



*Powering Business Worldwide*



# The Power of Eaton



**EATON**  
Powering Business Worldwide

There's a certain energy at Eaton. It's the power of integrating the competencies of some of the world's most respected names to build a brand you can trust to meet every power management need. The energy created supports our commitment to powering business worldwide.

As the world's demand increases for high-efficiency hydraulic systems for mobile and stationary applications, Eaton is helping to solve these challenges more reliably, efficiently, and sustainably. Our goal is simple; to provide unique solutions across a wide range of markets that keep businesses on the leading edge of change. Visit [Eaton.com/hydraulics/fusion](http://Eaton.com/hydraulics/fusion).

**That's the power of Eaton.**

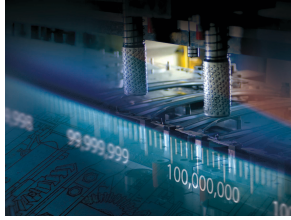


# Serving eight key segments - sharing one focus



## Alternative Energy

Making energy sources technically practical and economically sound requires the kind of control made possible by high-quality components. When Eaton is on the inside, you will experience the reliable, consistent performance to create and capture energy—making renewable energy an every-day energy.



## Discrete Manufacturing

Produce at peak efficiency with the superior precision and repeatability of Eaton products. Eaton hydraulic components provide the precise control and consistent operation required for virtually every step in your manufacturing operation. With Eaton, we'll help you redefine the meaning of raw productivity.



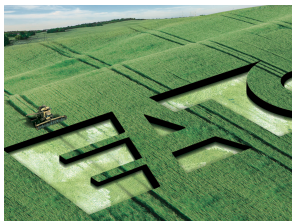
## Oil & Gas

As the oil & gas industry continues to face further globalization and consolidation, large-scale organizations that can meet your needs in every corner of the world are more difficult to find. At Eaton, our portfolio of products is only surpassed by our tremendous reach.



## Processing

Whatever your industry, no matter which processes you manage, Eaton parts and systems help keep you up and running. Our components make equipment more efficient and easier to use, so you get optimal machine performance and maximum productivity.



## Agriculture & Forestry

There's a reason farming and forestry are called "working the land." These segments involve some of the hardest work and longest hours of any sector in the economy. Your productivity and profitability depend on the way you manage time and tasks.



## Commercial Vehicles

Eaton technologies can make your driving operation more successful. Greater comfort and productivity help increase driver retention, while reduced emissions, leaks, and noise improve environmental performance. Increased efficiencies overall mean lower costs and higher net revenue.



## Material Handling

Eaton hydraulic systems provide the precise control and consistent operation required for material handling and utility work. With a broad selection of products and solutions built in, Eaton helps make you a master of your domain.



## Construction & Mining

When you work on a large scale, even the details are big. You need to trust every part of the equipment that lets you handle construction and mining jobs. For reliable components that deliver consistent performance in extreme conditions, turn to Eaton.

## Eaton is a leading diversified power management company

Eaton provides reliable, efficient and safe power management for a growing number of industries.

### Understanding and helping our customers succeed

- Listening and understanding to requirements and business drivers
- Delivering solutions with value propositions to solve the critical business needs

### Knowing what's important to our customers and integrating that knowledge into the fabric of our business

- ...to deliver innovative, quality products
- ...to respond fast
- ...to provide dedicated customer service and support around the globe

### Our strength is global reach with local responsiveness and support

- Customers served in more than 150 countries
- Diverse channels ensure reliable availability and support
- Design and engineering teams provide support for standard products and custom solutions
- Eaton experts offer efficient product and application training

# Table of Contents

## Application Data

|                               |    |
|-------------------------------|----|
| Important Safety Information  | 5  |
| Visual Index                  | 6  |
| Numbering Systems             | 12 |
| Tube Connector Selector Chart | 13 |
| Thread Identification         | 14 |
| Tubing Selection              | 19 |
| Flare Dimensions              | 23 |
| Tubing Installation           | 24 |
| Chemical Compatibility Chart  | 25 |

## Tubing

|                  |    |
|------------------|----|
| Plastic Tubing   | 30 |
| Air Brake Tubing | 33 |

## Brass Products

|                                              |     |
|----------------------------------------------|-----|
| Introduction                                 | 35  |
| Inverted Flare                               | 36  |
| SAE 45° Flare                                | 41  |
| Compression                                  | 46  |
| SelfAlign™                                   | 52  |
| Polyline™ Flareless                          | 58  |
| Push>Connect™                                | 62  |
| Push>Connect Metric                          | 69  |
| Push>Connect Flow Controls                   | 73  |
| Push>Connect Plus                            | 75  |
| Mini-Barb                                    | 77  |
| Quick>Connect™ Air Brake - Brass & Composite | 81  |
| Air Brake - Nylon Tubing                     | 90  |
| Air Brake - Copper Tubing                    | 96  |
| Threaded Sleeve                              | 101 |
| Pipe                                         | 103 |
| Needle Valves                                | 110 |
| Drain Cocks                                  | 114 |
| Truck Valves                                 | 117 |
| Plastic Drain Cocks                          | 118 |
| Ground Plug & Multiple Shut-Offs             | 119 |
| Brass Ball Valves                            | 122 |
| Special Adapter                              | 126 |
| Hydraulic Brake Products                     | 130 |

## Plastic Products

|                                  |     |
|----------------------------------|-----|
| Molded Compression Tube Products | 133 |
| Plastic Products                 | 141 |

## Brass – Nickel Plated

|               |     |
|---------------|-----|
| BSPP Products | 142 |
|---------------|-----|

## Related Products

|                                     |     |
|-------------------------------------|-----|
| Assembly & Tool Cutting Equipment   | 143 |
| Air Brake Products & Measuring Kits | 143 |
| Tube Cutting Equipment              | 144 |
| Tube Bending Tools                  | 145 |
| Tube Flaring & Brazing Tools        | 146 |
| Label Sets & Bags                   | 147 |
| Cabinets & Assortments              | 148 |

## Certification

|                         |     |
|-------------------------|-----|
| ISO & QS Certifications | 156 |
|-------------------------|-----|

## Conversion

|                   |     |
|-------------------|-----|
| Conversion Charts | 157 |
|-------------------|-----|

## Glossary

|               |     |
|---------------|-----|
| Alpha/Numeric | 159 |
|---------------|-----|

## Index

|               |     |
|---------------|-----|
| Numeric/Alpha | 162 |
|---------------|-----|

## Warranty

|                |     |
|----------------|-----|
| Eaton Warranty | 166 |
|----------------|-----|



# Application Data

## Important Safety Information



Warning

### Selection of Tubing

Selecting the proper tubing for a given application is essential to the proper operation and safe use of the tubing and related equipment. Inadequate attention to the selection of the tubing for an application can result in leakage, bursting, or other failure which can cause serious bodily injury or property damage from spraying fluids or flying projectiles. In order to avoid serious bodily injury or property damage resulting from selection of the wrong tubing, carefully review the information in this catalog. Some of the factors that are involved in the selection of the proper tubing are:

- material of tubing
- bends
- tubing size
- temperature
- tubing length
- tubing pressure rating
- tubing end connections
- installation design
- fluid conveyed (compatibility)

These factors and the other information in this catalog should be considered when selecting the proper tubing for an application.

