②           | ③                  |
| Example 1  | <b>CTA</b>                     | <b>-8</b>   | <b>-BRAS</b>       |
| Example 2  | <b>CMC4</b>                    | <b>-4N</b>  | <b>-S316</b>       |
| Exam 1     | Union Tee                      | 1/2" Hy-Lok | Brass              |
| Exam 2     | Male Connector With 1/4"Hy-Lok | 1/4" NPT    | 316 Stainless S316 |

1. The first group in example 1 or former part of first group in example 2 ① designates the fitting type.
2. The second group in example 1 ② designates either Hy-Lok tube end size of unions, union tees, crosses, etc. Where all Hy-Lok tube end sizes are the same or size of plugs, caps, nuts, etc. where only single end exists.
3. The latter part of first group in example 2 ⑪ designates the Hy-Lok tube end size and the second group ② designates pipe thread / size, or Hy-Lok tube end size, or tube size of fittings other than the fittings applicable to example 1.
4. The third group designates the fitting material.
5. In tees shown below, "2" is referred to as **run** and "3" is referred to as **branch**.



**Table 8. Fitting Type Designator**

| IDENTIFIER | DESCRIPTION                    | IDENTIFIER | DESCRIPTION                      |
|------------|--------------------------------|------------|----------------------------------|
| CUA        | Union                          | CPR        | Reducing Port Connector          |
| CUR        | Reducing Union                 | CFTC       | Lapped Flange Connector          |
| CLA        | Union Elbow                    | CFU        | AN Union                         |
| CTA        | Union Tee                      | CBFU       | AN Bulkhead Union                |
| CXA        | Union Cross                    | CFA        | AN Adapter                       |
| CBU        | Bulkhead Union                 | CSC        | SAE Male Connector               |
| CMC        | Male Connector                 | CSLA       | SAE Male Elbow                   |
| CMCT       | Thermocouple Male Connector    | CSLB       | SAE 45° Male Elbow               |
| CMC-G      | Male Connector For Bonded Seal | CSRT       | SAE Male Run Tee                 |
| COM        | Male Connector For Metal Seal  | CSBT       | SAE Male Branch Tee              |
| CBMC       | Bulkhead Male Connector        | COS        | O-Seal Straight Thread Connector |
| CLMA       | Male Elbow                     | COP        | O-Seal Pipe Thread Connector     |
| CLMB       | 45°Male Elbow                  | CWC        | Male Pipe Weld Connector         |
| CRTM       | Male Run Tee                   | CLW        | Male Pipe Weld                   |
| CBTM       | Male Branch Tee                | CSWC       | Tube Socket Weld Connector       |
| CFC        | Female Connector               | CLSW       | Tube Socket Weld Elbow           |
| CGC        | Gauge Connector                | CPA        | Plug                             |
| CBFC       | Bulkhead Female Connector      | CCA        | Cap                              |
| CLF        | Female Elbow                   | CN         | Nut                              |
| CRTF       | Female Run Tee                 | CFF        | Front Ferrule                    |
| CBTF       | Female Branch                  | CFB        | Back Ferrule                     |
| CR         | Reducer                        | CFS        | Ferrule Set                      |
| CBR        | Bulkhead Reducer               | CI         | Tube Insert                      |
| CAM        | Male Adapter                   | CCL        | Sure Ring                        |
| CAF        | Female Adapter                 | CIG        | Gap Gauge                        |
| CPC        | Port Connector                 | EZY-MAT    | Preswaging Tool                  |

**Hy-Lok Tube End Designator**

| Fractional Tube | O.D. | 1/16" | 1/8" | 3/16" | 1/4" | 5/16" | 3/8" | 1/2" | 5/8" | 3/4" | 7/8" | 1"   | 1 1/4" | 1 1/2" | 2"   |
|-----------------|------|-------|------|-------|------|-------|------|------|------|------|------|------|--------|--------|------|
| Designator      |      | 1     | 2    | 3     | 4    | 5     | 6    | 8    | 10   | 12   | 14   | 16   | 20     | 24     | 32   |
| Metric Tube     | O.D. | 2mm   | 3mm  | 4mm   | 6mm  | 8mm   | 10mm | 12mm | 16mm | 20mm | 22mm | 25mm | 28mm   | 32mm   | 38mm |
| Designator      |      | 2M    | 3M   | 4M    | 6M   | 8M    | 10M  | 12M  | 16M  | 20M  | 22M  | 25M  | 28M    | 32M    | 38M  |

**Pipe Thread Designator**

| Nom. Size     | 1/8" | 1/4" | 3/8" | 1/2" | 3/4" | 1"  | 1 1/4" | 1 1/2" | 2"  | Applicable Specifications                   |
|---------------|------|------|------|------|------|-----|--------|--------|-----|---------------------------------------------|
| ISO Tapered   | 2R   | 4R   | 6R   | 8R   | 12R  | 16R | 20R    | 24R    | 32R | JIS B0203(PT), DIN2999, ISO7/1, BS 21(BSPT) |
| NPT           | 2N   | 4N   | 6N   | 8N   | 12N  | 16N | 20N    | 24N    | 32N | ANSI B1.20.1 (NPT)                          |
| ISO Parallel  | 2G   | 4G   | 6G   | 8G   | 12G  | 16G | 20G    | 24G    | 32G | JIS B0202(PF), DIN ISO 228/1, BS 2779(BSPP) |
| Unified Screw | 2U   | 4U   | 6U   | 8U   | 12U  | 16U | 20U    | 24U    | 32U | American Standard unified Screw Thread      |

**Material Designator**

| Material   | SS 316 | Brass | Monel |
|------------|--------|-------|-------|
| Designator | S316   | BRAS  | MONE  |

## Tube To Tube Union

|                                                                                   |                              |    |
|-----------------------------------------------------------------------------------|------------------------------|----|
|  | Union<br><b>CUA</b>          | 9  |
|  | Reducing Union<br><b>CUR</b> | 10 |
|  | Union Elbow<br><b>CLA</b>    | 12 |
|  | Union Tee<br><b>CTA</b>      | 13 |
|  | Union Cross<br><b>CXA</b>    | 14 |
|  | Bulkhead Union<br><b>CBU</b> | 15 |

## Tube To Male Pipe

|                                                                                     |                                                       |    |
|-------------------------------------------------------------------------------------|-------------------------------------------------------|----|
|    | Male Connector<br><b>CMC</b>                          | 16 |
|    | Thermocouple Connector<br><b>CMCT</b>                 | 17 |
|    | Male Connector For Bonded Washer Seal<br><b>CMC-G</b> | 18 |
|   | Male Connector For Metal Gasket Seal<br><b>COM</b>    | 19 |
|  | Bulkhead Male Connector<br><b>CBMC</b>                | 20 |
|  | Male Elbow<br><b>CLMA</b>                             | 20 |
|  | 45° Male Elbow<br><b>CLMB</b>                         | 21 |
|  | Male Run Tee<br><b>CRTM</b>                           | 22 |
|  | Male Branch Tee<br><b>CBTM</b>                        | 23 |

## Tube To Female Pipe

|                                                                                     |                                          |    |
|-------------------------------------------------------------------------------------|------------------------------------------|----|
|  | Female Connector<br><b>CFC</b>           | 24 |
|  | Gauge Connector<br><b>CGC</b>            | 25 |
|  | Bulkhead Female Connector<br><b>CBFC</b> | 27 |
|  | Female Elbow<br><b>CLF</b>               | 28 |
|  | Female Run Tee<br><b>CRTF</b>            | 29 |
|  | Female Branch Tee<br><b>CBTF</b>         | 30 |

## Stub Tube Connector

|                                                                                   |                                             |    |
|-----------------------------------------------------------------------------------|---------------------------------------------|----|
|  | Reducer<br><b>CR</b>                        | 31 |
|  | Bulkhead Reducer<br><b>CBR</b>              | 33 |
|  | Male Adapter<br><b>CAM</b>                  | 34 |
|  | Female Adapter<br><b>CAF</b>                | 35 |
|  | Port Connector<br><b>CPC</b>                | 36 |
|  | Reducing Port Connector<br><b>CPR</b>       | 36 |
|  | Flange Lapped Tube Connector<br><b>CFTC</b> | 37 |

## Tube To An Tube

|                                                                                     |                                  |    |
|-------------------------------------------------------------------------------------|----------------------------------|----|
|  | An Union<br><b>CFU</b>           | 38 |
|  | An Bulkhead Union<br><b>CBFU</b> | 38 |
|  | An Adapter<br><b>CFA</b>         | 38 |

## Tube To SAE/MS O-Ring

|                                                                                     |                                                |    |
|-------------------------------------------------------------------------------------|------------------------------------------------|----|
|  | SAE/MS Male Connector<br><b>CSC</b>            | 41 |
|  | SAE/MS Male Elbow<br><b>CSLA</b>               | 41 |
|  | SAE/MS 45° Male Elbow<br><b>CSLB</b>           | 42 |
|  | SAE/MS Male Run Tee<br><b>CSRT</b>             | 42 |
|  | SAE/MS Male Branch Tee<br><b>CSBT</b>          | 42 |
|  | O-Seal Straight Thread Connector<br><b>COS</b> | 44 |
|  | O-Seal Pipe Thread Connector<br><b>COP</b>     | 44 |

## Tube To Weld End

|                                                                                     |                                           |    |
|-------------------------------------------------------------------------------------|-------------------------------------------|----|
|  | Male Pipe Weld Connector<br><b>CWC</b>    | 45 |
|  | Male Pipe Weld Elbow<br><b>CLW</b>        | 46 |
|  | Tube Socket Weld Connector<br><b>CSWC</b> | 46 |
|  | Tube Socket Weld Elbow<br><b>CLSW</b>     | 46 |

## Plug and Cap

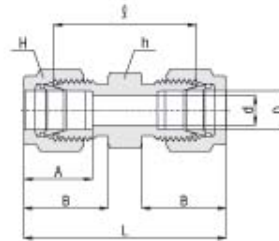
|                                                                                     |                    |    |
|-------------------------------------------------------------------------------------|--------------------|----|
|  | Plug<br><b>CPA</b> | 47 |
|  | Cap<br><b>CCA</b>  | 47 |

## Spare Parts

|                                                                                       |                                   |    |
|---------------------------------------------------------------------------------------|-----------------------------------|----|
|  | Tube Insert<br><b>CI</b>          | 48 |
|  | Sure Ring<br><b>CCL</b>           | 48 |
|  | Gap Gauge<br><b>CIG</b>           | 48 |
|  | Nut<br><b>CN</b>                  | 49 |
|  | Front Ferrule<br><b>CFF</b>       | 49 |
|  | Back Ferrule<br><b>CFB</b>        | 49 |
|  | Ferrule Set<br><b>CFS</b>         | 50 |
|  | Preswaging Tool<br><b>EZY-MAT</b> | 52 |

# Hy-Lok Tube Fittings

## Union CUA



### Connects Fractional Tubes

| Part No. | Tube O.D.<br>D |       | d<br>Min. | Width across flat |       |       |       | A     | B     | ℓ     | L      |
|----------|----------------|-------|-----------|-------------------|-------|-------|-------|-------|-------|-------|--------|
|          |                |       |           | h                 |       | H     |       |       |       |       |        |
|          |                |       |           | in                | mm    | in    | mm    |       |       |       |        |
| CUA - 1  | 1/16           | 1.58  | 1.27      | 5/16              | 7.93  | 5/16  | 7.93  | 8.63  | 10.92 | 17.50 | 25.15  |
| CUA - 2  | 1/8            | 3.17  | 2.28      | 7/16              | 11.11 | 7/16  | 11.11 | 12.70 | 15.24 | 22.35 | 35.56  |
| CUA - 3  | 3/16           | 4.76  | 3.04      | 7/16              | 11.11 | 1/2   | 12.70 | 13.71 | 16.00 | 24.13 | 37.33  |
| CUA - 4  | 1/4            | 6.35  | 4.82      | 1/2               | 12.70 | 9/16  | 14.28 | 15.24 | 17.78 | 26.16 | 40.89  |
| CUA - 5  | 5/16           | 7.93  | 6.35      | 9/16              | 14.28 | 5/8   | 15.87 | 16.25 | 18.54 | 28.19 | 42.92  |
| CUA - 6  | 3/8            | 9.52  | 7.11      | 5/8               | 15.87 | 11/16 | 17.46 | 16.76 | 19.30 | 30.22 | 44.95  |
| CUA - 8  | 1/2            | 12.70 | 10.41     | 13/16             | 20.63 | 7/8   | 22.22 | 22.86 | 21.84 | 30.98 | 51.30  |
| CUA - 10 | 5/8            | 15.87 | 12.70     | 15/16             | 23.81 | 1     | 25.40 | 24.38 | 21.84 | 31.75 | 52.07  |
| CUA - 12 | 3/4            | 19.05 | 15.74     | 1-1/16            | 26.98 | 1-1/8 | 28.57 | 24.38 | 21.84 | 33.27 | 53.59  |
| CUA - 14 | 7/8            | 22.22 | 18.28     | 1-3/16            | 30.16 | 1-1/4 | 31.75 | 25.90 | 21.84 | 35.05 | 55.37  |
| CUA - 16 | 1              | 25.40 | 22.35     | 1-3/8             | 34.92 | 1-1/2 | 38.10 | 31.24 | 26.41 | 40.38 | 64.77  |
| CUA - 20 | 1 1/4          | 31.75 | 27.68     | 1-3/4             | 44.45 | 1-7/8 | 47.62 | 41.14 | 38.86 | 48.00 | 92.20  |
| CUA - 24 | 1 1/2          | 38.10 | 34.03     | 2-1/8             | 53.97 | 2-1/4 | 57.15 | 50.03 | 45.21 | 53.60 | 107.95 |
| CUA - 32 | 2              | 50.80 | 45.97     | 2-3/4             | 69.85 | 3     | 76.20 | 67.56 | 62.73 | 74.70 | 149.35 |

### Connects Metric Tubes

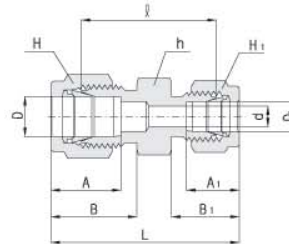
| Part No.  | Tube<br>O.D.<br>D | d<br>Min. | Width across flat |    | A    | B    | l    | L     |
|-----------|-------------------|-----------|-------------------|----|------|------|------|-------|
|           |                   |           | h                 | H  |      |      |      |       |
| CUA - 2M  | 2                 | 1.7       | 12                | 12 | 12.9 | 15.3 | 22.4 | 35.6  |
| CUA - 3M  | 3                 | 2.4       | 12                | 12 | 12.9 | 15.3 | 22.1 | 35.3  |
| CUA - 4M  | 4                 | 2.4       | 12                | 12 | 13.7 | 16.1 | 24.1 | 37.3  |
| CUA - 6M  | 6                 | 4.8       | 14                | 14 | 15.3 | 17.7 | 26.2 | 41.0  |
| CUA - 8M  | 8                 | 6.4       | 15                | 16 | 16.2 | 18.6 | 28.2 | 43.2  |
| CUA - 10M | 10                | 7.9       | 18                | 19 | 17.2 | 19.5 | 31.0 | 46.2  |
| CUA - 12M | 12                | 9.5       | 22                | 22 | 22.8 | 22.0 | 31.0 | 51.2  |
| CUA - 15M | 15                | 11.9      | 24                | 25 | 24.4 | 22.0 | 31.8 | 52.0  |
| CUA - 16M | 16                | 12.7      | 24                | 25 | 24.4 | 22.0 | 31.8 | 52.0  |
| CUA - 18M | 18                | 15.1      | 27                | 30 | 24.4 | 22.0 | 33.3 | 53.5  |
| CUA - 20M | 20                | 15.9      | 30                | 32 | 26.0 | 22.0 | 34.8 | 55.0  |
| CUA - 22M | 22                | 18.3      | 30                | 32 | 26.0 | 22.0 | 34.8 | 55.0  |
| CUA - 25M | 25                | 21.8      | 35                | 38 | 31.3 | 26.5 | 40.4 | 65.0  |
| CUA - 28M | 28                | 21.8      | 41                | 46 | 36.6 | 36.6 | 43.4 | 85.0  |
| CUA - 32M | 32                | 28.6      | 46                | 50 | 42.0 | 41.6 | 51.3 | 97.3  |
| CUA - 38M | 38                | 33.7      | 55                | 60 | 49.4 | 47.9 | 58.4 | 113.6 |

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



# Hy-Lok Tube Fittings

## Reducing Union CUR



### Connects Fractional Tubes

| Part No.    | Tube O.D. |       |                |       | d<br>Min. | Width across flat |       |       |       |                |       | A     | A <sub>1</sub> | B     | B <sub>1</sub> | ℓ     | L     |
|-------------|-----------|-------|----------------|-------|-----------|-------------------|-------|-------|-------|----------------|-------|-------|----------------|-------|----------------|-------|-------|
|             | D         |       | D <sub>1</sub> |       |           | h                 |       | H     |       | H <sub>1</sub> |       |       |                |       |                |       |       |
|             | in        | mm    | in             | mm    |           | in                | mm    | in    | mm    | in             | mm    |       |                |       |                |       |       |
| CUR 2 - 1   | 1/8       | 3.17  | 1/16           | 1.58  | 1.27      | 7/16              | 11.11 | 7/16  | 11.11 | 5/16           | 7.93  | 12.70 | 8.63           | 15.24 | 10.92          | 20.60 | 30.91 |
| CUR 3 - 1   | 3/16      | 4.76  | 1/16           | 1.58  | 1.27      | 7/16              | 11.11 | 1/2   | 12.70 | 5/16           | 7.93  | 13.71 | 8.63           | 16.00 | 10.92          | 21.84 | 32.25 |
| CUR 3 - 2   | 3/16      | 4.76  | 1/8            | 3.17  | 2.28      | 7/16              | 11.11 | 1/2   | 12.70 | 7/16           | 11.11 | 13.71 | 12.70          | 16.00 | 15.24          | 23.36 | 36.57 |
| CUR 4 - 1   | 1/4       | 6.35  | 1/16           | 1.58  | 1.27      | 1/2               | 12.70 | 9/16  | 14.28 | 5/16           | 7.93  | 15.24 | 8.63           | 17.78 | 10.92          | 23.11 | 34.29 |
| CUR 4 - 2   | 1/4       | 6.35  | 1/8            | 3.17  | 2.28      | 1/2               | 12.70 | 9/16  | 14.28 | 7/16           | 11.11 | 15.24 | 12.70          | 17.78 | 15.24          | 24.63 | 38.60 |
| CUR 4 - 3   | 1/4       | 6.35  | 3/16           | 4.76  | 3.04      | 1/2               | 12.70 | 9/16  | 14.28 | 1/2            | 12.70 | 15.24 | 13.71          | 17.78 | 16.00          | 25.40 | 39.37 |
| CUR 5 - 2   | 5/16      | 7.93  | 1/8            | 3.17  | 2.28      | 9/16              | 14.28 | 5/8   | 15.87 | 7/16           | 11.11 | 16.25 | 12.70          | 18.54 | 15.24          | 25.90 | 39.87 |
| CUR 5 - 4   | 5/16      | 7.93  | 1/4            | 6.35  | 4.82      | 9/16              | 14.28 | 5/8   | 15.87 | 9/16           | 14.28 | 16.25 | 15.24          | 18.54 | 17.78          | 27.43 | 42.16 |
| CUR 6 - 1   | 3/8       | 9.52  | 1/16           | 1.58  | 1.27      | 5/8               | 15.87 | 11/16 | 17.46 | 5/16           | 7.93  | 16.76 | 8.63           | 19.30 | 10.92          | 25.40 | 36.57 |
| CUR 6 - 2   | 3/8       | 9.52  | 1/8            | 3.17  | 2.28      | 5/8               | 15.87 | 11/16 | 17.46 | 7/16           | 11.11 | 16.76 | 12.70          | 19.30 | 15.24          | 26.92 | 40.89 |
| CUR 6 - 4   | 3/8       | 9.52  | 1/4            | 6.35  | 4.82      | 5/8               | 15.87 | 11/16 | 17.46 | 9/16           | 14.28 | 16.76 | 15.24          | 19.30 | 17.78          | 28.44 | 43.18 |
| CUR 6 - 5   | 3/8       | 9.52  | 5/16           | 7.93  | 6.35      | 5/8               | 15.87 | 11/16 | 17.46 | 5/8            | 15.87 | 16.76 | 16.25          | 19.30 | 18.54          | 29.46 | 44.19 |
| CUR 8 - 2   | 1/2       | 12.70 | 1/8            | 3.17  | 2.28      | 13/16             | 20.63 | 7/8   | 22.22 | 7/16           | 11.11 | 22.86 | 12.70          | 21.84 | 15.24          | 28.44 | 45.21 |
| CUR 8 - 4   | 1/2       | 12.70 | 1/4            | 6.35  | 4.82      | 13/16             | 20.63 | 7/8   | 22.22 | 9/16           | 14.28 | 22.86 | 15.24          | 21.84 | 17.78          | 29.46 | 46.99 |
| CUR 8 - 6   | 1/2       | 12.70 | 3/8            | 9.52  | 7.11      | 13/16             | 20.63 | 7/8   | 22.22 | 11/16          | 17.46 | 22.86 | 16.76          | 21.84 | 19.30          | 30.98 | 48.51 |
| CUR 10 - 6  | 5/8       | 15.87 | 3/8            | 9.52  | 7.11      | 15/16             | 23.81 | 1     | 25.40 | 11/16          | 17.46 | 24.38 | 16.76          | 21.84 | 19.30          | 31.75 | 49.27 |
| CUR 10 - 8  | 5/8       | 15.87 | 1/2            | 12.70 | 10.41     | 15/16             | 23.81 | 1     | 25.40 | 7/8            | 22.22 | 24.38 | 22.86          | 21.84 | 21.84          | 31.75 | 52.07 |
| CUR 12 - 4  | 3/4       | 19.05 | 1/4            | 6.35  | 4.82      | 1-1/16            | 26.98 | 1-1/8 | 28.57 | 9/16           | 14.28 | 24.38 | 15.24          | 21.84 | 17.78          | 31.75 | 49.27 |
| CUR 12 - 6  | 3/4       | 19.05 | 3/8            | 9.52  | 7.11      | 1-1/16            | 26.98 | 1-1/8 | 28.57 | 11/16          | 17.46 | 24.38 | 16.76          | 21.84 | 19.30          | 33.27 | 50.80 |
| CUR 12 - 8  | 3/4       | 19.05 | 1/2            | 12.70 | 10.41     | 1-1/16            | 26.98 | 1-1/8 | 28.57 | 7/8            | 22.22 | 24.38 | 22.86          | 21.84 | 21.84          | 33.27 | 53.59 |
| CUR 12 - 10 | 3/4       | 19.05 | 5/8            | 15.87 | 12.70     | 1-1/16            | 26.98 | 1-1/8 | 28.57 | 1              | 25.40 | 24.38 | 24.38          | 21.84 | 21.84          | 33.27 | 53.59 |
| CUR 16 - 8  | 1         | 25.40 | 1/2            | 12.70 | 10.41     | 1-3/8             | 34.92 | 1-1/2 | 38.10 | 7/8            | 22.22 | 31.24 | 22.86          | 26.41 | 21.84          | 40.89 | 63.24 |
| CUR 16 - 12 | 1         | 25.40 | 3/4            | 19.05 | 15.74     | 1-3/8             | 34.92 | 1-1/2 | 38.10 | 1-1/8          | 28.57 | 31.24 | 24.38          | 26.41 | 21.84          | 40.38 | 62.73 |

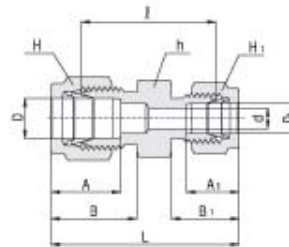
### Connects Metric Tubes

| Part No.      | Tube O.D. |                | d<br>Min. | Width across flat |    |                | A    | A <sub>1</sub> | B    | B <sub>1</sub> | ℓ    | L    |
|---------------|-----------|----------------|-----------|-------------------|----|----------------|------|----------------|------|----------------|------|------|
|               | D         | D <sub>1</sub> |           | h                 | H  | H <sub>1</sub> |      |                |      |                |      |      |
| CUR 3M - 2M   | 3         | 2              | 1.7       | 12                | 12 | 12             | 12.9 | 12.9           | 15.3 | 15.3           | 22.1 | 35.3 |
| CUR 6M - 2M   | 6         | 2              | 1.7       | 14                | 14 | 12             | 15.3 | 12.9           | 17.7 | 15.3           | 24.6 | 38.6 |
| CUR 6M - 3M   | 6         | 3              | 2.4       | 14                | 14 | 12             | 15.3 | 12.9           | 17.7 | 15.3           | 24.6 | 38.6 |
| CUR 6M - 4M   | 6         | 4              | 2.4       | 14                | 14 | 12             | 15.3 | 13.7           | 17.7 | 16.1           | 25.4 | 39.4 |
| CUR 8M - 6M   | 8         | 6              | 4.8       | 15                | 16 | 14             | 16.2 | 15.3           | 18.6 | 17.7           | 27.4 | 42.3 |
| CUR 10M - 6M  | 10        | 6              | 4.8       | 18                | 19 | 14             | 17.2 | 15.3           | 19.5 | 17.7           | 29.5 | 44.5 |
| CUR 10M - 8M  | 10        | 8              | 6.4       | 18                | 19 | 16             | 17.2 | 16.2           | 19.5 | 18.6           | 30.0 | 45.1 |
| CUR 12M - 6M  | 12        | 6              | 4.8       | 22                | 22 | 14             | 22.8 | 15.3           | 22.0 | 17.7           | 29.5 | 47.0 |
| CUR 12M - 8M  | 12        | 8              | 6.4       | 22                | 22 | 16             | 22.8 | 16.2           | 22.0 | 18.6           | 30.2 | 47.8 |
| CUR 12M - 10M | 12        | 10             | 7.9       | 22                | 22 | 19             | 22.8 | 17.2           | 22.0 | 19.5           | 31.0 | 48.7 |
| CUR 16M - 10M | 16        | 10             | 7.9       | 24                | 25 | 19             | 24.4 | 17.2           | 22.0 | 19.5           | 31.8 | 49.5 |
| CUR 16M - 12M | 16        | 12             | 9.5       | 24                | 25 | 22             | 24.4 | 22.8           | 22.0 | 22.0           | 31.8 | 52.0 |
| CUR 18M - 12M | 18        | 12             | 9.5       | 27                | 30 | 22             | 24.4 | 22.8           | 22.0 | 22.0           | 33.3 | 53.5 |
| CUR 25M - 18M | 25        | 18             | 15.1      | 35                | 38 | 30             | 31.3 | 24.4           | 26.5 | 22.0           | 38.6 | 61.0 |
| CUR 25M - 20M | 25        | 20             | 15.9      | 35                | 38 | 32             | 31.3 | 26.0           | 26.5 | 22.0           | 39.9 | 62.3 |

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

## Hy-Lok Tube Fittings

### Reducing Union CUR



### Connects Metric Tube To Fractional Tube

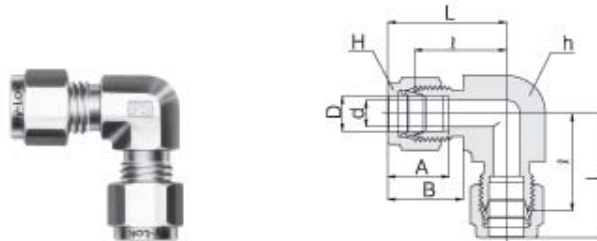
| Part No.    | Tube O.D. |                |       | d<br>Min. | Width across flat |    |                | A    | A <sub>1</sub> | B    | B <sub>1</sub> | ℓ    | L    |
|-------------|-----------|----------------|-------|-----------|-------------------|----|----------------|------|----------------|------|----------------|------|------|
|             | D         | D <sub>1</sub> |       |           | h                 | H  | H <sub>1</sub> |      |                |      |                |      |      |
|             |           | in             | mm    |           |                   |    |                |      |                |      |                |      |      |
| CUR 3M - 2  | 3         | 1/8            | 3.17  | 2.4       | 12                | 12 | 11.1           | 12.9 | 12.8           | 15.3 | 15.2           | 22.1 | 35.2 |
| CUR 4M - 2  | 4         | 1/8            | 3.17  | 2.4       | 12                | 12 | 11.1           | 13.7 | 12.8           | 16.1 | 15.2           | 23.4 | 36.5 |
| CUR 4M - 4  | 4         | 1/4            | 6.35  | 2.4       | 14                | 12 | 14.3           | 13.7 | 15.3           | 16.1 | 17.7           | 25.4 | 39.4 |
| CUR 6M - 2  | 6         | 1/8            | 3.17  | 2.4       | 14                | 14 | 11.1           | 15.3 | 12.8           | 17.7 | 15.2           | 24.6 | 38.5 |
| CUR 6M - 4  | 6         | 1/4            | 6.35  | 4.8       | 14                | 14 | 14.3           | 15.3 | 15.3           | 17.7 | 17.7           | 26.2 | 41.0 |
| CUR 6M - 5  | 6         | 5/16           | 7.93  | 4.8       | 14                | 14 | 15.9           | 15.3 | 16.2           | 17.7 | 18.6           | 27.4 | 42.3 |
| CUR 8M - 4  | 8         | 1/4            | 6.35  | 4.8       | 15                | 16 | 14.3           | 16.2 | 15.3           | 18.6 | 17.7           | 27.4 | 42.3 |
| CUR 10M - 2 | 10        | 1/8            | 3.17  | 2.4       | 18                | 19 | 11.1           | 17.2 | 12.8           | 19.5 | 15.2           | 27.7 | 41.8 |
| CUR 10M - 4 | 10        | 1/4            | 6.35  | 4.8       | 18                | 19 | 14.3           | 17.2 | 15.3           | 19.5 | 17.7           | 29.5 | 44.5 |
| CUR 10M - 5 | 10        | 5/16           | 7.93  | 6.4       | 18                | 19 | 15.9           | 17.2 | 16.2           | 19.5 | 18.6           | 30.3 | 45.1 |
| CUR 10M - 6 | 10        | 3/8            | 9.52  | 7.1       | 18                | 19 | 17.5           | 17.2 | 16.9           | 19.5 | 19.2           | 31.0 | 45.9 |
| CUR 12M - 5 | 12        | 5/16           | 7.93  | 6.4       | 22                | 22 | 15.9           | 22.8 | 16.2           | 22.0 | 18.6           | 30.2 | 47.8 |
| CUR 12M - 6 | 12        | 3/8            | 9.52  | 7.1       | 22                | 22 | 17.5           | 22.8 | 16.9           | 22.0 | 19.2           | 31.0 | 48.4 |
| CUR 12M - 8 | 12        | 1/2            | 12.70 | 9.5       | 22                | 22 | 22.2           | 22.8 | 22.8           | 22.0 | 22.0           | 31.0 | 51.2 |
| CUR 15M - 8 | 15        | 1/2            | 12.70 | 10.3      | 24                | 25 | 22.2           | 24.4 | 22.8           | 22.0 | 22.0           | 31.8 | 52.0 |
| CUR 16M -10 | 16        | 5/8            | 15.87 | 12.7      | 24                | 25 | 25.4           | 24.4 | 24.4           | 22.0 | 22.0           | 31.8 | 52.0 |
| CUR 18M -12 | 18        | 3/4            | 19.05 | 15.1      | 27                | 30 | 28.6           | 24.4 | 24.4           | 22.0 | 22.0           | 33.3 | 53.5 |
| CUR 20M -12 | 20        | 3/4            | 19.05 | 15.9      | 30                | 32 | 28.6           | 26.0 | 24.4           | 22.0 | 22.0           | 34.8 | 54.9 |
| CUR 20M -16 | 20        | 1              | 25.40 | 15.9      | 34.9              | 32 | 38.1           | 26.0 | 31.2           | 22.0 | 26.4           | 38.0 | 60.3 |
| CUR 22M -16 | 20        | 1              | 25.40 | 15.9      | 34.9              | 32 | 38.1           | 26.0 | 31.2           | 22.0 | 26.4           | 38.2 | 60.3 |

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



# Hy-Lok Tube Fittings

## Union Elbow CLA



### Connects Fractional Tubes

| Part No. | Tube O.D.<br>D |       | d<br>Min. | Width across flat |       |       |       | A     | B     | ℓ     | L      |
|----------|----------------|-------|-----------|-------------------|-------|-------|-------|-------|-------|-------|--------|
|          | in             | mm    |           | h                 |       | H     |       |       |       |       |        |
|          |                |       |           | in                | mm    | in    | mm    |       |       |       |        |
| CLA - 1  | 1/16           | 1.58  | 1.27      | 3/8               | 9.52  | 5/16  | 7.93  | 8.63  | 10.92 | 14.00 | 17.88  |
| CLA - 2  | 1/8            | 3.17  | 2.28      | 3/8               | 9.52  | 7/16  | 11.11 | 12.70 | 15.24 | 15.74 | 22.35  |
| CLA - 3  | 3/16           | 4.76  | 3.04      | 1/2               | 12.70 | 1/2   | 12.70 | 13.71 | 16.00 | 17.78 | 24.38  |
| CLA - 4  | 1/4            | 6.35  | 4.82      | 1/2               | 12.70 | 9/16  | 14.28 | 15.24 | 17.78 | 19.55 | 26.92  |
| CLA - 5  | 5/16           | 7.93  | 6.35      | 9/16              | 14.28 | 5/8   | 15.87 | 16.25 | 18.54 | 21.33 | 28.70  |
| CLA - 6  | 3/8            | 9.52  | 7.11      | 5/8               | 15.87 | 11/16 | 17.46 | 16.76 | 19.30 | 23.11 | 30.48  |
| CLA - 8  | 1/2            | 12.70 | 10.41     | 13/16             | 20.63 | 7/8   | 22.22 | 22.86 | 21.84 | 25.90 | 36.06  |
| CLA -10  | 5/8            | 15.87 | 12.70     | 15/16             | 23.80 | 1     | 25.40 | 24.38 | 21.84 | 28.70 | 38.80  |
| CLA -12  | 3/4            | 19.05 | 15.74     | 1-1/16            | 26.98 | 1-1/8 | 28.57 | 24.38 | 21.84 | 29.71 | 39.87  |
| CLA -14  | 7/8            | 22.22 | 18.28     | 1-3/8             | 34.92 | 1-1/4 | 31.75 | 25.90 | 21.84 | 34.54 | 44.70  |
| CLA -16  | 1              | 25.40 | 22.35     | 1-3/8             | 34.92 | 1-1/2 | 38.10 | 31.24 | 26.41 | 36.83 | 49.02  |
| CLA -20  | 1-1/4          | 31.75 | 27.68     | 1-11/16           | 42.86 | 1-7/8 | 47.62 | 41.14 | 38.86 | 44.50 | 66.54  |
| CLA -24  | 1-1/2          | 38.10 | 34.03     | 2                 | 50.80 | 2-1/4 | 57.15 | 50.03 | 45.21 | 50.80 | 77.97  |
| CLA -32  | 2              | 50.80 | 45.97     | 2-3/4             | 69.85 | 3     | 76.20 | 67.56 | 62.73 | 69.80 | 107.18 |

### Connects Metric Tubes

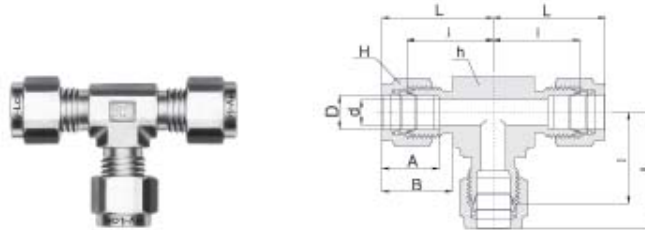
| Part No. | Tube<br>O.D.<br>D | d<br>Min. | Width across flat |    | A    | B    | ℓ    | L    |
|----------|-------------------|-----------|-------------------|----|------|------|------|------|
|          |                   |           | h                 | H  |      |      |      |      |
| CLA - 2M | 2                 | 1.7       | 9.5               | 12 | 12.9 | 15.3 | 15.7 | 22.3 |
| CLA - 3M | 3                 | 2.4       | 9.5               | 12 | 12.9 | 15.3 | 15.7 | 22.3 |
| CLA - 4M | 4                 | 2.4       | 12.7              | 12 | 13.7 | 16.4 | 18.8 | 25.4 |
| CLA - 6M | 6                 | 4.8       | 12.7              | 14 | 15.3 | 17.7 | 19.6 | 27.0 |
| CLA - 8M | 8                 | 6.4       | 14.3              | 16 | 16.2 | 18.6 | 21.3 | 28.8 |
| CLA -10M | 10                | 7.9       | 17.5              | 19 | 17.2 | 19.5 | 23.9 | 31.5 |
| CLA -12M | 12                | 9.5       | 20.6              | 22 | 22.8 | 22.0 | 25.9 | 36.0 |
| CLA -15M | 15                | 11.9      | 23.8              | 25 | 24.4 | 22.0 | 28.7 | 38.8 |
| CLA -16M | 16                | 12.7      | 23.8              | 25 | 24.4 | 22.0 | 28.7 | 38.8 |
| CLA -18M | 18                | 15.1      | 27.0              | 30 | 24.4 | 22.0 | 29.7 | 39.8 |
| CLA -20M | 20                | 15.9      | 34.9              | 32 | 26.0 | 22.0 | 32.5 | 42.6 |
| CLA -22M | 22                | 18.3      | 34.9              | 32 | 26.0 | 22.0 | 32.5 | 42.6 |
| CLA -25M | 25                | 21.8      | 34.9              | 38 | 31.3 | 26.5 | 36.8 | 49.1 |
| CLA -28M | 28                | 21.8      | 41.0              | 46 | 36.6 | 36.6 | 43.2 | 64.0 |
| CLA -32M | 32                | 28.6      | 46.0              | 50 | 42.0 | 41.6 | 49.3 | 72.3 |
| CLA -38M | 38                | 33.7      | 55.0              | 60 | 49.4 | 47.9 | 56.4 | 84.0 |

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



# Hy-Lok Tube Fittings

## Union Tee CTA



### Connects Fractional Tubes

| Part No. | Tube O.D.<br>D |       | d<br>Min. | Width across flat |       |       |       | A     | B     | ℓ     | L      |
|----------|----------------|-------|-----------|-------------------|-------|-------|-------|-------|-------|-------|--------|
|          | in             | mm    |           | h                 |       | H     |       |       |       |       |        |
|          |                |       |           | in                | mm    | in    | mm    |       |       |       |        |
| CTA - 1  | 1/16           | 1.58  | 1.27      | 3/8               | 9.52  | 5/16  | 7.93  | 8.63  | 10.92 | 14.00 | 17.88  |
| CTA - 2  | 1/8            | 3.17  | 2.28      | 3/8               | 9.52  | 7/16  | 11.11 | 12.70 | 15.24 | 15.74 | 22.35  |
| CTA - 3  | 3/16           | 4.76  | 3.04      | 1/2               | 12.70 | 1/2   | 12.70 | 13.71 | 16.00 | 17.78 | 24.38  |
| CTA - 4  | 1/4            | 6.35  | 4.82      | 1/2               | 12.70 | 9/16  | 14.28 | 15.24 | 17.78 | 19.55 | 26.92  |
| CTA - 5  | 5/16           | 7.93  | 6.35      | 5/8               | 15.80 | 5/8   | 15.87 | 16.25 | 18.54 | 21.33 | 28.70  |
| CTA - 6  | 3/8            | 9.52  | 7.11      | 5/8               | 15.87 | 11/16 | 17.46 | 16.76 | 19.30 | 23.11 | 30.48  |
| CTA - 8  | 1/2            | 12.70 | 10.41     | 13/16             | 20.63 | 7/8   | 22.22 | 22.86 | 21.84 | 25.90 | 36.06  |
| CTA -10  | 5/8            | 15.87 | 12.70     | 15/16             | 23.80 | 1     | 25.40 | 24.38 | 21.84 | 28.70 | 38.80  |
| CTA -12  | 3/4            | 19.05 | 15.74     | 1-1/16            | 26.98 | 1-1/8 | 28.57 | 24.38 | 21.84 | 29.71 | 39.87  |
| CTA -14  | 7/8            | 22.22 | 18.28     | 1-3/8             | 34.92 | 1-1/4 | 31.75 | 25.90 | 21.84 | 34.54 | 44.70  |
| CTA -16  | 1              | 25.40 | 22.35     | 1-3/8             | 34.92 | 1-1/2 | 38.10 | 31.24 | 26.41 | 36.83 | 49.02  |
| CTA -20  | 1-1/4          | 31.75 | 27.68     | 1-11/16           | 42.86 | 1-7/8 | 47.62 | 41.14 | 38.86 | 44.50 | 66.54  |
| CTA -24  | 1-1/2          | 38.10 | 34.03     | 2                 | 50.80 | 2-1/4 | 57.15 | 50.03 | 45.21 | 50.80 | 77.97  |
| CTA -32  | 2              | 50.80 | 45.97     | 2-3/4             | 69.85 | 3     | 76.20 | 67.56 | 62.73 | 69.80 | 107.18 |

### Connects Metric Tubes

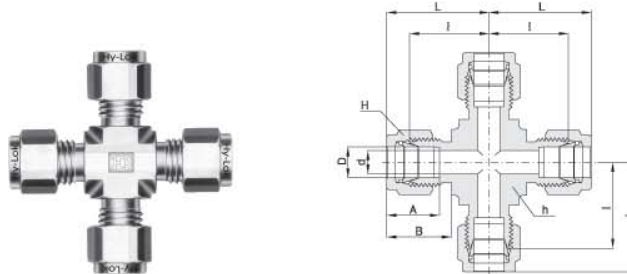
| Part No. | Tube<br>O.D.<br>D | d<br>Min. | Width across flat |    | A    | B    | l    | L    |
|----------|-------------------|-----------|-------------------|----|------|------|------|------|
|          |                   |           | h                 | H  |      |      |      |      |
| CTA - 2M | 2                 | 1.7       | 9.5               | 12 | 12.9 | 15.3 | 15.7 | 22.3 |
| CTA - 3M | 3                 | 2.4       | 9.5               | 12 | 12.9 | 15.3 | 15.7 | 22.3 |
| CTA - 4M | 4                 | 2.4       | 12.7              | 12 | 13.7 | 16.1 | 18.8 | 25.4 |
| CTA - 6M | 6                 | 4.8       | 12.7              | 14 | 15.3 | 17.7 | 19.6 | 27.0 |
| CTA - 8M | 8                 | 6.4       | 15.8              | 16 | 16.2 | 18.6 | 21.3 | 28.8 |
| CTA -10M | 10                | 7.9       | 17.5              | 19 | 17.2 | 19.5 | 23.9 | 31.5 |
| CTA -12M | 12                | 9.5       | 20.6              | 22 | 22.8 | 22.0 | 25.9 | 36.0 |
| CTA -15M | 15                | 11.9      | 25.4              | 25 | 24.4 | 22.0 | 28.7 | 38.8 |
| CTA -16M | 16                | 12.7      | 25.4              | 25 | 24.4 | 22.0 | 28.7 | 38.8 |
| CTA -18M | 18                | 15.1      | 27.0              | 30 | 24.4 | 22.0 | 29.7 | 39.8 |
| CTA -20M | 20                | 15.9      | 34.9              | 32 | 26.0 | 22.0 | 32.5 | 42.6 |
| CTA -22M | 22                | 18.3      | 34.9              | 32 | 26.0 | 22.0 | 32.5 | 42.6 |
| CTA -25M | 25                | 21.8      | 34.9              | 38 | 31.3 | 26.5 | 36.8 | 49.1 |
| CTA -28M | 28                | 21.8      | 41.0              | 46 | 36.6 | 36.6 | 43.2 | 64.0 |
| CTA -32M | 32                | 28.6      | 46.0              | 50 | 42.0 | 41.6 | 49.3 | 72.3 |
| CTA -38M | 38                | 33.7      | 55.0              | 60 | 49.4 | 47.9 | 56.4 | 84.0 |

\*Reducing union tees are available upon request. (Refer to catalog No. H-201TF)

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

# Hy-Lok Tube Fittings

## Union Cross CXA



### Connects Fractional Tubes

| Part No. | Tube O.D.<br>D |       | d<br>Min. | Width across flat |       |       |       | A     | B     | ℓ     | L     |
|----------|----------------|-------|-----------|-------------------|-------|-------|-------|-------|-------|-------|-------|
|          | in             | mm    |           | h                 |       | H     |       |       |       |       |       |
|          |                |       |           | in                | mm    | in    | mm    |       |       |       |       |
| CXA - 1  | 1/16           | 1.58  | 1.27      | 3/8               | 9.52  | 5/16  | 7.93  | 8.63  | 10.92 | 14.00 | 17.88 |
| CXA - 2  | 1/8            | 3.17  | 2.28      | 3/8               | 9.52  | 7/16  | 11.11 | 12.70 | 15.24 | 15.74 | 22.35 |
| CXA - 3  | 3/16           | 4.76  | 3.04      | 1/2               | 12.70 | 1/2   | 12.70 | 13.71 | 16.00 | 17.78 | 24.38 |
| CXA - 4  | 1/4            | 6.35  | 4.82      | 1/2               | 12.70 | 9/16  | 14.28 | 15.24 | 17.78 | 19.55 | 26.92 |
| CXA - 5  | 5/16           | 7.93  | 6.35      | 5/8               | 15.87 | 5/8   | 15.87 | 16.25 | 18.54 | 21.33 | 28.70 |
| CXA - 6  | 3/8            | 9.52  | 7.11      | 5/8               | 15.87 | 11/16 | 17.46 | 16.76 | 19.30 | 23.11 | 30.48 |
| CXA - 8  | 1/2            | 12.70 | 10.41     | 13/16             | 20.63 | 7/8   | 22.22 | 22.86 | 21.84 | 25.90 | 36.06 |
| CXA -10  | 5/8            | 15.87 | 12.70     | 13/16             | 20.63 | 1     | 25.40 | 24.38 | 21.84 | 28.70 | 38.80 |
| CXA -12  | 3/4            | 19.05 | 15.74     | 1-1/16            | 26.98 | 1-1/8 | 28.57 | 24.38 | 21.84 | 29.71 | 39.87 |
| CXA -14  | 7/8            | 22.22 | 18.28     | 1-3/8             | 34.92 | 1-1/4 | 31.75 | 25.90 | 21.84 | 34.54 | 44.70 |
| CXA -16  | 1              | 25.40 | 22.35     | 1-3/8             | 34.92 | 1-1/2 | 38.10 | 31.24 | 26.41 | 36.83 | 49.02 |

### Connects Metric Tubes

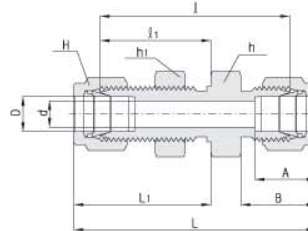
| Part No. | Tube<br>O.D.<br>D | d<br>Min. | Width across flat |    | A    | B    | ℓ    | L    |
|----------|-------------------|-----------|-------------------|----|------|------|------|------|
|          |                   |           | h                 | H  |      |      |      |      |
| CXA - 3M | 3                 | 2.4       | 9.5               | 12 | 12.9 | 15.3 | 15.7 | 22.3 |
| CXA - 6M | 6                 | 4.8       | 12.7              | 14 | 15.3 | 17.7 | 19.6 | 27.0 |
| CXA - 8M | 8                 | 6.4       | 15.8              | 16 | 16.2 | 18.6 | 21.3 | 28.8 |
| CXA -10M | 10                | 7.9       | 20.6              | 19 | 17.2 | 19.5 | 23.9 | 31.5 |
| CXA -12M | 12                | 9.5       | 20.6              | 22 | 22.8 | 22.0 | 25.9 | 36.0 |
| CXA -16M | 16                | 12.7      | 23.8              | 25 | 24.4 | 22.0 | 28.7 | 38.8 |
| CXA -18M | 18                | 15.1      | 27.0              | 30 | 24.4 | 22.0 | 29.7 | 39.8 |
| CXA -20M | 20                | 15.9      | 34.9              | 32 | 26.0 | 22.0 | 32.5 | 42.6 |
| CXA -25M | 25                | 21.8      | 34.9              | 38 | 31.3 | 22.0 | 36.8 | 49.1 |

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



# Hy-Lok Tube Fittings

## Bulkhead Union CBU



### Connects Fractional Tubes

| Part No. | Tube O.D.<br>D |       | d<br>Min. | Width across flat |       |       |       | A     | B     | ℓ      | ℓ <sub>1</sub> | L      | L <sub>1</sub> | Panel<br>Hole<br>Drill Size | Panel<br>Max.<br>Thickness |
|----------|----------------|-------|-----------|-------------------|-------|-------|-------|-------|-------|--------|----------------|--------|----------------|-----------------------------|----------------------------|
|          |                |       |           | h, h <sub>1</sub> |       | H     |       |       |       |        |                |        |                |                             |                            |
|          | in             | mm    |           | in                | mm    | in    | mm    |       |       |        |                |        |                |                             |                            |
| CBU - 1  | 1/16           | 1.58  | 1.27      | 5/16              | 7.93  | 5/16  | 7.93  | 8.63  | 10.92 | 23.87  | 13.46          | 31.50  | 17.27          | 5.16                        | 3.05                       |
| CBU - 2  | 1/8            | 3.17  | 2.28      | 1/2               | 12.70 | 7/16  | 11.11 | 12.70 | 15.24 | 38.10  | 24.63          | 51.30  | 31.24          | 8.33                        | 12.70                      |
| CBU - 3  | 3/16           | 4.76  | 3.04      | 9/16              | 14.28 | 1/2   | 12.70 | 13.71 | 16.00 | 40.38  | 25.40          | 53.59  | 32.00          | 9.92                        | 12.70                      |
| CBU - 4  | 1/4            | 6.35  | 4.82      | 5/8               | 15.87 | 9/16  | 14.28 | 15.24 | 17.78 | 42.92  | 26.16          | 57.65  | 33.52          | 11.50                       | 10.16                      |
| CBU - 5  | 5/16           | 7.93  | 6.35      | 11/16             | 17.46 | 5/8   | 15.87 | 16.25 | 18.54 | 45.97  | 28.44          | 60.70  | 35.81          | 13.09                       | 11.17                      |
| CBU - 6  | 3/8            | 9.52  | 7.11      | 3/4               | 19.05 | 11/16 | 17.46 | 16.76 | 19.30 | 47.49  | 29.46          | 62.23  | 36.83          | 14.68                       | 11.17                      |
| CBU - 8  | 1/2            | 12.70 | 10.41     | 15/16             | 23.81 | 7/8   | 22.22 | 22.86 | 21.84 | 50.80  | 31.75          | 71.12  | 41.91          | 19.44                       | 12.70                      |
| CBU -10  | 5/8            | 15.87 | 12.70     | 1-1/16            | 26.98 | 1     | 25.40 | 24.38 | 21.84 | 52.32  | 32.51          | 72.64  | 42.67          | 22.62                       | 12.70                      |
| CBU -12  | 3/4            | 19.05 | 15.74     | 1-3/16            | 30.16 | 1-1/8 | 28.57 | 24.38 | 21.84 | 58.67  | 37.33          | 78.99  | 47.49          | 25.79                       | 16.76                      |
| CBU -14  | 7/8            | 22.22 | 18.28     | 1-3/8             | 34.92 | 1-1/4 | 31.75 | 25.90 | 21.84 | 64.26  | 42.92          | 84.58  | 53.08          | 28.97                       | 19.05                      |
| CBU -16  | 1              | 25.40 | 22.35     | 1-5/8             | 41.27 | 1-1/2 | 38.10 | 31.24 | 26.41 | 71.37  | 45.21          | 95.75  | 57.40          | 33.73                       | 19.05                      |
| CBU -20  | 1-1/4          | 31.75 | 27.68     | 1-7/8             | 47.62 | 1-7/8 | 47.62 | 41.14 | 38.86 | 78.99  | 47.75          | 123.19 | 69.85          | 41.67                       | 19.05                      |
| CBU -24  | 1-1/2          | 38.10 | 34.03     | 2-1/4             | 57.15 | 2-1/4 | 57.15 | 50.03 | 45.21 | 84.83  | 49.27          | 139.19 | 76.45          | 49.61                       | 19.05                      |
| CBU -32  | 2              | 50.80 | 45.97     | 2-3/4             | 69.85 | 3     | 76.20 | 67.56 | 62.73 | 105.66 | 56.38          | 180.34 | 93.72          | 67.07                       | 19.05                      |

### Connects Metric Tubes

| Part No. | Tube<br>O.D.<br>D | d<br>Min. | Width across flat |                  |    | A    | B    | ℓ    | ℓ <sub>1</sub> | L     | L <sub>1</sub> | Panel<br>Hole<br>Drill Size | Panel<br>Max.<br>Thickness |
|----------|-------------------|-----------|-------------------|------------------|----|------|------|------|----------------|-------|----------------|-----------------------------|----------------------------|
|          |                   |           | h                 | h <sub>1</sub> * | H  |      |      |      |                |       |                |                             |                            |
| CBU - 3M | 3                 | 2.4       | 14                | 12.7             | 12 | 12.9 | 15.3 | 38.1 | 24.6           | 51.3  | 31.2           | 8.3                         | 12.7                       |
| CBU - 4M | 4                 | 2.4       | 14                | 14.3             | 12 | 13.7 | 16.1 | 40.4 | 25.4           | 53.6  | 32.0           | 9.9                         | 12.7                       |
| CBU - 6M | 6                 | 4.8       | 16                | 15.9             | 14 | 15.3 | 17.7 | 42.9 | 26.2           | 57.7  | 33.6           | 11.5                        | 10.2                       |
| CBU - 8M | 8                 | 6.4       | 18                | 17.5             | 16 | 16.2 | 18.6 | 46.0 | 28.6           | 61.0  | 36.1           | 13.1                        | 11.2                       |
| CBU -10M | 10                | 7.9       | 22                | 22.0             | 19 | 17.2 | 19.5 | 48.5 | 29.4           | 63.7  | 37.0           | 16.2                        | 11.2                       |
| CBU -12M | 12                | 9.5       | 24                | 23.8             | 22 | 22.8 | 22.0 | 50.8 | 31.8           | 71.0  | 41.9           | 19.5                        | 12.7                       |
| CBU -15M | 15                | 11.9      | 27                | 27.0             | 25 | 24.4 | 22.0 | 52.3 | 32.5           | 72.5  | 42.6           | 22.8                        | 12.7                       |
| CBU -16M | 16                | 12.7      | 27                | 27.0             | 25 | 24.4 | 22.0 | 52.3 | 32.5           | 72.5  | 42.6           | 22.8                        | 12.7                       |
| CBU -18M | 18                | 15.1      | 30                | 30.0             | 30 | 24.4 | 22.0 | 58.7 | 37.3           | 78.9  | 47.4           | 26.0                        | 16.8                       |
| CBU -20M | 20                | 15.9      | 35                | 35.0             | 32 | 26.0 | 22.0 | 64.3 | 42.9           | 84.5  | 53.0           | 29.0                        | 17.0                       |
| CBU -22M | 22                | 18.3      | 35                | 35.0             | 32 | 26.0 | 22.0 | 64.3 | 42.9           | 84.5  | 53.0           | 29.0                        | 19.1                       |
| CBU -25M | 25                | 21.8      | 41.3              | 41.3             | 38 | 31.3 | 26.5 | 71.4 | 45.2           | 95.9  | 57.5           | 33.7                        | 19.1                       |
| CBU -32M | 32                | 28.6      | 50                | 50.0             | 50 | 42.0 | 41.6 | 82.3 | 49.5           | 128.3 | 72.5           | 42.5                        | 19.0                       |
| CBU -38M | 38                | 33.7      | 60                | 60.0             | 60 | 49.4 | 47.9 | 89.4 | 51.5           | 144.6 | 79.1           | 50.5                        | 19.0                       |

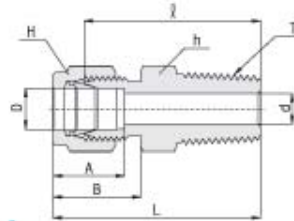
\*h<sub>1</sub> : Applicable to metric Tube bulkhead hexagon only.

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



## Hy-Lok Tube Fittings

### Male Connector CMC - N



### Connects Fractional Tube To Female NPT Thread

| Part No.     | Tube O.D.<br>D |       | T*<br>(NPT) | d<br>Min. | Width across flat |       |       |       | A     | B     | ℓ     | L      |
|--------------|----------------|-------|-------------|-----------|-------------------|-------|-------|-------|-------|-------|-------|--------|
|              | in             | mm    |             |           | h                 |       | H     |       |       |       |       |        |
|              |                |       |             |           | in                | mm    | in    | mm    |       |       |       |        |
| CMC 1 - 1N   | 1/16           | 1.58  | 1/16        | 1.27      | 5/16              | 7.93  | 5/16  | 7.93  | 8.63  | 10.92 | 20.00 | 23.83  |
| CMC 1 - 2N   | 1/16           | 1.58  | 1/8         | 1.27      | 7/16              | 11.11 | 7/16  | 11.11 | 8.63  | 10.92 | 22.35 | 26.23  |
| CMC 1 - 4N   | 1/16           | 1.58  | 1/4         | 1.27      | 9/16              | 14.28 | 5/16  | 7.93  | 8.63  | 10.92 | 27.17 | 30.98  |
| CMC 2 - 1N   | 1/8            | 3.17  | 1/16        | 2.28      | 7/16              | 11.11 | 7/16  | 11.11 | 12.70 | 15.24 | 23.11 | 29.71  |
| CMC 2 - 2N   | 1/8            | 3.17  | 1/8         | 2.28      | 7/16              | 11.11 | 7/16  | 11.11 | 12.70 | 15.24 | 23.87 | 30.48  |
| CMC 2 - 4N   | 1/8            | 3.17  | 1/4         | 2.28      | 9/16              | 14.28 | 7/16  | 11.11 | 12.70 | 15.24 | 28.95 | 35.56  |
| CMC 2 - 6N   | 1/8            | 3.17  | 3/8         | 2.28      | 11/16             | 17.46 | 7/16  | 11.11 | 12.70 | 15.24 | 29.21 | 35.81  |
| CMC 2 - 8N   | 1/8            | 3.17  | 1/2         | 2.28      | 7/8               | 22.22 | 7/16  | 11.11 | 12.70 | 15.24 | 35.56 | 42.16  |
| CMC 3 - 2N   | 3/16           | 4.76  | 1/8         | 3.04      | 7/16              | 11.11 | 1/2   | 12.70 | 13.71 | 16.00 | 24.63 | 31.24  |
| CMC 3 - 4N   | 3/16           | 4.76  | 1/4         | 3.04      | 9/16              | 14.28 | 1/2   | 12.70 | 13.71 | 16.00 | 29.71 | 36.32  |
| CMC 4 - 1N   | 1/4            | 6.35  | 1/16        | 4.82      | 1/2               | 12.70 | 9/16  | 14.28 | 15.24 | 17.78 | 25.40 | 32.76  |
| CMC 4 - 2N   | 1/4            | 6.35  | 1/8         | 4.82      | 1/2               | 12.70 | 9/16  | 14.28 | 15.24 | 17.78 | 25.40 | 32.76  |
| CMC 4 - 4N   | 1/4            | 6.35  | 1/4         | 4.82      | 9/16              | 14.28 | 9/16  | 14.28 | 15.24 | 17.78 | 30.48 | 37.84  |
| CMC 4 - 6N   | 1/4            | 6.35  | 3/8         | 4.82      | 11/16             | 17.46 | 9/16  | 14.28 | 15.24 | 17.78 | 30.98 | 38.35  |
| CMC 4 - 8N   | 1/4            | 6.35  | 1/2         | 4.82      | 7/8               | 22.22 | 9/16  | 14.28 | 15.24 | 17.78 | 37.33 | 44.70  |
| CMC 4 -12N   | 1/4            | 6.35  | 3/4         | 4.82      | 1-1/16            | 26.98 | 9/16  | 14.28 | 15.24 | 17.78 | 38.86 | 46.22  |
| CMC 5 - 2N   | 5/16           | 7.93  | 1/8         | 4.82      | 9/16              | 14.28 | 5/8   | 15.87 | 16.25 | 18.54 | 26.67 | 34.03  |
| CMC 5 - 4N   | 5/16           | 7.93  | 1/4         | 6.35      | 9/16              | 14.28 | 5/8   | 15.87 | 16.25 | 18.54 | 31.24 | 38.60  |
| CMC 5 - 6N   | 5/16           | 7.93  | 3/8         | 6.35      | 11/16             | 17.46 | 5/8   | 15.87 | 16.25 | 18.54 | 31.75 | 39.11  |
| CMC 6 - 2N   | 3/8            | 9.52  | 1/8         | 4.82      | 5/8               | 15.87 | 11/16 | 17.46 | 16.76 | 19.30 | 27.94 | 35.30  |
| CMC 6 - 4N   | 3/8            | 9.52  | 1/4         | 7.11      | 5/8               | 15.87 | 11/16 | 17.46 | 16.76 | 19.30 | 32.51 | 39.87  |
| CMC 6 - 6N   | 3/8            | 9.52  | 3/8         | 7.11      | 11/16             | 17.46 | 11/16 | 17.46 | 16.76 | 19.30 | 32.51 | 39.87  |
| CMC 6 - 8N   | 3/8            | 9.52  | 1/2         | 7.11      | 7/8               | 22.22 | 11/16 | 17.46 | 16.76 | 19.30 | 38.86 | 46.22  |
| CMC 6 -12N   | 3/8            | 9.52  | 3/4         | 7.11      | 1-1/16            | 26.98 | 11/16 | 17.46 | 16.76 | 19.30 | 40.38 | 47.75  |
| CMC 8 - 2N   | 1/2            | 12.70 | 1/8         | 4.82      | 13/16             | 20.63 | 7/8   | 22.22 | 22.86 | 21.84 | 28.70 | 38.86  |
| CMC 8 - 4N   | 1/2            | 12.70 | 1/4         | 7.11      | 13/16             | 20.63 | 7/8   | 22.22 | 22.86 | 21.84 | 33.27 | 43.43  |
| CMC 8 - 6N   | 1/2            | 12.70 | 3/8         | 9.65      | 13/16             | 20.63 | 7/8   | 22.22 | 22.86 | 21.84 | 33.27 | 43.43  |
| CMC 8 - 8N   | 1/2            | 12.70 | 1/2         | 10.41     | 7/8               | 22.22 | 7/8   | 22.22 | 22.86 | 21.84 | 38.86 | 49.02  |
| CMC 8 -12N   | 1/2            | 12.70 | 3/4         | 10.41     | 1-1/16            | 26.98 | 7/8   | 22.22 | 22.86 | 21.84 | 40.38 | 50.54  |
| CMC 8 -16N   | 1/2            | 12.70 | 1           | 10.41     | 1-3/8             | 34.92 | 7/8   | 22.22 | 22.86 | 21.84 | 46.99 | 57.15  |
| CMC 10 - 6N  | 5/8            | 15.87 | 3/8         | 9.65      | 15/16             | 23.81 | 1     | 25.40 | 24.38 | 21.84 | 34.03 | 44.19  |
| CMC 10 - 8N  | 5/8            | 15.87 | 1/2         | 11.93     | 15/16             | 23.81 | 1     | 25.40 | 24.38 | 21.84 | 38.86 | 49.02  |
| CMC 10 - 12N | 5/8            | 15.87 | 3/4         | 12.70     | 1-1/16            | 26.98 | 1     | 25.40 | 24.38 | 21.84 | 40.38 | 50.54  |
| CMC 12 - 8N  | 3/4            | 19.05 | 1/2         | 11.93     | 1-1/16            | 26.98 | 1-1/8 | 28.57 | 24.38 | 21.84 | 40.38 | 50.54  |
| CMC 12 - 12N | 3/4            | 19.05 | 3/4         | 15.74     | 1-1/16            | 26.98 | 1-1/8 | 28.57 | 24.38 | 21.84 | 40.38 | 50.54  |
| CMC 12 - 16N | 3/4            | 19.05 | 1           | 15.74     | 1-3/8             | 34.92 | 1-1/8 | 28.57 | 24.38 | 21.84 | 46.99 | 57.15  |
| CMC 14 - 12N | 7/8            | 22.22 | 3/4         | 15.74     | 1-3/16            | 30.16 | 1-1/4 | 31.75 | 25.90 | 21.84 | 40.38 | 50.54  |
| CMC 14 - 16N | 7/8            | 22.22 | 1           | 18.28     | 1-3/8             | 34.92 | 1-1/4 | 31.75 | 25.90 | 21.84 | 46.99 | 57.15  |
| CMC 16 - 8N  | 1              | 25.40 | 1/2         | 11.93     | 1-3/8             | 34.92 | 1-1/2 | 38.10 | 31.24 | 26.41 | 45.21 | 57.40  |
| CMC 16 - 12N | 1              | 25.40 | 3/4         | 15.74     | 1-3/8             | 34.92 | 1-1/2 | 38.10 | 31.24 | 26.41 | 45.21 | 57.40  |
| CMC 16 - 16N | 1              | 25.40 | 1           | 22.35     | 1-3/8             | 34.92 | 1-1/2 | 38.10 | 31.24 | 26.41 | 50.03 | 62.23  |
| CMC 20 - 16N | 1-1/4          | 31.75 | 1           | 22.35     | 1-3/4             | 44.45 | 1-7/8 | 47.62 | 41.14 | 38.86 | 55.11 | 77.21  |
| CMC 20 - 20N | 1-1/4          | 31.75 | 1-1/4       | 27.68     | 1-3/4             | 44.45 | 1-7/8 | 47.62 | 41.14 | 38.86 | 55.11 | 77.21  |
| CMC 24 - 24N | 1-1/2          | 38.10 | 1-1/2       | 34.03     | 2-1/8             | 53.97 | 2-1/4 | 57.15 | 50.03 | 45.21 | 61.72 | 88.90  |
| CMC 32 - 32N | 2              | 50.80 | 2           | 45.97     | 2-3/4             | 69.85 | 3     | 76.20 | 67.56 | 62.73 | 76.20 | 113.53 |

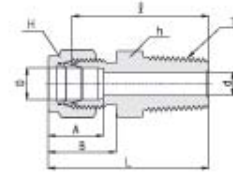
\* ISO Tapered Threads are available upon request.

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



## Hy-Lok Tube Fittings

### Male Connector CMC - R



#### Connects Metric Tube To Female ISO Tapered Thread

| Part No.      | Tube<br>O.D.<br>D | T*<br>R(PT) | d<br>Min | Width across flat |    | A    | B    | ℓ    | L    |
|---------------|-------------------|-------------|----------|-------------------|----|------|------|------|------|
|               |                   |             |          | h                 | H  |      |      |      |      |
| CMC 2M - 2R   | 2                 | 1/8         | 1.7      | 12                | 12 | 12.9 | 15.3 | 23.9 | 30.5 |
| CMC 3M - 2R   | 3                 | 1/8         | 2.4      | 12                | 12 | 12.9 | 15.3 | 23.9 | 30.5 |
| CMC 3M - 4R   | 3                 | 1/4         | 2.4      | 14                | 12 | 12.9 | 15.3 | 29.0 | 35.6 |
| CMC 4M - 2R   | 4                 | 1/8         | 2.4      | 12                | 12 | 13.7 | 16.1 | 24.6 | 31.2 |
| CMC 4M - 4R   | 4                 | 1/4         | 2.4      | 14                | 12 | 13.7 | 16.1 | 29.7 | 36.3 |
| CMC 6M - 2R   | 6                 | 1/8         | 4.8      | 14                | 14 | 15.3 | 17.7 | 25.4 | 32.8 |
| CMC 6M - 4R   | 6                 | 1/4         | 4.8      | 14                | 14 | 15.3 | 17.7 | 30.5 | 37.9 |
| CMC 6M - 6R   | 6                 | 3/8         | 4.8      | 18                | 14 | 15.3 | 17.7 | 31.0 | 38.4 |
| CMC 6M - 8R   | 6                 | 1/2         | 4.8      | 22                | 14 | 15.3 | 17.7 | 37.3 | 44.7 |
| CMC 8M - 2R   | 8                 | 1/8         | 4.8      | 15                | 16 | 16.2 | 18.6 | 26.7 | 34.2 |
| CMC 8M - 4R   | 8                 | 1/4         | 6.4      | 15                | 16 | 16.2 | 18.6 | 31.2 | 38.7 |
| CMC 8M - 6R   | 8                 | 3/8         | 6.4      | 18                | 16 | 16.2 | 18.6 | 31.8 | 39.2 |
| CMC 8M - 8R   | 8                 | 1/2         | 6.4      | 22                | 16 | 16.2 | 18.6 | 38.1 | 45.6 |
| CMC 10M - 2R  | 10                | 1/8         | 4.8      | 18                | 19 | 17.2 | 19.5 | 28.7 | 36.3 |
| CMC 10M - 4R  | 10                | 1/4         | 7.1      | 18                | 19 | 17.2 | 19.5 | 33.3 | 40.9 |
| CMC 10M - 6R  | 10                | 3/8         | 7.9      | 18                | 19 | 17.2 | 19.5 | 33.3 | 40.9 |
| CMC 10M - 8R  | 10                | 1/2         | 7.9      | 22                | 19 | 17.2 | 19.5 | 38.9 | 46.5 |
| CMC 12M - 4R  | 12                | 1/4         | 7.1      | 22                | 22 | 22.8 | 22.0 | 33.3 | 43.4 |
| CMC 12M - 6R  | 12                | 3/8         | 9.5      | 22                | 22 | 22.8 | 22.0 | 33.3 | 43.4 |
| CMC 12M - 8R  | 12                | 1/2         | 9.5      | 22                | 22 | 22.8 | 22.0 | 38.9 | 49.0 |
| CMC 12M - 12R | 12                | 3/4         | 9.5      | 27                | 22 | 22.8 | 22.0 | 40.4 | 50.5 |
| CMC 15M - 8R  | 15                | 1/2         | 11.9     | 24                | 25 | 24.4 | 22.0 | 38.9 | 49.0 |
| CMC 16M - 4R  | 16                | 1/4         | 7.1      | 24                | 25 | 24.4 | 22.0 | 34.0 | 44.1 |
| CMC 16M - 6R  | 16                | 3/8         | 9.5      | 24                | 25 | 24.4 | 22.0 | 34.0 | 44.1 |
| CMC 16M - 8R  | 16                | 1/2         | 11.9     | 24                | 25 | 24.4 | 22.0 | 38.9 | 49.0 |
| CMC 16M - 12R | 16                | 3/4         | 12.7     | 27                | 25 | 24.4 | 22.0 | 38.9 | 49.0 |
| CMC 18M - 8R  | 18                | 1/2         | 11.9     | 27                | 30 | 24.4 | 22.0 | 40.4 | 50.5 |
| CMC 18M - 12R | 18                | 3/4         | 15.1     | 27                | 30 | 24.4 | 22.0 | 40.4 | 50.5 |
| CMC 20M - 8R  | 20                | 1/2         | 11.9     | 30                | 32 | 26.0 | 22.0 | 42.2 | 52.3 |
| CMC 20M - 12R | 20                | 3/4         | 15.9     | 30                | 32 | 26.0 | 22.0 | 42.2 | 52.3 |
| CMC 22M - 12R | 22                | 3/4         | 15.9     | 30                | 32 | 26.0 | 22.0 | 42.2 | 52.3 |
| CMC 22M - 16R | 22                | 1           | 18.3     | 35                | 32 | 26.0 | 22.0 | 47.0 | 57.0 |
| CMC 25M - 12R | 25                | 3/4         | 15.9     | 35                | 38 | 31.3 | 26.5 | 45.2 | 57.5 |
| CMC 25M - 16R | 25                | 1           | 21.8     | 35                | 38 | 31.3 | 26.5 | 50.0 | 62.3 |
| CMC 28M - 16R | 28                | 1           | 21.8     | 41                | 46 | 36.6 | 36.6 | 51.6 | 72.4 |
| CMC 28M - 20R | 28                | 1-1/4       | 21.8     | 46                | 46 | 36.6 | 36.6 | 52.3 | 73.1 |
| CMC 32M - 20R | 32                | 1-1/4       | 28.6     | 46                | 50 | 42.0 | 41.6 | 56.6 | 79.6 |
| CMC 32M - 24R | 38                | 1-1/2       | 33.7     | 55                | 60 | 49.4 | 47.9 | 64.0 | 91.6 |

\*NPT Threads are available upon request.

### Thermocouple Male Connector CMCT

Bore-through male connectors handle thermocouples or dip tubes with ease. For correct part number, just add "T" as a suffix to CMC, the male connector designator.

Example: CMCT 12M-8R-S316 12mm tube O.D. x 1/2" ISO tapered stainless Steel 316  
CMCT 8-8N-S316 1/2" tube O.D. x 1/2" NPT stainless steel 316



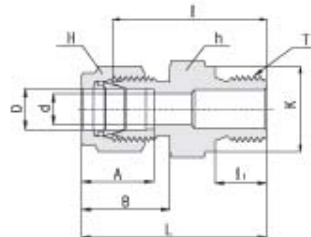
**Note :** There are some limitations in size available as it is impractical to bore through all male connectors. For availability, contact your local distributor.