### Proper Selection of Tube Fittings

Selection of the proper Eaton tube products for the application is essential to the proper operation and safe use of tubing and related equipment. Inadequate attention to the selection of the products for your application can result in tube leakage, bursting, or other failure which can cause serious injury or property damage from spraying fluids or flying projectiles. In order to avoid serious bodily injury or property damage resulting from selection of the wrong tube end fitting, carefully review the information in this catalog. Some of the factors which are involved in the selection of the proper products are:

- tube end connections
- installation design
- compatibility with tubing
- tubing size
- temperature
- corrosion requirements

These factors and the other information in this catalog should be considered selecting the proper tube when for an application.

### Tubing Installation

Proper installation of the tubing is essential to the proper operation and safe use of the tubing and related equipment. Improper installation of the tubing can result in serious injury or property damage. In order to avoid serious bodily injury or property damage resulting from improper installation of the tubing, carefully review the information in this catalog regarding tubing installation.

Some of the factors you must consider in installing the tubing properly are:

- proper installation procedures
- changes in length
- protection from high temperature sources
- twisting
- stress
- rubbing and abrasion

These factors and other information in this catalog regarding tubing installation should be considered before installing the tubing.

### Tubing Assembly

Changes in materials, finishes, and assembly techniques may affect the sealing or holding capability of the joint. Due to the great variety of possible assembly scenarios, assembly procedures should be tested to determine if the joint is adequate for its intended use. Improper assembly or overtightening could result in leakage, tubing separation or other failures which could cause serious bodily injury or property damage from spraying fluids or flying projectiles.

These factors and other information in this catalog regarding tubing assembly should be considered before installing the tubing.

### Dimensions

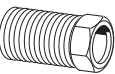
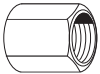
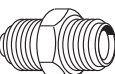
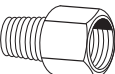
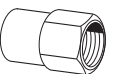
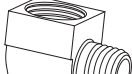
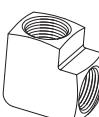
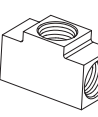
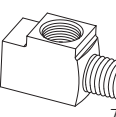
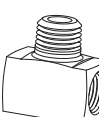
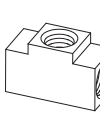
Dimensions given in this catalog are approximate and should be used for reference only. Exact dimensional information for a given product is subject to change and varying tolerances.

**Note:** Please contact Eaton Technical Support at 1-888-258-0222 for questions on applications.

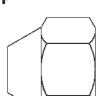
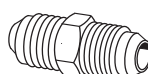
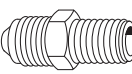
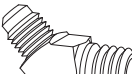
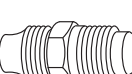
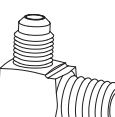
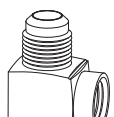
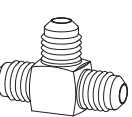
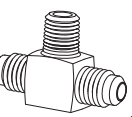
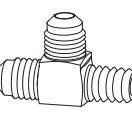
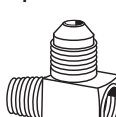
# Application Data

## Visual Index

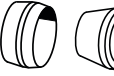
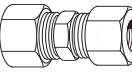
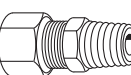
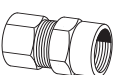
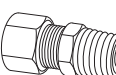
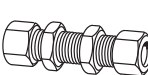
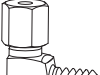
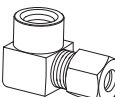
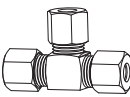
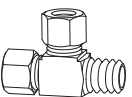
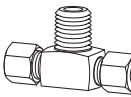
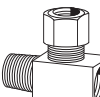
### Inverted Flare

|                                                                                                                                |                                                                                                                                |                                                                                                                              |                                                                                                                                       |                                                                                                                                   |                                                                                                                                             |
|--------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Tube Nut (Steel)</b><br><br>105x<br>pg. 37 | <b>Tube Nut (Brass)</b><br><br>100x<br>pg. 37 | <b>Plug (Steel)</b><br><br>131x<br>pg. 37   | <b>Tube Nut Long (Steel)</b><br><br>7896x<br>pg. 37 | <b>Union</b><br><br>302x<br>pg. 37             | <b>Adapter SAE 45° Flare to Inv. Flare</b><br><br>pg. 38 |
| <b>Male Connector</b><br><br>202x<br>pg. 38   | <b>Female Connector</b><br><br>252x<br>pg. 38 | <b>45° Male Elbow</b><br><br>352x<br>pg. 38 | <b>90° Union Elbow</b><br><br>502x<br>pg. 39        | <b>90° Male Elbow</b><br><br>402x<br>pg. 39    |                                                                                                                                             |
| <b>90° Female Elbow</b><br><br>452x<br>pg. 39 | <b>Union Tee</b><br><br>702x<br>pg. 40        | <b>Male Run Tee</b><br><br>752x<br>pg. 40   | <b>Male Branch Tee</b><br><br>602x<br>pg. 40        | <b>Female Branch Tee</b><br><br>652x<br>pg. 40 |                                                                                                                                             |

### SAE 45° Flare

|                                                                                                                                 |                                                                                                                                          |                                                                                                                               |                                                                                                                              |                                                                                                                                               |                                                                                                                                  |
|---------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------|
| <b>Nut</b><br><br>1110x<br>pg. 42              | <b>Long Nut</b><br><br>41x<br>pg. 42                    | <b>Cap</b><br><br>40x<br>pg. 42              | <b>Plug</b><br><br>39x<br>pg. 42           | <b>Union</b><br><br>42x<br>pg. 42                          | <b>Male Connector</b><br><br>48x<br>pg. 43    |
| <b>Female Connector</b><br><br>46x<br>pg. 43 | <b>Male Ball Check Connector</b><br><br>43x<br>pg. 43 | <b>45° Male Elbow</b><br><br>54x<br>pg. 43 | <b>AC Type Adapter</b><br><br>pg. 44     | <b>Adapter SAE 45° Flare to Inv. Flare</b><br><br>pg. 44 | <b>90° Union Elbow</b><br><br>55x<br>pg. 44 |
| <b>90° Male Elbow</b><br><br>49x<br>pg. 44   | <b>90° Female Elbow</b><br><br>50x<br>pg. 44          | <b>Union Tee</b><br><br>44x<br>pg. 45      | <b>Male Run Tee</b><br><br>51x<br>pg. 45 | <b>Male Branch Tee</b><br><br>45x<br>pg. 45              | <b>Adapter Tee</b><br><br>56x<br>pg. 45     |