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

## Hy-Lok Tube Fittings

### Male Connector For Bonded Washer Seal

#### CMC - G



### Connects Metric Tube To Female ISO Parallel Thread

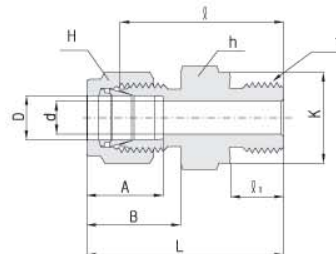
| Part No.      | Tube<br>O.D.<br>D | T<br>G(PF) | d<br>Min. | Width across flat |    | A    | B    | ℓ    | ℓ <sub>1</sub> | L    | K    |
|---------------|-------------------|------------|-----------|-------------------|----|------|------|------|----------------|------|------|
|               |                   |            |           | h                 | H  |      |      |      |                |      |      |
| CMC 2M - 2G   | 2                 | 1/8        | 1.7       | 14                | 12 | 12.9 | 15.3 | 23.4 | 7.1            | 30.0 | 13.8 |
| CMC 3M - 2G   | 3                 | 1/8        | 2.4       | 14                | 12 | 12.9 | 15.3 | 23.4 | 7.1            | 30.0 | 13.8 |
| CMC 3M - 4G   | 3                 | 1/4        | 2.4       | 19                | 12 | 12.9 | 15.3 | 28.7 | 11.2           | 35.3 | 18.0 |
| CMC 4M - 2G   | 4                 | 1/8        | 2.4       | 14                | 12 | 13.7 | 16.1 | 24.1 | 7.1            | 30.7 | 13.8 |
| CMC 6M - 2G   | 6                 | 1/8        | 4.0       | 14                | 14 | 15.3 | 17.7 | 24.9 | 7.1            | 32.3 | 13.8 |
| CMC 6M - 4G   | 6                 | 1/4        | 4.8       | 19                | 14 | 15.3 | 17.7 | 30.2 | 11.2           | 37.6 | 18.0 |
| CMC 6M - 6G   | 6                 | 3/8        | 4.8       | 22                | 14 | 15.3 | 17.7 | 31.5 | 11.2           | 38.9 | 21.8 |
| CMC 6M - 8G   | 6                 | 1/2        | 4.8       | 27                | 14 | 15.3 | 17.7 | 37.3 | 14.2           | 44.7 | 26.0 |
| CMC 8M - 2G   | 8                 | 1/8        | 4.0       | 15                | 16 | 16.2 | 18.6 | 25.7 | 7.1            | 33.2 | 13.8 |
| CMC 8M - 4G   | 8                 | 1/4        | 6.4       | 19                | 16 | 16.2 | 18.6 | 31.0 | 11.2           | 38.5 | 13.8 |
| CMC 8M - 6G   | 8                 | 3/8        | 6.4       | 22                | 16 | 16.2 | 18.6 | 32.3 | 11.2           | 39.8 | 21.8 |
| CMC 8M - 8G   | 8                 | 1/2        | 6.4       | 27                | 16 | 16.2 | 18.6 | 38.1 | 14.2           | 45.6 | 26.0 |
| CMC 10M - 4G  | 10                | 1/4        | 6.4       | 19                | 19 | 17.2 | 19.5 | 31.8 | 11.2           | 39.4 | 18.0 |
| CMC 10M - 6G  | 10                | 3/8        | 7.9       | 22                | 19 | 17.2 | 19.5 | 33.0 | 11.2           | 40.6 | 21.8 |
| CMC 10M - 8G  | 10                | 1/2        | 7.9       | 27                | 19 | 17.2 | 19.5 | 38.9 | 14.2           | 46.5 | 26.0 |
| CMC 12M - 4G  | 12                | 1/4        | 5.9       | 22                | 22 | 22.8 | 22.0 | 32.5 | 11.2           | 42.6 | 18.0 |
| CMC 12M - 6G  | 12                | 3/8        | 7.9       | 22                | 22 | 22.8 | 22.0 | 33.0 | 11.2           | 43.1 | 21.8 |
| CMC 12M - 8G  | 12                | 1/2        | 9.5       | 27                | 22 | 22.8 | 22.0 | 38.9 | 14.2           | 49.0 | 26.0 |
| CMC 12M - 12G | 12                | 3/4        | 9.5       | 35                | 22 | 22.8 | 22.0 | 42.7 | 15.7           | 52.8 | 32.0 |
| CMC 16M - 6G  | 16                | 3/8        | 7.9       | 24                | 25 | 24.4 | 22.0 | 33.8 | 11.2           | 43.9 | 21.8 |
| CMC 16M - 8G  | 16                | 1/2        | 11.9      | 27                | 25 | 24.4 | 22.0 | 38.9 | 14.2           | 49.0 | 26.0 |
| CMC 18M - 8G  | 18                | 1/2        | 11.9      | 27                | 30 | 24.4 | 22.0 | 38.9 | 14.2           | 49.0 | 26.0 |
| CMC 18M - 12G | 18                | 3/4        | 15.1      | 35                | 30 | 24.4 | 22.0 | 42.7 | 15.7           | 52.8 | 32.0 |
| CMC 20M - 8G  | 20                | 1/2        | 11.9      | 30                | 32 | 26.0 | 22.0 | 40.4 | 14.2           | 50.5 | 26.0 |
| CMC 20M - 12G | 20                | 3/4        | 15.9      | 35                | 32 | 26.0 | 22.0 | 42.7 | 15.7           | 52.8 | 32.0 |
| CMC 22M - 12G | 22                | 3/4        | 15.9      | 35                | 32 | 26.0 | 22.0 | 42.7 | 15.7           | 52.8 | 32.0 |
| CMC 22M - 16G | 22                | 1          | 18.3      | 41                | 32 | 26.0 | 22.0 | 45.2 | 18.3           | 55.3 | 39.0 |
| CMC 25M - 12G | 25                | 3/4        | 15.9      | 35                | 38 | 31.3 | 26.5 | 45.2 | 15.7           | 57.5 | 32.0 |
| CMC 25M - 16G | 25                | 1          | 19.8      | 41                | 38 | 31.3 | 26.5 | 47.8 | 18.3           | 60.1 | 39.0 |
| CMC 28M - 16G | 28                | 1          | 19.8      | 41                | 46 | 36.6 | 36.6 | 49.3 | 18.3           | 70.1 | 39.0 |
| CMC 28M - 20G | 28                | 1-1/4      | 21.8      | 50                | 46 | 36.6 | 36.6 | 53.1 | 19.8           | 73.9 | 49.0 |
| CMC 32M - 20G | 32                | 1-1/4      | 25.0      | 50                | 50 | 42.0 | 41.6 | 55.9 | 19.8           | 78.9 | 49.0 |
| CMC 38M - 24G | 38                | 1-1/2      | 31.8      | 55                | 60 | 49.4 | 47.9 | 63.2 | 22.1           | 90.8 | 54.7 |

For leak tight installation, see ISO Parallel and Tapered Pipe Thread on page 6.

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



## Male Connector For Metal Gasket Seal COM



### Connects Metric Tube To Female ISO Parallel Thread

| Part No.      | Tube<br>O.D.<br>D | T<br>G(PF) | d<br>Min. | Width across flat |    | A    | B    | ℓ    | ℓ <sub>i</sub> | L    | K    |
|---------------|-------------------|------------|-----------|-------------------|----|------|------|------|----------------|------|------|
|               |                   |            |           | h                 | H  |      |      |      |                |      |      |
| COM 3M - 2G   | 3                 | 1/8        | 2.4       | 14                | 12 | 12.9 | 15.3 | 23.4 | 7.1            | 30.0 | 13.8 |
| COM 3M - 4G   | 3                 | 1/4        | 2.4       | 19                | 12 | 12.9 | 15.3 | 28.7 | 11.2           | 35.3 | 18.0 |
| COM 4M - 2G   | 4                 | 1/8        | 2.4       | 14                | 12 | 13.7 | 16.1 | 24.1 | 7.1            | 30.7 | 13.8 |
| COM 6M - 2G   | 6                 | 1/8        | 4.0       | 14                | 14 | 15.3 | 17.7 | 24.9 | 7.1            | 32.3 | 13.8 |
| COM 6M - 4G   | 6                 | 1/4        | 4.8       | 19                | 14 | 15.3 | 17.7 | 30.2 | 11.2           | 37.6 | 18.0 |
| COM 6M - 6G   | 6                 | 3/8        | 4.8       | 22                | 14 | 15.3 | 17.7 | 31.5 | 11.2           | 38.9 | 21.8 |
| COM 6M - 8G   | 6                 | 1/2        | 4.8       | 27                | 14 | 15.3 | 17.7 | 37.3 | 14.2           | 44.7 | 26.0 |
| COM 8M - 2G   | 8                 | 1/8        | 4.0       | 15                | 16 | 16.2 | 18.6 | 25.7 | 7.1            | 33.2 | 13.8 |
| COM 8M - 4G   | 8                 | 1/4        | 6.4       | 19                | 16 | 16.2 | 18.6 | 31.0 | 11.2           | 38.5 | 18.0 |
| COM 8M - 6G   | 8                 | 3/8        | 6.4       | 22                | 16 | 16.2 | 18.6 | 32.3 | 11.2           | 39.8 | 21.8 |
| COM 8M - 8G   | 8                 | 1/2        | 6.4       | 27                | 16 | 16.2 | 18.6 | 38.1 | 14.2           | 45.6 | 26.0 |
| COM 10M - 4G  | 10                | 1/4        | 5.9       | 19                | 19 | 17.2 | 19.5 | 31.8 | 11.2           | 39.4 | 18.0 |
| COM 10M - 6G  | 10                | 3/8        | 7.9       | 22                | 19 | 17.2 | 19.5 | 33.0 | 11.2           | 40.6 | 21.8 |
| COM 10M - 8G  | 10                | 1/2        | 7.9       | 27                | 19 | 17.2 | 19.5 | 38.9 | 14.2           | 46.5 | 26.0 |
| COM 12M - 4G  | 12                | 1/4        | 5.9       | 22                | 22 | 22.8 | 22.0 | 32.5 | 11.2           | 42.6 | 18.0 |
| COM 12M - 6G  | 12                | 3/8        | 7.9       | 22                | 22 | 22.8 | 22.0 | 33.0 | 11.2           | 43.1 | 21.8 |
| COM 12M - 8G  | 12                | 1/2        | 9.5       | 27                | 22 | 22.8 | 22.0 | 38.9 | 14.2           | 49.0 | 26.0 |
| COM 12M - 12G | 12                | 3/4        | 9.5       | 35                | 22 | 22.8 | 22.0 | 42.7 | 15.7           | 52.8 | 32.0 |
| COM 15M - 8G  | 15                | 1/2        | 11.9      | 27                | 25 | 24.4 | 22.0 | 38.9 | 14.2           | 49.0 | 26.0 |
| COM 16M - 6G  | 16                | 3/8        | 7.9       | 24                | 25 | 24.4 | 22.0 | 33.8 | 11.2           | 43.9 | 21.8 |
| COM 16M - 8G  | 16                | 1/2        | 11.9      | 27                | 25 | 24.4 | 22.0 | 38.9 | 14.2           | 49.0 | 26.0 |
| COM 18M - 8G  | 18                | 1/2        | 11.9      | 27                | 30 | 24.4 | 22.0 | 38.9 | 14.2           | 49.0 | 26.0 |
| COM 18M - 12G | 18                | 3/4        | 15.1      | 35                | 30 | 24.4 | 22.0 | 42.7 | 15.7           | 52.8 | 32.0 |
| COM 20M - 8G  | 20                | 1/2        | 11.9      | 30                | 32 | 26.0 | 22.0 | 40.4 | 14.2           | 50.5 | 26.0 |
| COM 20M - 12G | 20                | 3/4        | 15.9      | 35                | 32 | 26.0 | 22.0 | 42.7 | 15.7           | 52.8 | 32.0 |
| COM 22M - 12G | 22                | 3/4        | 15.9      | 35                | 32 | 26.0 | 22.0 | 42.7 | 15.7           | 52.8 | 32.0 |
| COM 22M - 16G | 22                | 1          | 18.3      | 41                | 32 | 26.0 | 22.0 | 45.2 | 18.3           | 55.3 | 39.0 |
| COM 25M - 12G | 25                | 3/4        | 15.9      | 35                | 38 | 31.3 | 26.5 | 45.2 | 15.7           | 57.5 | 32.0 |
| COM 25M - 16G | 25                | 1          | 19.8      | 41                | 38 | 31.3 | 26.5 | 47.8 | 18.3           | 60.1 | 39.0 |
| COM 28M - 16G | 28                | 1          | 19.8      | 41                | 46 | 36.6 | 36.6 | 49.3 | 18.3           | 70.1 | 39.0 |
| COM 28M - 20G | 28                | 1-1/4      | 21.8      | 50                | 46 | 36.6 | 36.6 | 53.1 | 19.8           | 73.9 | 49.0 |
| COM 32M - 20G | 32                | 1-1/4      | 28.6      | 50                | 50 | 42.0 | 41.6 | 55.9 | 19.8           | 78.9 | 49.0 |
| COM 38M - 24G | 38                | 1-1/2      | 31.8      | 55                | 60 | 49.4 | 47.9 | 61.7 | 20.6           | 89.3 | 54.7 |

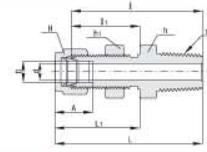
For leak tight installation, see ISO Parallel and Tapered Pipe Thread on page 6.

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



# Hy-Lok Tube Fittings

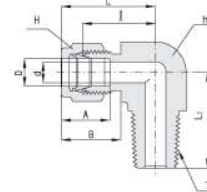
## Bulkhead Male Connector CBMC



**Connects Fractional Tube To Female NPT Thread**

| Part No.    | Tube O.D.<br>D |       | T*<br>(NPT) | d<br>Min. | Width across flat |       |                |       |       |       | A     | ℓ     | ℓ <sub>1</sub> | L     | L <sub>1</sub> | Panel<br>Hole<br>Drill Size | Panel<br>Max.<br>Thickness |
|-------------|----------------|-------|-------------|-----------|-------------------|-------|----------------|-------|-------|-------|-------|-------|----------------|-------|----------------|-----------------------------|----------------------------|
|             | in             | mm    |             |           | h                 |       | h <sub>1</sub> |       | H     |       |       |       |                |       |                |                             |                            |
|             |                |       |             |           | in                | mm    | in             | mm    | in    | mm    |       |       |                |       |                |                             |                            |
| CBMC 2 - 2N | 1/8            | 3.17  | 1/8         | 2.28      | 1/2               | 12.70 | 1/2            | 12.70 | 7/16  | 11.11 | 12.70 | 39.87 | 24.63          | 46.48 | 31.24          | 8.33                        | 12.20                      |
| CBMC 4 - 2N | 1/4            | 6.35  | 1/8         | 4.82      | 5/8               | 15.87 | 5/8            | 15.87 | 9/16  | 14.28 | 15.24 | 42.16 | 26.16          | 49.53 | 33.52          | 11.50                       | 10.16                      |
| CBMC 4 - 4N | 1/4            | 6.35  | 1/4         | 4.82      | 5/8               | 15.87 | 5/8            | 15.87 | 9/16  | 14.28 | 15.24 | 45.97 | 26.16          | 53.34 | 33.52          | 11.50                       | 10.16                      |
| CBMC 6 - 4N | 3/8            | 9.52  | 1/4         | 7.11      | 3/4               | 19.05 | 3/4            | 19.05 | 11/16 | 17.46 | 16.76 | 50.03 | 29.46          | 57.40 | 36.83          | 14.68                       | 11.17                      |
| CBMC 6 - 6N | 3/8            | 9.52  | 3/8         | 7.11      | 3/4               | 19.05 | 3/4            | 19.05 | 11/16 | 17.46 | 16.76 | 50.03 | 29.46          | 57.40 | 36.83          | 14.68                       | 11.17                      |
| CBMC 6 - 8N | 3/8            | 9.52  | 1/2         | 7.11      | 7/8               | 22.22 | 3/4            | 19.05 | 11/16 | 17.46 | 16.76 | 56.38 | 29.46          | 63.75 | 36.83          | 14.68                       | 11.17                      |
| CBMC 8 - 6N | 1/2            | 12.70 | 3/8         | 9.39      | 15/16             | 23.81 | 15/16          | 23.81 | 7/8   | 22.22 | 22.86 | 53.08 | 31.75          | 63.24 | 41.91          | 19.44                       | 12.70                      |
| CBMC 8 - 8N | 1/2            | 12.70 | 1/2         | 10.41     | 15/16             | 23.81 | 15/16          | 23.81 | 7/8   | 22.22 | 22.86 | 58.67 | 31.75          | 68.83 | 41.91          | 19.44                       | 12.70                      |
| CBMC12 -12N | 3/4            | 19.05 | 3/4         | 15.74     | 1-3/16            | 30.16 | 1-3/16         | 30.16 | 1-1/8 | 28.57 | 24.38 | 66.04 | 37.33          | 76.20 | 47.49          | 25.76                       | 16.76                      |
| CBMC16 -16N | 1              | 25.40 | 1           | 22.35     | 1-5/8             | 41.27 | 1-5/8          | 41.27 | 1-1/2 | 38.10 | 31.24 | 81.02 | 45.21          | 93.21 | 57.40          | 33.73                       | 19.05                      |

## Male Elbow CLMA



**Connects Fractional Tube To Female NPT Thread**

| Part No.     | Tube O.D.<br>D |       | T*<br>(NPT) | d<br>Min. | Width across flat |       |       |       | A     | B     | ℓ     | L      | L <sub>i</sub> |
|--------------|----------------|-------|-------------|-----------|-------------------|-------|-------|-------|-------|-------|-------|--------|----------------|
|              |                |       |             |           | h                 |       | H     |       |       |       |       |        |                |
|              | in             | mm    |             |           | in                | mm    | in    | mm    |       |       |       |        |                |
| CLMA 1 - 1N  | 1/16           | 1.58  | 1/16        | 1.27      | 7/16              | 11.11 | 5/16  | 7.93  | 8.63  | 10.92 | 15.24 | 19.05  | 17.78          |
| CLMA 1 - 2N  | 1/16           | 1.58  | 1/8         | 1.27      | 7/16              | 11.11 | 5/16  | 7.93  | 8.63  | 10.92 | 15.24 | 19.05  | 17.78          |
| CLMA 2 - 2N  | 1/8            | 3.17  | 1/8         | 2.28      | 1/2               | 12.70 | 7/16  | 11.11 | 12.70 | 15.24 | 18.30 | 24.91  | 18.90          |
| CLMA 2 - 4N  | 1/8            | 3.17  | 1/4         | 2.28      | 1/2               | 12.70 | 7/16  | 11.11 | 12.70 | 15.24 | 18.30 | 24.91  | 23.36          |
| CLMA 3 - 2N  | 3/16           | 4.76  | 1/8         | 3.04      | 1/2               | 12.70 | 1/2   | 12.70 | 13.71 | 16.00 | 18.79 | 25.40  | 18.79          |
| CLMA 3 - 4N  | 3/16           | 4.76  | 1/4         | 3.04      | 1/2               | 12.70 | 1/2   | 12.70 | 13.71 | 16.00 | 18.79 | 25.40  | 23.36          |
| CLMA 4 - 1N  | 1/4            | 6.35  | 1/16        | 3.04      | 1/2               | 12.70 | 9/16  | 14.28 | 15.24 | 17.78 | 19.55 | 26.90  | 18.79          |
| CLMA 4 - 2N  | 1/4            | 6.35  | 1/8         | 4.82      | 1/2               | 12.70 | 9/16  | 14.28 | 15.24 | 17.78 | 19.10 | 26.47  | 19.10          |
| CLMA 4 - 4N  | 1/4            | 6.35  | 1/4         | 4.82      | 1/2               | 12.70 | 9/16  | 14.28 | 15.24 | 17.78 | 19.81 | 27.18  | 23.87          |
| CLMA 4 - 6N  | 1/4            | 6.35  | 3/8         | 4.82      | 11/16             | 17.46 | 9/16  | 14.28 | 15.24 | 17.78 | 22.35 | 29.71  | 28.40          |
| CLMA 4 - 8N  | 1/4            | 6.35  | 1/2         | 4.82      | 13/16             | 20.63 | 9/16  | 14.28 | 15.24 | 17.78 | 24.60 | 31.97  | 33.00          |
| CLMA 5 - 2N  | 5/16           | 7.93  | 1/8         | 4.82      | 9/16              | 14.28 | 5/8   | 15.87 | 16.25 | 18.54 | 21.33 | 28.70  | 19.81          |
| CLMA 5 - 4N  | 5/16           | 7.93  | 1/4         | 6.35      | 9/16              | 14.28 | 5/8   | 15.87 | 16.25 | 18.54 | 22.40 | 29.77  | 24.50          |
| CLMA 5 - 6N  | 5/16           | 7.93  | 3/8         | 6.35      | 11/16             | 17.46 | 5/8   | 15.87 | 16.25 | 18.54 | 23.11 | 30.48  | 28.40          |
| CLMA 6 - 2N  | 3/8            | 9.52  | 1/8         | 4.82      | 5/8               | 15.87 | 11/16 | 17.46 | 16.76 | 19.30 | 23.11 | 30.48  | 20.80          |
| CLMA 6 - 4N  | 3/8            | 9.52  | 1/4         | 7.11      | 5/8               | 15.87 | 11/16 | 17.46 | 16.76 | 19.30 | 23.11 | 30.48  | 25.40          |
| CLMA 6 - 6N  | 3/8            | 9.52  | 3/8         | 7.11      | 11/16             | 17.46 | 11/16 | 17.46 | 16.76 | 19.30 | 23.87 | 31.24  | 28.44          |
| CLMA 6 - 8N  | 3/8            | 9.52  | 1/2         | 7.11      | 13/16             | 20.63 | 11/16 | 17.46 | 16.76 | 19.30 | 23.80 | 31.42  | 33.02          |
| CLMA 6 - 12N | 3/8            | 9.52  | 3/4         | 7.11      | 1-1/16            | 26.98 | 11/16 | 17.46 | 16.76 | 19.30 | 29.71 | 37.08  | 36.83          |
| CLMA 8 - 4N  | 1/2            | 12.70 | 1/4         | 7.11      | 13/16             | 20.63 | 7/8   | 22.22 | 22.86 | 21.84 | 25.90 | 36.06  | 28.30          |
| CLMA 8 - 6N  | 1/2            | 12.70 | 3/8         | 9.65      | 13/16             | 20.63 | 7/8   | 22.22 | 22.86 | 21.84 | 25.90 | 36.06  | 28.30          |
| CLMA 8 - 8N  | 1/2            | 12.70 | 1/2         | 10.41     | 13/16             | 20.63 | 7/8   | 22.22 | 22.86 | 21.84 | 25.90 | 36.06  | 33.02          |
| CLMA 8 - 12N | 1/2            | 12.70 | 3/4         | 10.41     | 1-1/16            | 26.98 | 7/8   | 22.22 | 22.86 | 21.84 | 29.71 | 39.87  | 36.83          |
| CLMA10 - 6N  | 5/8            | 15.87 | 3/8         | 9.65      | 15/16             | 23.80 | 1     | 25.40 | 24.38 | 21.84 | 27.90 | 37.06  | 30.20          |
| CLMA10 - 8N  | 5/8            | 15.87 | 1/2         | 11.93     | 15/16             | 23.80 | 1     | 25.40 | 24.38 | 21.84 | 27.90 | 37.06  | 35.00          |
| CLMA10 - 12N | 5/8            | 15.87 | 3/4         | 12.70     | 1-1/16            | 26.98 | 1     | 25.40 | 24.38 | 21.84 | 29.71 | 39.87  | 36.83          |
| CLMA12 - 8N  | 3/4            | 19.05 | 1/2         | 11.93     | 1-1/16            | 26.98 | 1-1/8 | 28.57 | 24.38 | 21.84 | 29.71 | 39.87  | 36.83          |
| CLMA12 - 12N | 3/4            | 19.05 | 3/4         | 15.74     | 1-1/16            | 26.98 | 1-1/8 | 28.57 | 24.38 | 21.84 | 29.71 | 39.87  | 36.83          |
| CLMA14 - 12N | 7/8            | 22.22 | 3/4         | 15.74     | 1-3/8             | 34.92 | 1-1/4 | 31.75 | 25.90 | 21.84 | 34.54 | 44.70  | 41.65          |
| CLMA16 - 12N | 1              | 25.40 | 3/4         | 15.74     | 1-3/8             | 34.92 | 1-1/2 | 38.10 | 31.24 | 26.41 | 36.83 | 49.02  | 42.20          |
| CLMA16 - 16N | 1              | 25.40 | 1           | 22.35     | 1-3/8             | 34.92 | 1-1/2 | 38.10 | 31.24 | 26.41 | 36.83 | 49.02  | 46.70          |
| CLMA20 - 20N | 1-1/4          | 31.75 | 1-1/4       | 27.68     | 1-11/16           | 42.86 | 1-7/8 | 47.62 | 41.14 | 38.86 | 44.50 | 66.54  | 47.75          |
| CLMA24 - 24N | 1-1/2          | 38.10 | 1-1/2       | 34.03     | 2                 | 50.80 | 2-1/4 | 57.15 | 50.03 | 45.21 | 50.80 | 77.97  | 60.45          |
| CLMA32 - 32N | 2              | 50.80 | 2           | 45.97     | 2-3/4             | 69.85 | 3     | 76.20 | 67.56 | 62.73 | 69.80 | 107.18 | 70.61          |

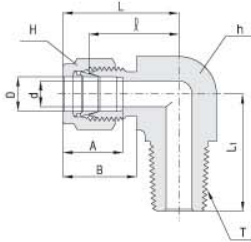
\*ISO Tapered Threads are available upon request.

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



# Hy-Lok Tube Fittings

## Male Elbow CLMA

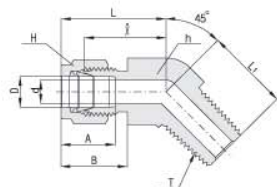


### Connects Metric Tube To Female ISO Tapered Thread

| Part No.     | Tube O.D. D | T* R(PT) | d Min. | Width across flat |    | A    | B    | ℓ    | L    | L <sub>1</sub> |
|--------------|-------------|----------|--------|-------------------|----|------|------|------|------|----------------|
|              |             |          |        | h                 | H  |      |      |      |      |                |
| CLMA 3M - 2R | 3           | 1/8      | 2.4    | 12.7              | 12 | 12.9 | 15.3 | 17.0 | 23.6 | 17.8           |
| CLMA 3M - 4R | 3           | 1/4      | 2.4    | 12.7              | 12 | 12.9 | 15.3 | 18.0 | 24.6 | 23.4           |
| CLMA 4M - 2R | 4           | 1/8      | 2.4    | 12.7              | 12 | 13.7 | 16.1 | 18.8 | 25.4 | 18.8           |
| CLMA 4M - 4R | 4           | 1/4      | 2.4    | 12.7              | 12 | 13.7 | 16.1 | 18.8 | 25.4 | 23.4           |
| CLMA 6M - 2R | 6           | 1/8      | 4.8    | 12.7              | 14 | 15.3 | 17.7 | 19.6 | 27.0 | 18.8           |
| CLMA 6M - 4R | 6           | 1/4      | 4.8    | 12.7              | 14 | 15.3 | 17.7 | 19.6 | 27.0 | 23.4           |
| CLMA 6M - 6R | 6           | 3/8      | 4.8    | 17.5              | 14 | 15.3 | 17.7 | 22.4 | 29.8 | 26.2           |
| CLMA 6M - 8R | 6           | 1/2      | 4.8    | 20.6              | 14 | 15.3 | 17.7 | 24.4 | 31.8 | 33.0           |
| CLMA 8M - 2R | 8           | 1/8      | 4.8    | 14.3              | 16 | 16.2 | 18.6 | 21.3 | 28.8 | 19.8           |
| CLMA 8M - 4R | 8           | 1/4      | 6.4    | 14.3              | 16 | 16.2 | 18.6 | 21.3 | 28.8 | 24.4           |
| CLMA 8M - 6R | 8           | 3/8      | 6.4    | 17.5              | 16 | 16.2 | 18.6 | 23.9 | 31.4 | 28.5           |
| CLMA 8M - 8R | 8           | 1/2      | 6.4    | 20.6              | 16 | 16.2 | 18.6 | 25.1 | 32.6 | 33.0           |
| CLMA10M - 2R | 10          | 1/8      | 4.8    | 17.5              | 19 | 17.2 | 19.5 | 23.9 | 31.5 | 23.6           |
| CLMA10M - 4R | 10          | 1/4      | 7.1    | 17.5              | 19 | 17.2 | 19.5 | 23.9 | 31.5 | 26.2           |
| CLMA10M - 6R | 10          | 3/8      | 7.9    | 17.5              | 19 | 17.2 | 19.5 | 23.9 | 31.5 | 26.2           |
| CLMA10M - 8R | 10          | 1/2      | 7.9    | 20.6              | 19 | 17.2 | 19.5 | 25.9 | 33.5 | 33.0           |
| CLMA12M - 2R | 12          | 1/8      | 4.8    | 20.6              | 22 | 22.8 | 22.0 | 25.9 | 36.0 | 23.6           |
| CLMA12M - 4R | 12          | 1/4      | 7.1    | 20.6              | 22 | 22.8 | 22.0 | 25.9 | 36.0 | 26.2           |
| CLMA12M - 6R | 12          | 3/8      | 9.5    | 20.6              | 22 | 22.8 | 22.0 | 25.9 | 36.0 | 26.2           |
| CLMA12M - 8R | 12          | 1/2      | 9.5    | 20.6              | 22 | 22.8 | 22.0 | 25.9 | 36.0 | 33.0           |
| CLMA12M -12R | 12          | 3/4      | 9.5    | 27.0              | 22 | 22.8 | 22.0 | 29.7 | 39.8 | 36.8           |
| CLMA16M - 6R | 16          | 3/8      | 9.5    | 25.4              | 25 | 24.4 | 22.0 | 27.9 | 38.0 | 30.2           |
| CLMA16M - 8R | 16          | 1/2      | 11.9   | 25.4              | 25 | 24.4 | 22.0 | 27.9 | 38.0 | 35.1           |
| CLMA16M -12R | 16          | 3/4      | 12.7   | 27.0              | 25 | 24.4 | 22.0 | 29.7 | 39.8 | 36.8           |
| CLMA18M - 8R | 18          | 1/2      | 11.9   | 27.0              | 30 | 24.4 | 22.0 | 29.7 | 39.8 | 36.8           |
| CLMA18M -12R | 18          | 3/4      | 15.1   | 27.0              | 30 | 24.4 | 22.0 | 29.7 | 39.8 | 36.8           |
| CLMA20M - 8R | 20          | 1/2      | 11.9   | 34.9              | 32 | 26.0 | 22.0 | 34.5 | 44.6 | 41.7           |
| CLMA20M -12R | 20          | 3/4      | 15.9   | 34.9              | 32 | 26.0 | 22.0 | 34.5 | 44.6 | 41.7           |
| CLMA22M -12R | 22          | 3/4      | 15.9   | 34.9              | 32 | 26.0 | 22.0 | 34.5 | 44.6 | 41.7           |
| CLMA22M -16R | 22          | 1        | 18.3   | 34.9              | 32 | 26.0 | 22.0 | 34.5 | 44.6 | 46.5           |
| CLMA25M -12R | 25          | 3/4      | 15.9   | 34.9              | 38 | 31.3 | 26.5 | 36.8 | 49.1 | 41.7           |
| CLMA25M -16R | 25          | 1        | 21.8   | 34.9              | 38 | 31.3 | 26.5 | 36.8 | 49.1 | 46.5           |

\*NPT Threads are available upon request.

## 45° Male Elbow CLMB



### Connects Fractional Tube To Female NPT Thread

| Part No.    | Tube O.D.<br>D |       | T*<br>(NPT) | d<br>Min. | Width across flat |       |       |       | A     | B     | ℓ     | L     | L <sub>1</sub> |
|-------------|----------------|-------|-------------|-----------|-------------------|-------|-------|-------|-------|-------|-------|-------|----------------|
|             | in             | mm    |             |           | h                 |       | H     |       |       |       |       |       |                |
|             |                |       |             |           | in                | mm    | in    | mm    |       |       |       |       |                |
| CLMB 4 - 2N | 1/4            | 6.35  | 1/8         | 4.82      | 1/2               | 12.70 | 9/16  | 14.28 | 15.24 | 17.78 | 17.27 | 24.63 | 16.51          |
| CLMB 4 - 4N | 1/4            | 6.35  | 1/4         | 4.82      | 1/2               | 12.70 | 9/16  | 14.28 | 15.24 | 17.78 | 17.27 | 24.63 | 21.08          |
| CLMB 6 - 2N | 3/8            | 9.52  | 1/8         | 4.82      | 5/8               | 15.87 | 11/16 | 17.46 | 16.76 | 19.30 | 20.57 | 27.94 | 18.28          |
| CLMB 6 - 4N | 3/8            | 9.52  | 1/4         | 7.11      | 5/8               | 15.87 | 11/16 | 17.46 | 16.76 | 19.30 | 20.57 | 27.94 | 22.86          |
| CLMB 6 - 6N | 3/8            | 9.52  | 3/8         | 7.11      | 13/16             | 20.63 | 11/16 | 17.46 | 16.76 | 19.30 | 21.84 | 29.21 | 24.13          |
| CLMB 8 - 6N | 1/2            | 12.70 | 3/8         | 9.65      | 13/16             | 20.63 | 7/8   | 22.22 | 22.86 | 21.84 | 21.84 | 32.00 | 24.13          |
| CLMB 8 - 8N | 1/2            | 12.70 | 1/2         | 10.41     | 13/16             | 20.63 | 7/8   | 22.22 | 22.86 | 21.84 | 21.84 | 32.00 | 28.95          |
| CLMB12 -12N | 3/4            | 19.05 | 3/4         | 15.74     | 1-1/8             | 28.57 | 1-1/8 | 28.57 | 24.38 | 21.84 | 23.87 | 34.03 | 30.98          |
| CLMB16 -16N | 1              | 25.40 | 1           | 22.35     | 1-3/8             | 34.92 | 1-1/2 | 38.10 | 31.24 | 26.41 | 28.19 | 40.38 | 37.84          |

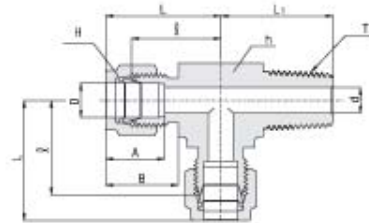
\*ISO Tapered Threads are available upon request.

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



# Hy-Lok Tube Fittings

## Male Run Tee CRTM



### Connects Fractional Tube To Female NPT Thread

| Part No.    | Tube O.D.<br>D |       | T*<br>(NPT) | d<br>Min. | Width across flat |       |       |       | A     | B     | ℓ     | L     | L <sub>1</sub> |
|-------------|----------------|-------|-------------|-----------|-------------------|-------|-------|-------|-------|-------|-------|-------|----------------|
|             | in             | mm    |             |           | h                 |       | H     |       |       |       |       |       |                |
|             |                |       |             |           | in                | mm    | in    | mm    |       |       |       |       |                |
| CRTM 2 - 2N | 1/8            | 3.17  | 1/8         | 2.28      | 1/2               | 12.70 | 7/16  | 11.11 | 12.70 | 15.24 | 17.00 | 24.91 | 17.80          |
| CRTM 2 - 4N | 1/8            | 3.17  | 1/4         | 2.28      | 1/2               | 12.70 | 7/16  | 11.11 | 12.70 | 15.24 | 18.03 | 24.91 | 23.36          |
| CRTM 3 - 2N | 3/16           | 4.76  | 1/8         | 3.04      | 1/2               | 12.70 | 1/2   | 12.70 | 13.71 | 16.00 | 17.78 | 24.38 | 17.78          |
| CRTM 4 - 2N | 1/4            | 6.35  | 1/8         | 4.82      | 1/2               | 12.70 | 9/16  | 14.28 | 15.24 | 17.78 | 19.55 | 26.92 | 18.79          |
| CRTM 4 - 4N | 1/4            | 6.35  | 1/4         | 4.82      | 1/2               | 12.70 | 9/16  | 14.28 | 15.24 | 17.78 | 19.71 | 27.38 | 23.87          |
| CRTM 5 - 2N | 5/16           | 7.93  | 1/8         | 4.82      | 9/16              | 14.28 | 5/8   | 15.87 | 16.25 | 18.54 | 22.35 | 29.71 | 20.82          |
| CRTM 6 - 4N | 3/8            | 9.52  | 1/4         | 7.11      | 5/8               | 15.87 | 11/16 | 17.46 | 16.75 | 19.30 | 23.11 | 30.48 | 25.40          |
| CRTM 6 - 6N | 3/8            | 9.52  | 3/8         | 7.11      | 11/16             | 17.46 | 11/16 | 17.46 | 16.76 | 19.30 | 23.87 | 31.24 | 26.20          |
| CRTM 8 - 6N | 1/2            | 12.70 | 3/8         | 9.65      | 13/16             | 20.63 | 7/8   | 22.22 | 22.86 | 21.84 | 25.90 | 36.06 | 28.19          |
| CRTM 8 - 8N | 1/2            | 12.70 | 1/2         | 10.41     | 13/16             | 20.63 | 7/8   | 22.22 | 22.86 | 21.84 | 25.90 | 36.06 | 33.02          |
| CRTM10 - 8N | 5/8            | 15.87 | 1/2         | 11.93     | 15/16             | 23.80 | 1     | 25.40 | 24.38 | 21.84 | 27.94 | 38.10 | 35.05          |
| CRTM12- 12N | 3/4            | 19.05 | 3/4         | 15.74     | 1-1/16            | 26.98 | 1-1/8 | 28.57 | 24.38 | 21.84 | 28.19 | 38.35 | 36.83          |

\* ISO Tapered Threads are available upon request.

### Connects Metric Tube To Female ISO Tapered Thread

| Part No.       | Tube<br>O.D.<br>D | T*<br>R(PT) | d<br>Min. | Width across flat |    | A    | B    | ℓ    | L    | L <sub>1</sub> |
|----------------|-------------------|-------------|-----------|-------------------|----|------|------|------|------|----------------|
|                |                   |             |           | h                 | H  |      |      |      |      |                |
| CRTM 3M - 2R   | 3                 | 1/8         | 2.4       | 12.7              | 12 | 12.9 | 15.3 | 17.0 | 23.6 | 17.8           |
| CRTM 3M - 4R   | 3                 | 1/4         | 2.4       | 12.7              | 12 | 12.9 | 15.3 | 18.0 | 24.6 | 23.4           |
| CRTM 4M - 2R   | 4                 | 1/8         | 2.4       | 12.7              | 12 | 13.7 | 16.1 | 18.8 | 25.4 | 18.8           |
| CRTM 6M - 2R   | 6                 | 1/8         | 4.8       | 12.7              | 14 | 15.3 | 17.7 | 19.6 | 27.0 | 18.8           |
| CRTM 6M - 4R   | 6                 | 1/4         | 4.8       | 14.2              | 14 | 15.3 | 17.7 | 19.6 | 27.0 | 23.4           |
| CRTM 8M - 2R   | 8                 | 1/8         | 4.8       | 14.3              | 16 | 16.2 | 18.6 | 21.3 | 28.8 | 19.8           |
| CRTM 8M - 4R   | 8                 | 1/4         | 6.4       | 14.3              | 16 | 16.2 | 18.6 | 21.3 | 28.8 | 24.4           |
| CRTM 10M - 4R  | 10                | 1/4         | 7.1       | 17.5              | 19 | 17.2 | 19.5 | 23.9 | 31.5 | 28.2           |
| CRTM 10M - 6R  | 10                | 3/8         | 7.9       | 17.5              | 19 | 17.2 | 19.5 | 23.9 | 31.5 | 28.2           |
| CRTM 12M - 4R  | 12                | 1/4         | 7.1       | 20.6              | 22 | 22.8 | 22.0 | 25.9 | 36.0 | 28.2           |
| CRTM 12M - 6R  | 12                | 3/8         | 9.5       | 20.6              | 22 | 22.8 | 22.0 | 25.9 | 36.0 | 28.2           |
| CRTM 12M - 8R  | 12                | 1/2         | 9.5       | 20.6              | 22 | 22.8 | 22.0 | 25.9 | 36.0 | 33.0           |
| CRTM 16M - 6R  | 16                | 3/8         | 9.5       | 25.4              | 25 | 24.4 | 22.0 | 27.9 | 38.0 | 30.2           |
| CRTM 16M - 8R  | 16                | 1/2         | 11.9      | 25.4              | 25 | 24.4 | 22.0 | 27.9 | 38.0 | 35.1           |
| CRTM 20M - 12R | 20                | 3/4         | 15.9      | 34.9              | 32 | 26.0 | 22.0 | 34.5 | 44.6 | 41.7           |

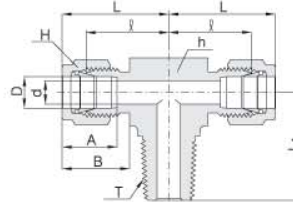
\* NPT Threads are available upon request.

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

# Hy-Lok Tube Fittings

## Male Branch Tee

### CBTM



### Connects Fractional Tube To Female NPT Thread

| Part No.      | Tube O.D.<br>D |       | T*<br>(NPT) | d<br>Min. | Width across flat |       |       |       | A     | B     | ℓ     | L     | L <sub>1</sub> |
|---------------|----------------|-------|-------------|-----------|-------------------|-------|-------|-------|-------|-------|-------|-------|----------------|
|               |                |       |             |           | h                 |       | H     |       |       |       |       |       |                |
|               | in             | mm    |             |           | in                | mm    | in    | mm    |       |       |       |       |                |
| CBTM 2 - 2N   | 1/8            | 3.17  | 1/8         | 2.28      | 1/2               | 12.70 | 7/16  | 11.11 | 12.70 | 15.24 | 17.00 | 24.91 | 17.80          |
| CBTM 2 - 4N   | 1/8            | 3.17  | 1/4         | 2.28      | 1/2               | 12.70 | 7/16  | 11.11 | 12.70 | 15.24 | 18.30 | 24.91 | 23.36          |
| CBTM 3 - 2N   | 3/16           | 4.76  | 1/8         | 3.04      | 1/2               | 12.70 | 1/2   | 12.70 | 13.71 | 16.00 | 17.78 | 24.38 | 17.78          |
| CBTM 4 - 2N   | 1/4            | 6.35  | 1/8         | 4.82      | 1/2               | 12.70 | 9/16  | 14.28 | 15.24 | 17.78 | 19.55 | 26.92 | 18.79          |
| CBTM 4 - 4N   | 1/4            | 6.35  | 1/4         | 4.82      | 1/2               | 12.70 | 9/16  | 14.28 | 15.24 | 17.78 | 19.71 | 27.08 | 23.87          |
| CBTM 5 - 2N   | 5/16           | 7.93  | 1/8         | 4.82      | 9/16              | 14.28 | 5/8   | 15.87 | 16.25 | 18.54 | 22.35 | 29.71 | 20.82          |
| CBTM 6 - 4N   | 3/8            | 9.52  | 1/4         | 7.11      | 5/8               | 15.87 | 11/16 | 17.46 | 16.76 | 19.30 | 23.11 | 30.48 | 25.40          |
| CBTM 6 - 6N   | 3/8            | 9.52  | 3/8         | 7.11      | 11/16             | 17.46 | 11/16 | 17.46 | 16.76 | 19.30 | 23.87 | 31.24 | 26.20          |
| CBTM 8 - 6N   | 1/2            | 12.70 | 3/8         | 10.41     | 13/16             | 20.63 | 7/8   | 22.22 | 22.86 | 21.84 | 25.90 | 36.06 | 28.19          |
| CBTM 8 - 8N   | 1/2            | 12.70 | 1/2         | 10.41     | 13/16             | 20.63 | 7/8   | 22.22 | 22.86 | 21.84 | 25.90 | 36.06 | 33.02          |
| CBTM 10 - 8N  | 5/8            | 15.87 | 1/2         | 11.93     | 15/16             | 23.80 | 1     | 25.40 | 24.38 | 21.84 | 27.94 | 38.10 | 35.05          |
| CBTM 12 - 12N | 3/4            | 19.05 | 3/4         | 15.74     | 1-1/16            | 26.98 | 1-1/8 | 28.57 | 24.38 | 21.84 | 28.19 | 38.35 | 36.83          |

\*ISO Tapered Threads are available upon request.

### Connects Metric Tube To Female ISO Tapered Thread

| Part No.       | Tube<br>O.D.<br>D | T*<br>R(PT) | d<br>Min. | Width across flat |    | A    | B    | ℓ    | L    | L <sub>1</sub> |
|----------------|-------------------|-------------|-----------|-------------------|----|------|------|------|------|----------------|
|                |                   |             |           | h                 | H  |      |      |      |      |                |
| CBTM 3M - 2R   | 3                 | 1/8         | 2.4       | 12.7              | 12 | 12.9 | 15.3 | 17.0 | 23.6 | 17.8           |
| CBTM 3M - 4R   | 3                 | 1/4         | 2.4       | 12.7              | 12 | 12.9 | 15.3 | 18.0 | 24.6 | 23.4           |
| CBTM 4M - 2R   | 4                 | 1/8         | 2.4       | 12.7              | 12 | 13.7 | 16.1 | 18.8 | 25.4 | 18.8           |
| CBTM 6M - 2R   | 6                 | 1/8         | 4.8       | 12.7              | 14 | 15.3 | 17.7 | 19.6 | 27.0 | 18.8           |
| CBTM 6M - 4R   | 6                 | 1/4         | 4.8       | 14.2              | 14 | 15.3 | 17.7 | 19.6 | 27.0 | 23.4           |
| CBTM 8M - 2R   | 8                 | 1/8         | 4.8       | 14.3              | 16 | 16.2 | 18.6 | 21.3 | 28.8 | 19.8           |
| CBTM 8M - 4R   | 8                 | 1/4         | 6.4       | 14.3              | 16 | 16.2 | 18.6 | 21.3 | 28.8 | 24.4           |
| CBTM 10M - 4R  | 10                | 1/4         | 7.1       | 17.5              | 19 | 17.2 | 19.5 | 23.9 | 31.5 | 28.2           |
| CBTM 10M - 6R  | 10                | 3/8         | 7.9       | 17.5              | 19 | 17.2 | 19.5 | 23.9 | 31.5 | 28.2           |
| CBTM 12M - 4R  | 12                | 1/4         | 7.1       | 20.6              | 22 | 22.8 | 22.0 | 25.9 | 36.0 | 28.2           |
| CBTM 12M - 6R  | 12                | 3/8         | 9.5       | 20.6              | 22 | 22.8 | 22.0 | 25.9 | 36.0 | 28.2           |
| CBTM 12M - 8R  | 12                | 1/2         | 9.5       | 20.6              | 22 | 22.8 | 22.0 | 25.9 | 36.0 | 33.0           |
| CBTM 16M - 6R  | 16                | 3/8         | 9.5       | 25.4              | 25 | 24.4 | 22.0 | 27.9 | 38.0 | 30.2           |
| CBTM 16M - 8R  | 16                | 1/2         | 11.9      | 25.4              | 25 | 24.4 | 22.0 | 27.9 | 38.0 | 35.1           |
| CBTM 20M - 12R | 20                | 3/4         | 15.9      | 34.9              | 32 | 26.0 | 22.0 | 34.5 | 44.6 | 41.7           |

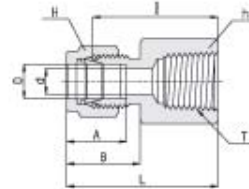
\*NPT Threads are available upon request.

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



# Hy-Lok Tube Fittings

## Female Connector CFC



### Connects Fractional Tube To Male NPT Thread

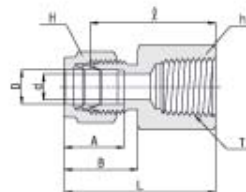
| Part No.     | Tube O.D.<br>D |       | T*<br>(NPT) | d<br>Min. | Width across flat |       |       |       | A     | B     | ℓ     | L      |
|--------------|----------------|-------|-------------|-----------|-------------------|-------|-------|-------|-------|-------|-------|--------|
|              | in             | mm    |             |           | h                 |       | H     |       |       |       |       |        |
|              |                |       |             |           | in                | mm    | in    | mm    |       |       |       |        |
| CFC 1 - 1N   | 1/16           | 1.58  | 1/16        | 1.27      | 7/16              | 11.11 | 5/16  | 7.93  | 8.63  | 10.92 | 19.81 | 23.62  |
| CFC 1 - 2N   | 1/16           | 1.58  | 1/8         | 1.27      | 9/16              | 14.28 | 5/16  | 7.93  | 8.63  | 10.92 | 20.57 | 24.38  |
| CFC 2 - 2N   | 1/8            | 3.17  | 1/8         | 2.28      | 9/16              | 14.28 | 7/16  | 11.11 | 12.70 | 15.24 | 22.09 | 28.70  |
| CFC 2 - 4N   | 1/8            | 3.17  | 1/4         | 2.28      | 3/4               | 19.05 | 7/16  | 11.11 | 12.70 | 15.24 | 26.92 | 33.52  |
| CFC 3 - 2N   | 3/16           | 4.76  | 1/8         | 3.04      | 9/16              | 14.28 | 1/2   | 12.70 | 13.71 | 16.00 | 23.11 | 29.71  |
| CFC 4 - 2N   | 1/4            | 6.35  | 1/8         | 4.82      | 9/16              | 14.28 | 9/16  | 14.28 | 15.24 | 17.78 | 23.87 | 31.24  |
| CFC 4 - 4N   | 1/4            | 6.35  | 1/4         | 4.82      | 3/4               | 19.05 | 9/16  | 14.28 | 15.24 | 17.78 | 28.44 | 35.81  |
| CFC 4 - 6N   | 1/4            | 6.35  | 3/8         | 4.82      | 7/8               | 22.22 | 9/16  | 14.28 | 15.24 | 17.78 | 30.22 | 37.59  |
| CFC 4 - 8N   | 1/4            | 6.35  | 1/2         | 4.82      | 1-1/16            | 26.98 | 9/16  | 14.28 | 15.24 | 17.78 | 35.05 | 42.41  |
| CFC 5 - 2N   | 5/16           | 7.93  | 1/8         | 6.35      | 9/16              | 14.28 | 5/8   | 15.87 | 16.25 | 18.54 | 24.63 | 32.00  |
| CFC 5 - 4N   | 5/16           | 7.93  | 1/4         | 6.35      | 3/4               | 19.05 | 5/8   | 15.87 | 16.25 | 18.54 | 29.46 | 36.83  |
| CFC 6 - 2N   | 3/8            | 9.52  | 1/8         | 7.11      | 5/8               | 15.87 | 11/16 | 17.46 | 16.76 | 19.30 | 25.40 | 32.76  |
| CFC 6 - 4N   | 3/8            | 9.52  | 1/4         | 7.11      | 3/4               | 19.05 | 11/16 | 17.46 | 16.76 | 19.30 | 30.22 | 37.59  |
| CFC 6 - 6N   | 3/8            | 9.52  | 3/8         | 7.11      | 7/8               | 22.22 | 11/16 | 17.46 | 16.76 | 19.30 | 31.75 | 39.11  |
| CFC 6 - 8N   | 3/8            | 9.52  | 1/2         | 7.11      | 1-1/16            | 26.98 | 11/16 | 17.46 | 16.76 | 19.30 | 36.57 | 43.94  |
| CFC 6 - 12N  | 3/8            | 9.52  | 3/4         | 7.11      | 1-5/16            | 33.33 | 11/16 | 17.46 | 16.76 | 19.30 | 40.38 | 47.75  |
| CFC 8 - 4N   | 1/2            | 12.70 | 1/4         | 10.41     | 13/16             | 20.63 | 7/8   | 22.22 | 22.86 | 21.84 | 30.22 | 40.38  |
| CFC 8 - 6N   | 1/2            | 12.70 | 3/8         | 10.41     | 7/8               | 22.22 | 7/8   | 22.22 | 22.86 | 21.84 | 31.75 | 41.91  |
| CFC 8 - 8N   | 1/2            | 12.70 | 1/2         | 10.41     | 1-1/16            | 26.98 | 7/8   | 22.22 | 22.86 | 21.84 | 36.57 | 46.73  |
| CFC 8 - 12N  | 1/2            | 12.70 | 3/4         | 10.41     | 1-5/16            | 33.33 | 7/8   | 22.22 | 22.86 | 21.84 | 38.10 | 48.26  |
| CFC 10 - 6N  | 5/8            | 15.87 | 3/8         | 12.70     | 15/16             | 23.80 | 1     | 25.40 | 24.38 | 21.84 | 31.75 | 41.91  |
| CFC 10 - 8N  | 5/8            | 15.87 | 1/2         | 12.70     | 1-1/16            | 26.98 | 1     | 25.40 | 24.38 | 21.84 | 36.57 | 46.73  |
| CFC 10 - 12N | 5/8            | 15.87 | 3/4         | 12.70     | 1-5/16            | 33.33 | 1     | 25.40 | 24.38 | 21.84 | 38.10 | 48.26  |
| CFC 12 - 8N  | 3/4            | 19.05 | 1/2         | 15.74     | 1-1/16            | 26.98 | 1-1/8 | 28.57 | 24.38 | 21.84 | 36.57 | 46.73  |
| CFC 12 - 12N | 3/4            | 19.05 | 3/4         | 15.74     | 1-5/16            | 33.33 | 1-1/8 | 28.57 | 24.38 | 21.84 | 38.10 | 48.26  |
| CFC 14 - 12N | 7/8            | 22.22 | 3/4         | 18.28     | 1-5/16            | 33.33 | 1-1/4 | 31.75 | 25.90 | 21.84 | 39.62 | 49.78  |
| CFC 16 - 12N | 1              | 25.40 | 3/4         | 22.35     | 1-3/8             | 34.92 | 1-1/2 | 38.10 | 31.24 | 26.41 | 41.14 | 53.34  |
| CFC 16 - 16N | 1              | 25.40 | 1           | 22.35     | 1-5/8             | 41.27 | 1-1/2 | 38.10 | 31.24 | 26.41 | 50.03 | 62.23  |
| CFC 20 - 20N | 1-1/4          | 31.75 | 1-1/4       | 27.68     | 2-1/8             | 53.97 | 1-7/8 | 47.62 | 41.14 | 38.86 | 52.57 | 74.67  |
| CFC 24 - 24N | 1-1/2          | 38.10 | 1-1/2       | 34.03     | 2-3/8             | 60.32 | 2-1/4 | 57.15 | 50.03 | 45.21 | 56.13 | 83.31  |
| CFC 32 - 32N | 2              | 50.80 | 2           | 45.97     | 2-7/8             | 70.03 | 3     | 76.20 | 67.56 | 62.73 | 64.26 | 101.60 |

\* ISO Tapered Threads are available upon request.

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

# Hy-Lok Tube Fittings

## Female Connector CFC



### Connects Metric Tube To Male ISO Tapered Thread

| Part No.      | Tube<br>O.D.<br>D | T*<br>R(PT) | d<br>Min. | Width across flat |    | A    | B    | ℓ    | L    |
|---------------|-------------------|-------------|-----------|-------------------|----|------|------|------|------|
|               |                   |             |           | h                 | H  |      |      |      |      |
| CFC 3M - 2R   | 3                 | 1/8         | 2.4       | 14                | 12 | 12.9 | 15.3 | 22.1 | 28.7 |
| CFC 3M - 4R   | 3                 | 1/4         | 2.4       | 19                | 12 | 12.9 | 15.3 | 26.9 | 33.5 |
| CFC 4M - 2R   | 4                 | 1/8         | 2.4       | 14                | 12 | 13.7 | 16.1 | 23.1 | 29.7 |
| CFC 6M - 2R   | 6                 | 1/8         | 4.8       | 14                | 14 | 15.3 | 17.7 | 23.9 | 31.3 |
| CFC 6M - 4R   | 6                 | 1/4         | 4.8       | 19                | 14 | 15.3 | 17.7 | 28.4 | 35.8 |
| CFC 6M - 6R   | 6                 | 3/8         | 4.8       | 22                | 14 | 15.3 | 17.7 | 29.5 | 36.9 |
| CFC 6M - 8R   | 6                 | 1/2         | 4.8       | 27                | 14 | 15.3 | 17.7 | 35.1 | 42.5 |
| CFC 8M - 2R   | 8                 | 1/8         | 6.4       | 15                | 16 | 16.2 | 18.6 | 24.6 | 32.1 |
| CFC 8M - 4R   | 8                 | 1/4         | 6.4       | 19                | 16 | 16.2 | 18.6 | 29.5 | 37.0 |
| CFC 8M - 6R   | 8                 | 3/8         | 6.4       | 22                | 16 | 16.2 | 18.6 | 30.2 | 37.7 |
| CFC 8M - 8R   | 8                 | 1/2         | 6.4       | 27                | 16 | 16.2 | 18.6 | 35.8 | 43.3 |
| CFC 10M - 2R  | 10                | 1/8         | 7.9       | 18                | 19 | 17.2 | 19.5 | 25.4 | 33.0 |
| CFC 10M - 4R  | 10                | 1/4         | 7.9       | 19                | 19 | 17.2 | 19.5 | 30.2 | 37.8 |
| CFC 10M - 6R  | 10                | 3/8         | 7.9       | 22                | 19 | 17.2 | 19.5 | 31.0 | 38.6 |
| CFC 10M - 8R  | 10                | 1/2         | 7.9       | 27                | 19 | 17.2 | 19.5 | 36.6 | 44.2 |
| CFC 12M - 2R  | 12                | 1/8         | 9.5       | 22                | 22 | 22.8 | 22.0 | 28.4 | 38.5 |
| CFC 12M - 4R  | 12                | 1/4         | 9.5       | 22                | 22 | 22.8 | 22.0 | 30.2 | 40.3 |
| CFC 12M - 6R  | 12                | 3/8         | 9.5       | 22                | 22 | 22.8 | 22.0 | 31.0 | 41.1 |
| CFC 12M - 8R  | 12                | 1/2         | 9.5       | 27                | 22 | 22.8 | 22.0 | 36.6 | 46.7 |
| CFC 12M - 12R | 12                | 3/4         | 9.5       | 35                | 22 | 22.8 | 22.0 | 38.9 | 49.0 |
| CFC 15M - 8R  | 15                | 1/2         | 11.9      | 27                | 25 | 24.4 | 22.0 | 36.6 | 46.7 |
| CFC 16M - 8R  | 16                | 1/2         | 12.7      | 27                | 25 | 24.4 | 22.0 | 36.8 | 46.9 |
| CFC 20M - 8R  | 20                | 1/2         | 15.9      | 30                | 32 | 26.0 | 22.0 | 37.8 | 47.9 |
| CFC 20M - 12R | 20                | 3/4         | 15.9      | 35                | 32 | 26.0 | 22.0 | 39.6 | 49.7 |
| CFC 22M - 12R | 22                | 3/4         | 18.3      | 35                | 32 | 26.0 | 22.0 | 39.6 | 49.7 |
| CFC 22M - 16R | 22                | 1           | 18.3      | 41                | 32 | 26.0 | 22.0 | 47.8 | 57.9 |
| CFC 25M - 12R | 25                | 3/4         | 21.8      | 35                | 38 | 31.3 | 26.5 | 41.1 | 53.4 |
| CFC 25M - 16R | 25                | 1           | 21.8      | 41                | 38 | 31.3 | 26.5 | 50.0 | 62.3 |

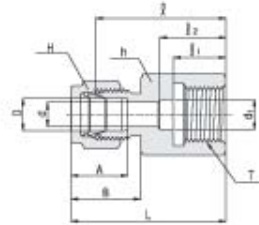
\*NPT Threads are available upon request.

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



# Hy-Lok Tube Fittings

## Gauge Connector CGC



### Connects Fractional Tube To ISO Parallel Thread (Gauge)

| Part No.   | Tube O.D.<br>D |       | T<br>G(PF) | d<br>Min. | d.   | Width across flat |       |       |       | A     | B     | ℓ     | ℓ <sub>1</sub> | ℓ <sub>2</sub> | L     |
|------------|----------------|-------|------------|-----------|------|-------------------|-------|-------|-------|-------|-------|-------|----------------|----------------|-------|
|            | in             | mm    |            |           |      | h                 |       | H     |       |       |       |       |                |                |       |
|            |                |       |            |           |      | in                | mm    | in    | mm    |       |       |       |                |                |       |
| CGC 4 - 2G | 1/4            | 6.35  | 1/8        | 4.82      | -    | 9/16              | 14.28 | 9/16  | 14.28 | 15.24 | 17.78 | 26.3  | 12.00          | -              | 33.55 |
| CGC 4 - 4G | 1/4            | 6.35  | 1/4        | 4.82      | 5.58 | 3/4               | 19.05 | 9/16  | 14.28 | 15.24 | 17.78 | 30.22 | 13.00          | 17.00          | 37.59 |
| CGC 4 - 6G | 1/4            | 6.35  | 3/8        | 4.82      | 6.60 | 15/16             | 24.81 | 9/16  | 14.28 | 15.24 | 17.78 | 30.22 | 14.22          | 20.30          | 37.59 |
| CGC 4 - 8G | 1/4            | 6.35  | 1/2        | 4.82      | 6.60 | 11/16             | 26.98 | 9/16  | 14.28 | 15.24 | 17.78 | 30.07 | 18.80          | 24.90          | 43.43 |
| CGC 5 - 4G | 5/16           | 7.93  | 1/4        | 5.58      | -    | 3/4               | 19.05 | 5/8   | 15.87 | 16.25 | 18.54 | 30.98 | 13.00          | -              | 38.35 |
| CGC 5 - 8G | 5/16           | 7.93  | 1/2        | 7.11      | -    | 1-1/16            | 26.98 | 5/8   | 15.87 | 16.25 | 18.54 | 33.02 | 18.80          | -              | 40.38 |
| CGC 6 - 4G | 3/8            | 9.52  | 1/8        | 5.58      | -    | 3/4               | 19.05 | 11/16 | 17.46 | 16.76 | 19.30 | 31.75 | 12.95          | -              | 39.12 |
| CGC 6 - 6G | 3/8            | 9.52  | 3/8        | 6.60      | -    | 15/16             | 24.81 | 11/16 | 17.46 | 16.76 | 19.30 | 31.24 | 14.22          | -              | 38.61 |
| CGC 6 - 8G | 3/8            | 9.52  | 1/2        | 7.11      | -    | 1-1/16            | 26.98 | 11/16 | 17.46 | 16.76 | 19.30 | 34.54 | 18.80          | -              | 41.91 |
| CGC 8 - 4G | 1/2            | 12.70 | 1/4        | 5.5       | -    | 7/8               | 22.22 | 7/8   | 22.22 | 22.86 | 21.84 | 31.80 | 13.00          | -              | 41.95 |
| CGC 8 - 6G | 1/2            | 12.70 | 3/8        | 6.60      | -    | 15/16             | 23.81 | 7/8   | 22.22 | 22.86 | 21.84 | 34.29 | 14.24          | -              | 44.45 |
| CGC 8 - 8G | 1/2            | 12.70 | 1/2        | 7.11      | 7.11 | 1-1/16            | 26.98 | 7/8   | 22.22 | 22.86 | 21.84 | 38.10 | 18.80          | -              | 48.26 |

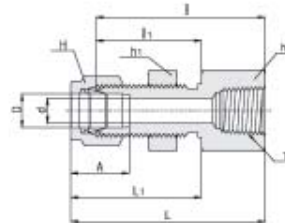
### Connects Metric Tube To ISO Parallel Thread (Gauge)

| Part No.     | Tube<br>O.D.<br>D | T<br>G(PF) | d<br>Min. | d <sub>i</sub> | Width across flat |    | A    | B    | ℓ    | ℓ <sub>1</sub> | ℓ <sub>2</sub> | L    |
|--------------|-------------------|------------|-----------|----------------|-------------------|----|------|------|------|----------------|----------------|------|
|              |                   |            |           |                | h                 | H  |      |      |      |                |                |      |
| CGC 3M - 4G  | 3                 | 1/4        | 2.4       | 5.5            | 19                | 12 | 12.9 | 15.3 | 28.7 | 13             | 17             | 35.3 |
| CGC 6M - 4G  | 6                 | 1/4        | 4.8       | 5.5            | 19                | 14 | 15.3 | 17.7 | 30.2 | 13             | 17             | 37.6 |
| CGC 6M - 6G  | 6                 | 3/8        | 4.8       | 6.5            | 24                | 14 | 15.3 | 17.7 | 30.2 | 14             | 20             | 37.6 |
| CGC 6M - 8G  | 6                 | 1/2        | 4.8       | 7.0            | 27                | 14 | 15.3 | 17.7 | 36.3 | 19             | 25             | 43.0 |
| CGC 8M - 4G  | 8                 | 1/4        | 5.5       | -              | 19                | 16 | 16.2 | 18.6 | 31.0 | 13             | -              | 38.5 |
| CGC 8M - 6G  | 8                 | 3/8        | 6.5       | -              | 24                | 16 | 16.2 | 18.6 | 28.7 | 14             | -              | 36.2 |
| CGC 8M - 8G  | 8                 | 1/2        | 7.0       | -              | 27                | 16 | 16.2 | 18.6 | 33.0 | 19             | -              | 40.5 |
| CGC 10M - 4G | 10                | 1/4        | 5.5       | -              | 19                | 19 | 17.2 | 19.5 | 31.8 | 13             | -              | 39.4 |
| CGC 10M - 6G | 10                | 3/8        | 6.5       | -              | 24                | 19 | 17.2 | 19.5 | 31.2 | 14             | -              | 38.8 |
| CGC 10M - 8G | 10                | 1/2        | 7.0       | -              | 27                | 19 | 17.2 | 19.5 | 34.5 | 19             | -              | 41.4 |
| CGC 12M - 4G | 12                | 1/4        | 5.5       | -              | 22                | 22 | 22.8 | 22.0 | 31.8 | 13             | -              | 41.9 |
| CGC 12M - 6G | 12                | 3/8        | 6.5       | -              | 24                | 22 | 22.8 | 22.0 | 34.3 | 14             | -              | 44.4 |
| CGC 12M - 8G | 12                | 1/2        | 7.0       | -              | 27                | 22 | 22.8 | 22.0 | 38.1 | 19             | -              | 48.2 |
| CGC 20M - 8G | 20                | 1/2        | 7.0       | -              | 30                | 32 | 26.0 | 22.0 | 44.2 | 19             | -              | 54.3 |
| CGC 22M - 8G | 22                | 1/2        | 7.0       | -              | 30                | 32 | 26.0 | 22.0 | 44.2 | 19             | -              | 54.3 |

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

# Hy-Lok Tube Fittings

## Bulkhead Female Connector CBFC



### Connects Fractional Tube To Male NPT Thread

| Part No.     | Tube O.D.<br>D |       | T*<br>(NPT) | d<br>Min. | Width across flat |       |                |       |       |       | A     | ℓ     | ℓ <sub>1</sub> | L     | L <sub>1</sub> | Panel<br>Hole<br>Drill Size | Panel<br>Max.<br>Thickness |
|--------------|----------------|-------|-------------|-----------|-------------------|-------|----------------|-------|-------|-------|-------|-------|----------------|-------|----------------|-----------------------------|----------------------------|
|              |                |       |             |           | h                 |       | h <sub>1</sub> |       | H     |       |       |       |                |       |                |                             |                            |
|              | in             | mm    |             |           | in                | mm    | in             | mm    | in    | mm    |       |       |                |       |                |                             |                            |
| CBFC 2 - 2N  | 1/8            | 3.17  | 1/8         | 2.28      | 9/16              | 14.28 | 1/2            | 12.70 | 7/16  | 11.11 | 12.70 | 38.10 | 24.63          | 44.70 | 31.24          | 8.38                        | 12.70                      |
| CBFC 4 - 2N  | 1/4            | 6.35  | 1/8         | 4.82      | 5/8               | 15.87 | 5/8            | 15.87 | 9/16  | 14.28 | 15.24 | 39.62 | 26.16          | 46.99 | 33.52          | 11.50                       | 10.16                      |
| CBFC 4 - 4N  | 1/4            | 6.35  | 1/4         | 4.82      | 3/4               | 19.05 | 5/8            | 15.87 | 9/16  | 14.28 | 15.24 | 44.45 | 26.16          | 51.81 | 33.52          | 11.50                       | 10.16                      |
| CBFC 6 - 4N  | 3/8            | 9.52  | 1/4         | 7.11      | 3/4               | 19.05 | 3/4            | 19.05 | 11/16 | 17.46 | 16.76 | 47.75 | 29.46          | 55.11 | 36.83          | 14.68                       | 11.17                      |
| CBFC 8 - 6N  | 1/2            | 12.70 | 3/8         | 10.41     | 15/16             | 23.81 | 15/16          | 23.81 | 7/8   | 22.22 | 22.86 | 51.56 | 31.75          | 61.72 | 41.91          | 19.44                       | 12.70                      |
| CBFC 8 - 8N  | 1/2            | 12.70 | 1/2         | 10.41     | 1-1/16            | 26.98 | 15/16          | 23.81 | 7/8   | 22.22 | 22.86 | 56.38 | 31.75          | 66.54 | 41.91          | 19.44                       | 12.70                      |
| CBFC12 - 12N | 3/4            | 19.05 | 3/4         | 15.74     | 1-1/4             | 31.75 | 1-3/16         | 30.16 | 1-1/8 | 28.57 | 24.38 | 63.60 | 38.30          | 73.51 | 47.21          | 25.79                       | 16.76                      |

### Connects Metric Tube To Male NPT Thread

| Part No.      | Tube<br>O.D.<br>D | T*<br>(NPT) | d<br>Min. | Width across flat |                |    | A    | ℓ    | ℓ <sub>1</sub> | L     | L <sub>1</sub> | Panel<br>Hole<br>Drill Size | Panel<br>Max.<br>Thickness |
|---------------|-------------------|-------------|-----------|-------------------|----------------|----|------|------|----------------|-------|----------------|-----------------------------|----------------------------|
|               |                   |             |           | h                 | h <sub>1</sub> | H  |      |      |                |       |                |                             |                            |
| CBFC 6M - 2N  | 6                 | 1/8         | 4.8       | 15.8              | 15.8           | 14 | 15.3 | 39.6 | 27.7           | 46.90 | 35.00          | 11.5                        | 10.2                       |
| CBFC 6M - 4N  | 6                 | 1/4         | 4.8       | 19.0              | 16.0           | 14 | 15.3 | 44.4 | 26.2           | 51.80 | 33.60          | 11.5                        | 10.2                       |
| CBFC 8M - 4N  | 8                 | 1/4         | 6.3       | 19.0              | 17.4           | 16 | 16.2 | 46.7 | 28.4           | 53.85 | 35.55          | 13.1                        | 11.2                       |
| CBFC 12M - 8N | 12                | 1/2         | 9.5       | 27.0              | 24.0           | 22 | 22.8 | 56.4 | 31.8           | 66.50 | 41.90          | 19.5                        | 12.7                       |

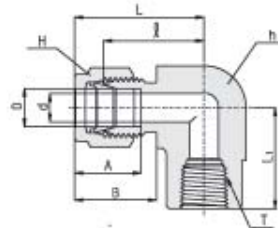
\*ISO Tapered Threads are available upon request.

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# Hy-Lok Tube Fittings

## Female Elbow CLF



### Connects Fractional Tube To Male NPT Thread

| Part No.     | Tube O.D.<br>D |       | T*<br>(NPT) | d<br>Min. | Width across flat |       |       |       | A     | B     | ℓ     | L     | L <sub>1</sub> |
|--------------|----------------|-------|-------------|-----------|-------------------|-------|-------|-------|-------|-------|-------|-------|----------------|
|              | in             | mm    |             |           | h                 |       | H     |       |       |       |       |       |                |
|              |                |       |             |           | in                | mm    | in    | mm    |       |       |       |       |                |
| CLF 2 - 2N   | 1/8            | 3.17  | 1/8         | 2.28      | 1/2               | 12.70 | 7/16  | 11.11 | 12.70 | 15.24 | 18.03 | 24.63 | 19.05          |
| CLF 2 - 4N   | 1/8            | 3.17  | 1/4         | 2.28      | 11/16             | 17.46 | 7/16  | 11.11 | 12.70 | 15.24 | 20.82 | 27.43 | 22.35          |
| CLF 3 - 2N   | 3/16           | 4.76  | 1/8         | 3.04      | 1/2               | 12.70 | 1/2   | 12.70 | 13.71 | 16.00 | 18.79 | 25.40 | 19.05          |
| CLF 4 - 2N   | 1/4            | 6.35  | 1/8         | 4.82      | 1/2               | 12.70 | 9/16  | 14.28 | 15.24 | 17.78 | 19.55 | 26.92 | 19.05          |
| CLF 4 - 4N   | 1/4            | 6.35  | 1/4         | 4.82      | 11/16             | 17.46 | 9/16  | 14.28 | 15.24 | 17.78 | 22.35 | 29.71 | 22.35          |
| CLF 4 - 6N   | 1/4            | 6.35  | 3/8         | 4.82      | 13/16             | 20.63 | 9/16  | 14.28 | 15.24 | 17.78 | 24.38 | 31.75 | 22.35          |
| CLF 4 - 8N   | 1/4            | 6.35  | 1/2         | 4.82      | 1                 | 25.40 | 9/16  | 14.28 | 15.24 | 17.78 | 27.17 | 34.54 | 28.44          |
| CLF 5 - 2N   | 5/16           | 7.93  | 1/8         | 6.35      | 9/16              | 14.28 | 5/8   | 15.87 | 16.25 | 18.54 | 21.33 | 28.70 | 19.05          |
| CLF 5 - 4N   | 5/16           | 7.93  | 1/4         | 6.35      | 11/16             | 17.46 | 5/8   | 15.87 | 16.25 | 18.54 | 23.11 | 30.48 | 22.35          |
| CLF 6 - 2N   | 3/8            | 9.52  | 1/8         | 7.11      | 5/8               | 15.87 | 11/16 | 17.46 | 16.76 | 19.30 | 23.11 | 30.48 | 19.05          |
| CLF 6 - 4N   | 3/8            | 9.52  | 1/4         | 7.11      | 11/16             | 17.46 | 11/16 | 17.46 | 16.76 | 19.30 | 23.87 | 31.24 | 22.35          |
| CLF 6 - 6N   | 3/8            | 9.52  | 3/8         | 7.11      | 13/16             | 20.63 | 11/16 | 17.46 | 16.76 | 19.30 | 25.90 | 33.27 | 22.35          |
| CLF 6 - 8N   | 3/8            | 9.52  | 1/2         | 7.11      | 1                 | 25.40 | 11/16 | 17.46 | 16.76 | 19.30 | 28.70 | 36.06 | 28.44          |
| CLF 8 - 4N   | 1/2            | 12.70 | 1/4         | 10.41     | 13/16             | 20.63 | 7/8   | 22.22 | 22.86 | 21.84 | 25.90 | 36.06 | 22.35          |
| CLF 8 - 6N   | 1/2            | 12.70 | 3/8         | 10.41     | 13/16             | 20.63 | 7/8   | 22.22 | 22.86 | 21.84 | 25.90 | 36.06 | 22.35          |
| CLF 8 - 8N   | 1/2            | 12.70 | 1/2         | 10.41     | 1                 | 25.40 | 7/8   | 22.22 | 22.86 | 21.84 | 28.70 | 38.86 | 28.44          |
| CLF 10 - 6N  | 5/8            | 15.87 | 3/8         | 12.70     | 15/16             | 23.80 | 1     | 25.40 | 24.38 | 21.84 | 27.94 | 38.10 | 22.35          |
| CLF 10 - 8N  | 5/8            | 15.87 | 1/2         | 12.70     | 1                 | 25.40 | 1     | 25.40 | 24.38 | 21.84 | 29.71 | 39.87 | 28.44          |
| CLF 12 - 8N  | 3/4            | 19.05 | 1/2         | 15.74     | 1-1/16            | 26.98 | 1-1/8 | 28.57 | 24.38 | 21.84 | 29.71 | 39.87 | 28.44          |
| CLF 12 - 12N | 3/4            | 19.05 | 3/4         | 15.74     | 1-3/8             | 34.92 | 1-1/8 | 28.57 | 24.38 | 21.84 | 34.54 | 44.70 | 31.75          |
| CLF 14 - 12N | 7/8            | 22.22 | 3/4         | 18.28     | 1-3/8             | 34.92 | 1-1/4 | 31.75 | 25.90 | 21.84 | 34.54 | 44.70 | 31.75          |
| CLF 16 - 12N | 1              | 25.40 | 3/4         | 22.35     | 1-3/8             | 34.92 | 1-1/2 | 38.10 | 31.24 | 26.41 | 36.83 | 49.02 | 31.75          |
| CLF 16 - 16N | 1              | 25.40 | 1           | 22.35     | 1-11/16           | 42.86 | 1-1/2 | 38.10 | 31.24 | 26.41 | 38.10 | 50.29 | 38.10          |

### Connects Metric Tube To Male NPT Thread

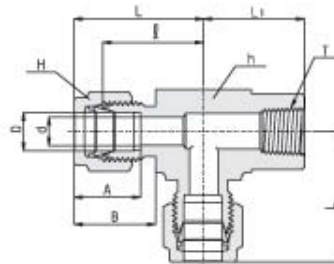
| Part No.    | Tube<br>O.D.<br>D | T*<br>(NPT) | d<br>Min. | Width across flat |    | A    | B    | L    | L <sub>1</sub> | L <sub>2</sub> |
|-------------|-------------------|-------------|-----------|-------------------|----|------|------|------|----------------|----------------|
|             |                   |             |           | h                 | H  |      |      |      |                |                |
| CLF 6M - 2N | 6                 | 1/8         | 4.8       | 12.7              | 14 | 15.3 | 17.7 | 19.6 | 27.0           | 19.00          |
| CLF 6M - 4N | 6                 | 1/4         | 4.8       | 17.5              | 14 | 15.3 | 17.7 | 22.4 | 29.8           | 22.40          |
| CLF 6M - 6N | 6                 | 3/8         | 4.8       | 20.6              | 14 | 15.3 | 17.7 | 24.4 | 31.7           | 22.40          |
| CLF 6M - 8N | 6                 | 1/2         | 4.8       | 25.4              | 14 | 15.3 | 17.7 | 27.2 | 34.6           | 28.40          |
| CLF 8M - 4N | 8                 | 1/4         | 6.4       | 17.5              | 16 | 16.2 | 18.6 | 23.1 | 30.6           | 22.40          |
| CLF 8M - 8N | 8                 | 1/2         | 6.4       | 20.6              | 16 | 16.2 | 18.6 | 28.0 | 35.2           | 28.40          |
| CLF10M - 2N | 10                | 1/8         | 7.9       | 17.5              | 19 | 17.2 | 19.5 | 23.9 | 31.5           | 19.00          |
| CLF10M - 4N | 10                | 1/4         | 7.9       | 17.5              | 19 | 17.2 | 19.5 | 25.9 | 33.5           | 22.40          |
| CLF10M - 6N | 10                | 3/8         | 7.9       | 20.6              | 19 | 17.2 | 19.5 | 25.9 | 33.5           | 22.40          |
| CLF10M - 8N | 10                | 1/2         | 7.9       | 25.4              | 19 | 17.2 | 19.5 | 28.7 | 36.1           | 28.40          |
| CLF12M - 4N | 12                | 1/4         | 9.5       | 20.6              | 22 | 22.8 | 22.0 | 25.9 | 36.0           | 22.40          |
| CLF12M - 6N | 12                | 3/8         | 9.5       | 20.6              | 22 | 22.8 | 22.0 | 25.9 | 36.0           | 22.40          |
| CLF12M - 8N | 12                | 1/2         | 9.5       | 25.4              | 22 | 22.8 | 22.0 | 28.7 | 38.8           | 28.40          |
| CLF16M - 8N | 16                | 1/2         | 12.7      | 27.0              | 25 | 24.4 | 22.0 | 29.7 | 39.5           | 28.40          |

\*ISO Tapered Threads are available upon request.