### Compression and Selfalign Products

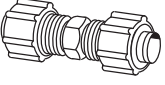
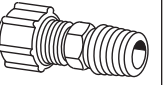
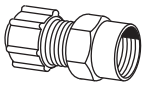
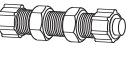
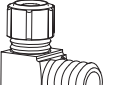
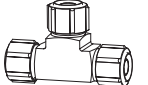
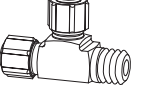
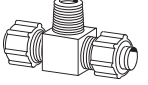
|                                                                                                                                                     |                                                                                                                                                     |                                                                                                                                                              |                                                                                                                                                     |                                                                                                                                                     |                                                                                                                                                      |
|-----------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Tube Support for Plastic Tubing</b><br><br>2030x<br>pg. 47    | <b>Sleeve</b><br><br>60x<br>pg. 47      601x<br>pg. 54           | <b>Nut</b><br><br>61x<br>pg. 47      611x<br>pg. 54                       | <b>Long Nut</b><br><br>1611x<br>pg. 48                          | <b>Bulkhead Nut</b><br><br>0102x<br>pg. 48                     | <b>Union</b><br><br>62x<br>pg. 48      621x<br>pg. 55           |
| <b>Male Connector</b><br><br>68x<br>pg. 48      681x<br>pg. 55   | <b>Female Connector</b><br><br>66x<br>pg. 49      661x<br>pg. 55 | <b>Male Ball Check Connector</b><br><br>63x<br>pg. 49      631x<br>pg. 55 | <b>Bulkhead Union</b><br><br>74x<br>pg. 49      741x<br>pg. 56  | <b>90° Male Elbow</b><br><br>69x<br>pg. 50      691x<br>pg. 56 | <b>90° Union Elbow</b><br><br>65x<br>pg. 50      651x<br>pg. 56 |
| <b>90° Female Elbow</b><br><br>70x<br>pg. 50      701x<br>pg. 56 | <b>Union Tee</b><br><br>64x<br>pg. 51      641x<br>pg. 57        | <b>Male Run Tee</b><br><br>71x<br>pg. 51      711x<br>pg. 57              | <b>Male Branch Tee</b><br><br>72x<br>pg. 51      721x<br>pg. 57 | <b>Adapter Tee</b><br><br>76x<br>pg. 51                        |                                                                                                                                                      |



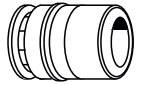
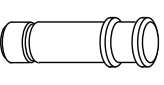
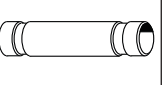
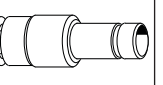
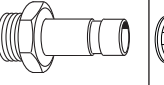
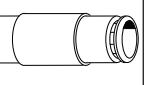
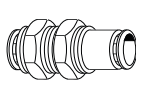
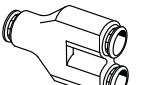
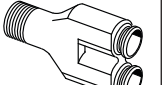
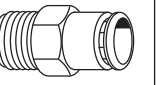
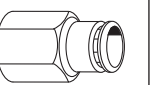
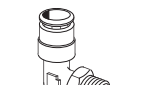
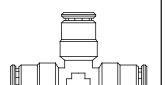
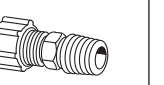
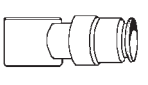
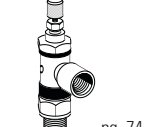
# Application Data

## Visual Index

### Polyline Flareless

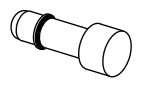
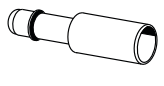
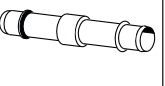
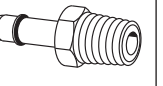
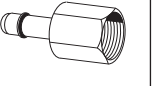
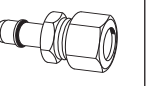
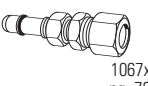
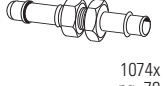
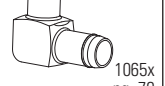
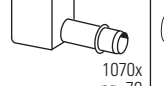
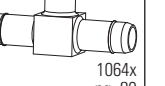
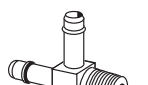
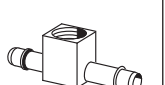
|                                                                                                                                 |                                                                                                                               |                                                                                                                                                     |                                                                                                                                       |                                                                                                                            |                                                                                                                                 |
|---------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------|
| <b>Plastic Sleeve</b><br><br>1260x<br>pg. 59   | <b>Brass Nut</b><br><br>1261x-<br>pg. 59     | <b>Brass Nut/Plastic Sleeve Assembly</b><br><br>1261x-Ax<br>pg. 59 | <b>Brass Bulkhead Nut</b><br><br>1202x-A<br>pg. 59 | <b>Union</b><br><br>1262x<br>pg. 59     | <b>Male Connector</b><br><br>1268x<br>pg. 60 |
| <b>Female Connector</b><br><br>1266x<br>pg. 60 | <b>Bulkhead Union</b><br><br>1274x<br>pg. 60 | <b>Male Elbow</b><br><br>1269x<br>pg. 61                          | <b>Female Elbow</b><br><br>1270x<br>pg. 61         | <b>Union Tee</b><br><br>1264x<br>pg. 61 | <b>Male Run Tee</b><br><br>1271x<br>pg. 61   |
| <b>Male Branch Tee</b><br><br>1272x<br>pg. 61  |                                                                                                                               |                                                                                                                                                     |                                                                                                                                       |                                                                                                                            |                                                                                                                                 |

### Push>Connect

|                                                                                                                                                |                                                                                                                                         |                                                                                                                                        |                                                                                                                                                    |                                                                                                                                             |                                                                                                                                        |
|------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------|
| <b>Cartridge</b><br><br>Metric 1161x<br>pg. 69 64             | <b>Plug (Plastic)</b><br><br>Metric 1129x<br>pg. 69 64 | <b>Double Union</b><br><br>Metric 1105x<br>pg. 69 64 | <b>Reducer</b><br><br>Metric 1109x<br>pg. 69 64                 | <b>Stem Adapter</b><br><br>Metric 1180x<br>pg. 69 65     | <b>Union</b><br><br>Metric 1612x<br>pg. 69 65       |
| <b>Bulkhead Union</b><br><br>Metric 1174x<br>pg. 70 65        | <b>Union "Y"</b><br><br>Metric 1107x<br>pg. 70 65      | <b>Male "Y"</b><br><br>Metric 1108x<br>pg. 70 66     | <b>Male Connector</b><br><br>Metric 1168x<br>pg. 70 66          | <b>Female Connector</b><br><br>Metric 1166x<br>pg. 70 66 | <b>Union Elbow</b><br><br>Metric 1165x<br>pg. 71 66 |
| <b>Swivel Male Elbow</b><br><br>Metric 1169x-S<br>pg. 71 67 | <b>Male Elbow</b><br><br>Metric 1169x<br>pg. 71 67   | <b>Union Tee</b><br><br>Metric 1164x<br>pg. 72 67  | <b>Male Run Tee Swivel</b><br><br>Metric 1171x-S<br>pg. 72 67 | <b>Male Connector</b><br><br>Metric 1168x<br>pg. 70 66 | <b>Stud Manifolds</b><br><br>pg. 68               |
| <b>Banjios</b><br><br>pg. 68                                | <b>Flow Controls</b><br><br>pg. 74                   |                                                                                                                                        |                                                                                                                                                    |                                                                                                                                             |                                                                                                                                        |

Push > Connect Plus see page 75.