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

## Hy-Lok Tube Fittings

### Female Run Tee CRTF



#### Connects Fractional Tube To Male NPT Thread

| Part No.    | Tube O.D.<br>D |       | T*<br>(NPT) | d<br>Min. | Width across flat |       |       |       | A     | B     | ℓ     | L     | L <sub>i</sub> |
|-------------|----------------|-------|-------------|-----------|-------------------|-------|-------|-------|-------|-------|-------|-------|----------------|
|             | in             | mm    |             |           | h                 |       | H     |       |       |       |       |       |                |
|             |                |       |             |           | in                | mm    | in    | mm    |       |       |       |       |                |
| CRTF 2 - 2N | 1/8            | 3.17  | 1/8         | 2.28      | 1/2               | 12.70 | 7/16  | 11.11 | 12.70 | 15.24 | 18.03 | 24.63 | 19.05          |
| CRTF 4 - 2N | 1/4            | 6.35  | 1/8         | 4.82      | 1/2               | 12.70 | 9/16  | 14.28 | 15.24 | 17.78 | 19.55 | 26.92 | 19.05          |
| CRTF 4 - 4N | 1/4            | 6.35  | 1/4         | 4.82      | 11/16             | 17.46 | 9/16  | 14.28 | 15.24 | 17.78 | 22.86 | 29.71 | 22.35          |
| CRTF 6 - 4N | 3/8            | 9.52  | 1/4         | 7.11      | 11/16             | 17.46 | 11/16 | 17.46 | 16.76 | 19.30 | 23.87 | 31.24 | 22.35          |
| CRTF 8 - 6N | 1/2            | 12.70 | 3/8         | 10.41     | 13/16             | 20.63 | 7/8   | 22.22 | 22.86 | 21.84 | 25.90 | 36.06 | 22.35          |
| CRTF 8 - 8N | 1/2            | 12.70 | 1/2         | 10.41     | 1                 | 25.40 | 7/8   | 22.22 | 22.86 | 21.84 | 29.71 | 39.87 | 28.44          |
| CRTF12 -12N | 3/4            | 19.05 | 3/4         | 15.74     | 1-3/8             | 34.92 | 1-1/8 | 28.57 | 24.38 | 21.84 | 34.54 | 44.70 | 31.75          |
| CRTF16 -12N | 1              | 25.40 | 3/4         | 22.35     | 1-3/8             | 34.92 | 1-1/2 | 38.10 | 31.24 | 26.41 | 36.83 | 49.02 | 31.75          |
| CRTF16 -16N | 1              | 25.40 | 1           | 22.35     | 1-11/16           | 42.86 | 1-1/2 | 38.10 | 31.24 | 26.41 | 41.40 | 53.59 | 38.10          |

#### Connects Metric Tube To Male NPT Thread

| Part No.      | Tube O.D.<br>D | T*<br>(NPT) | d<br>Min. | Width across flat |    | A    | B    | ℓ    | L    | L <sub>i</sub> |
|---------------|----------------|-------------|-----------|-------------------|----|------|------|------|------|----------------|
|               |                |             |           | h                 | H  |      |      |      |      |                |
| CRTF 6M - 2N  | 6              | 1/8         | 4.8       | 12.7              | 14 | 15.3 | 17.7 | 19.6 | 46.0 | 19.0           |
| CRTF 6M - 4N  | 6              | 1/4         | 4.8       | 17.5              | 14 | 15.3 | 17.7 | 22.4 | 52.1 | 22.4           |
| CRTF 6M - 8N  | 6              | 1/2         | 4.8       | 25.4              | 14 | 15.3 | 17.7 | 27.2 | 34.5 | 28.4           |
| CRTF 8M - 2N  | 8              | 1/8         | 6.4       | 15.8              | 16 | 16.2 | 18.6 | 22.4 | 48.9 | 19.0           |
| CRTF 8M - 4N  | 8              | 1/4         | 6.4       | 17.5              | 16 | 16.2 | 18.6 | 23.1 | 53.0 | 22.4           |
| CRTF 8M - 6N  | 8              | 3/8         | 6.4       | 20.6              | 16 | 16.2 | 18.6 | 25.2 | 32.4 | 22.4           |
| CRTF 8M - 8N  | 8              | 1/2         | 6.4       | 25.4              | 16 | 16.2 | 18.6 | 28.0 | 35.2 | 28.4           |
| CRTF 10M - 4N | 10             | 1/4         | 7.9       | 20.6              | 19 | 17.2 | 19.5 | 25.9 | 33.5 | 22.4           |
| CRTF 12M - 4N | 12             | 1/4         | 9.5       | 20.6              | 22 | 22.8 | 22.0 | 25.9 | 58.4 | 22.4           |
| CRTF 12M - 6N | 12             | 3/8         | 9.5       | 20.6              | 22 | 22.8 | 22.0 | 25.9 | 58.4 | 22.4           |
| CRTF 12M - 8N | 12             | 1/2         | 9.5       | 25.4              | 22 | 22.8 | 22.0 | 28.7 | 38.8 | 28.4           |
| CRTF 16M - 8N | 16             | 1/2         | 12.7      | 25.4              | 25 | 24.4 | 22.0 | 29.7 | 39.9 | 28.4           |

\*ISO Tapered Threads are available upon request.

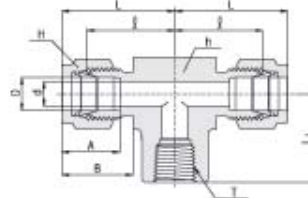
All dimensions are in millimeters unless otherwise specified. Dimensions are for reference only, subject to change.



## Hy-Lok Tube Fittings

Female Branch Tee.

**CBTF**



### Connects Fractional Tube To Male NPT Thread

| Part No.     | Tube O.D.<br>D |       | T*<br>(NPT) | d<br>Min. | Width across flat |       |       |       | A     | B     | ℓ     | L     | L <sub>1</sub> |
|--------------|----------------|-------|-------------|-----------|-------------------|-------|-------|-------|-------|-------|-------|-------|----------------|
|              | in             | mm    |             |           | h                 |       | H     |       |       |       |       |       |                |
|              |                |       |             |           | in                | mm    | in    | mm    |       |       |       |       |                |
| CBTF 2 - 2N  | 1/8            | 3.17  | 1/8         | 2.28      | 1/2               | 12.70 | 7/16  | 11.11 | 12.70 | 15.24 | 18.03 | 24.38 | 19.05          |
| CBTF 4 - 2N  | 1/4            | 6.35  | 1/8         | 4.82      | 1/2               | 12.70 | 9/16  | 14.28 | 15.24 | 17.78 | 19.55 | 26.92 | 19.05          |
| CBTF 4 - 4N  | 1/4            | 6.35  | 1/4         | 4.82      | 11/16             | 17.46 | 9/16  | 14.28 | 15.24 | 17.78 | 22.35 | 29.71 | 22.35          |
| CBTF 6 - 4N  | 3/8            | 9.52  | 1/4         | 7.11      | 11/16             | 17.46 | 11/16 | 17.46 | 16.76 | 19.30 | 23.87 | 31.24 | 22.35          |
| CBTF 8 - 4N  | 1/2            | 12.70 | 1/4         | 10.41     | 13/16             | 20.63 | 7/8   | 22.22 | 22.86 | 21.84 | 25.90 | 36.06 | 22.35          |
| CBTF 8 - 6N  | 1/2            | 12.70 | 3/8         | 10.41     | 13/16             | 20.63 | 7/8   | 22.22 | 22.86 | 21.84 | 25.90 | 36.06 | 22.35          |
| CBTF 8 - 8N  | 1/2            | 12.70 | 1/2         | 10.41     | 1                 | 25.40 | 7/8   | 22.22 | 22.86 | 21.84 | 28.70 | 38.86 | 28.44          |
| CBTF10 - 8N  | 5/8            | 15.87 | 1/2         | 12.70     | 1                 | 25.40 | 1     | 25.40 | 24.38 | 21.84 | 28.70 | 38.86 | 28.44          |
| CBTF12 -12N  | 3/4            | 19.05 | 3/4         | 15.74     | 1-3/8             | 34.92 | 1-1/8 | 28.57 | 24.38 | 21.84 | 34.54 | 44.70 | 31.75          |
| CBTF16 -12N  | 1              | 25.40 | 3/4         | 22.35     | 1-3/8             | 34.92 | 1-1/2 | 38.10 | 31.24 | 26.41 | 36.83 | 49.02 | 31.75          |
| CBTF16 - 16N | 1              | 25.40 | 1           | 22.35     | 1-11/16           | 42.86 | 1-1/2 | 38.10 | 31.24 | 26.41 | 44.20 | 53.59 | 38.10          |

### Connects Metric Tube To Male NPT Thread

| Part No.     | Tube O.D.<br>D | T*<br>(NPT) | d<br>Min. | Width across flat |    | A    | B    | L    | L    | L1   |
|--------------|----------------|-------------|-----------|-------------------|----|------|------|------|------|------|
|              |                |             |           | h                 | H  |      |      |      |      |      |
| CBTF 6M - 2N | 6              | 1/8         | 4.8       | 12.7              | 14 | 15.3 | 17.7 | 19.6 | 27.0 | 19.0 |
| CBTF 6M - 4N | 6              | 1/4         | 4.8       | 17.5              | 14 | 15.3 | 17.7 | 22.4 | 29.8 | 22.4 |
| CBTF 6M - 6N | 6              | 3/8         | 4.8       | 20.6              | 14 | 15.3 | 17.7 | 24.4 | 31.7 | 22.4 |
| CBTF 6M - 8N | 6              | 1/2         | 4.8       | 25.4              | 14 | 15.3 | 17.7 | 27.2 | 34.5 | 28.4 |
| CBTF 8M - 2N | 8              | 1/8         | 6.4       | 15.8              | 16 | 16.2 | 18.6 | 23.1 | 29.9 | 19.0 |
| CBTF 8M - 4N | 8              | 1/4         | 6.4       | 17.5              | 16 | 16.2 | 18.6 | 23.1 | 30.6 | 22.4 |
| CBTF 8M - 6N | 8              | 3/8         | 6.4       | 20.6              | 16 | 16.2 | 18.6 | 25.2 | 32.4 | 22.4 |
| CBTF 8M - 8N | 8              | 1/2         | 6.4       | 25.4              | 16 | 16.2 | 18.6 | 28.0 | 35.2 | 28.4 |
| CBTF10M - 4N | 10             | 1/4         | 7.9       | 20.6              | 19 | 17.2 | 19.5 | 25.9 | 33.5 | 22.4 |
| CBTF10M - 6N | 10             | 3/8         | 7.9       | 20.6              | 19 | 17.2 | 19.5 | 25.9 | 33.3 | 22.4 |
| CBTF10M - 8N | 10             | 1/2         | 9.5       | 25.4              | 19 | 17.2 | 19.5 | 26.2 | 33.6 | 22.4 |
| CBTF12M - 4N | 12             | 1/4         | 9.5       | 20.6              | 22 | 22.8 | 22.0 | 25.9 | 36.0 | 22.4 |
| CBTF12M - 6N | 12             | 3/8         | 9.5       | 20.6              | 22 | 22.8 | 22.0 | 25.9 | 36.0 | 22.4 |
| CBTF12M - 8N | 12             | 1/2         | 9.5       | 25.4              | 22 | 22.8 | 22.0 | 28.7 | 38.8 | 28.4 |
| CBTF16M - 8N | 16             | 1/2         | 12.7      | 25.4              | 25 | 24.4 | 22.0 | 28.7 | 38.8 | 28.7 |

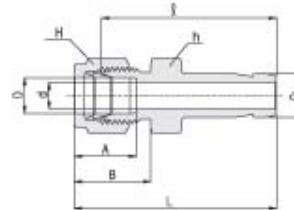
\*ISO Tapered threads are available upon request.

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



# Hy-Lok Tube Fittings

## Reducer CR



### \*Connects Fractional Tube To Fractional Hy-Lok Port

| Part No.  | Tube O.D. |       |                |       | d<br>Min. | Width across flat |       |       |       | A     | B     | ℓ      | L      |
|-----------|-----------|-------|----------------|-------|-----------|-------------------|-------|-------|-------|-------|-------|--------|--------|
|           | D         |       | D <sub>1</sub> |       |           | h                 |       | H     |       |       |       |        |        |
|           | in        | mm    | in             | mm    |           | in                | mm    | in    | mm    |       |       |        |        |
| CR 1 - 2  | 1/16      | 1.58  | 1/8            | 3.17  | 1.27      | 5/16              | 7.93  | 5/16  | 7.93  | 8.63  | 10.92 | 25.40  | 29.21  |
| CR 1 - 4  | 1/16      | 1.58  | 1/4            | 6.35  | 1.27      | 5/16              | 7.93  | 5/16  | 7.93  | 8.63  | 10.92 | 27.68  | 31.49  |
| CR 2 - 1  | 1/8       | 3.17  | 1/16           | 1.58  | 0.76      | 7/16              | 11.11 | 7/16  | 11.11 | 12.70 | 15.24 | 22.35  | 28.95  |
| CR 2 - 2  | 1/8       | 3.17  | 1/8            | 3.17  | 2.03      | 7/16              | 11.11 | 7/16  | 11.11 | 12.70 | 15.24 | 26.92  | 33.52  |
| CR 2 - 3  | 1/8       | 3.17  | 3/16           | 4.76  | 2.28      | 7/16              | 11.11 | 7/16  | 11.11 | 12.70 | 15.24 | 27.68  | 34.29  |
| CR 2 - 4  | 1/8       | 3.17  | 1/4            | 6.35  | 2.28      | 7/16              | 11.11 | 7/16  | 11.11 | 12.70 | 15.24 | 29.46  | 36.06  |
| CR 2 - 6  | 1/8       | 3.17  | 3/8            | 9.52  | 2.28      | 7/16              | 11.11 | 7/16  | 11.11 | 12.70 | 15.24 | 30.98  | 37.59  |
| CR 2 - 8  | 1/8       | 3.17  | 1/2            | 12.70 | 2.28      | 9/16              | 14.28 | 7/16  | 11.11 | 12.70 | 15.24 | 37.59  | 44.19  |
| CR 3 - 2  | 3/16      | 4.76  | 1/8            | 3.17  | 2.03      | 7/16              | 11.11 | 1/2   | 12.70 | 13.71 | 16.00 | 28.19  | 34.79  |
| CR 3 - 4  | 3/16      | 4.76  | 1/4            | 6.35  | 3.04      | 7/16              | 11.11 | 1/2   | 12.70 | 13.71 | 16.00 | 30.48  | 37.08  |
| CR 4 - 2  | 1/4       | 6.35  | 1/8            | 3.17  | 2.03      | 1/2               | 12.70 | 9/16  | 14.28 | 15.24 | 17.78 | 29.46  | 36.83  |
| CR 4 - 3  | 1/4       | 6.35  | 3/16           | 4.76  | 3.04      | 1/2               | 12.70 | 9/16  | 14.28 | 15.24 | 17.78 | 30.22  | 37.59  |
| CR 4 - 4  | 1/4       | 6.35  | 1/4            | 6.35  | 4.82      | 1/2               | 12.70 | 9/16  | 14.28 | 15.24 | 17.78 | 31.75  | 39.11  |
| CR 4 - 5  | 1/4       | 6.35  | 5/16           | 7.93  | 4.82      | 1/2               | 12.70 | 9/16  | 14.28 | 15.24 | 17.78 | 32.51  | 39.87  |
| CR 4 - 6  | 1/4       | 6.35  | 3/8            | 9.52  | 4.82      | 1/2               | 12.70 | 9/16  | 14.28 | 15.24 | 17.78 | 33.27  | 40.64  |
| CR 4 - 8  | 1/4       | 6.65  | 1/2            | 12.70 | 4.82      | 9/16              | 14.28 | 9/16  | 14.28 | 15.24 | 17.78 | 38.86  | 46.22  |
| CR 4 - 10 | 1/4       | 6.35  | 5/8            | 15.87 | 4.82      | 11/16             | 17.46 | 9/16  | 14.28 | 15.24 | 17.78 | 40.64  | 48.00  |
| CR 4 - 12 | 1/4       | 6.35  | 3/4            | 19.05 | 4.82      | 13/16             | 20.63 | 9/16  | 14.28 | 15.24 | 17.78 | 40.38  | 47.75  |
| CR 5 - 6  | 5/16      | 7.93  | 3/8            | 9.52  | 6.35      | 9/16              | 14.28 | 5/8   | 15.87 | 16.25 | 18.54 | 34.54  | 41.91  |
| CR 5 - 8  | 5/16      | 7.93  | 1/2            | 12.70 | 6.35      | 9/16              | 14.28 | 5/8   | 15.87 | 16.25 | 18.54 | 40.13  | 47.49  |
| CR 6 - 4  | 3/8       | 9.52  | 1/4            | 6.35  | 4.82      | 5/8               | 15.87 | 11/16 | 17.46 | 16.76 | 19.30 | 34.03  | 41.40  |
| CR 6 - 6  | 3/8       | 9.52  | 3/8            | 9.52  | 7.11      | 5/8               | 15.87 | 11/16 | 17.46 | 16.76 | 19.30 | 35.81  | 43.18  |
| CR 6 - 8  | 3/8       | 9.52  | 1/2            | 12.70 | 7.11      | 5/8               | 15.87 | 11/16 | 17.46 | 16.76 | 19.30 | 41.14  | 48.51  |
| CR 6 - 10 | 3/8       | 9.52  | 5/8            | 15.87 | 7.11      | 11/16             | 17.46 | 11/16 | 17.46 | 16.76 | 19.30 | 42.92  | 50.29  |
| CR 6 - 12 | 3/8       | 9.52  | 3/4            | 19.05 | 7.11      | 13/16             | 20.63 | 11/16 | 17.46 | 16.76 | 19.30 | 42.92  | 50.29  |
| CR 8 - 4  | 1/2       | 12.70 | 1/4            | 6.35  | 4.82      | 13/16             | 20.63 | 7/8   | 22.22 | 22.86 | 21.84 | 34.79  | 44.95  |
| CR 8 - 6  | 1/2       | 12.70 | 3/8            | 9.52  | 7.11      | 13/16             | 20.63 | 7/8   | 22.22 | 22.86 | 21.84 | 36.57  | 46.73  |
| CR 8 - 8  | 1/2       | 12.70 | 1/2            | 12.70 | 9.90      | 13/16             | 20.63 | 7/8   | 22.22 | 22.86 | 21.84 | 42.16  | 52.32  |
| CR 8 - 10 | 1/2       | 12.70 | 5/8            | 15.87 | 10.41     | 13/16             | 20.63 | 7/8   | 22.22 | 22.86 | 21.84 | 43.68  | 53.84  |
| CR 8 - 12 | 1/2       | 12.70 | 3/4            | 19.05 | 10.41     | 13/16             | 20.63 | 7/8   | 22.22 | 22.86 | 21.84 | 43.68  | 53.84  |
| CR 8 - 16 | 1/2       | 12.70 | 1              | 25.40 | 10.41     | 1-1/16            | 26.98 | 7/8   | 22.22 | 22.86 | 21.84 | 50.03  | 60.19  |
| CR10 - 12 | 5/8       | 15.87 | 3/4            | 19.05 | 12.70     | 15/16             | 23.81 | 1     | 25.40 | 24.38 | 21.84 | 44.45  | 54.61  |
| CR10 - 14 | 5/8       | 15.87 | 7/8            | 22.22 | 12.70     | 15/16             | 23.81 | 1     | 25.40 | 24.38 | 21.84 | 45.97  | 56.13  |
| CR10 - 16 | 5/8       | 15.87 | 1              | 25.40 | 12.70     | 1-1/16            | 26.98 | 1     | 25.40 | 24.38 | 21.84 | 50.80  | 60.96  |
| CR12 - 8  | 3/4       | 19.05 | 1/2            | 12.70 | 9.90      | 1-1/16            | 26.98 | 1-1/8 | 28.57 | 24.38 | 21.84 | 44.45  | 54.61  |
| CR12 - 16 | 3/4       | 19.05 | 1              | 25.40 | 15.74     | 1-1/16            | 26.98 | 1-1/8 | 28.57 | 24.38 | 21.84 | 52.32  | 62.48  |
| CR16 - 20 | 1         | 25.40 | 1-1/4          | 31.75 | 22.35     | 1-3/8             | 34.92 | 1-1/2 | 38.10 | 31.24 | 26.41 | 68.32  | 80.51  |
| CR16 - 24 | 1         | 25.40 | 1-1/2          | 38.10 | 22.35     | 1-5/8             | 41.27 | 1-1/2 | 38.10 | 31.24 | 26.41 | 76.96  | 89.15  |
| CR16 - 32 | 1         | 25.40 | 2              | 50.80 | 22.35     | 2-1/8             | 53.97 | 1-1/2 | 38.10 | 31.24 | 26.41 | 100.33 | 112.52 |
| CR20 - 24 | 1-1/4     | 31.75 | 1-1/2          | 38.10 | 27.68     | 1-7/8             | 47.62 | 2-1/4 | 57.15 | 41.14 | 38.86 | 82.04  | 104.14 |
| CR20 - 32 | 1-1/4     | 31.75 | 2              | 50.80 | 27.68     | 1-7/8             | 47.62 | 3     | 76.20 | 41.14 | 38.86 | 103.12 | 125.22 |
| CR24 - 32 | 1-1/2     | 38.10 | 2              | 50.80 | 34.03     | 2-1/4             | 57.15 | 3     | 76.20 | 50.03 | 45.21 | 104.14 | 131.31 |

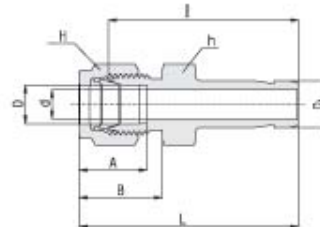
\*Connects fractional tube to metric Hy-Lok port are available upon request.

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



# Hy-Lok Tube Fittings

## Reducer CR



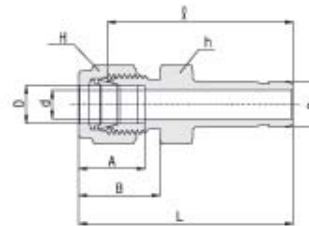
### Connects Metric Tube To Metric Hy-Lok Port

| Part No.    | Tube O.D. |                | d<br>Min. | Width across flat |    | A    | B    | L    | L    |
|-------------|-----------|----------------|-----------|-------------------|----|------|------|------|------|
|             | D         | D <sub>1</sub> |           | h                 | H  |      |      |      |      |
| CR 2M - 3M  | 2         | 3              | 1.7       | 12                | 12 | 12.9 | 15.3 | 26.9 | 33.5 |
| CR 3M - 4M  | 3         | 4              | 2.4       | 12                | 12 | 12.9 | 15.3 | 28.4 | 35.0 |
| CR 3M - 6M  | 3         | 6              | 2.4       | 12                | 12 | 12.9 | 15.3 | 29.5 | 36.1 |
| CR 3M - 10M | 3         | 10             | 2.4       | 12                | 12 | 12.9 | 15.3 | 31.8 | 38.4 |
| CR 4M - 6M  | 4         | 6              | 2.4       | 12                | 12 | 13.7 | 16.1 | 30.5 | 37.1 |
| CR 6M - 3M  | 6         | 3              | 1.8       | 14                | 14 | 15.3 | 17.7 | 29.5 | 36.9 |
| CR 6M - 8M  | 6         | 8              | 4.8       | 14                | 14 | 15.3 | 17.7 | 32.5 | 39.9 |
| CR 6M - 10M | 6         | 10             | 4.8       | 14                | 14 | 15.3 | 17.7 | 33.3 | 40.7 |
| CR 6M - 12M | 6         | 12             | 4.8       | 14                | 14 | 15.3 | 17.7 | 38.9 | 46.3 |
| CR 8M - 6M  | 8         | 6              | 4.6       | 15                | 16 | 16.2 | 18.6 | 32.8 | 40.3 |
| CR 8M - 10M | 8         | 10             | 6.4       | 15                | 16 | 16.2 | 18.6 | 34.5 | 42.0 |
| CR 8M - 12M | 8         | 12             | 6.4       | 15                | 16 | 16.2 | 18.6 | 40.1 | 47.6 |
| CR10M - 6M  | 10        | 6              | 4.6       | 18                | 19 | 17.2 | 19.5 | 34.8 | 42.4 |
| CR10M - 12M | 10        | 12             | 7.9       | 18                | 19 | 17.2 | 19.5 | 42.2 | 49.8 |
| CR10M - 15M | 10        | 15             | 7.9       | 18                | 19 | 17.2 | 19.5 | 43.7 | 51.3 |
| CR10M - 18M | 10        | 18             | 7.9       | 19                | 19 | 17.2 | 19.5 | 43.7 | 51.3 |
| CR12M - 6M  | 12        | 6              | 4.6       | 22                | 22 | 22.8 | 22.0 | 34.8 | 44.9 |
| CR12M - 10M | 12        | 10             | 7.7       | 22                | 22 | 22.8 | 22.0 | 36.6 | 46.7 |
| CR12M - 16M | 12        | 16             | 9.5       | 22                | 22 | 22.8 | 22.0 | 43.7 | 53.8 |
| CR12M - 18M | 12        | 18             | 9.5       | 22                | 22 | 22.8 | 22.0 | 43.7 | 53.8 |
| CR12M - 20M | 12        | 20             | 9.5       | 22                | 22 | 22.8 | 22.0 | 46.0 | 56.1 |
| CR12M - 22M | 12        | 22             | 9.5       | 24                | 22 | 22.8 | 22.0 | 46.0 | 56.1 |
| CR12M - 25M | 12        | 25             | 9.5       | 27                | 22 | 22.8 | 22.0 | 52.3 | 62.4 |
| CR16M - 12M | 16        | 12             | 9.1       | 24                | 25 | 24.4 | 22.0 | 42.9 | 53.0 |
| CR18M - 12M | 18        | 12             | 9.1       | 27                | 30 | 24.4 | 22.0 | 44.5 | 54.6 |
| CR18M - 16M | 18        | 16             | 12.7      | 27                | 30 | 24.4 | 22.0 | 46.0 | 56.1 |
| CR18M - 20M | 18        | 20             | 15.1      | 27                | 30 | 24.4 | 22.0 | 47.5 | 57.6 |
| CR18M - 22M | 18        | 22             | 15.1      | 27                | 30 | 24.4 | 22.0 | 47.5 | 57.6 |
| CR18M - 25M | 18        | 25             | 15.1      | 27                | 30 | 24.4 | 22.0 | 52.3 | 62.4 |
| CR20M - 16M | 20        | 16             | 12.7      | 30                | 32 | 26.0 | 22.0 | 47.8 | 57.9 |
| CR20M - 18M | 20        | 18             | 13.9      | 30                | 32 | 26.0 | 22.0 | 47.8 | 57.9 |
| CR20M - 22M | 20        | 22             | 15.8      | 30                | 32 | 26.0 | 22.0 | 49.3 | 59.4 |
| CR20M - 25M | 20        | 25             | 15.8      | 30                | 32 | 26.0 | 22.0 | 54.1 | 64.2 |
| CR22M - 18M | 22        | 18             | 13.9      | 30                | 32 | 26.0 | 22.0 | 47.8 | 57.9 |
| CR22M - 20M | 22        | 20             | 15.1      | 30                | 32 | 26.0 | 22.0 | 49.3 | 59.4 |
| CR22M - 25M | 22        | 25             | 18.3      | 30                | 32 | 26.0 | 22.0 | 54.1 | 64.2 |
| CR25M - 18M | 25        | 18             | 13.9      | 35                | 38 | 31.3 | 26.5 | 50.8 | 63.1 |
| CR25M - 20M | 25        | 20             | 15.1      | 35                | 38 | 31.3 | 26.5 | 52.3 | 64.6 |

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

## Hy-Lok Tube Fittings

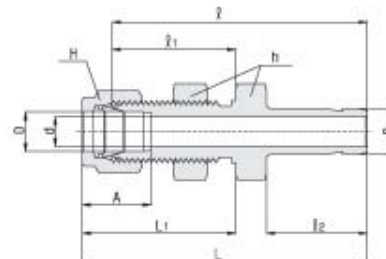
### Reducer CR



#### Connects Metric Tube To Fractional Hy-Lok Port

| Part No.    | Tube O.D. |                |       | d<br>Min. | Width across flat |    | A    | B    | ℓ    | L    |
|-------------|-----------|----------------|-------|-----------|-------------------|----|------|------|------|------|
|             | D         | D <sub>i</sub> |       |           | h                 | H  |      |      |      |      |
|             |           | in             | mm    |           |                   |    |      |      |      |      |
| CR 2M - 2   | 2         | 1/8            | 3.17  | 1.7       | 12                | 12 | 12.9 | 15.3 | 26.9 | 33.5 |
| CR 3M - 2   | 3         | 1/8            | 3.17  | 2.0       | 12                | 12 | 12.9 | 15.3 | 26.9 | 33.5 |
| CR 3M - 4   | 3         | 1/4            | 6.35  | 2.4       | 12                | 12 | 12.9 | 15.3 | 29.5 | 36.1 |
| CR 4M - 4   | 4         | 1/4            | 6.35  | 2.4       | 12                | 12 | 13.7 | 16.1 | 30.5 | 37.1 |
| CR 6M - 2   | 6         | 1/8            | 3.17  | 2.0       | 14                | 14 | 15.3 | 17.7 | 29.5 | 36.9 |
| CR 6M - 4   | 6         | 1/4            | 6.35  | 4.8       | 14                | 14 | 15.3 | 17.7 | 31.8 | 39.2 |
| CR 6M - 5   | 6         | 5/16           | 7.93  | 4.8       | 14                | 14 | 15.3 | 17.7 | 32.5 | 39.9 |
| CR 6M - 6   | 6         | 3/8            | 9.52  | 4.8       | 14                | 14 | 15.3 | 17.7 | 33.3 | 40.7 |
| CR 6M - 8   | 6         | 1/2            | 12.70 | 4.8       | 14                | 14 | 15.3 | 17.7 | 38.9 | 46.3 |
| CR 8M - 6   | 8         | 3/8            | 9.52  | 6.4       | 15                | 16 | 16.2 | 18.6 | 34.5 | 42.0 |
| CR 8M - 8   | 8         | 1/2            | 12.70 | 6.4       | 15                | 16 | 16.2 | 18.6 | 40.1 | 47.6 |
| CR 10M - 6  | 10        | 3/8            | 9.52  | 7.1       | 18                | 19 | 17.2 | 19.5 | 36.6 | 44.2 |
| CR 10M - 8  | 10        | 1/2            | 12.70 | 7.9       | 18                | 19 | 17.2 | 19.5 | 42.2 | 49.8 |
| CR 12M - 8  | 12        | 1/2            | 12.70 | 9.5       | 22                | 22 | 22.8 | 22.0 | 42.2 | 52.3 |
| CR 12M - 12 | 12        | 3/4            | 19.05 | 9.5       | 22                | 22 | 22.8 | 22.0 | 43.7 | 53.8 |
| CR 18M - 12 | 18        | 3/4            | 19.05 | 15.1      | 27                | 30 | 24.4 | 22.0 | 46.0 | 56.1 |
| CR 18M - 16 | 18        | 1              | 25.40 | 15.1      | 27                | 30 | 24.4 | 22.0 | 52.3 | 62.4 |
| CR 25M - 16 | 25        | 1              | 25.40 | 20.2      | 35                | 38 | 31.3 | 26.5 | 57.2 | 69.5 |

### Bulkhead Reducer CBR



#### Connects Fractional Tube To Fractional Hy-Lok Port

| Part No.   | Tube O.D.<br>D |       | d<br>Min. | Width across flat |       |       |       | A     | ℓ     | ℓ <sub>1</sub> | ℓ <sub>2</sub> | L      | L     | Panel<br>Hole<br>Drill Size | Panel<br>Max.<br>Thickness |
|------------|----------------|-------|-----------|-------------------|-------|-------|-------|-------|-------|----------------|----------------|--------|-------|-----------------------------|----------------------------|
|            |                |       |           | h                 |       | H     |       |       |       |                |                |        |       |                             |                            |
|            | in             | mm    |           | in                | mm    | in    | mm    |       |       |                |                |        |       |                             |                            |
| CBR 2 - 2  | 1/8            | 3.17  | 2.03      | 1/2               | 12.70 | 7/16  | 11.11 | 12.70 | 42.92 | 24.63          | 13.46          | 49.53  | 31.24 | 8.33                        | 12.70                      |
| CBR 4 - 4  | 1/4            | 6.35  | 4.82      | 5/8               | 15.87 | 9/16  | 14.28 | 15.24 | 48.51 | 26.16          | 15.74          | 55.88  | 33.52 | 11.50                       | 10.16                      |
| CBR 6 - 6  | 3/8            | 9.52  | 7.11      | 3/4               | 19.05 | 11/16 | 17.46 | 16.76 | 53.84 | 29.46          | 17.52          | 61.21  | 36.83 | 14.68                       | 11.17                      |
| CBR 8 - 8  | 1/2            | 12.70 | 10.41     | 15/16             | 23.81 | 7/8   | 22.22 | 22.86 | 62.73 | 31.75          | 23.11          | 72.89  | 41.91 | 19.44                       | 12.70                      |
| CBR10 - 10 | 5/8            | 15.87 | 12.70     | 1-1/16            | 26.98 | 1     | 25.40 | 24.38 | 65.02 | 32.51          | 24.70          | 75.18  | 42.67 | 22.62                       | 12.70                      |
| CBR16 - 16 | 1              | 25.40 | 20.32     | 1-5/8             | 41.27 | 1-1/2 | 38.10 | 31.24 | 88.13 | 45.21          | 31.70          | 100.33 | 57.40 | 33.73                       | 19.05                      |

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



# Hy-Lok Tube Fittings

## Male Adapter CAM

Hy-Lok Adapter eliminates difficult alignment problems.



1. It is required to install tubing to a female port in a certain direction as shown.



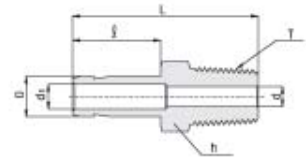
2. With pipe connection tight, the male elbow is directed to wrong direction.



3. To avoid this, simply tighten the pipe thread of male adapter into female port.



4. Connect union elbow to male adapter by tightening the Hy-Lok nut while keeping the elbow in the desired direction. Then install the tubing into the other end of elbow.