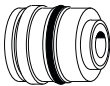
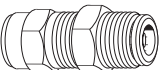
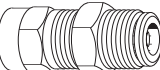
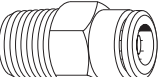
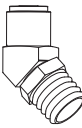
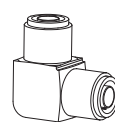
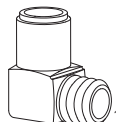
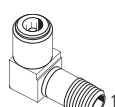
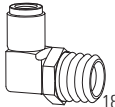
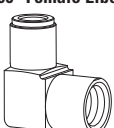
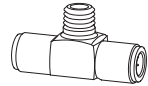
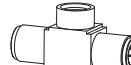
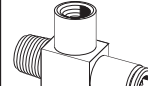
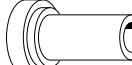
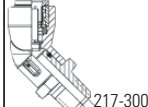
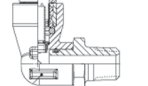
### Mini-Barb

|                                                                                                                                                 |                                                                                                                                   |                                                                                                                                     |                                                                                                                                   |                                                                                                                                     |                                                                                                                                          |
|-------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Plug</b><br><br>1073x<br>pg. 78                           | <b>Solder Connector</b><br><br>1079x<br>pg. 78 | <b>Union</b><br><br>1062x<br>pg. 78             | <b>Male Connector</b><br><br>1068x<br>pg. 78 | <b>Female Connector</b><br><br>1066x<br>pg. 78 | <b>Compression Connector</b><br><br>1078x<br>pg. 78 |
| <b>Bulkhead Compression Connector</b><br><br>1067x<br>pg. 79 | <b>Bulkhead Union</b><br><br>1074x<br>pg. 79   | <b>Union Elbow</b><br><br>1065x<br>pg. 79       | <b>90° Male Elbow</b><br><br>1069x<br>pg. 79 | <b>90° Female Elbow</b><br><br>1070x<br>pg. 79 | <b>Union Tee</b><br><br>1064x<br>pg. 80             |
| <b>Male Run Tee</b><br><br>1071x<br>pg. 80                   | <b>Male Branch Tee</b><br><br>1072x<br>pg. 80  | <b>Female Branch Tee</b><br><br>1077x<br>pg. 80 | <b>Adapter Tee</b><br><br>1075x<br>pg. 80    |                                                                                                                                     |                                                                                                                                          |

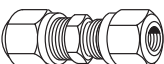
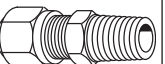
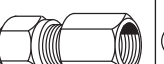
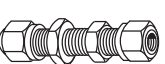
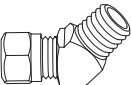
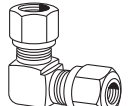
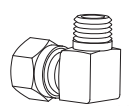
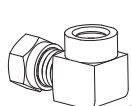
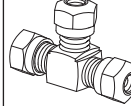
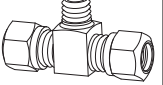
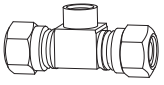
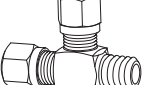
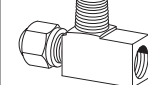
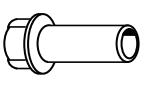
# Application Data

## Visual Index

### Quick>Connect Air Brake

|                                                                                                                                       |                                                                                                                                        |                                                                                                                                             |                                                                                                                                           |                                                                                                                                            |                                                                                                                                           |
|---------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Encapsulated Cartridge</b><br><br>1861x<br>pg. 83 | <b>Union</b><br><br>1862x<br>pg. 83                   | <b>Quick Connect Bulkhead Union</b><br><br>1874x<br>pg. 83 | <b>Female Bulkhead Union</b><br><br>1873x<br>pg. 83     | <b>Male Connector</b><br><br>1868x<br>pg. 84            | <b>Female Connector</b><br><br>1866x<br>pg. 84         |
| <b>45° Male Elbow</b><br><br>1880x<br>pg. 84         | <b>45° Male Swivel Elbow</b><br><br>1880x-S<br>pg. 85 | <b>90° Union Elbow</b><br><br>1865x<br>pg. 85              | <b>90° Male Elbow</b><br><br>1869x<br>pg. 85            | <b>90° Male Elbow Long</b><br><br>1869x-L<br>pg. 85     | <b>90° Male Swivel Elbow</b><br><br>1869x-S<br>pg. 86  |
| <b>90° Female Elbow</b><br><br>1870x<br>pg. 86       | <b>Union Tee</b><br><br>1864x<br>pg. 86               | <b>Male Run Tee</b><br><br>1871x<br>pg. 86                 | <b>Male Swivel Run Tee</b><br><br>1871x-S<br>pg. 87     | <b>Male Branch Tee</b><br><br>1872x<br>pg. 87           | <b>Swivel Male Branch Tee</b><br><br>1872x-S<br>pg. 87 |
| <b>Female Branch Tee</b><br><br>1877x<br>pg. 87      | <b>Adapter Tee</b><br><br>1883x<br>pg. 89             | <b>Pressure Plug</b><br><br>1829x<br>pg. 89                | <b>Composite 45° Q-Elbow</b><br><br>217-30000<br>pg. 88 | <b>Composite 90° Q-Elbow</b><br><br>217-10000<br>pg. 88 |                                                                                                                                           |

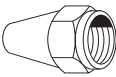
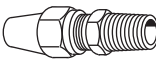
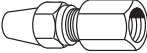
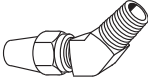
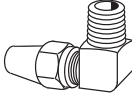
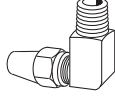
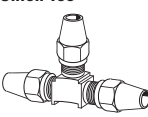
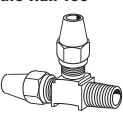
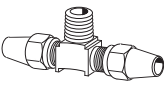
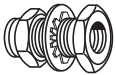
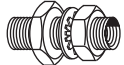
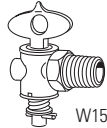
### Air Brake Connectors for Nylon Tubing

|                                                                                                                                  |                                                                                                                                    |                                                                                                                                 |                                                                                                                                         |                                                                                                                                     |                                                                                                                                   |
|----------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------|
| <b>Sleeve</b><br><br>1460x<br>pg. 91          | <b>Nut</b><br><br>1461x<br>pg. 91               | <b>Union</b><br><br>1462x<br>pg. 91          | <b>Male Connector</b><br><br>1468x<br>pg. 92        | <b>Female Connector</b><br><br>1466x<br>pg. 92 | <b>Bulkhead Union</b><br><br>1474x<br>pg. 92 |
| <b>45° Male Elbow</b><br><br>1480x<br>pg. 92  | <b>Union Elbow</b><br><br>1465x<br>pg. 93       | <b>90° Male Elbow</b><br><br>1469x<br>pg. 93 | <b>90° Male Elbow Long</b><br><br>1469x-L<br>pg. 93 | <b>90° Female Elbow</b><br><br>1470x<br>pg. 93 | <b>Union Tee</b><br><br>1464x<br>pg. 94      |
| <b>Male Branch Tee</b><br><br>1472x<br>pg. 94 | <b>Female Branch Tee</b><br><br>1477x<br>pg. 94 | <b>Male Run Tee</b><br><br>1471x<br>pg. 94   | <b>Adapter Tee</b><br><br>1482x<br>pg. 95           | <b>Insert</b><br><br>1484x<br>pg. 95           | <b>Gauge Ring</b><br><br>1485x<br>pg. 95     |

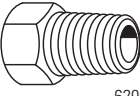
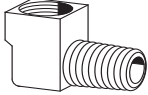
# Application Data

## Visual Index

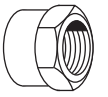
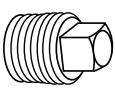
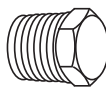
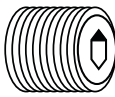
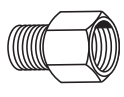
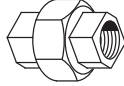
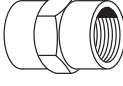
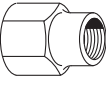
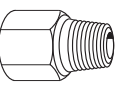
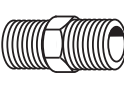
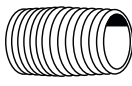
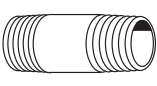
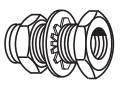
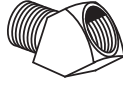
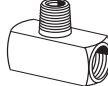
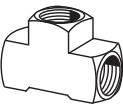
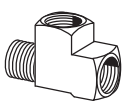
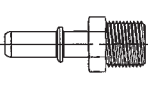
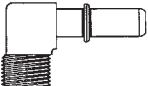
### Air Brake Connectors for Copper Tubing

|                                                                                                                                  |                                                                                                                                      |                                                                                                                              |                                                                                                                                   |                                                                                                                                         |                                                                                                                                   |
|----------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------|
| <b>Sleeve</b><br><br>1360x<br>pg. 97            | <b>Nut</b><br><br>1361x<br>pg. 97                   | <b>Union</b><br><br>1362x<br>pg. 97        | <b>Male Connector</b><br><br>1368x<br>pg. 97   | <b>Female Connector</b><br><br>1366x<br>pg. 98       | <b>45° Male Elbow</b><br><br>1380x<br>pg. 98   |
| <b>90° Male Elbow</b><br><br>1369x<br>pg. 98    | <b>90° Male Elbow Long</b><br><br>1369x-L<br>pg. 98 | <b>Union Tee</b><br><br>1364x<br>pg. 99    | <b>Male Run Tee</b><br><br>1371x<br>pg. 99     | <b>Male Branch Tee</b><br><br>1372x<br>pg. 99        | <b>Bulkhead Coupling (brass)</b><br><br>pg. 99 |
| <b>Bulkhead Coupling (brass)</b><br><br>pg. 100 | <b>Bulkhead Coupling (brass)</b><br><br>pg. 100     | <b>Drain Cock</b><br><br>W15310<br>pg. 100 | <b>Shut-Off Valve</b><br><br>W2033L<br>pg. 100 | <b>External Seat Draincock</b><br><br>145<br>pg. 100 |                                                                                                                                   |

### Threaded Sleeve

|                                                                                                                     |                                                                                                                                |                                                                                                                             |
|---------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------|
| <b>Nut</b><br><br>6100x<br>pg. 102 | <b>Male Connector</b><br><br>6200x<br>pg. 102 | <b>Male Elbow</b><br><br>6400x<br>pg. 102 |
|---------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------|

### Pipe

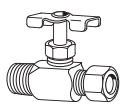
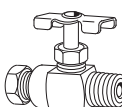
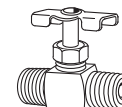
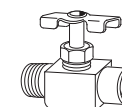
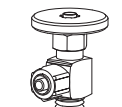
|                                                                                                                                   |                                                                                                                                |                                                                                                                                     |                                                                                                                                      |                                                                                                                                      |                                                                                                                                |
|-----------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------|
| <b>Cap</b><br><br>3129x<br>pg. 104             | <b>Slotted Plug</b><br><br>3150x<br>pg. 104 | <b>Square Head Plug</b><br><br>3151x<br>pg. 104 | <b>Hex Head Plug</b><br><br>3152x<br>pg. 104    | <b>Hex Socket Plug</b><br><br>3153x<br>pg. 104  | <b>Adapter</b><br><br>3200x<br>pg. 104    |
| <b>Bushing</b><br><br>3220x<br>pg. 105         | <b>Union</b><br><br>3250x<br>pg. 105        | <b>Coupling</b><br><br>3300x<br>pg. 105         | <b>Reducer Coupling</b><br><br>3300x<br>pg. 105 | <b>Restriction Pipe Adapter</b><br><br>pg. 105  | <b>Hex Nipple</b><br><br>3325x<br>pg. 106 |
| <b>Close Nipple</b><br><br>3326x<br>pg. 106    | <b>Long Nipple</b><br><br>pg. 106           | <b>Bulkhead Coupling (brass)</b><br><br>pg. 107 | <b>45° Street Elbow</b><br><br>3350x<br>pg. 107 | <b>90° Street Elbow</b><br><br>3400x<br>pg. 107 | <b>90° Elbow</b><br><br>3500x<br>pg. 108  |
| <b>Male Branch Tee</b><br><br>3600x<br>pg. 108 | <b>Tee</b><br><br>3700x<br>pg. 108          | <b>Male Run Tee</b><br><br>3750x<br>pg. 108     | <b>Cross</b><br><br>3950x<br>pg. 108            | <b>Straight</b><br><br>pg. 109                  | <b>90° Elbow</b><br><br>pg. 109           |



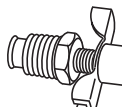
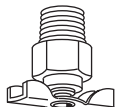
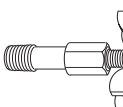
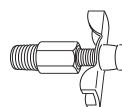
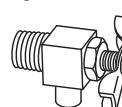
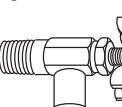
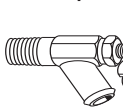
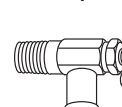
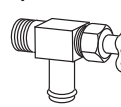
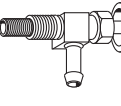
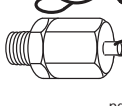
# Application Data

## Visual Index

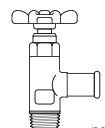
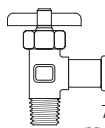
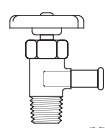
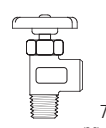
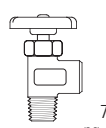
### Needle Valves

|                                                                                                                           |                                                                                                                                  |                                                                                                                            |                                                                                                                              |                                                                                                                           |                                                                                                                              |
|---------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------|
| <b>Compression Double</b><br><br>pg. 110 | <b>Compression Straightway</b><br><br>pg. 110   | <b>Compression Angle</b><br><br>pg. 110   | <b>Inverted Straightway</b><br><br>pg. 110 | <b>Male Pipe Double</b><br><br>pg. 111 | <b>Male to Female Pipe</b><br><br>pg. 111 |
| <b>Female Pipe</b><br><br>pg. 111        | <b>SAE 45° Flare Straightway</b><br><br>pg. 112 | <b>SAE 45° Flare Angle</b><br><br>pg. 112 | <b>Polyline Straightway</b><br><br>pg. 112 | <b>Polyline Angle</b><br><br>pg. 112   |                                                                                                                              |