## Connects Fractional Hy-Lok Port To Female NPT Thread

| Part No.    | Tube O.D.<br>D |       | T*<br>(NPT) | d<br>Min. | d <sub>1</sub> | Width across flat<br>h |       | ℓ     | L      |
|-------------|----------------|-------|-------------|-----------|----------------|------------------------|-------|-------|--------|
|             | in             | mm    |             |           |                | in                     | mm    |       |        |
| CAM 2 - 2N  | 1/8            | 3.17  | 1/8         | 4.57      | 1.77           | 7/16                   | 11.11 | 13.45 | 29.50  |
| CAM 2 - 4N  | 1/8            | 3.17  | 1/4         | 7.11      | 1.77           | 9/16                   | 14.28 | 13.45 | 34.80  |
| CAM 3 - 2N  | 3/16           | 4.76  | 1/8         | 4.57      | 3.04           | 7/16                   | 11.11 | 14.20 | 30.22  |
| CAM 3 - 4N  | 3/16           | 4.76  | 1/4         | 7.11      | 3.04           | 9/16                   | 14.28 | 14.20 | 35.56  |
| CAM 4 - 2N  | 1/4            | 6.35  | 1/8         | 4.57      | 4.57           | 7/16                   | 11.11 | 15.75 | 31.80  |
| CAM 4 - 4N  | 1/4            | 6.35  | 1/4         | 7.11      | 4.57           | 9/16                   | 14.28 | 15.75 | 37.08  |
| CAM 4 - 6N  | 1/4            | 6.35  | 3/8         | 10.41     | 4.57           | 11/16                  | 17.46 | 15.75 | 37.84  |
| CAM 4 - 8N  | 1/4            | 6.35  | 1/2         | 12.70     | 4.57           | 7/8                    | 22.22 | 15.75 | 43.43  |
| CAM 5 - 2N  | 5/16           | 7.93  | 1/8         | 4.57      | 6.35           | 7/16                   | 11.11 | 16.80 | 32.76  |
| CAM 5 - 4N  | 5/16           | 7.93  | 1/4         | 7.11      | 6.35           | 9/16                   | 14.28 | 16.80 | 38.10  |
| CAM 6 - 2N  | 3/8            | 9.52  | 1/8         | 4.57      | 7.11           | 7/16                   | 11.11 | 17.50 | 33.50  |
| CAM 6 - 4N  | 3/8            | 9.52  | 1/4         | 7.11      | 7.11           | 9/16                   | 14.28 | 17.50 | 38.90  |
| CAM 6 - 6N  | 3/8            | 9.52  | 3/8         | 10.41     | 7.11           | 11/16                  | 17.46 | 17.50 | 39.60  |
| CAM 6 - 8N  | 3/8            | 9.52  | 1/2         | 12.70     | 7.11           | 7/8                    | 22.22 | 17.50 | 45.20  |
| CAM 8 - 4N  | 1/2            | 12.70 | 1/4         | 7.11      | 9.90           | 9/16                   | 14.28 | 23.20 | 44.50  |
| CAM 8 - 6N  | 1/2            | 12.70 | 3/8         | 10.41     | 9.90           | 11/16                  | 17.46 | 23.20 | 45.20  |
| CAM 8 - 8N  | 1/2            | 12.70 | 1/2         | 12.70     | 9.90           | 7/8                    | 22.22 | 23.20 | 50.50  |
| CAM10 - 6N  | 5/8            | 15.87 | 3/8         | 10.41     | 12.70          | 11/16                  | 17.46 | 24.70 | 47.40  |
| CAM10 - 8N  | 5/8            | 15.87 | 1/2         | 12.70     | 12.70          | 7/8                    | 22.22 | 24.70 | 52.30  |
| CAM10 - 12N | 5/8            | 15.87 | 3/4         | 18.28     | 12.70          | 1-1/16                 | 26.98 | 24.70 | 52.30  |
| CAM12 - 8N  | 3/4            | 19.05 | 1/2         | 12.70     | 14.98          | 7/8                    | 22.22 | 24.70 | 52.30  |
| CAM12 - 12N | 3/4            | 19.05 | 3/4         | 18.28     | 14.98          | 1-1/16                 | 26.98 | 24.70 | 52.30  |
| CAM12 - 16N | 3/4            | 19.05 | 1           | 22.35     | 14.98          | 1-3/8                  | 34.92 | 24.70 | 57.91  |
| CAM14 - 12N | 7/8            | 22.22 | 3/4         | 18.28     | 17.27          | 1-1/16                 | 26.98 | 26.70 | 54.30  |
| CAM16 - 12N | 1              | 25.40 | 3/4         | 18.28     | 20.06          | 1-1/16                 | 26.98 | 31.70 | 58.70  |
| CAM16 - 16N | 1              | 25.40 | 1           | 22.35     | 20.06          | 1-3/8                  | 34.92 | 31.70 | 66.00  |
| CAM20 - 20N | 1-1/4          | 31.75 | 1-1/4       | 27.68     | -              | 1-3/4                  | 44.45 | 40.00 | 80.26  |
| CAM24 - 24N | 1-1/2          | 38.10 | 1-1/2       | 33.27     | -              | 2-1/8                  | 53.97 | 51.50 | 94.48  |
| CAM32 - 32N | 2              | 50.80 | 2           | 44.45     | -              | 2-3/4                  | 69.85 | 68.40 | 119.38 |

\*ISO Tapered Threads are available upon request.

## Connects Metric Hy-Lok Port To Female ISO Taperad Thread

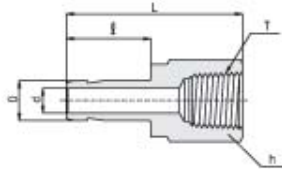
| Part No.     | Tube O.D.<br>D | T*<br>R(PT) | d<br>Min. | d <sub>1</sub> | Width across flat<br>h | ℓ     | L    |
|--------------|----------------|-------------|-----------|----------------|------------------------|-------|------|
| CAM 2M - 2R  | 3              | 1/8         | 4.0       | 1.8            | 12                     | 13.15 | 29.4 |
| CAM 6M - 2R  | 6              | 1/8         | 4.6       | 4.6            | 12                     | 15.75 | 32.8 |
| CAM 6M - 4R  | 6              | 1/4         | 4.6       | 4.6            | 14                     | 15.75 | 38.1 |
| CAM 8M - 4R  | 8              | 1/4         | 6.3       | 6.3            | 14                     | 16.50 | 39.1 |
| CAM10M - 4R  | 10             | 1/4         | 7.7       | 7.7            | 14                     | 17.50 | 39.9 |
| CAM10M - 6R  | 10             | 3/8         | 7.7       | 7.7            | 17                     | 17.50 | 40.6 |
| CAM10M - 8R  | 10             | 1/2         | 11.9      | 7.7            | 22                     | 17.50 | 45.2 |
| CAM12M - 4R  | 12             | 1/4         | 7.1       | 9.1            | 14                     | 23.50 | 46.5 |
| CAM12M - 6R  | 12             | 3/8         | 9.1       | 9.1            | 17                     | 23.50 | 46.2 |
| CAM12M - 8R  | 12             | 1/2         | 11.9      | 9.1            | 22                     | 23.50 | 51.8 |
| CAM18M - 8R  | 18             | 1/2         | 11.9      | 13.9           | 22                     | 24.90 | 53.2 |
| CAM18M - 12R | 18             | 3/4         | 15.9      | 13.9           | 27                     | 24.90 | 53.2 |
| CAM28M - 16R | 28             | 1           | 22.2      | -              | 35                     | 31.70 | 74.7 |
| CAM28M - 20R | 28             | 1-1/4       | 23.8      | -              | 46                     | 31.70 | 76.2 |
| CAM32M - 20R | 32             | 1-1/4       | 27.4      | -              | 46                     | 40.00 | 81.0 |
| CAM38M - 24R | 38             | 1-1/2       | 33.3      | -              | 55                     | 51.50 | 92.2 |

\*NPT Threads are available upon request.

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## Hy-Lok Tube Fittings

### Female Adapter CAF



### Connects Fractional Hy-Lok Port To Male NPT Thread

| Part No.    | Tube O.D.<br>D |       | T*<br>(NPT) | d<br>Min. | Width across flat<br>h |       | ℓ     | L      |
|-------------|----------------|-------|-------------|-----------|------------------------|-------|-------|--------|
|             | in             | mm    |             |           | in                     | mm    |       |        |
| CAF 2 - 2N  | 1/8            | 3.17  | 1/8         | 1.77      | 9/16                   | 14.28 | 13.45 | 31.50  |
| CAF 2 - 4N  | 1/8            | 3.17  | 1/4         | 1.77      | 3/4                    | 19.05 | 13.45 | 35.30  |
| CAF 3 - 2N  | 3/16           | 4.76  | 1/8         | 3.04      | 9/16                   | 14.28 | 14.20 | 32.00  |
| CAF 3 - 4N  | 3/16           | 4.76  | 1/4         | 3.04      | 3/4                    | 19.05 | 14.20 | 35.81  |
| CAF 4 - 2N  | 1/4            | 6.35  | 1/8         | 4.57      | 9/16                   | 14.28 | 16.00 | 33.02  |
| CAF 4 - 4N  | 1/4            | 6.35  | 1/4         | 4.57      | 3/4                    | 19.05 | 16.00 | 37.10  |
| CAF 4 - 6N  | 1/4            | 6.35  | 3/8         | 4.57      | 7/8                    | 22.22 | 16.00 | 39.37  |
| CAF 4 - 8N  | 1/4            | 6.35  | 1/2         | 4.57      | 1-1/16                 | 26.98 | 16.00 | 45.50  |
| CAF 5 - 2N  | 5/16           | 7.93  | 1/8         | 6.35      | 9/16                   | 14.28 | 16.80 | 34.29  |
| CAF 5 - 4N  | 5/16           | 7.93  | 1/4         | 6.35      | 3/4                    | 19.05 | 16.80 | 37.59  |
| CAF 6 - 2N  | 3/8            | 9.52  | 1/8         | 7.11      | 9/16                   | 14.28 | 17.50 | 34.29  |
| CAF 6 - 4N  | 3/8            | 9.52  | 1/4         | 7.11      | 3/4                    | 19.05 | 17.50 | 38.10  |
| CAF 6 - 6N  | 3/8            | 9.52  | 3/8         | 7.11      | 7/8                    | 22.22 | 17.50 | 40.38  |
| CAF 6 - 8N  | 3/8            | 9.52  | 1/2         | 7.11      | 1-1/16                 | 26.98 | 17.50 | 46.73  |
| CAF 8 - 4N  | 1/2            | 12.70 | 1/4         | 9.90      | 3/4                    | 19.05 | 24.00 | 43.43  |
| CAF 8 - 6N  | 1/2            | 12.70 | 3/8         | 9.90      | 7/8                    | 22.22 | 24.00 | 45.46  |
| CAF 8 - 8N  | 1/2            | 12.70 | 1/2         | 9.90      | 1-1/16                 | 26.98 | 24.00 | 51.80  |
| CAF10 - 6N  | 5/8            | 15.87 | 3/8         | 12.70     | 7/8                    | 22.22 | 24.70 | 48.26  |
| CAF10 - 8N  | 5/8            | 15.87 | 1/2         | 12.70     | 1-1/16                 | 26.98 | 24.70 | 53.84  |
| CAF10 - 12N | 5/8            | 15.87 | 3/4         | 12.70     | 1-5/16                 | 33.33 | 24.70 | 55.37  |
| CAF12 - 8N  | 3/4            | 19.05 | 1/2         | 14.98     | 1-1/16                 | 26.98 | 24.70 | 52.83  |
| CAF12 - 12N | 3/4            | 19.05 | 3/4         | 14.98     | 1-5/16                 | 33.33 | 24.70 | 54.86  |
| CAF12 - 16N | 3/4            | 19.05 | 1           | 14.98     | 1-5/8                  | 41.27 | 24.70 | 58.42  |
| CAF14 - 12N | 7/8            | 22.22 | 3/4         | 17.27     | 1-5/16                 | 33.33 | 26.70 | 57.15  |
| CAF16 - 12N | 1              | 25.40 | 3/4         | 20.06     | 1-5/16                 | 33.33 | 31.70 | 60.70  |
| CAF16 - 16N | 1              | 25.40 | 1           | 20.06     | 1-5/8                  | 41.27 | 31.70 | 64.26  |
| CAF20 - 20N | 1-1/4          | 31.75 | 1-1/4       | 27.68     | 2-1/8                  | 53.97 | 40.00 | 77.72  |
| CAF24 - 24N | 1-1/2          | 38.10 | 1-1/2       | 33.27     | 2-3/8                  | 60.32 | 51.50 | 88.90  |
| CAF32 - 32N | 2              | 50.80 | 2           | 44.45     | 2-7/8                  | 70.02 | 68.40 | 107.44 |

\*ISO Tapered Threads are available upon request.

### Connects Metric Hy-Lok Port To Male ISO Tapered Thread

| Part No.     | Tube<br>O.D.<br>D | T*<br>R(PT) | d<br>Min. | Width across<br>flat<br>h | ℓ     | L     |
|--------------|-------------------|-------------|-----------|---------------------------|-------|-------|
| CAF 3M - 2R  | 3                 | 1/8         | 1.8       | 14                        | 13.15 | 31.15 |
| CAF 6M - 2R  | 6                 | 1/8         | 4.6       | 14                        | 15.75 | 32.5  |
| CAF 6M - 4R  | 6                 | 1/4         | 4.6       | 19                        | 15.75 | 37.1  |
| CAF 8M - 4R  | 8                 | 1/4         | 6.3       | 19                        | 16.50 | 37.6  |
| CAF10M - 4R  | 10                | 1/4         | 7.7       | 19                        | 17.50 | 38.1  |
| CAF10M - 6R  | 10                | 3/8         | 7.7       | 22                        | 17.50 | 40.1  |
| CAF10M - 8R  | 10                | 1/2         | 7.7       | 27                        | 17.50 | 46.5  |
| CAF12M - 4R  | 12                | 1/4         | 9.1       | 19                        | 23.50 | 43.7  |
| CAF12M - 6R  | 12                | 3/8         | 9.1       | 22                        | 23.50 | 46.0  |
| CAF12M - 8R  | 12                | 1/2         | 9.1       | 27                        | 23.50 | 52.3  |
| CAF18M - 12R | 18                | 3/4         | 13.9      | 35                        | 24.90 | 54.8  |

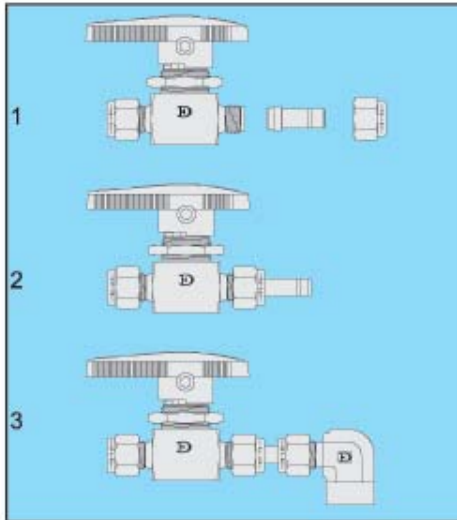
\*NPT Threads are available upon request.

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



# Hy-Lok Tube Fittings

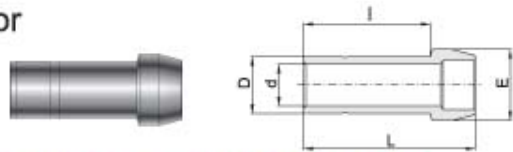
**Hy-Lok Port Connector** provides close coupling between two ports.



## Example of Installation onto Ball Valve

1. Remove nut and ferrules from Hy-Lok end of valve. Place nut only (no ferrules) over the machined ferrule of port connector.
2. Insert the machined ferrule into ball valve and finger tighten nut. Further tighten nut with a wrench 1/4 turn only, (for 3/16", 4mm and under, 1/8 turn only, for over 1" and 25mm, 1/2 turn only) as there are on ferrules to set.
3. Insert the other end into Hy-Lok end of fitting and tighten nut according to normal Hy-Lok installation instructions.

## Port Connector CPC



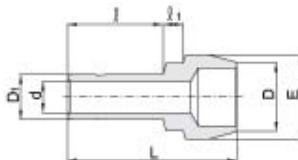
### Connects Two Fractional Hy-Lok Ports

| Part No. | Tube O.D.<br>D |       | d<br>Min. | E     | l     | L     |
|----------|----------------|-------|-----------|-------|-------|-------|
|          | in             | mm    |           |       |       |       |
| CPC - 1  | 1/16           | 1.58  | 1.00      | 3.30  | 10.67 | 13.72 |
| CPC - 2  | 1/8            | 3.17  | 2.00      | 6.10  | 15.75 | 22.35 |
| CPC - 4  | 1/4            | 6.35  | 4.30      | 9.39  | 19.05 | 24.89 |
| CPC - 5  | 5/16           | 7.93  | 5.60      | 10.92 | 20.07 | 25.91 |
| CPC - 6  | 3/8            | 9.52  | 6.80      | 12.45 | 20.57 | 26.67 |
| CPC - 8  | 1/2            | 12.70 | 9.40      | 15.74 | 26.67 | 36.32 |
| CPC -12  | 3/4            | 19.05 | 14.73     | 22.09 | 28.19 | 37.85 |
| CPC -16  | 1              | 25.40 | 20.30     | 28.44 | 35.81 | 49.28 |

### Connects Two Metric HY-Lok Ports

| Part No.  | Tube<br>O.D.<br>D | d<br>Min. | E     | l     | L     |
|-----------|-------------------|-----------|-------|-------|-------|
| CPC - 3M  | 3                 | 1.8       | 6.00  | 15.70 | 22.20 |
| CPC - 4M  | 4                 | 2.2       | 7.00  | 16.67 | 23.21 |
| CPC - 6M  | 6                 | 4.4       | 9.00  | 19.10 | 25.00 |
| CPC - 8M  | 8                 | 5.6       | 11.00 | 20.10 | 26.00 |
| CPC - 10M | 10                | 7.1       | 13.10 | 21.20 | 27.10 |
| CPC - 12M | 12                | 8.8       | 15.00 | 26.70 | 36.20 |
| CPC - 15M | 15                | 11.2      | 18.00 | 28.30 | 37.80 |
| CPC - 16M | 16                | 12.0      | 19.00 | 28.30 | 37.80 |
| CPC - 18M | 18                | 13.9      | 21.00 | 28.30 | 37.80 |
| CPC - 20M | 20                | 15.5      | 23.00 | 29.90 | 39.40 |
| CPC - 22M | 22                | 17.9      | 24.97 | 29.30 | 38.97 |
| CPC - 25M | 25                | 19.9      | 28.00 | 35.70 | 49.30 |
| CPC - 28M | 28                | 22.5      | 34.30 | 48.60 | 63.50 |
| CPC - 32M | 32                | 26.5      | 39.50 | 52.80 | 69.70 |
| CPC - 38M | 38                | 31.6      | 47.10 | 61.90 | 81.90 |

## Reducing Port Connector CPR



### Connects Two Fractional Hy-Lok Ports

| Part No.   | Tube O.D.<br>D |       | Reduced O.D.<br>D1 |       | d<br>Min. | E     | l     | l1   | L     |
|------------|----------------|-------|--------------------|-------|-----------|-------|-------|------|-------|
|            | in             | mm    | in                 | mm    |           |       |       |      |       |
| CPR 2 - 1  | 1/8            | 3.17  | 1/16               | 1.58  | 0.80      | 6.10  | 9.14  | 2.56 | 18.30 |
| CPR 4 - 1  | 1/4            | 6.35  | 1/16               | 1.58  | 0.80      | 9.39  | 9.65  | 3.55 | 19.05 |
| CPR 4 - 2  | 1/4            | 6.35  | 1/8                | 3.17  | 2.30      | 9.39  | 13.71 | 3.31 | 22.86 |
| CPR 6 - 2  | 3/8            | 9.52  | 1/8                | 3.17  | 2.30      | 12.50 | 13.71 | 3.55 | 23.37 |
| CPR 6 - 4  | 3/8            | 9.52  | 1/4                | 6.35  | 4.30      | 12.50 | 16.26 | 3.30 | 25.40 |
| CPR 8 - 4  | 1/2            | 12.70 | 1/4                | 6.35  | 4.30      | 15.74 | 16.26 | 3.81 | 29.72 |
| CPR 8 - 6  | 1/2            | 12.70 | 3/8                | 9.52  | 6.80      | 15.74 | 17.78 | 3.30 | 30.73 |
| CPR 12 - 8 | 3/4            | 19.05 | 1/2                | 12.70 | 9.40      | 22.09 | 24.38 | 3.81 | 37.85 |
| CPR 16 - 8 | 1              | 25.40 | 1/2                | 12.70 | 9.40      | 28.44 | 24.38 | 5.08 | 42.93 |
| CPR 16 -12 | 1              | 25.40 | 3/4                | 19.05 | 14.73     | 28.44 | 26.16 | 4.06 | 43.69 |

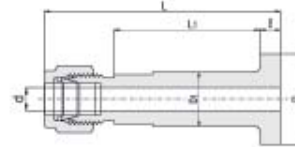
### Connects Two Metric HY-Lok Ports

| Part No.    | Tube<br>O.D.<br>D | Reduced<br>O.D.<br>D1 | d<br>Min. | E    | l     | l1   | L     |
|-------------|-------------------|-----------------------|-----------|------|-------|------|-------|
| CPR 6M - 3M | 6                 | 3                     | 1.9       | 9.0  | 13.80 | 3.2  | 22.90 |
| CPR 8M - 6M | 8                 | 6                     | 4.1       | 11.0 | 16.30 | 3.2  | 25.40 |
| CPR10M - 6M | 10                | 6                     | 4.4       | 13.1 | 16.30 | 3.6  | 25.80 |
| CPR10M - 8M | 10                | 8                     | 5.6       | 13.1 | 17.00 | 3.4  | 26.30 |
| CPR12M - 6M | 12                | 6                     | 4.1       | 15.0 | 16.30 | 3.8  | 29.60 |
| CPR12M - 8M | 12                | 8                     | 5.6       | 15.0 | 17.00 | 3.6  | 30.10 |
| CPR12M -10M | 12                | 10                    | 7.1       | 15.0 | 17.80 | 3.3  | 30.60 |
| CPR16M - 6M | 16                | 6                     | 4.6       | 19.0 | 15.75 | 3.6  | 29.37 |
| CPR16M -12M | 16                | 12                    | 8.8       | 19.0 | 24.40 | 3.6  | 37.50 |
| CPR28M -25M | 28                | 25                    | 19.8      | 34.3 | 33.00 | 8.2  | 56.50 |
| CPR32M -25M | 32                | 25                    | 19.8      | 39.5 | 33.00 | 9.9  | 60.30 |
| CPR38M -25M | 38                | 25                    | 19.8      | 47.1 | 33.00 | 12.3 | 65.80 |

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

## Hy-Lok Tube Fittings

### Lapped Flange Connector CFTC



Hy-Lok Lapped flange connector provides safe and easy connections between process lines and instruments. It provides Hy-Lok tube connection ends by a lap joint pipe flange to ANSI B 16.5 or BS 1560. Both "smooth" and "serrated" surface finishes are available. For identification of serrated surface finish, groove is provided.

| Part No.    | Tube Size | Flange Seal | Dimensions |                |     |    |                |       | Flange Surface Finish (Ra) |
|-------------|-----------|-------------|------------|----------------|-----|----|----------------|-------|----------------------------|
|             |           |             | L          | L <sub>1</sub> | I   | D  | D <sub>1</sub> | d min |                            |
| CFTC 4 - SM | 1/4"      | SM          | 80.8       | 56.5           | 6.5 | 35 | 22.2           | 4.8   | 3.2-6.3 Micrometer         |
| CFTC 4 - SE | 1/4"      | SE          | 80.8       | 56.5           | 6.5 | 35 | 22.2           | 4.8   | 6.3-12.5 Micrometer        |
| CFTC 6 - SM | 3/8"      | SM          | 82.3       | 56.5           | 6.5 | 35 | 22.2           | 7.1   | 3.2-6.3 Micrometer         |
| CFTC 6 - SE | 3/8"      | SE          | 82.3       | 56.5           | 6.5 | 35 | 22.2           | 7.1   | 6.3-12.5 Micrometer        |
| CFTC 8 - SM | 1/2"      | SM          | 84.8       | 56.5           | 6.5 | 35 | 22.2           | 10.4  | 3.2-6.3 Micrometer         |
| CFTC 8 - SE | 1/2"      | SE          | 84.8       | 56.5           | 6.5 | 35 | 22.2           | 10.4  | 6.3-12.5 Micrometer        |

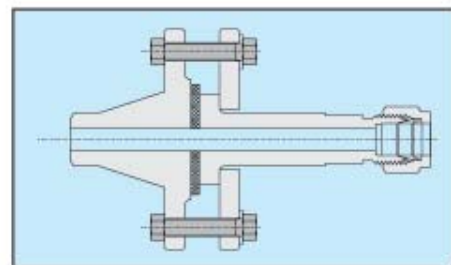
#### Surface Finish



Smooth (SM)



Serrated (SE)



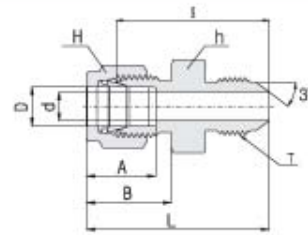
Lapped flange connector installed with gasket between seal faces

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



## Hy-Lok Tube Fittings

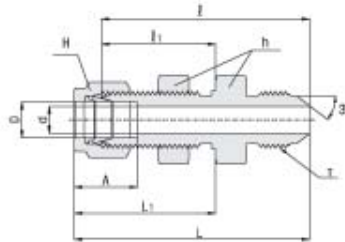
### AN Union CFU



#### Connects Fractional Tube To AN Flared Tube

| Part No.   | Tube O.D.<br>D |       | *AN Tube<br>Flare Size |       | Straight<br>Thread<br>T(U) | d<br>Min. | Width across flat |       |       |       | A     | B     | ℓ     | L     |
|------------|----------------|-------|------------------------|-------|----------------------------|-----------|-------------------|-------|-------|-------|-------|-------|-------|-------|
|            | in             | mm    | in                     | mm    |                            |           | h                 |       | H     |       |       |       |       |       |
|            |                |       |                        |       |                            |           | in                | mm    | in    | mm    |       |       |       |       |
| CFU 1 - 2  | 1/16           | 1.58  | 1/8                    | 3.17  | 5/16-24                    | 1.27      | 7/16              | 11.11 | 5/16  | 7.93  | 8.63  | 10.92 | 23.36 | 27.17 |
| CFU 2 - 2  | 1/8            | 3.17  | 1/8                    | 3.17  | 5/16-24                    | 1.52      | 7/16              | 11.11 | 7/16  | 11.11 | 12.70 | 15.24 | 24.89 | 31.49 |
| CFU 2 - 4  | 1/8            | 3.17  | 1/4                    | 6.35  | 7/16-20                    | 2.28      | 1/2               | 12.70 | 7/16  | 11.11 | 12.70 | 15.24 | 28.44 | 35.05 |
| CFU 4 - 4  | 1/4            | 6.35  | 1/4                    | 6.35  | 7/16-20                    | 4.31      | 1/2               | 12.70 | 9/16  | 14.28 | 15.24 | 17.78 | 30.22 | 37.59 |
| CFU 5 - 5  | 5/16           | 7.93  | 5/16                   | 7.93  | 1/2-20                     | 5.84      | 9/16              | 14.28 | 5/8   | 15.87 | 16.25 | 18.54 | 30.98 | 38.35 |
| CFU 6 - 4  | 3/8            | 9.52  | 1/4                    | 6.35  | 7/16-20                    | 4.31      | 5/8               | 15.87 | 11/16 | 17.46 | 16.76 | 19.30 | 32.25 | 39.62 |
| CFU 6 - 6  | 3/8            | 9.52  | 3/8                    | 9.52  | 9/16-18                    | 7.11      | 5/8               | 15.87 | 11/16 | 17.46 | 16.76 | 19.30 | 32.25 | 39.62 |
| CFU 8 - 8  | 1/2            | 12.70 | 1/2                    | 12.70 | 3/4-16                     | 9.90      | 13/16             | 20.63 | 7/8   | 22.22 | 22.86 | 21.84 | 35.81 | 45.97 |
| CFU12 - 12 | 3/4            | 19.05 | 3/4                    | 19.05 | 1-1/16-12                  | 15.49     | 1-1/8             | 28.57 | 1-1/8 | 28.57 | 24.38 | 21.84 | 43.18 | 53.34 |
| CFU16 - 16 | 1              | 25.40 | 1                      | 25.40 | 1-5/16-12                  | 21.33     | 1-3/8             | 34.92 | 1-1/2 | 38.10 | 31.24 | 26.41 | 49.27 | 61.46 |

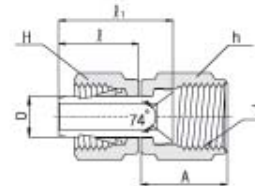
### AN Bulkhead Union CBFU



#### Connects Fractional Tube To AN Flared Tube

| Part No.   | Tube O.D.<br>D |       | *AN Tube<br>Flare Size |       | Straight<br>Thread<br>T(U) | d<br>Min. | Width across flat |       |       |       | A     | ℓ     | ℓ <sub>1</sub> | L     | L <sub>1</sub> | Panel<br>Hole<br>Drill Size | Panel<br>Max.<br>Thickness |
|------------|----------------|-------|------------------------|-------|----------------------------|-----------|-------------------|-------|-------|-------|-------|-------|----------------|-------|----------------|-----------------------------|----------------------------|
|            |                |       |                        |       |                            |           | h                 |       | H     |       |       |       |                |       |                |                             |                            |
|            | in             | mm    | in                     | mm    |                            |           | in                | mm    | in    | mm    |       |       |                |       |                |                             |                            |
| CBFU 4 - 4 | 1/4            | 6.35  | 1/4                    | 6.35  | 7/16-20                    | 4.31      | 5/8               | 15.87 | 9/16  | 14.28 | 15.24 | 46.48 | 26.16          | 53.84 | 33.52          | 11.50                       | 10.16                      |
| CBFU 6 - 6 | 3/8            | 9.52  | 3/8                    | 9.52  | 9/16-18                    | 7.11      | 3/4               | 19.05 | 11/16 | 17.46 | 16.76 | 49.78 | 29.46          | 57.15 | 36.83          | 14.68                       | 11.17                      |
| CBFU 8 - 8 | 1/2            | 12.70 | 1/2                    | 12.70 | 3/4-16                     | 9.90      | 15/16             | 23.81 | 7/8   | 22.22 | 22.86 | 55.62 | 31.75          | 65.78 | 41.91          | 19.44                       | 12.70                      |
| CBFU12 -12 | 3/4            | 19.05 | 3/4                    | 19.05 | 1-1/16-12                  | 15.49     | 1-3/16            | 30.16 | 1-1/8 | 28.57 | 24.38 | 68.83 | 37.33          | 78.99 | 47.49          | 25.79                       | 16.76                      |
| CBFU16 -16 | 1              | 25.40 | 1                      | 25.40 | 1-5/16-12                  | 21.33     | 1-5/8             | 41.27 | 1-1/2 | 38.10 | 31.24 | 80.26 | 45.21          | 92.45 | 57.40          | 33.73                       | 19.05                      |

### AN Adapter CFA



#### Connects Fractional Hy-Lok Port To Male AN

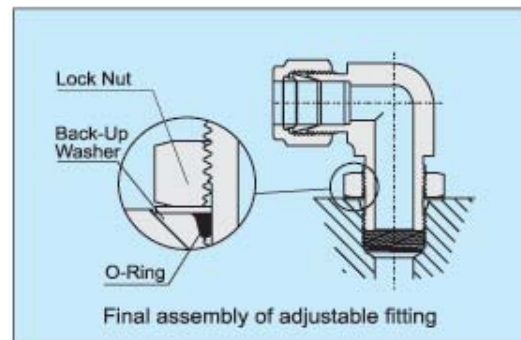
| Part No.  | Tube O.D.<br>D |       | *AN Tube<br>O.D. |       | Straight<br>Thread<br>T(U) | Width across flat |       |       |       | A     | ℓ     | ℓ <sub>1</sub> |
|-----------|----------------|-------|------------------|-------|----------------------------|-------------------|-------|-------|-------|-------|-------|----------------|
|           | in             | mm    | in               | mm    |                            | h                 |       | H     |       |       |       |                |
|           |                |       |                  |       |                            | in                | mm    | in    | mm    |       |       |                |
| CFA 2 - 2 | 1/8            | 3.17  | 1/8              | 3.17  | 5/16-24                    | 3/8               | 9.52  | 7/16  | 11.11 | 13.71 | 13.46 | 18.54          |
| CFA 2 - 4 | 1/8            | 3.17  | 1/4              | 6.35  | 7/16-20                    | 9/16              | 14.28 | 7/16  | 11.11 | 15.74 | 13.46 | 19.05          |
| CFA 4 - 4 | 1/4            | 6.35  | 1/4              | 6.35  | 7/16-20                    | 9/16              | 14.28 | 9/16  | 14.28 | 15.74 | 15.74 | 21.33          |
| CFA 6 - 6 | 3/8            | 9.52  | 3/8              | 9.52  | 9/16-18                    | 11/16             | 17.46 | 11/16 | 17.46 | 18.28 | 17.52 | 24.89          |
| CFA 8 - 8 | 1/2            | 12.70 | 1/2              | 12.70 | 3/4-16                     | 7/8               | 22.22 | 7/8   | 22.22 | 21.59 | 23.11 | 31.75          |

\*From Air Force and Navy Standard for 37 degree flared fittings (SAE J514)

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

## Adjustable SAE/MS Straight Thread Fittings

These adjustable or positionable fittings are useful in that the direction of Hy-Lok tube end can be oriented into desired direction with ease. they can be installed on tanks or vessels without welding or brazing. Buna-N O-ring is standard, and other materials are available upon request.



## Installation Instructions

1. Lubricate O-ring with lubricant compatible with system and O-ring material and place it over the groove close to metal back-up washer.

3. Position the fitting by backing it out no more than one turn.



Fig. 1 - Lock Nut Backed Off

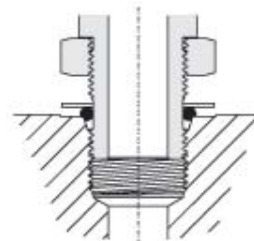


Fig. 3 - Fitting Backed Off for Alignment  
(1 Turn Maximum)

2. Screw fitting into the SAE straight thread boss until the washer contacts the face of the boss.

4. Hold the fitting in position and tighten the lock nut until the washer contacts the face of the boss.

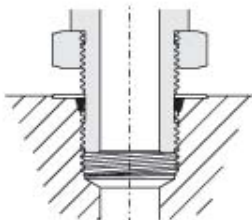


Fig. 2 - Fitting Installed High

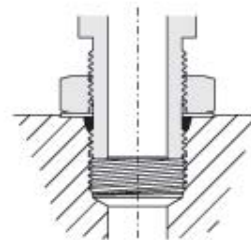
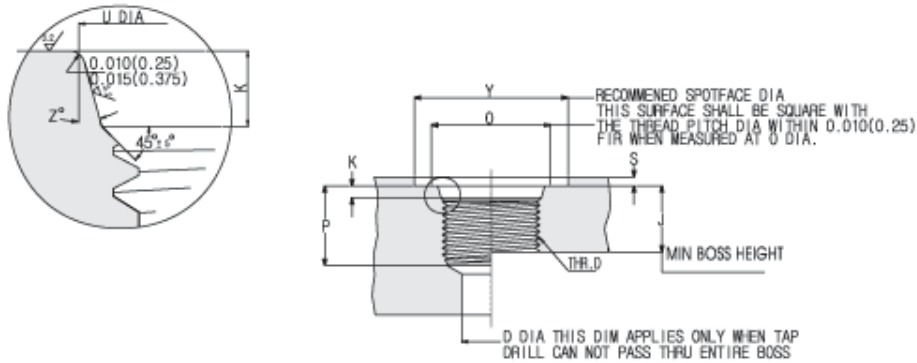


Fig. 4 - Fitting Lock Nut Tightened to Appropriate Torque



## SAE / MS Internal Straight Thread Boss



### Data for SAE / MS Straight thread Boss

(reprinted from "Hydraulic tube Fittings-SAE J1926 / 1 Port Dimensions of SAE Standard.")

| Nom Tube O.D. | Thread Size | D Min. | J Min. | K   | O Min. | P Min. | U    | Y  | S Max. | Z   |
|---------------|-------------|--------|--------|-----|--------|--------|------|----|--------|-----|
| 1/8           | 5/16-24     | 1.6    | 10.0   | 1.9 | 11     | 12.0   | 9.1  | 17 | 1.6    | 12° |
| 3/16          | 3/8-24      | 3.2    | 10.0   | 1.9 | 13     | 12.0   | 10.7 | 19 | 1.6    | 12° |
| 1/4           | 7/16-20     | 4.4    | 11.5   | 2.4 | 15     | 14.0   | 12.4 | 21 | 1.6    | 12° |
| 5/16          | 1/2-20      | 6.0    | 11.5   | 2.4 | 16     | 14.0   | 14.0 | 23 | 1.6    | 12° |
| 3/8           | 9/16-18     | 7.5    | 12.7   | 2.5 | 18     | 15.5   | 15.6 | 25 | 1.6    | 12° |
| 1/2           | 3/4-16      | 10.0   | 14.3   | 2.5 | 22     | 17.5   | 20.6 | 30 | 2.4    | 15° |
| 5/8           | 7/8-14      | 12.5   | 16.7   | 2.5 | 26     | 20.0   | 23.9 | 34 | 2.4    | 15° |
| 3/4           | 1-1/16-12   | 16.0   | 19.0   | 3.3 | 32     | 23.0   | 29.2 | 41 | 2.4    | 15° |
| 7/8           | 1-3/16-12   | 18.0   | 19.0   | 3.3 | 35     | 23.0   | 32.3 | 45 | 2.4    | 15° |
| 1             | 1-5/16-12   | 21.0   | 19.0   | 3.3 | 38     | 23.0   | 35.5 | 49 | 3.2    | 15° |
| 1 1/4         | 1-5/8-12    | 27.0   | 19.0   | 3.3 | 48     | 23.0   | 43.5 | 58 | 3.2    | 15° |
| 1 1/2         | 1-7/8-12    | 33.0   | 19.0   | 3.3 | 54     | 23.0   | 49.8 | 65 | 3.2    | 15° |
| 2             | 2-1/2-12    | 70.0   | 19.0   | 3.3 | 70     | 23.0   | 65.7 | 88 | 3.2    | 15° |

- Diameter U shall be concentric with thread pitch diameter within 0.13 full indicator reading(FIR), and shall be free from longitudinal and spiral tool marks. Angular tool marks up to 2.5 Micro meter max. shall be permissible.
- Maximum recommended spotface depth to permit sufficient wrench grip for proper tightening of the fitting or locknut.
- If face of boss is on a machined surface, dimensions Y and S need not apply as long as R 0.25/0.375 is maintained to avoid damage to the O-Ring during installation.
- Tap drill depths given require use of a bottoming taps to produce the specified full thread lengths. Where standard taps are used, the tap drill depths must be increased accordingly.
- Figures are for reference only, as any boss can be used for a tubing size depending upon other design criteria.