### Drain Cocks

|                                                                                                                                               |                                                                                                                               |                                                                                                                        |                                                                                                                              |                                                                                                                               |                                                                                                                                    |
|-----------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------|
| <b>External Seat</b><br><br>pg. 113                          | <b>External Seat</b><br><br>pg. 113          | <b>Internal Seat</b><br><br>pg. 113   | <b>Internal Seat (long)</b><br><br>pg. 113 | <b>Internal Seat</b><br><br>pg. 114        | <b>Internal Seat Drain Valve</b><br><br>pg. 114 |
| <b>Air Vent</b><br><br>pg. 114                               | <b>Angle Bib Drain</b><br><br>pg. 114        | <b>Angle Bib Drain</b><br><br>pg. 114 | <b>Hose to Pipe (steel)</b><br><br>pg. 115 | <b>Hose to Pipe (steel)</b><br><br>pg. 115 | <b>Pipe to Hose Shut-Off</b><br><br>pg. 115     |
| <b>Gasoline Shut-Off with screen filter</b><br><br>pg. 115 | <b>Air Tank Drain Valve</b><br><br>pg. 115 |                                                                                                                        |                                                                                                                              |                                                                                                                               |                                                                                                                                    |

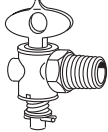
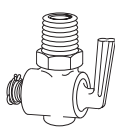
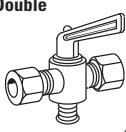
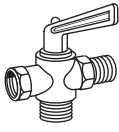
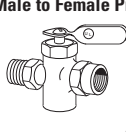
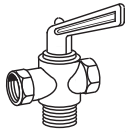
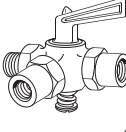
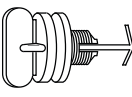
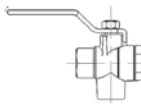
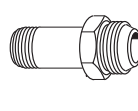
### Truck Valves

|                                                                                                                              |                                                                                                                              |                                                                                                                              |                                                                                                                               |                                                                                                                                |
|------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------|
| <b>Truck Valve</b><br><br>7502<br>pg. 116 | <b>Truck Valve</b><br><br>7504<br>pg. 116 | <b>Truck Valve</b><br><br>7506<br>pg. 116 | <b>Truck Valve</b><br><br>7508<br>pg. 116 | <b>Truck Valve</b><br><br>7509<br>pg. 116 |
|------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------|

# Application Data

## Visual Index

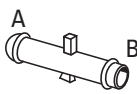
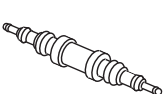
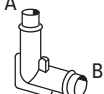
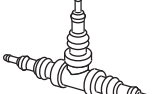
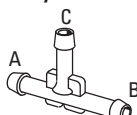
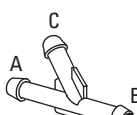
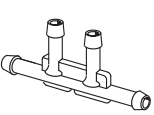
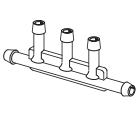
### Ground Plug & Multiple Shut-Offs

|                                                                                                                                |                                                                                                                                      |                                                                                                                                             |                                                                                                                                    |                                                                                                                             |                                                                                                                                  |
|--------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------|
| <b>Draincock</b><br><br>pg. 118               | <b>Ground Plug Drain</b><br><br>pg. 118             | <b>SAE 45° Flare Double</b><br><br>pg. 118                 | <b>SAE 45° Flare Straightway</b><br><br>pg. 119 | <b>Compression Double</b><br><br>pg. 119 | <b>Compression Straightway</b><br><br>pg. 119 |
| <b>Male to Female Pipe</b><br><br>pg. 119     | <b>Truck Shut-Off to Female Pipe</b><br><br>pg. 119 | <b>Marine Shut-Off Male to Female Pipe</b><br><br>pg. 120 | <b>Female Pipe Double</b><br><br>pg. 120        | <b>3-Way Shut-Off</b><br><br>pg. 120     | <b>3-Way Multiple Shut-Off</b><br><br>pg. 120 |
| <b>4-Way Multiple Shut-Off</b><br><br>pg. 120 | <b>Plastic Drain Cocks</b><br><br>pg. 117           | <b>Brass Ball Valves</b><br><br>pg. 121-127               | <b>Special Adapters</b><br><br>pg. 125-128      | <b>BSPP Products</b><br><br>pg. 141      |                                                                                                                                  |

### Molded Compression Tube Fittings

|                                                                                                                                |                                                                                                                                 |                                                                                                                                      |                                                                                                                                    |                                                                                                                                     |                                                                                                                                |
|--------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------|
| <b>Male Connector</b><br><br>1568x<br>pg. 134 | <b>Union Connector</b><br><br>1562x<br>pg. 135 | <b>Bulkhead Union</b><br><br>1574x<br>pg. 134      | <b>Female Connector</b><br><br>1566x<br>pg. 135 | <b>Male Elbow</b><br><br>1569x<br>pg. 136        | <b>Female Elbow</b><br><br>1570x<br>pg. 136 |
| <b>Union Tee</b><br><br>1564x<br>pg. 137    | <b>Union Elbow</b><br><br>1564x<br>pg. 137   | <b>Male Branch Tee</b><br><br>1572x<br>pg. 137   | <b>Male Run Tee</b><br><br>1571x<br>pg. 138   | <b>Compression Nut</b><br><br>1561x<br>pg. 138 | <b>Insert</b><br><br>1584x<br>pg. 138     |
| <b>Cap Nut</b><br><br>1529x<br>pg. 139      | <b>Bulkhead Nut</b><br><br>1502x<br>pg. 139  | <b>KYNAR Check Valve</b><br><br>1531x<br>pg. 139 |                                                                                                                                    |                                                                                                                                     |                                                                                                                                |

### Plastic Barbed Fittings

|                                                                                                                             |                                                                                                                              |                                                                                                                          |                                                                                                                          |                                                                                                                    |                                                                                                                        |
|-----------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------|
| <b>Straight Connector</b><br><br>pg. 140 | <b>Universal Connector</b><br><br>pg. 140 | <b>Elbow Connector</b><br><br>pg. 140 | <b>Universal Tee</b><br><br>pg. 140 | <b>3 Way T</b><br><br>pg. 140 | <b>Y Connector</b><br><br>pg. 140 |
| <b>4 Way Tee</b><br><br>pg. 140          | <b>5 Way Tee</b><br><br>pg. 140           |                                                                                                                          |                                                                                                                          |                                                                                                                    |                                                                                                                        |

48 X 6  
↑ ↑  
1 2

48 X 6 X 2  
↑ ↑ ↑  
1 2 3

Parts in this catalog are identified by a series of numbers separated by the letter "X."

1. The number preceding the "X" is the Catalog "Base Number" and indicates the type of connector. See Table 1 for additional base number data (sometimes referred to as dash size).

2. The second number is the tube and/or pipe size in sixteenths of an inch. When a pipe thread for a given tube size follows the SAE standard as shown in Table 2, no other number is required. Example: 48X6 = SAE 45° Flare Male Connector-3/8" tube, 1/4" Male Pipe.

3. If the pipe size is not to the SAE standard, another "X" is added followed by the pipe size indicated in sixteenths of an inch. Example: 1/8" is equal to 2/16" or X2 suffix.

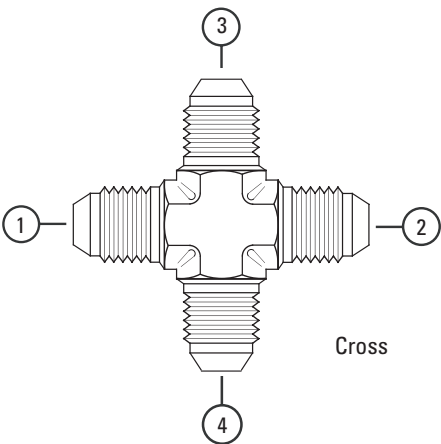
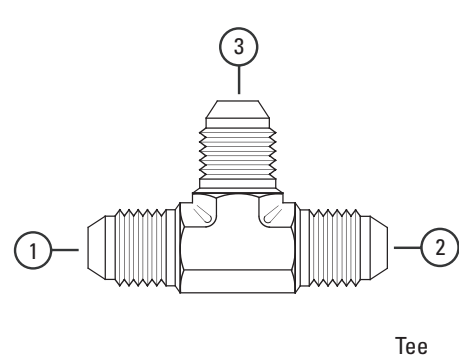
In designating tube and pipe sizes for tees and crosses that are not SAE standard, indicate the sizes in the sequence shown.

Table 1

| Type               | Example Male Connector | Example Female Connector |
|--------------------|------------------------|--------------------------|
| 45° Flare          | 48                     | 46                       |
| Compression        | 68                     | 66                       |
| Polyline           | 1268                   | 1266                     |
| Selfalign          | 681                    | 661                      |
| Air Brake (Nylon)  | 1468                   | 1466                     |
| Air Brake (Copper) | 1368                   | 1366                     |

Table 2

|     | Tube Size | Pipe Threads |
|-----|-----------|--------------|
| X2  | 1/8"      | 1/8"         |
| X3  | 3/16"     | 1/8"         |
| X4  | 1/4"      | 1/8"         |
| X5  | 5/16"     | 1/8"         |
| X6  | 3/8"      | 1/4"         |
| X7  | 7/16"     | 1/4"         |
| X8  | 1/2"      | 3/8"         |
| X10 | 5/8"      | 1/2"         |
| X12 | 3/4"      | 1/2"         |
| X14 | 7/8"      | 3/4"         |
| X16 | 1"        | 1"           |
| X20 | 1-1/4"    | No Standard  |
| X24 | 1-1/2"    | No Standard  |
| X32 | 2"        | No Standard  |



# Application Data

## Tube Connector Selector Chart

 Refer to safety information regarding proper selection of tubing and tube connectors on page 5.

| Connector Types                                                                               | Mini-Barb | Polyline | Threaded Sleeve | Pipe  | Inverted Flare | SAE 45° Flare | Compression | Selfalign | 1400 Series Air Brake | 1300 Series Air Brake | Push> Connect | Q-CAB®      | Molded Compression |
|-----------------------------------------------------------------------------------------------|-----------|----------|-----------------|-------|----------------|---------------|-------------|-----------|-----------------------|-----------------------|---------------|-------------|--------------------|
| Material                                                                                      | Brass     | Brass    | Brass           | Brass | Brass          | Brass         | Brass       | Brass     | Brass                 | Brass                 | Brass         | Brass Comp. | Nylon Poly         |
| Tube Size                                                                                     | 1/8       | 1/8      | 1/8             | 1/8   | 1/8            | 1/8           | 1/8         | 1/8       | 1/4                   | 1/4                   | 1/8           | 1/8         | 1/8                |
| (O.D. range in inches)                                                                        | 1/2       | 1/2      | 3/8             | 3/4   | 1              | 3/4           | 1           | 1         | 3/4                   | 3/4                   | 1/2           | 2           | 2                  |
| Maximum Working Pressure Depends on tubing material, O.D., wall thickness and connector size. | 135       | 500      | 500             | 1200  | 2000           | 2000          | 2000        | 2000      | 150                   | 150                   | 250           | 150         | 50/220             |

### Vibration (Comparative)

|           |  |  |  |  |  |  |  |  |  |  |  |  |  |
|-----------|--|--|--|--|--|--|--|--|--|--|--|--|--|
| Fair      |  |  |  |  |  |  |  |  |  |  |  |  |  |
| Good      |  |  |  |  |  |  |  |  |  |  |  |  |  |
| Excellent |  |  |  |  |  |  |  |  |  |  |  |  |  |

### Tubing Types

|                          |  |  |  |  |  |  |          |          |          |  |  |  |  |
|--------------------------|--|--|--|--|--|--|----------|----------|----------|--|--|--|--|
| Copper                   |  |  |  |  |  |  |          |          |          |  |  |  |  |
| Steel                    |  |  |  |  |  |  |          |          |          |  |  |  |  |
| Aluminum                 |  |  |  |  |  |  |          |          |          |  |  |  |  |
| Stainless Steel-Annealed |  |  |  |  |  |  |          |          |          |  |  |  |  |
| Stainless Steel-1/8-Hard |  |  |  |  |  |  |          |          |          |  |  |  |  |
| Polyethylene             |  |  |  |  |  |  | w/insert | w/insert |          |  |  |  |  |
| Nylon                    |  |  |  |  |  |  |          |          | w/insert |  |  |  |  |
| Polyvinyl Chloride (PVC) |  |  |  |  |  |  | w/insert | w/insert |          |  |  |  |  |
| Bundy                    |  |  |  |  |  |  | B        | B        |          |  |  |  |  |

### Conforms

|            |  |  |  |   |   |   |   |  |   |  |  |   |   |
|------------|--|--|--|---|---|---|---|--|---|--|--|---|---|
| SAE        |  |  |  |   |   |   |   |  |   |  |  |   |   |
| NSF Listed |  |  |  |   |   |   |   |  |   |  |  |   |   |
| FDA Listed |  |  |  |   |   |   |   |  |   |  |  |   | N |
| UL         |  |  |  | F | F | F | F |  |   |  |  |   |   |
| ASA        |  |  |  |   |   |   |   |  |   |  |  |   |   |
| ASME       |  |  |  |   |   |   |   |  |   |  |  |   |   |
| Military   |  |  |  |   |   |   |   |  | H |  |  |   |   |
| DOT        |  |  |  |   |   |   |   |  |   |  |  | H |   |

### Typical Use

|                     |  |  |  |  |  |  |  |  |  |  |  |  |  |
|---------------------|--|--|--|--|--|--|--|--|--|--|--|--|--|
| Instrumentation     |  |  |  |  |  |  |  |  |  |  |  |  |  |
| Oil-Air-Water       |  |  |  |  |  |  |  |  |  |  |  |  |  |
| Refrigeration       |  |  |  |  |  |  |  |  |  |  |  |  |  |
| Hydraulic Systems   |  |  |  |  |  |  |  |  |  |  |  |  |  |
| Cooling Systems     |  |  |  |  |  |  |  |  |  |  |  |  |  |
| Lubrication Systems |  |  |  |  |  |  |  |  |  |  |  |  |  |
| Air Brake           |  |  |  |  |  |  |  |  |  |  |  |  |  |