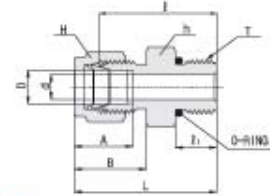
## O - Ring Dimensions for SAE / MS Bosses

Standard O-Ring is Buna-N other materials are available upon request.

| Part Size | Nominal Tube O.D. | Uniform Size Number | Dimension |                  | Part Size | Nominal Tube O.D. | Uniform Size Number | Dimension |                  |
|-----------|-------------------|---------------------|-----------|------------------|-----------|-------------------|---------------------|-----------|------------------|
|           |                   |                     | I.D. in   | Cross Section in |           |                   |                     | I.D. in   | Cross Section in |
| 2         | 1/8               | 902                 | .239      | .064             | 12        | 3/4               | 912                 | .924      | .116             |
| 3         | 3/16              | 903                 | .301      | .064             | 14        | 7/8               | 914                 | 1.048     | .116             |
| 4         | 1/4               | 904                 | .351      | .072             | 16        | 1                 | 916                 | 1.171     | .116             |
| 5         | 5/16              | 905                 | .414      | .072             | 20        | 1-1/4             | 920                 | 1.475     | .118             |
| 6         | 3/8               | 906                 | .468      | .078             | 24        | 1-1/2             | 924                 | 1.720     | .118             |
| 8         | 1/2               | 908                 | .644      | .087             | 32        | 2                 | 932                 | 2.337     | .118             |
| 10        | 5/8               | 910                 | .755      | .097             |           |                   |                     |           |                  |

# Hy-Lok Tube Fittings

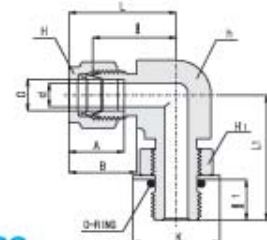
## SAE / MS Male Connector CSC



### Connects Fractional Tube To SAE / MS Straight Thread Boss

| Part No.   | Tube O.D.<br>D |       | Straight<br>Thread<br>T(U) | d<br>Min. | Width across flat |       |       |       | A     | B     | ℓ     | ℓ <sub>1</sub> | L      | O-Ring<br>Uniform<br>Size Number |
|------------|----------------|-------|----------------------------|-----------|-------------------|-------|-------|-------|-------|-------|-------|----------------|--------|----------------------------------|
|            | in             | mm    |                            |           | h                 |       | H     |       |       |       |       |                |        |                                  |
|            |                |       |                            |           | in                | mm    | in    | mm    |       |       |       |                |        |                                  |
| CSC 2 - 2U | 1/8            | 3.17  | 5/16-24                    | 2.28      | 7/16              | 11.11 | 7/16  | 11.11 | 12.70 | 15.24 | 23.26 | 7.62           | 29.97  | -902                             |
| CSC 2 - 4U | 1/8            | 3.17  | 7/16-20                    | 2.28      | 9/16              | 14.28 | 7/16  | 11.11 | 12.70 | 15.24 | 24.89 | 9.14           | 31.49  | -904                             |
| CSC 4 - 4U | 1/4            | 6.35  | 7/16-20                    | 4.82      | 9/16              | 14.28 | 9/16  | 14.28 | 15.24 | 17.78 | 26.67 | 9.14           | 34.03  | -904                             |
| CSC 4 - 6U | 1/4            | 6.35  | 9/16-18                    | 4.82      | 11/16             | 17.46 | 9/16  | 14.28 | 15.24 | 17.78 | 28.19 | 9.90           | 35.56  | -906                             |
| CSC 4 - 8U | 1/4            | 6.35  | 3/4-16                     | 4.82      | 7/8               | 22.22 | 9/16  | 14.28 | 15.24 | 17.78 | 30.22 | 11.17          | 37.59  | -908                             |
| CSC 4 -10U | 1/4            | 6.35  | 7/8-14                     | 4.82      | 1                 | 25.40 | 9/16  | 14.28 | 15.24 | 17.78 | 33.27 | 12.70          | 40.64  | -910                             |
| CSC 5 - 5U | 5/16           | 7.93  | 1/2-20                     | 5.84      | 5/8               | 15.87 | 5/8   | 15.87 | 16.25 | 18.54 | 27.43 | 9.14           | 34.79  | -905                             |
| CSC 6 - 4U | 3/8            | 9.52  | 7/16-20                    | 5.08      | 5/8               | 15.87 | 11/16 | 17.46 | 16.76 | 19.30 | 28.19 | 9.14           | 35.56  | -904                             |
| CSC 6 - 6U | 3/8            | 9.52  | 9/16-18                    | 7.11      | 11/16             | 17.46 | 11/16 | 17.46 | 16.76 | 19.30 | 29.71 | 9.90           | 37.08  | -906                             |
| CSC 6 - 8U | 3/8            | 9.52  | 3/4-16                     | 7.11      | 7/8               | 22.22 | 11/16 | 17.46 | 16.76 | 19.30 | 31.75 | 11.17          | 39.11  | -908                             |
| CSC 6 -10U | 3/8            | 9.52  | 7/8-14                     | 7.11      | 1                 | 25.40 | 11/16 | 17.46 | 16.76 | 19.30 | 34.79 | 12.70          | 42.16  | -910                             |
| CSC 8 - 6U | 1/2            | 12.70 | 9/16-18                    | 7.11      | 13/16             | 20.63 | 7/8   | 22.22 | 22.86 | 21.84 | 28.95 | 9.90           | 39.11  | -906                             |
| CSC 8 - 8U | 1/2            | 12.70 | 3/4-16                     | 10.41     | 7/8               | 22.22 | 7/8   | 22.22 | 22.86 | 21.84 | 31.75 | 11.17          | 41.91  | -908                             |
| CSC 8 -10U | 1/2            | 12.70 | 7/8-14                     | 10.41     | 1                 | 25.40 | 7/8   | 22.22 | 22.86 | 21.84 | 34.79 | 12.70          | 44.95  | -910                             |
| CSC 8 -12U | 1/2            | 12.70 | 1-1/16-12                  | 10.41     | 1-1/4             | 31.75 | 7/8   | 22.22 | 22.86 | 21.84 | 38.86 | 14.98          | 49.02  | -912                             |
| CSC10 - 8U | 5/8            | 15.87 | 3/4-16                     | 10.66     | 15/16             | 23.81 | 1     | 25.40 | 24.38 | 21.84 | 31.75 | 11.17          | 41.91  | -908                             |
| CSC10 -10U | 5/8            | 15.87 | 7/8-14                     | 12.70     | 1                 | 25.40 | 1     | 25.40 | 24.38 | 21.84 | 35.05 | 12.70          | 45.21  | -910                             |
| CSC12 - 8U | 3/4            | 19.05 | 3/4-16                     | 10.66     | 1-1/16            | 26.98 | 1-1/8 | 28.57 | 24.38 | 21.84 | 35.81 | 11.17          | 45.97  | -908                             |
| CSC12 -12U | 3/4            | 19.05 | 1-1/16-12                  | 15.74     | 1-1/4             | 31.80 | 1-1/8 | 28.57 | 24.38 | 21.84 | 38.86 | 14.98          | 49.02  | -912                             |
| CSC14 -14U | 7/8            | 22.22 | 1-3/16-12                  | 18.28     | 1-3/8             | 34.92 | 1-1/4 | 31.75 | 25.90 | 21.84 | 38.86 | 14.98          | 49.02  | -914                             |
| CSC16 -12U | 1              | 25.40 | 1-1/16-12                  | 16.76     | 1-3/8             | 34.92 | 1-1/2 | 38.10 | 31.24 | 26.41 | 41.14 | 14.98          | 53.34  | -912                             |
| CSC16 -16U | 1              | 25.40 | 1-5/16-12                  | 22.35     | 1-1/2             | 38.10 | 1-1/2 | 38.10 | 31.24 | 26.41 | 42.16 | 14.98          | 54.35  | -916                             |
| CSC20 -20U | 1-1/4          | 31.75 | 1-5/8-12                   | 27.68     | 1-7/8             | 47.62 | 1-7/8 | 47.62 | 41.14 | 38.86 | 46.22 | 14.98          | 68.32  | -920                             |
| CSC24 -24U | 1-1/2          | 38.10 | 1-7/8-12                   | 34.03     | 2-1/8             | 53.97 | 2-1/4 | 57.15 | 50.03 | 45.21 | 50.54 | 14.98          | 77.72  | -924                             |
| CSC32 -32U | 2              | 50.80 | 2-1/2-12                   | 45.97     | 2-3/4             | 69.85 | 3     | 76.20 | 67.56 | 62.73 | 64.26 | 14.98          | 101.60 | -932                             |

## SAE / MS Male Elbow (Adjustable) CSLA



### Connects Fractional Tube To SAE / MS Straight Thread Boss

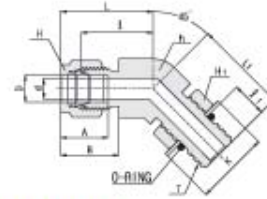
| Part No.     | Tube O.D.<br>D |       | Straight<br>Thread<br>T(U) | d<br>Min. | Width across flat |       |       |       |                |       | A     | B     | ℓ     | ℓ <sub>1</sub> | L      | L <sub>1</sub> | K     | O-Ring<br>Uniform<br>Size Number |
|--------------|----------------|-------|----------------------------|-----------|-------------------|-------|-------|-------|----------------|-------|-------|-------|-------|----------------|--------|----------------|-------|----------------------------------|
|              |                |       |                            |           | h                 |       | H     |       | H <sub>1</sub> |       |       |       |       |                |        |                |       |                                  |
|              | in             | mm    |                            |           | in                | mm    | in    | mm    | in             | mm    |       |       |       |                |        |                |       |                                  |
| CSLA 4 - 4U  | 1/4            | 6.35  | 7/16-20                    | 4.82      | 1/2               | 12.70 | 9/16  | 14.28 | 9/16           | 14.28 | 15.24 | 17.78 | 21.08 | 9.90           | 28.44  | 28.44          | 16.51 | -904                             |
| CSLA 4 - 6U  | 1/4            | 6.35  | 9/16-18                    | 4.82      | 5/8               | 15.87 | 9/16  | 14.28 | 11/16          | 17.46 | 15.24 | 17.78 | 23.11 | 11.17          | 30.48  | 32.25          | 20.06 | -906                             |
| CSLA 5 - 5U  | 5/16           | 7.93  | 1/2-20                     | 5.84      | 9/16              | 14.28 | 5/8   | 15.87 | 5/8            | 15.87 | 16.25 | 18.54 | 22.86 | 9.90           | 30.22  | 29.46          | 18.28 | -905                             |
| CSLA 6 - 6U  | 3/8            | 9.52  | 9/16-18                    | 7.11      | 5/8               | 15.87 | 11/16 | 17.46 | 11/16          | 17.46 | 16.76 | 19.30 | 24.63 | 11.17          | 32.00  | 32.25          | 20.06 | -906                             |
| CSLA 6 - 8U  | 3/8            | 9.52  | 3/4-16                     | 7.11      | 13/16             | 20.63 | 11/16 | 17.46 | 7/8            | 22.22 | 16.76 | 19.30 | 27.43 | 12.70          | 34.79  | 37.84          | 25.65 | -908                             |
| CSLA 8 - 8U  | 1/2            | 12.70 | 3/4-16                     | 10.41     | 13/16             | 20.63 | 7/8   | 22.22 | 7/8            | 22.22 | 22.86 | 21.84 | 27.43 | 12.70          | 37.59  | 37.84          | 25.65 | -908                             |
| CSLA10 - 10U | 5/8            | 15.87 | 7/8-14                     | 12.70     | 1                 | 25.40 | 1     | 25.40 | 1              | 25.40 | 24.38 | 21.84 | 29.46 | 14.22          | 39.62  | 43.43          | 29.46 | -910                             |
| CSLA12 - 12U | 3/4            | 19.05 | 1-1/16-12                  | 15.74     | 1-1/16            | 26.98 | 1-1/8 | 28.57 | 1-1/4          | 31.75 | 24.38 | 21.84 | 31.24 | 16.76          | 41.40  | 48.76          | 36.57 | -912                             |
| CSLA14 - 14U | 7/8            | 22.22 | 1-3/16-12                  | 18.28     | 1-1/4             | 31.75 | 1-1/4 | 31.75 | 1-3/8          | 34.92 | 25.90 | 21.84 | 33.02 | 16.76          | 43.18  | 50.54          | 40.38 | -914                             |
| CSLA16 - 16U | 1              | 25.40 | 1-5/16-12                  | 22.35     | 1-3/8             | 34.92 | 1-1/2 | 38.10 | 1-1/2          | 38.10 | 31.24 | 26.41 | 38.35 | 16.76          | 50.54  | 53.59          | 43.94 | -916                             |
| CSLA20 - 20U | 1-1/4          | 31.75 | 1-5/8-12                   | 27.68     | 1-11/16           | 42.86 | 1-7/8 | 47.62 | 1-7/8          | 47.62 | 41.14 | 38.86 | 45.72 | 16.76          | 67.81  | 58.16          | 54.86 | -920                             |
| CSLA24 - 24U | 1-1/2          | 38.10 | 1-7/8-12                   | 34.03     | 2                 | 50.80 | 2-1/4 | 57.15 | 2-1/8          | 53.97 | 50.03 | 45.21 | 50.80 | 16.76          | 77.97  | 60.45          | 62.23 | -924                             |
| CSLA32 - 32U | 2              | 50.80 | 2-1/2-12                   | 45.97     | 2-3/4             | 69.85 | 3     | 76.20 | 2-3/4          | 69.85 | 67.56 | 62.73 | 69.85 | 16.76          | 107.18 | 71.62          | 80.26 | -932                             |

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



## Hy-Lok Tube Fittings

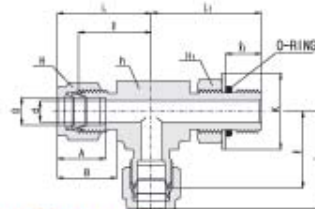
### SAE / MS 45° Male Elbow (Adjustable) CSLB



#### Connects Fractional Tube To SAE / MS Straight Thread Boss

| Part No.    | Tube O.D.<br>D |       | Straight<br>Thread<br>T(U) | d<br>Min. | Width across flat |       |       |       |                |       | A     | B     | ℓ     | ℓ <sub>1</sub> | L     | L <sub>1</sub> | K     | O-Ring<br>Uniform<br>Size<br>Number |
|-------------|----------------|-------|----------------------------|-----------|-------------------|-------|-------|-------|----------------|-------|-------|-------|-------|----------------|-------|----------------|-------|-------------------------------------|
|             | in             | mm    |                            |           | h                 |       | H     |       | H <sub>1</sub> |       |       |       |       |                |       |                |       |                                     |
|             |                |       |                            |           | in                | mm    | in    | mm    | in             | mm    |       |       |       |                |       |                |       |                                     |
| CSLB 4 - 4U | 1/4            | 6.35  | 7/16-20                    | 4.82      | 1/2               | 12.70 | 9/16  | 14.28 | 9/16           | 14.28 | 15.24 | 17.78 | 18.28 | 9.90           | 25.65 | 25.65          | 16.51 | -904                                |
| CSLB 6 - 6U | 3/8            | 9.52  | 9/16-18                    | 7.11      | 5/8               | 15.87 | 11/16 | 17.46 | 11/16          | 17.46 | 16.76 | 19.30 | 20.57 | 11.17          | 27.94 | 28.19          | 20.06 | -906                                |
| CSLB 8 - 8U | 1/2            | 12.70 | 3/4-16                     | 10.41     | 13/16             | 20.63 | 7/8   | 22.22 | 7/8            | 22.22 | 22.86 | 21.84 | 21.84 | 12.70          | 32.00 | 32.25          | 25.65 | -908                                |
| CSLB12-12U  | 3/4            | 19.05 | 1-1/16-12                  | 15.74     | 1-1/8             | 28.57 | 1-1/8 | 28.57 | 1-1/4          | 31.75 | 24.38 | 21.84 | 29.71 | 16.76          | 39.87 | 47.24          | 36.57 | -912                                |
| CSLB16-16U  | 1              | 25.40 | 1-5/16-12                  | 22.35     | 1-3/8             | 34.92 | 1-1/2 | 38.10 | 1-1/2          | 38.10 | 31.24 | 26.41 | 35.30 | 16.76          | 47.49 | 50.54          | 43.94 | -916                                |

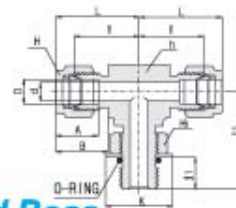
### SAE / MS Male Run Tee (Adjustable) CSRT



#### Connects Fractional Tube To SAE / MS Straight Thread Boss

| Part No.    | Tube O.D.<br>D |       | Straight<br>Thread<br>T(U) | d<br>Min. | Width across flat |       |       |       |                |       | A     | B     | ℓ     | ℓ <sub>1</sub> | L      | L <sub>1</sub> | K     | O-Ring<br>Uniform<br>Size<br>Number |
|-------------|----------------|-------|----------------------------|-----------|-------------------|-------|-------|-------|----------------|-------|-------|-------|-------|----------------|--------|----------------|-------|-------------------------------------|
|             |                |       |                            |           | h                 |       | H     |       | H <sub>1</sub> |       |       |       |       |                |        |                |       |                                     |
|             | in             | mm    |                            |           | in                | mm    | in    | mm    | in             | mm    |       |       |       |                |        |                |       |                                     |
| CSRT 4 - 4U | 1/4            | 6.35  | 7/16-20                    | 4.82      | 1/2               | 12.70 | 9/16  | 14.28 | 9/16           | 14.28 | 15.24 | 17.78 | 21.08 | 9.90           | 28.44  | 28.44          | 16.51 | -904                                |
| CSRT 6 - 6U | 3/8            | 9.52  | 9/16-18                    | 7.11      | 5/8               | 15.87 | 11/16 | 17.46 | 11/16          | 17.46 | 16.76 | 19.03 | 24.63 | 11.17          | 32.00  | 32.25          | 20.06 | -906                                |
| CSRT 8 - 8U | 1/2            | 12.70 | 3/4-16                     | 10.41     | 13/16             | 20.63 | 7/8   | 22.22 | 7/8            | 22.22 | 22.86 | 21.84 | 27.43 | 12.70          | 37.59  | 37.84          | 25.65 | -908                                |
| CSRT12 -12U | 3/4            | 19.05 | 1-1/16-12                  | 15.74     | 1-1/8             | 28.57 | 1-1/8 | 28.57 | 1-1/4          | 28.57 | 24.38 | 21.84 | 31.24 | 16.76          | 41.40  | 48.76          | 36.57 | -912                                |
| CSRT16 -16U | 1              | 25.40 | 1-5/16-12                  | 22.35     | 1-3/8             | 34.92 | 1-1/2 | 38.10 | 1-1/2          | 38.10 | 31.24 | 26.41 | 38.35 | 16.76          | 50.54  | 50.54          | 43.94 | -916                                |
| CSRT20 -20U | 1-1/4          | 31.75 | 1-5/8-12                   | 27.68     | 1-11/16           | 42.86 | 1-7/8 | 47.62 | 1-7/8          | 47.62 | 41.14 | 38.86 | 45.72 | 16.76          | 67.81  | 58.16          | 54.86 | -920                                |
| CSRT24 -24U | 1-1/2          | 38.10 | 1-7/8-12                   | 34.03     | 2                 | 50.80 | 2-1/4 | 57.15 | 2-1/8          | 53.97 | 50.03 | 45.21 | 50.80 | 16.76          | 77.97  | 60.45          | 62.23 | -924                                |
| CSRT32 -32U | 2              | 50.80 | 2-1/2-12                   | 45.97     | 2-3/4             | 69.85 | 3     | 76.20 | 2-3/4          | 69.85 | 67.56 | 62.73 | 69.85 | 16.76          | 107.18 | 71.62          | 80.26 | -932                                |

### SAE / MS Male Branch Tee (Adjustable) CSBT



#### Connects Fractional Tube To SAE / MS Straight Thread Boss

| Part No.    | Tube O.D.<br>D |       | Straight<br>Thread<br>T(U) | d<br>Min. | Width across flat |       |       |       |                |       | A     | B     | ℓ     | ℓ <sub>1</sub> | L      | L <sub>1</sub> | K     | O-Ring<br>Uniform<br>Size<br>Number |
|-------------|----------------|-------|----------------------------|-----------|-------------------|-------|-------|-------|----------------|-------|-------|-------|-------|----------------|--------|----------------|-------|-------------------------------------|
|             |                |       |                            |           | h                 |       | H     |       | H <sub>1</sub> |       |       |       |       |                |        |                |       |                                     |
|             | in             | mm    |                            |           | in                | mm    | in    | mm    | in             | mm    |       |       |       |                |        |                |       |                                     |
| CSBT 4 - 4U | 1/4            | 6.35  | 7/16-20                    | 4.82      | 1/2               | 12.70 | 9/16  | 14.28 | 9/16           | 14.28 | 15.24 | 17.78 | 21.08 | 9.90           | 28.44  | 28.44          | 16.51 | -904                                |
| CSBT 6 - 6U | 3/8            | 9.52  | 9/16-18                    | 7.11      | 5/8               | 15.87 | 11/16 | 17.46 | 11/16          | 17.46 | 16.76 | 19.30 | 24.63 | 11.17          | 32.00  | 32.25          | 20.06 | -906                                |
| CSBT 8 - 8U | 1/2            | 12.70 | 3/4-16                     | 10.41     | 13/16             | 20.63 | 7/8   | 22.22 | 7/8            | 22.22 | 22.86 | 21.84 | 27.43 | 12.70          | 37.59  | 37.84          | 25.65 | -908                                |
| CSBT12 -12U | 3/4            | 19.05 | 1-1/16-12                  | 15.74     | 1-1/16            | 26.98 | 1-1/8 | 28.57 | 1-1/4          | 31.75 | 24.38 | 21.84 | 31.24 | 16.76          | 41.40  | 48.76          | 36.57 | -912                                |
| CSBT16 -16U | 1              | 25.40 | 1-5/16-12                  | 22.35     | 1-3/8             | 34.92 | 1-1/2 | 38.10 | 1-1/2          | 38.10 | 31.24 | 26.41 | 38.35 | 16.76          | 50.54  | 53.59          | 43.94 | -916                                |
| CSBT20 -20U | 1-1/4          | 31.75 | 1-5/8-12                   | 27.68     | 1-11/16           | 42.86 | 1-7/8 | 47.62 | 1-7/8          | 47.62 | 41.14 | 38.86 | 45.72 | 16.76          | 67.81  | 58.16          | 54.86 | -920                                |
| CSBT24 -24U | 1-1/2          | 38.10 | 1-7/8-12                   | 34.03     | 2                 | 50.80 | 2-1/4 | 57.15 | 2-1/8          | 53.97 | 50.03 | 45.21 | 50.80 | 16.76          | 77.97  | 60.45          | 62.03 | -924                                |
| CSBT32 -32U | 2              | 50.80 | 2-1/2-12                   | 45.97     | 2-3/4             | 69.85 | 3     | 76.20 | 2-3/4          | 69.85 | 67.56 | 62.73 | 69.85 | 16.76          | 107.18 | 71.62          | 80.26 | -932                                |

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

## O-Seal Connectors

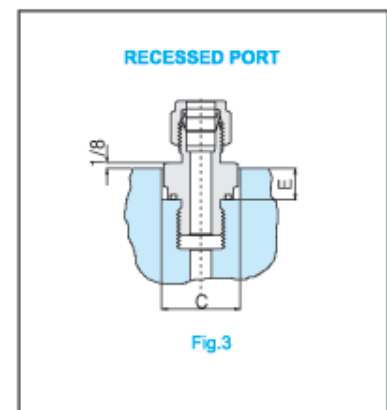
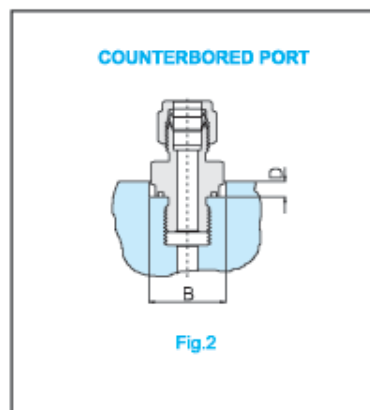
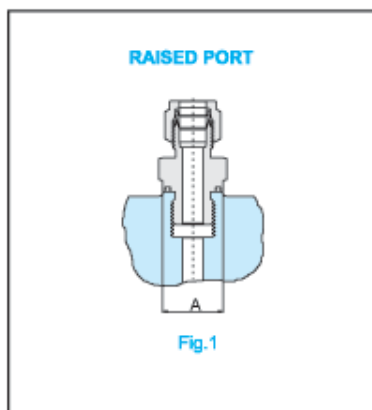
Hy-Lok O-seal fittings can be directly installed into existing pipe thread or straight thread port. Due to short thread length, thread interference which is common on tapered thread does not occur and the leak tight seal is made by O-ring. The standard Buna-N O-ring is fully contained in a precision groove. The groove provides antiextrusion of O-ring at high pressure and controlled squeeze for vacuum tight sealing. To provide a leak tight installation, smooth flat surface perpendicular to the axis of the threads is required.

## Installation Instructions

1. Hand tighten the O-Seal fittings in the port until O-ring compresses on the port.
2. Further snug the fitting lightly with a wrench.

Note : When installing or disconnecting tubing to or from Hy-Lok tube end, make sure that the fitting body is always held by back-up wrench. By doing this, the fitting does not turn and the proper seal is maintained.

The illustrations and table below show required mounting dimensions for O-seal connectors.



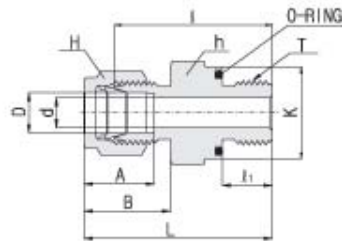
## Mounting Dimesions

| Port No.   | Straight Thread | Pipe Thread | A Min. | B Min. | C Min. | D Min. | E Min. |
|------------|-----------------|-------------|--------|--------|--------|--------|--------|
| COS 2 - 2  | 5/16-24         | -           | 12.7   | 15.0   | 16.8   | 2.3    | 5.6    |
| COP 2 - 2  | -               | 1/8 NPT     | 17.5   | 19.8   | 22.4   | 4.1    | 7.1    |
| COS 3 - 3  | 3/8-24          | -           | 14.2   | 16.8   | 19.1   | 2.3    | 5.6    |
| COS 4 - 4  | 7/16-20         | -           | 17.5   | 19.8   | 22.4   | 4.1    | 7.1    |
| COP 4 - 2  | -               | 1/8 NPT     | 17.5   | 19.8   | 22.4   | 4.1    | 7.1    |
| COP 4 - 4  | -               | 1/4 NPT     | 22.1   | 24.6   | 27.7   | 4.1    | 7.9    |
| COS 5 - 5  | 1/2-20          | -           | 19.1   | 23.1   | 26.2   | 4.1    | 7.9    |
| COS 6 - 6  | 9/16-18         | -           | 20.6   | 24.6   | 27.7   | 4.1    | 7.9    |
| COP 6 - 6  | -               | 1/8 NPT     | 25.4   | 29.5   | 33.3   | 4.1    | 8.6    |
| COP 6 - 8  | -               | 1/2 NPT     | 31.0   | 34.0   | 38.9   | 5.6    | 11.2   |
| COS 8 - 8  | 3/4-16          | -           | 25.4   | 29.5   | 33.3   | 4.1    | 8.6    |
| COP 8 - 8  | -               | 1/2 NPT     | 31.0   | 34.0   | 38.9   | 5.6    | 11.2   |
| COS12 - 12 | 1-1/16-12       | -           | 35.8   | 38.9   | 44.5   | 5.6    | 12.7   |
| COS16 - 16 | 1-5/16-12       | -           | 42.9   | 45.2   | 51.6   | 5.6    | 14.2   |



## Hy-Lok Tube Fittings

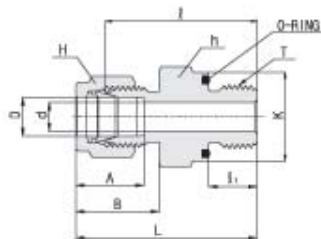
### O-Seal Straight Thread Connector COS



#### Connects Fractional Tube To Female Straight Thread.

| Part No.   | Tube O.D.<br>D |       | Straight<br>Thread<br>T(U) | d<br>Min. | Width across flat |       |       |       | A     | B     | ℓ     | ℓ <sub>1</sub> | L     | O-Ring<br>Uniform<br>Size Number |
|------------|----------------|-------|----------------------------|-----------|-------------------|-------|-------|-------|-------|-------|-------|----------------|-------|----------------------------------|
|            | in             | mm    |                            |           | h                 |       | H     |       |       |       |       |                |       |                                  |
|            |                |       |                            |           | in                | mm    | in    | mm    |       |       |       |                |       |                                  |
| COS 2 - 2U | 1/8            | 3.17  | 5/16-24                    | 2.28      | 9/16              | 14.28 | 7/16  | 11.11 | 12.70 | 15.24 | 26.16 | 8.63           | 32.76 | -011                             |
| COS 3 - 3U | 3/16           | 4.76  | 3/8-24                     | 3.04      | 5/8               | 15.87 | 1/2   | 12.70 | 13.71 | 16.00 | 27.68 | 9.65           | 34.29 | -012                             |
| COS 4 - 4U | 1/4            | 6.35  | 7/16-20                    | 4.82      | 3/4               | 19.05 | 9/16  | 14.28 | 15.24 | 17.78 | 30.98 | 10.41          | 38.35 | -111                             |
| COS 5 - 5U | 5/16           | 7.93  | 1/2-20                     | 6.35      | 7/8               | 22.22 | 5/8   | 15.87 | 16.25 | 18.54 | 33.27 | 11.17          | 40.64 | -112                             |
| COS 6 - 6U | 3/8            | 9.52  | 9/16-18                    | 7.11      | 15/16             | 23.81 | 11/16 | 17.46 | 16.76 | 19.30 | 35.05 | 11.93          | 42.41 | -113                             |
| COS 8 - 8U | 1/2            | 12.70 | 3/4-16                     | 10.41     | 1-1/8             | 28.57 | 7/8   | 22.22 | 22.86 | 21.84 | 35.81 | 11.93          | 45.97 | -116                             |
| COS12 -12U | 3/4            | 19.05 | 1-1/16-12                  | 15.74     | 1-1/2             | 38.10 | 1-1/8 | 28.57 | 24.38 | 21.84 | 42.16 | 14.22          | 52.32 | -215                             |
| COS16 -16U | 1              | 25.40 | 1-5/16-12                  | 22.35     | 1-3/4             | 44.45 | 1-1/2 | 38.10 | 31.24 | 26.41 | 45.97 | 14.22          | 58.16 | -219                             |

### O-Seal Pipe Thread Connector COP



#### Connects Fractional Tube To Female NPT Thread.

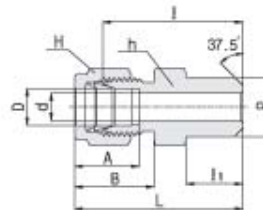
| Part No. | Tube O.D.<br>D |       | Straight<br>Thread<br>T*(NPT) | d<br>Min. | Width across flat |       |       |       | A     | B     | ℓ     | ℓ <sub>1</sub> | L     | O-Ring<br>Uniform<br>Size Number |
|----------|----------------|-------|-------------------------------|-----------|-------------------|-------|-------|-------|-------|-------|-------|----------------|-------|----------------------------------|
|          | in             | mm    |                               |           | h                 |       | H     |       |       |       |       |                |       |                                  |
|          |                |       |                               |           | in                | mm    | in    | mm    |       |       |       |                |       |                                  |
| COP2 - 2 | 1/8            | 3.17  | 1/8                           | 2.28      | 3/4               | 19.05 | 7/16  | 11.11 | 12.70 | 15.24 | 26.16 | 7.11           | 32.76 | -111                             |
| COP4 - 2 | 1/4            | 6.35  | 1/8                           | 4.82      | 3/4               | 19.05 | 9/16  | 14.28 | 15.24 | 17.78 | 27.68 | 7.11           | 35.05 | -111                             |
| COP4 - 4 | 1/4            | 6.35  | 1/4                           | 4.82      | 15/16             | 23.81 | 9/16  | 14.28 | 15.24 | 17.78 | 30.98 | 9.65           | 38.35 | -113                             |
| COP6 - 4 | 3/8            | 9.52  | 1/4                           | 7.11      | 15/16             | 23.81 | 11/16 | 17.46 | 16.76 | 19.30 | 32.51 | 9.65           | 39.87 | -113                             |
| COP6 - 6 | 3/8            | 9.52  | 3/8                           | 7.11      | 1-1/8             | 28.57 | 11/16 | 17.46 | 16.76 | 19.30 | 34.03 | 10.41          | 41.40 | -116                             |
| COP6 - 8 | 3/8            | 9.52  | 1/2                           | 7.11      | 1-5/16            | 33.33 | 11/16 | 17.46 | 16.76 | 19.30 | 39.62 | 13.46          | 46.99 | -212                             |
| COP8 - 8 | 1/2            | 12.70 | 1/2                           | 10.41     | 1-5/16            | 33.33 | 7/8   | 22.22 | 22.86 | 21.84 | 39.62 | 13.46          | 49.78 | -212                             |

\*ISO Parallel Threads are available upon request.

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

## Hy-Lok Tube Fittings

### Male Pipe Weld Connector CWC



### Connects Fractional Tube To Pipe

| Part No.     | Tube O.D. |       | Male Pipe Size |       | d<br>Min. | Width across flat |       |       |       | A     | B     | ℓ     | ℓ <sub>1</sub> | L      |
|--------------|-----------|-------|----------------|-------|-----------|-------------------|-------|-------|-------|-------|-------|-------|----------------|--------|
|              | D         |       | P              |       |           | h                 |       | H     |       |       |       |       |                |        |
|              | in        | mm    | Nom.           | O.D.  |           | in                | mm    | in    | mm    |       |       |       |                |        |
| CWC 2 - 2P   | 1/8       | 3.17  | 1/8            | 10.30 | 2.28      | 7/16              | 11.11 | 7/16  | 11.11 | 12.70 | 15.24 | 23.87 | 9.65           | 31.24  |
| CWC 3 - 2P   | 3/16      | 4.76  | 1/8            | 10.30 | 3.04      | 7/16              | 11.11 | 1/2   | 12.70 | 13.71 | 16.00 | 24.63 | 9.65           | 31.24  |
| CWC 4 - 2P   | 1/4       | 6.35  | 1/8            | 10.30 | 4.82      | 1/2               | 12.70 | 9/16  | 14.28 | 15.24 | 17.78 | 25.40 | 9.65           | 32.76  |
| CWC 4 - 4P   | 1/4       | 6.35  | 1/4            | 13.70 | 4.82      | 9/16              | 14.28 | 9/16  | 14.28 | 15.24 | 17.78 | 30.48 | 14.22          | 37.84  |
| CWC 5 - 2P   | 5/16      | 7.93  | 1/8            | 10.30 | 5.08      | 9/16              | 14.28 | 5/8   | 15.87 | 16.25 | 18.54 | 26.67 | 9.65           | 34.03  |
| CWC 5 - 4P   | 5/16      | 7.93  | 1/4            | 13.70 | 6.35      | 9/16              | 14.28 | 5/8   | 15.87 | 16.25 | 18.54 | 31.24 | 14.22          | 38.60  |
| CWC 6 - 4P   | 3/8       | 9.52  | 1/4            | 13.70 | 7.11      | 5/8               | 15.87 | 11/16 | 17.46 | 16.76 | 19.30 | 32.51 | 14.22          | 39.87  |
| CWC 6 - 6P   | 3/8       | 9.52  | 3/8            | 17.10 | 7.11      | 11/16             | 17.46 | 11/16 | 17.46 | 16.76 | 19.30 | 32.51 | 14.22          | 39.87  |
| CWC 6 - 8P   | 3/8       | 9.52  | 1/2            | 21.30 | 7.11      | 7/8               | 22.22 | 11/16 | 17.46 | 16.76 | 19.30 | 38.86 | 19.05          | 43.23  |
| CWC 6 - 12P  | 3/8       | 9.52  | 3/4            | 26.67 | 7.11      | 1-1/16            | 26.98 | 11/16 | 17.46 | 16.76 | 19.30 | 40.38 | 19.05          | 47.75  |
| CWC 8 - 6P   | 1/2       | 12.70 | 3/8            | 17.10 | 10.41     | 13/16             | 20.63 | 7/8   | 22.22 | 22.86 | 21.84 | 33.27 | 14.22          | 43.43  |
| CWC 8 - 8P   | 1/2       | 12.70 | 1/2            | 21.30 | 10.41     | 7/8               | 22.22 | 7/8   | 22.22 | 22.86 | 21.84 | 38.86 | 19.05          | 49.02  |
| CWC 8 - 12P  | 1/2       | 12.70 | 3/4            | 26.67 | 10.41     | 1-1/16            | 26.98 | 7/8   | 22.22 | 22.86 | 21.84 | 40.38 | 19.05          | 50.54  |
| CWC 10 - 8P  | 5/8       | 15.87 | 1/2            | 21.30 | 12.70     | 15/16             | 23.81 | 1     | 25.40 | 24.38 | 21.84 | 38.86 | 19.05          | 49.02  |
| CWC 12 - 12P | 3/4       | 19.05 | 3/4            | 26.67 | 15.74     | 1-1/16            | 26.98 | 1-1/8 | 28.57 | 24.38 | 21.84 | 40.38 | 19.05          | 50.54  |
| CWC 16 - 16P | 1         | 25.40 | 1              | 33.40 | 22.35     | 1-3/8             | 34.92 | 1-1/2 | 38.10 | 31.24 | 26.41 | 50.03 | 23.87          | 62.23  |
| CWC 20 - 20P | 1-1/4     | 31.75 | 1-1/4          | 42.16 | 27.68     | 1-3/4             | 44.45 | 2     | 50.80 | 41.14 | 38.86 | 55.11 | 23.87          | 77.21  |
| CWC 24 - 24P | 1-1/2     | 38.10 | 1-1/2          | 48.26 | 34.03     | 2-1/8             | 53.97 | 2-1/4 | 57.15 | 50.03 | 45.21 | 61.72 | 26.16          | 88.90  |
| CWC 32 - 32P | 2         | 50.80 | 2              | 60.32 | 47.75     | 2-3/4             | 69.85 | 3     | 76.20 | 67.56 | 62.73 | 76.20 | 26.92          | 113.53 |

### Connects Metric Tube To Pipe

| Part No.      | Tube<br>O.D.<br>D | Male Pipe Size<br>P |      | d<br>Min. | Width across flat |    | A    | B    | ℓ    | ℓ <sub>1</sub> | L    |
|---------------|-------------------|---------------------|------|-----------|-------------------|----|------|------|------|----------------|------|
|               |                   | Nom.                | O.D. |           | h                 | H  |      |      |      |                |      |
| CWC 3M - 2P   | 3                 | 1/8                 | 10.3 | 2.4       | 12                | 12 | 12.9 | 15.3 | 23.1 | 9.7            | 29.7 |
| CWC 4M - 2P   | 4                 | 1/8                 | 10.3 | 2.4       | 12                | 12 | 13.7 | 16.1 | 24.1 | 9.7            | 30.7 |
| CWC 6M - 2P   | 6                 | 1/8                 | 10.3 | 4.8       | 14                | 14 | 15.3 | 17.7 | 25.4 | 9.7            | 32.8 |
| CWC 6M - 4P   | 6                 | 1/4                 | 13.7 | 4.8       | 14                | 14 | 15.3 | 17.7 | 30.2 | 14.2           | 37.6 |
| CWC 8M - 2P   | 8                 | 1/8                 | 10.3 | 5.1       | 15                | 16 | 16.2 | 18.6 | 26.7 | 9.7            | 34.2 |
| CWC 8M - 4P   | 8                 | 1/4                 | 13.7 | 6.4       | 15                | 16 | 16.2 | 18.6 | 31.2 | 14.2           | 38.7 |
| CWC 8M - 8P   | 8                 | 1/2                 | 21.3 | 6.4       | 22                | 16 | 16.2 | 18.6 | 37.3 | 19.0           | 44.8 |
| CWC 10M - 4P  | 10                | 1/4                 | 13.7 | 7.1       | 18                | 19 | 17.2 | 19.5 | 33.3 | 14.2           | 40.9 |
| CWC 10M - 6P  | 10                | 3/8                 | 17.1 | 7.9       | 18                | 19 | 17.2 | 19.5 | 33.3 | 14.2           | 40.1 |
| CWC 10M - 8P  | 10                | 1/2                 | 21.3 | 7.9       | 22                | 19 | 17.2 | 19.5 | 38.1 | 19.0           | 45.7 |
| CWC 12M - 4P  | 12                | 1/4                 | 13.7 | 7.1       | 22                | 22 | 22.8 | 22.0 | 33.3 | 14.2           | 43.4 |
| CWC 12M - 6P  | 12                | 3/8                 | 17.1 | 9.5       | 22                | 22 | 22.8 | 22.0 | 33.3 | 14.2           | 43.4 |
| CWC 12M - 8P  | 12                | 1/2                 | 21.3 | 9.5       | 22                | 22 | 22.8 | 22.0 | 38.1 | 19.0           | 48.2 |
| CWC 14M - 6P  | 14                | 3/8                 | 17.1 | 10.3      | 24                | 25 | 24.4 | 22.0 | 34.0 | 14.2           | 44.1 |
| CWC 15M - 8P  | 15                | 1/2                 | 21.3 | 11.9      | 24                | 25 | 24.4 | 22.0 | 38.9 | 19.0           | 49.0 |
| CWC 16M - 8P  | 16                | 1/2                 | 21.3 | 12.7      | 24                | 25 | 24.4 | 22.0 | 38.9 | 19.0           | 49.0 |
| CWC 18M - 8P  | 18                | 1/2                 | 21.3 | 13.5      | 27                | 30 | 24.4 | 22.0 | 40.4 | 19.0           | 50.5 |
| CWC 32M - 20P | 32                | 1-1/4               | 42.2 | 28.6      | 46                | 50 | 42.0 | 41.6 | 56.6 | 23.9           | 79.6 |
| CWC 38M - 24P | 38                | 1-1/2               | 48.3 | 33.7      | 55                | 60 | 49.4 | 47.9 | 64.0 | 26.2           | 91.6 |

Note : All Hy-Lok pipe weld ends have schedule 80 wall thickness or greater.

### Welding Precautions

- If you weld the fully assembled fittings, the assembly can be distorted and the lubricant on the nut can be removed, which is not desirable.
- To avoid this, remove nut and ferrules from the body and cover thread and seat area with another nut or a plug in

order to protect them from weld splatter. (Jsut finger tighten for easy removal)

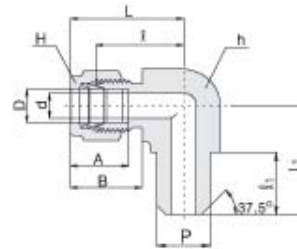
- Provide a proper heat sink for heat dissipation.
- After weld, put the nut and ferrule back in place.

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



## Hy-Lok Tube Fittings

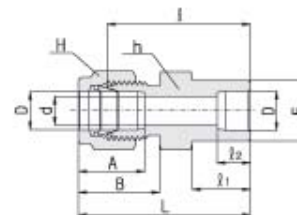
### Male Pipe Weld Elbow CLW



#### Connects Fractional Tube To Pipe

| Part No.    | Tube O.D.<br>D |       | Pipe Weld Size<br>P |       | d<br>Min. | Width across flat |       |       |       | A     | B     | ℓ     | ℓ <sub>1</sub> | L     | L <sub>1</sub> |
|-------------|----------------|-------|---------------------|-------|-----------|-------------------|-------|-------|-------|-------|-------|-------|----------------|-------|----------------|
|             | in             | mm    | Nom.                | O.D.  |           | h                 |       | H     |       |       |       |       |                |       |                |
|             |                |       |                     |       |           | in                | mm    | in    | mm    |       |       |       |                |       |                |
| CLW 2 - 2P  | 1/8            | 3.17  | 1/8                 | 10.30 | 4.82      | 1/2               | 12.70 | 9/16  | 14.28 | 15.24 | 17.78 | 19.55 | 9.65           | 26.92 | 18.79          |
| CLW 4 - 4P  | 1/4            | 6.35  | 1/4                 | 13.70 | 4.82      | 1/2               | 12.70 | 9/16  | 14.28 | 15.24 | 17.78 | 19.55 | 14.22          | 26.92 | 23.36          |
| CLW 6 - 4P  | 3/8            | 9.52  | 1/4                 | 13.70 | 7.11      | 5/8               | 15.87 | 11/16 | 17.46 | 16.76 | 19.30 | 23.11 | 14.22          | 30.48 | 25.40          |
| CLW 8 - 8P  | 1/2            | 12.70 | 1/2                 | 21.30 | 10.41     | 13/16             | 20.63 | 7/8   | 22.22 | 22.86 | 21.84 | 25.90 | 19.05          | 36.06 | 33.02          |
| CLW12 - 12P | 3/4            | 19.05 | 3/4                 | 26.67 | 15.74     | 1-1/16            | 26.98 | 1-1/8 | 28.57 | 24.38 | 21.84 | 29.71 | 19.05          | 39.87 | 36.83          |

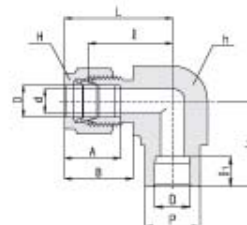
### Tube Socket Weld Connector CSWC



#### Connects Fractional Tubes

| Part No.    | Tube O.D.<br>D |       | d<br>Min. | E     | Width across flat |       |       |       | A     | B     | ℓ     | ℓ <sub>1</sub> | ℓ <sub>2</sub> | L     |
|-------------|----------------|-------|-----------|-------|-------------------|-------|-------|-------|-------|-------|-------|----------------|----------------|-------|
|             | in             | mm    |           |       | h                 |       | H     |       |       |       |       |                |                |       |
|             |                |       |           |       | in                | mm    | in    | mm    |       |       |       |                |                |       |
| CSWC 2 - 2  | 1/8            | 3.17  | 2.28      | 7.87  | 7/16              | 11.11 | 7/16  | 11.11 | 12.70 | 15.24 | 22.35 | 8.63           | 6.35           | 28.95 |
| CSWC 4 - 4  | 1/4            | 6.35  | 4.82      | 11.17 | 1/2               | 12.70 | 9/16  | 14.28 | 15.24 | 17.78 | 26.16 | 10.41          | 7.87           | 33.52 |
| CSWC 6 - 6  | 3/8            | 9.52  | 7.11      | 15.74 | 5/8               | 15.87 | 11/16 | 17.46 | 16.76 | 19.30 | 30.22 | 11.93          | 9.65           | 37.59 |
| CSWC 8 - 8  | 1/2            | 12.70 | 10.41     | 19.05 | 13/16             | 20.63 | 7/8   | 22.22 | 22.86 | 21.84 | 30.98 | 11.93          | 12.70          | 41.14 |
| CSWC12 - 12 | 3/4            | 19.05 | 15.74     | 26.67 | 1-1/16            | 26.98 | 1-1/8 | 28.57 | 24.38 | 21.84 | 33.27 | 11.93          | 14.22          | 43.43 |
| CSWC16 - 16 | 1              | 25.40 | 22.35     | 33.27 | 1-3/8             | 34.92 | 1-1/2 | 38.10 | 31.24 | 26.41 | 40.38 | 14.22          | 19.05          | 52.57 |

### Tube Socket Weld Elbow CLSW



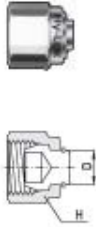
#### Connects Fractional Tubes

| Part No.    | Tube O.D.<br>D |       | d<br>Min. | E     | Width across flat |       |       |       | A     | B     | ℓ     | ℓ <sub>1</sub> | L     | L <sub>1</sub> |
|-------------|----------------|-------|-----------|-------|-------------------|-------|-------|-------|-------|-------|-------|----------------|-------|----------------|
|             | in             | mm    |           |       | h                 |       | H     |       |       |       |       |                |       |                |
|             |                |       |           |       | in                | mm    | in    | mm    |       |       |       |                |       |                |
| CLSW 4 - 4  | 1/4            | 6.35  | 4.82      | 12.70 | 1/2               | 12.70 | 9/16  | 14.28 | 15.24 | 17.78 | 19.55 | 7.87           | 26.92 | 19.55          |
| CLSW 6 - 6  | 3/8            | 9.52  | 7.11      | 15.74 | 5/8               | 15.87 | 11/16 | 17.46 | 16.76 | 19.30 | 23.11 | 9.65           | 30.48 | 23.11          |
| CLSW 8 - 8  | 1/2            | 12.70 | 10.41     | 20.57 | 13/16             | 20.63 | 7/8   | 22.22 | 22.86 | 21.84 | 25.90 | 12.70          | 36.06 | 25.90          |
| CLSW12 - 12 | 3/4            | 19.05 | 15.74     | 26.92 | 1-1/16            | 26.98 | 1-1/8 | 28.57 | 24.38 | 21.84 | 29.71 | 14.22          | 39.87 | 29.71          |
| CLSW16 - 16 | 1              | 25.40 | 22.35     | 35.05 | 1-3/8             | 34.92 | 1-1/2 | 38.10 | 31.24 | 26.41 | 36.83 | 19.05          | 49.02 | 36.83          |

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

# Hy-Lok Tube Fittings

## Plug for Hy-Lok Port CPA



**Installation Instruction**  
With wrench, 1/4 turn from finger-tight position.  
(1/8 turn for 1/8", 3/16" and 2mm, 3mm, 4mm size plug, 1/2 turn for over 1" and 25mm)

## Connects Fractional Hy-Lok Port

| Part No. | Tube O.D.<br>D |       | Width across flat<br>H |       |
|----------|----------------|-------|------------------------|-------|
|          | in             | mm    | in                     | mm    |
| CPA - 1  | 1/16           | 1.58  | 5/16                   | 7.94  |
| CPA - 2  | 1/8            | 3.17  | 7/16                   | 11.11 |
| CPA - 3  | 3/16           | 4.76  | 1/2                    | 12.70 |
| CPA - 4  | 1/4            | 6.35  | 9/16                   | 14.28 |
| CPA - 5  | 5/16           | 7.93  | 5/8                    | 15.87 |
| CPA - 6  | 3/8            | 9.52  | 11/16                  | 17.46 |
| CPA - 8  | 1/2            | 12.70 | 7/8                    | 22.22 |
| CPA - 10 | 5/8            | 15.87 | 1                      | 25.40 |
| CPA - 12 | 3/4            | 19.05 | 1-1/8                  | 28.57 |
| CPA - 14 | 7/8            | 22.22 | 1-1/4                  | 31.75 |
| CPA - 16 | 1              | 25.40 | 1-1/2                  | 38.10 |
| CPA - 20 | 1-1/4          | 31.75 | 1-7/8                  | 47.62 |
| CPA - 24 | 1-1/2          | 38.10 | 2-1/4                  | 57.15 |
| CPA - 32 | 2              | 50.80 | 3                      | 76.20 |

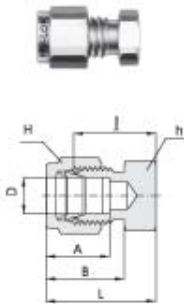
Plugs unused port of metric Hy-Lok fittings.

## Connects Metric Hy-Lok Port

| Part No.  | Tube O.D.<br>D | Width across flat<br>H | Part No.  | Tube O.D.<br>D | Width across flat<br>H |
|-----------|----------------|------------------------|-----------|----------------|------------------------|
| CPA - 2M  | 2              | 12                     | CPA - 16M | 16             | 25                     |
| CPA - 3M  | 3              | 12                     | CPA - 18M | 18             | 30                     |
| CPA - 4M  | 4              | 12                     | CPA - 20M | 20             | 32                     |
| CPA - 6M  | 6              | 14                     | CPA - 22M | 22             | 32                     |
| CPA - 8M  | 8              | 16                     | CPA - 25M | 25             | 38                     |
| CPA - 10M | 10             | 19                     | CPA - 28M | 28             | 46                     |
| CPA - 12M | 12             | 22                     | CPA - 32M | 32             | 50                     |
| CPA - 15M | 15             | 25                     | CPA - 38M | 38             | 60                     |

Plugs unused port of fractional Hy-Lok fittings.

## Cap for Tube End CCA



**Installation Instruction**  
Just follow Hy-Lok installation instruction on page.51

## Connects Fractional Tube End

| Part No. | Tube O.D.<br>D |       | Width across flat<br>h H |       |       |       | A     | B     | l     | L     |
|----------|----------------|-------|--------------------------|-------|-------|-------|-------|-------|-------|-------|
|          | in             | mm    | in                       | mm    | in    | mm    |       |       |       |       |
| CCA - 1  | 1/16           | 1.58  | 5/16                     | 7.94  | 5/16  | 7.94  | 8.63  | 10.92 | 11.20 | 14.18 |
| CCA - 2  | 1/8            | 3.17  | 7/16                     | 11.11 | 7/16  | 11.11 | 12.70 | 15.24 | 13.46 | 20.06 |
| CCA - 3  | 3/16           | 4.76  | 7/16                     | 11.11 | 1/2   | 12.70 | 13.71 | 16.00 | 14.73 | 21.33 |
| CCA - 4  | 1/4            | 6.35  | 1/2                      | 12.70 | 9/16  | 14.28 | 15.24 | 17.78 | 16.00 | 23.26 |
| CCA - 5  | 5/16           | 7.93  | 9/16                     | 14.28 | 5/8   | 15.87 | 16.25 | 18.54 | 17.01 | 24.38 |
| CCA - 6  | 3/8            | 9.52  | 5/8                      | 15.87 | 11/16 | 17.46 | 16.76 | 19.30 | 18.28 | 25.65 |
| CCA - 8  | 1/2            | 12.70 | 13/16                    | 20.63 | 7/8   | 22.22 | 22.86 | 21.84 | 19.05 | 29.21 |
| CCA - 10 | 5/8            | 15.87 | 15/16                    | 23.81 | 1     | 25.40 | 24.38 | 21.84 | 19.81 | 29.97 |
| CCA - 12 | 3/4            | 19.05 | 1-1/16                   | 26.98 | 1-1/8 | 28.57 | 24.38 | 21.84 | 21.33 | 31.49 |
| CCA - 14 | 7/8            | 22.22 | 1-3/16                   | 30.16 | 1-1/4 | 31.75 | 25.90 | 21.84 | 23.87 | 34.03 |
| CCA - 16 | 1              | 25.40 | 1-3/8                    | 34.92 | 1-1/2 | 38.10 | 31.24 | 26.41 | 26.16 | 38.35 |
| CCA - 20 | 1-1/4          | 31.75 | 1-3/4                    | 44.45 | 1-7/8 | 47.62 | 41.14 | 38.86 | 31.24 | 53.34 |
| CCA - 24 | 1-1/2          | 38.10 | 2-1/8                    | 53.97 | 2-1/4 | 57.15 | 50.03 | 45.21 | 37.33 | 64.51 |
| CCA - 32 | 2              | 50.80 | 2-3/4                    | 69.85 | 3     | 76.20 | 67.56 | 62.73 | 49.27 | 86.61 |

## Connects Metric Tube End

| Part No.  | Tube O.D.<br>D | Width across flat<br>h H |    | A    | B    | l    | L    |
|-----------|----------------|--------------------------|----|------|------|------|------|
|           |                | h                        | H  |      |      |      |      |
| CCA - 2M  | 2              | 12                       | 12 | 12.9 | 15.3 | 13.5 | 20.1 |
| CCA - 3M  | 3              | 12                       | 12 | 12.9 | 15.3 | 13.5 | 20.1 |
| CCA - 4M  | 4              | 12                       | 12 | 13.7 | 16.1 | 14.7 | 21.3 |
| CCA - 6M  | 6              | 14                       | 14 | 15.3 | 17.7 | 15.7 | 23.1 |
| CCA - 8M  | 8              | 15                       | 16 | 16.2 | 18.6 | 17.0 | 24.5 |
| CCA - 10M | 10             | 18                       | 19 | 17.2 | 19.5 | 19.0 | 26.6 |
| CCA - 12M | 12             | 22                       | 22 | 22.8 | 22.0 | 19.0 | 29.1 |
| CCA - 15M | 15             | 24                       | 25 | 24.4 | 22.0 | 19.8 | 29.9 |
| CCA - 16M | 16             | 24                       | 25 | 24.4 | 22.0 | 19.8 | 29.9 |
| CCA - 18M | 18             | 27                       | 30 | 24.4 | 22.0 | 21.3 | 31.4 |
| CCA - 20M | 20             | 30                       | 32 | 26.0 | 22.0 | 23.9 | 34.0 |
| CCA - 22M | 22             | 30                       | 32 | 26.0 | 22.0 | 23.9 | 34.0 |
| CCA - 25M | 25             | 35                       | 38 | 31.3 | 26.5 | 26.2 | 38.5 |
| CCA - 28M | 28             | 41                       | 46 | 36.6 | 36.6 | 27.7 | 48.5 |
| CCA - 32M | 32             | 46                       | 50 | 42.0 | 41.6 | 32.8 | 55.8 |
| CCA - 38M | 38             | 55                       | 60 | 49.4 | 47.9 | 37.8 | 65.4 |

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



## Hy-Lok Tube Fittings

### Tube Insert for Nylon or Soft Plastic Tubing

#### CI

**Hy-Lok Tube Inserts** are used to secure the nylon or other soft plastic tubing to Hy-Lok tube fittings. For, right choice of Hy-Lok tube inserts, check if O.D. and I.D. of the tubing are the same as dimension D and D1 of tube inserts, respectively.



#### Fractional

| Part No.  | Tube O.D. |       |                |       |
|-----------|-----------|-------|----------------|-------|
|           | D         |       | D <sub>1</sub> |       |
|           | in        | mm    | in             | mm    |
| CI 3 - 2  | 3/16      | 4.76  | 1/8            | 3.17  |
| CI 4 - 2  | 1/4       | 6.35  | 1/8            | 3.17  |
| CI 4 - 3  | 1/4       | 6.35  | 3/16           | 4.76  |
| CI 5 - 2  | 5/16      | 7.93  | 1/8            | 3.17  |
| CI 5 - 3  | 5/16      | 7.93  | 3/16           | 4.76  |
| CI 5 - 4  | 5/16      | 7.93  | 1/4            | 6.35  |
| CI 6 - 3  | 3/8       | 9.52  | 3/16           | 4.76  |
| CI 6 - 4  | 3/8       | 9.52  | 1/4            | 6.35  |
| CI 8 - 4  | 1/2       | 12.70 | 1/4            | 6.35  |
| CI 8 - 6  | 1/2       | 12.70 | 3/8            | 9.52  |
| CI10 - 6  | 5/8       | 15.87 | 3/8            | 9.52  |
| CI10 - 8  | 5/8       | 15.87 | 1/2            | 12.70 |
| CI12 - 8  | 3/4       | 19.05 | 1/2            | 12.70 |
| CI12 - 10 | 3/4       | 19.05 | 5/8            | 15.87 |
| CI16 - 12 | 1         | 25.40 | 3/4            | 19.05 |

#### Metric

| Part No.     | Tube O.D. |                |
|--------------|-----------|----------------|
|              | D         | D <sub>1</sub> |
| CI 6M - 4M   | 6         | 4              |
| CI 8M - 6M   | 8         | 6              |
| CI 10M - 8M  | 10        | 8              |
| CI 12M - 8M  | 12        | 8              |
| CI 12M - 10M | 12        | 10             |

### Sure Ring Against Overtight

#### CCL

**Hy-Lok Sure Ring** is especially useful when you install Hy-Lok fittings in a small space such as in a cabinet where it is practically impossible to apply the standard installation procedures. (i.e., 1 1/4 turns or 3/4 turn from finger tight) It ensures sufficient tightening and protects over-tightening. For installation, insert Sure Ring between the nut and the body before assembly, and then tighten the nut until being blocked by the sure ring.

### Gap Gauge for Gap Inspection

#### CIG



#### Multiple Size

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

#### Fractional

| Part No. | Tube O.D. |       |
|----------|-----------|-------|
|          | in        | mm    |
| CCL - 2  | 1/8       | 3.17  |
| CCL - 4  | 1/4       | 6.35  |
| CCL - 6  | 3/8       | 9.52  |
| CCL - 8  | 1/2       | 12.70 |
| CCL - 12 | 3/4       | 19.05 |
| CCL - 16 | 1         | 25.40 |

#### Metric

| Part No.  | Tube O.D. |
|-----------|-----------|
| CCL - 3M  | 3         |
| CCL - 6M  | 6         |
| CCL - 10M | 10        |
| CCL - 12M | 12        |
| CCL - 18M | 18        |
| CCL - 20M | 20        |
| CCL - 25M | 25        |

# Hy-Lok Tube Fittings

## Nut CN



### Fractional

| Part No. | Tube O.D.<br>D |       | Width across flat<br>H |       | L     |
|----------|----------------|-------|------------------------|-------|-------|
|          | in             | mm    | in                     | mm    |       |
| CN - 1   | 1/16           | 1.58  | 5/16                   | 7.94  | 7.90  |
| CN - 2   | 1/8            | 3.17  | 7/16                   | 11.11 | 11.93 |
| CN - 3   | 3/16           | 4.76  | 1/2                    | 12.70 | 11.93 |
| CN - 4   | 1/4            | 6.35  | 9/16                   | 14.28 | 12.70 |
| CN - 5   | 5/16           | 7.93  | 5/8                    | 15.87 | 13.46 |
| CN - 6   | 3/8            | 9.52  | 11/16                  | 17.46 | 14.22 |
| CN - 8   | 1/2            | 12.70 | 7/8                    | 22.22 | 17.52 |
| CN - 10  | 5/8            | 15.87 | 1                      | 25.40 | 17.52 |
| CN - 12  | 3/4            | 19.05 | 1-1/8                  | 28.57 | 17.52 |
| CN - 14  | 7/8            | 22.22 | 1-1/4                  | 31.75 | 17.52 |
| CN - 16  | 1              | 25.40 | 1-1/2                  | 38.10 | 20.57 |
| CN - 20  | 1-1/4          | 31.75 | 1-7/8                  | 47.62 | 31.75 |
| CN - 24  | 1-1/2          | 38.10 | 2-1/4                  | 57.15 | 38.10 |
| CN - 32  | 2              | 50.80 | 3                      | 76.20 | 52.32 |

### Metric

| Part No. | Tube<br>O.D.<br>D | Width<br>across<br>flat<br>H | L    |
|----------|-------------------|------------------------------|------|
| CN - 2M  | 3                 | 12                           | 11.9 |
| CN - 3M  | 3                 | 12                           | 11.9 |
| CN - 4M  | 4                 | 12                           | 11.9 |
| CN - 6M  | 6                 | 14                           | 12.7 |
| CN - 8M  | 8                 | 16                           | 13.5 |
| CN - 10M | 10                | 19                           | 15.1 |
| CN - 12M | 12                | 22                           | 17.4 |
| CN - 15M | 15                | 25                           | 17.4 |
| CN - 16M | 16                | 25                           | 17.4 |
| CN - 18M | 18                | 30                           | 17.4 |
| CN - 20M | 20                | 32                           | 17.4 |
| CN - 22M | 22                | 32                           | 17.4 |
| CN - 25M | 25                | 38                           | 20.6 |
| CN - 28M | 28                | 46                           | 30.6 |
| CN - 32M | 32                | 50                           | 34.4 |
| CN - 38M | 38                | 50                           | 40.6 |

## Front Ferrule CFF



### Fractional

| Part No. | Tube O.D.<br>D |       |
|----------|----------------|-------|
|          | in             | mm    |
| CFF - 1  | 1/16           | 1.58  |
| CFF - 2  | 1/8            | 3.17  |
| CFF - 3  | 3/16           | 4.76  |
| CFF - 4  | 1/4            | 6.35  |
| CFF - 5  | 5/16           | 7.93  |
| CFF - 6  | 3/8            | 9.52  |
| CFF - 8  | 1/2            | 12.70 |
| CFF - 10 | 5/8            | 15.87 |
| CFF - 12 | 3/4            | 19.05 |
| CFF - 14 | 7/8            | 22.22 |
| CFF - 16 | 1              | 25.40 |
| CFF - 20 | 1-1/4          | 31.75 |
| CFF - 24 | 1-1/2          | 38.10 |
| CFF - 32 | 2              | 50.80 |

### Metric

| Part No.  | Tube<br>O.D.<br>D |
|-----------|-------------------|
| CFF - 2M  | 2                 |
| CFF - 3M  | 3                 |
| CFF - 4M  | 4                 |
| CFF - 6M  | 6                 |
| CFF - 8M  | 8                 |
| CFF - 10M | 10                |
| CFF - 12M | 12                |
| CFF - 15M | 15                |
| CFF - 16M | 16                |
| CFF - 18M | 18                |
| CFF - 20M | 20                |
| CFF - 22M | 22                |
| CFF - 25M | 25                |
| CFF - 28M | 28                |
| CFF - 32M | 32                |
| CFF - 38M | 38                |

## Back Ferrule CFB



### Fractional

| Part No. | Tube O.D.<br>D |       |
|----------|----------------|-------|
|          | in             | mm    |
| CFB - 1  | 1/16           | 1.58  |
| CFB - 2  | 1/8            | 3.17  |
| CFB - 3  | 3/16           | 4.76  |
| CFB - 4  | 1/4            | 6.35  |
| CFB - 5  | 5/16           | 7.93  |
| CFB - 6  | 3/8            | 9.52  |
| CFB - 8  | 1/2            | 12.70 |
| CFB - 10 | 5/8            | 15.87 |
| CFB - 12 | 3/4            | 19.05 |
| CFB - 14 | 7/8            | 22.22 |
| CFB - 16 | 1              | 25.40 |
| CFB - 20 | 1-1/4          | 31.75 |
| CFB - 24 | 1-1/2          | 38.10 |
| CFB - 32 | 2              | 50.80 |

### Metric

| Part No.  | Tube<br>O.D.<br>D |
|-----------|-------------------|
| CFB - 2M  | 2                 |
| CFB - 3M  | 3                 |
| CFB - 4M  | 4                 |
| CFB - 6M  | 6                 |
| CFB - 8M  | 8                 |
| CFB - 10M | 10                |
| CFB - 12M | 12                |
| CFB - 15M | 15                |
| CFB - 16M | 16                |
| CFB - 18M | 18                |
| CFB - 20M | 20                |
| CFB - 22M | 22                |
| CFB - 25M | 25                |
| CFB - 28M | 28                |
| CFB - 32M | 32                |
| CFB - 38M | 38                |

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



# Hy-Lok Tube Fittings

## Ferrule Set CFS



### Fractional

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

### Metric

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

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

## 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 Fittings of 1 inch or 25mm and Under

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



1. Insert prepared tubing into Hy-Lok fitting until tubing end is firmly seated on the body shoulder and make sure the nut is hand tight. (Do not force the tubing into ferrule 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 9 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 9 o' clock position before tightening will be at 12 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 fittings are designed to accept the tube variations specified in ASTM or equivalent specifications, it is more desirable to have common starting point, or snug position, for high pressure applications. Make sure that the tubing end is fully seated. Slightly 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 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. A sharp rise in resistance will be felt at the original position, then snug - up slightly with a wrench.

### Installation of Hy-Lok Fittings bigger than 1" : or 25mm

**EZY-MAT TOOL**, Hy-Lok Corporation's Hydraulic Preswaging Machine, designed for use all Hy-Lok tube fittings ranging 1/2" ~ 2"(12mm~38mm). This tool can make you save money and reduce the storage space and carrying efforts.

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

**EZY-MAT TOOL** is easy to learn and operate. Reading and following instructions is all you need. With the manual model, the hand pumping requires very little power and 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). This saves money, storage space and carrying efforts.

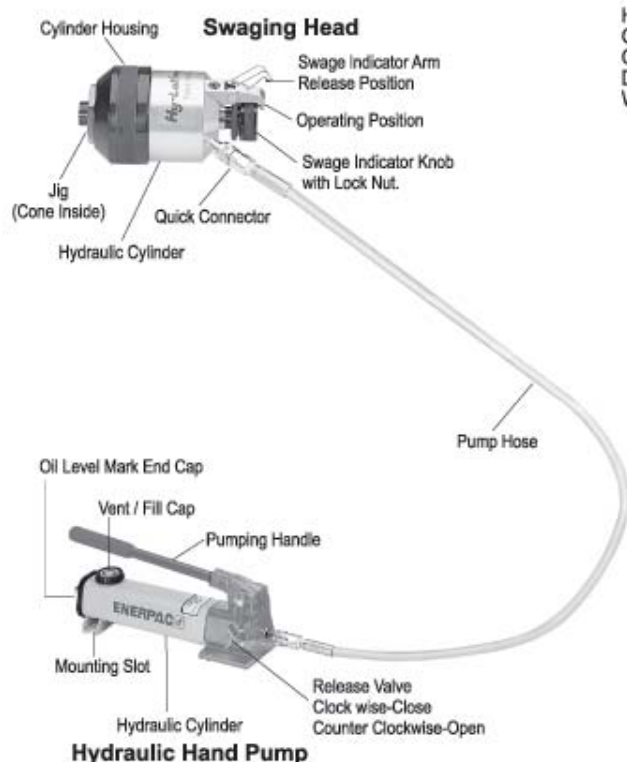
**EZY-MAT TOOL** reduces make-up torque, and reduces assembly time in the field and prevents the fitting from deformation and damage.



## 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)



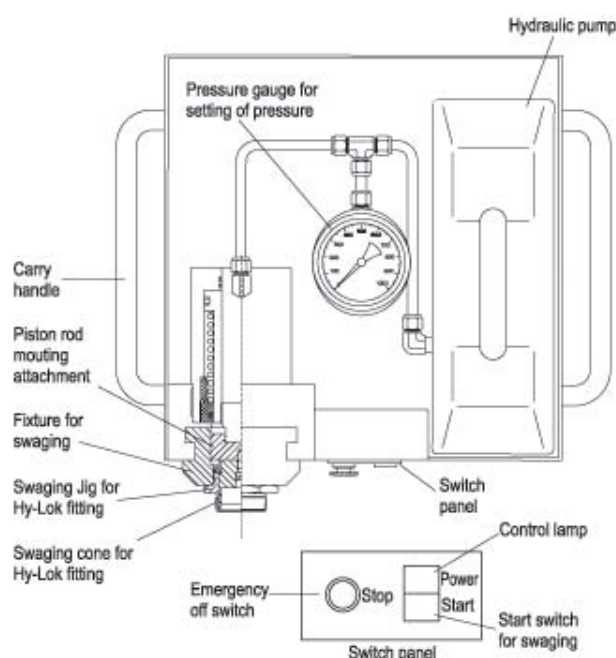
### EZY - MAT 2 (Auto)

#### 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.

#### 100V 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.

# Hy-Lok Corporation Main Products



## Hy-Lok Fittings

Hy-Lok Tube Fittings  
 Clean Fittings  
 Bite Type Tube Fittings (JIS B2351)  
 Bite Type Tube Fittings (DIN 2353)  
 HP Series High Pressure Tube Fittings  
 37° Flared Tube Fittings (SAE J514)  
 ZCO O-Ring Fittings (SAE J1453)  
 Instrument Thread & Weld Fittings  
 Hose Fittings (ISO 8434 / SAE J513 / J514 / JIS B8363)  
 Push-On Hose Fittings  
 Pipe Fittings (ASME B16.11 / BS 3799 / JIS B2316 / MSS-SP95)  
 Hose Connectors  
 Hydraulic Flanges (SAE J518 / ISO 6164)

## Hy-Lok Valves

BL Series Bellows Valves  
 DV Series Diaphragm Valves  
 NV Series Integral Bonnet Needle Valves  
 SV Series Integral Bonnet Bar Stock Needle Valves  
 SVH Series Screwed Bonnet High Pressure Needle Valves  
 GB Series Union Bonnet Barstock Needle Valves  
 RP Series Rising Plug Valves  
 M Series Instrument Manifolds  
 CRYO Series Cryogenic Needle & Ball Valves  
 PIV Series Primary Isolation Valves (DBB or IBB)  
 102 Series Forged High Pressure Ball Valves  
 105 Series Barstock High Pressure Ball Valves  
 110 Series Ball Valves  
 112 Series Ball Valves  
 115 Series Hydraulic Ball Valves  
 SO Series Swing Out Ball Valves  
 T Series Trunnion Ball Valves  
 P Series Plug Valves  
 PS Series Paint Shop Ball Valves  
 RTJ Flanged Ball Valves  
 700 Series Check Valves  
 700D Series Hydraulic Non Return Valves to DIN  
 700H Series High Pressure Compact Check Valves  
 RV Series Relief Valves  
 Bleed & Purge Valves  
 Flanged Balls to DIN / SAE / JIS  
 FT Series Micron Tee Filters  
 FI Series Micron Inline Filters  
 Air Pipe Module  
 Instrument Panel  
 Air Manifolds & Distributor



## DOs

- DO use Hy-Lok fittings for best performance.
- DO send us tubing for test if it is too thin or too thick.
- 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 nuts 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, but turn nut.
- DON'T overtighten. It will not improve seal integrity and it 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 employment of products described in this catalogue can 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.

## QUALITY SYSTEM CERTIFICATES



ISO 9001  
CERTIFICATE NO. QQC 212

ASME SECT III (MO)  
CERTIFICATE NO. QSC 584

## TYPE APPROVALS



American Bureau of Shipping  
CERTIFICATE NO. 00-BK50268-X



Lloyd's Register  
CERTIFICATE NO. 01/10075



GERMANISCHER LLOYD  
CERTIFICATE NO. 57798-91 HH



DET NORSKE VERITAS  
CERTIFICATE NO. P - 9100



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