 Recommendation and Applicability

B — May be used if bundy is tin dipped  
N — Nylon material

F — Available on special order

H — Available in most sizes

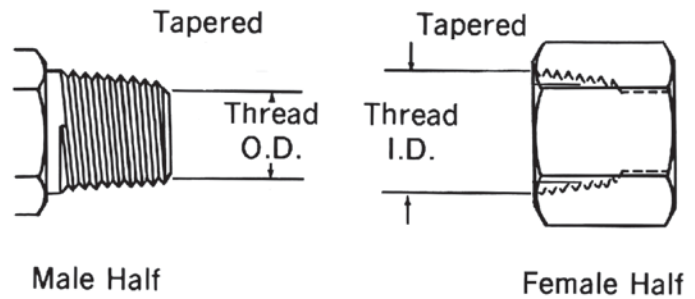


# Application Data

## Thread Identification

### American Connections NPTF (National Pipe Tapered Fuel)

This connection is still widely used in fluid power systems, even though it is not recommended by the National Fluid Power Association (NFPA) for use in hydraulic applications. The thread is tapered and the seal takes place by deformation of the threads.



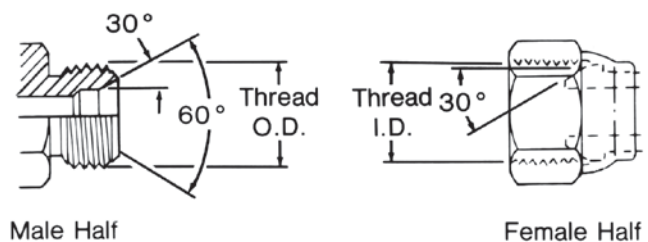
### NPTF Threads

Measure thread diameter and subtract 1/4-inch to find the nominal pipe size.

| Inch Size | Dash Size | Nominal Thread Size | Male Thread O.D. Inch |         | Female Thread I.D. Inch |         |
|-----------|-----------|---------------------|-----------------------|---------|-------------------------|---------|
|           |           |                     | Fraction              | Decimal | Fraction                | Decimal |
| 1/8       | 02        | 1/8-27              | 13/32                 | 0.41    | 3/8                     | 0.38    |
| 1/4       | 04        | 1/4-18              | 17/32                 | 0.54    | 1/2                     | 0.49    |
| 3/8       | 06        | 3/8-18              | 11/16                 | 0.68    | 5/8                     | 0.63    |
| 1/2       | 08        | 1/2-14              | 27/32                 | 0.84    | 25/32                   | 0.77    |
| 3/4       | 12        | 3/4-14              | 1-1/16                | 1.05    | 1                       | 0.98    |
| 1         | 16        | 1-11-1/2            | 1-5/16                | 1.32    | 1-1/4                   | 1.24    |
| 1-1/4     | 20        | 1-1/4-11-1/2        | 1-21/32               | 1.66    | 1-19/32                 | 0.58    |
| 1-1/2     | 24        | 1-1/2-11-1/2        | 1-29/32               | 1.90    | 1-13/16                 | 1.82    |
| 2         | 32        | 2-11-1/2            | 2-3/8                 | 2.38    | 2-5/16                  | 2.30    |

### NPSM (National Pipe Straight Mechanical)

This connection is sometimes used in fluid power systems. The female half has a straight thread and an inverted 30° seat. The male half of the connection has a straight thread and a 30° internal chamfer. The seal takes place by compression of the 30° seat on the chamfer. The threads hold the connection mechanically.



Note: A properly chamfered NPTF male will also seal with the NPSM female.

| Inch Size | Dash Size | Nominal Thread Size | Male Thread O.D. Inch |         | Female Thread I.D. Inch |         |
|-----------|-----------|---------------------|-----------------------|---------|-------------------------|---------|
|           |           |                     | Fraction              | Decimal | Fraction                | Decimal |
| 1/8       | 02        | 1/8-27              | 13/32                 | 0.41    | 3/8                     | 0.38    |
| 1/4       | 04        | 1/4-18              | 17/32                 | 0.54    | 1/2                     | 0.49    |
| 3/8       | 06        | 3/8-18              | 11/16                 | 0.68    | 5/8                     | 0.63    |
| 1/2       | 08        | 1/2-14              | 27/32                 | 0.84    | 25/32                   | 0.77    |
| 3/4       | 12        | 3/4-14              | 1-1/16                | 1.05    | 1                       | 0.98    |
| 1         | 16        | 1-11-1/2            | 1-5/15                | 1.32    | 1-1/4                   | 1.24    |
| 1-1/4     | 20        | 1-1/4-11-1/2        | 1-21/32               | 1.66    | 1-19/32                 | 0.58    |
| 1-1/2     | 24        | 1-1/2-11-1/2        | 1-29/32               | 1.90    | 1-13/16                 | 1.82    |
| 2         | 32        | 2-11-1/2            | 2-3/8                 | 2.38    | 2-5/16                  | 2.30    |

# Application Data

## Thread Identification

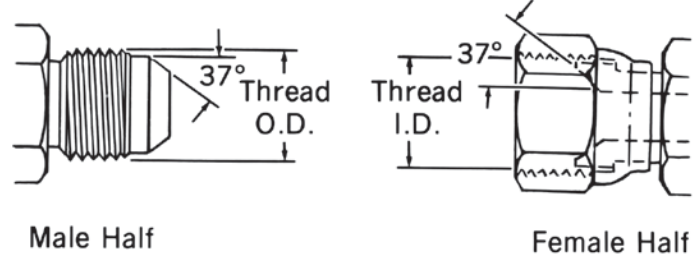
### American Connections SAE J514 37° Hydraulic

This connection is very common in fluid power systems. Both the male and female halves of the connections have 37° seats. The seal takes place by establishing a line contact between the male flare and the female cone seat.

The threads hold the connection mechanically.

#### Caution:

In the -02, -03, -04, -05, -08 and -10 sizes, the threads of the SAE 45° flare and the SAE 37° flare are the same. However, the sealing surface angles are not the same.



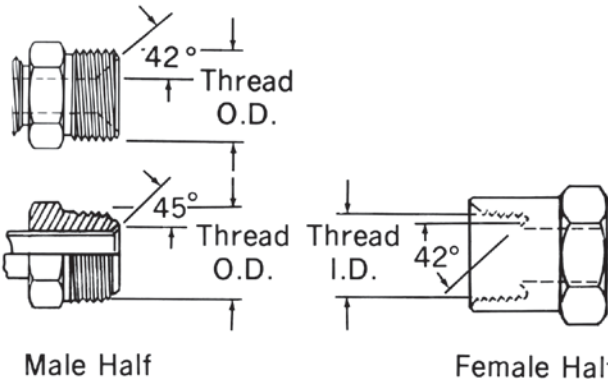
| Inch Size | Dash Size | Nominal Thread Size | Male Thread O.D. Inch |         | Female Thread I.D. Inch |         |
|-----------|-----------|---------------------|-----------------------|---------|-------------------------|---------|
|           |           |                     | Fraction              | Decimal | Fraction                | Decimal |
| 1/8       | 02        | 5/16-24             | 5/16                  | 0.31    | 9/32                    | 0.27    |
| 3/16      | 03        | 3/8-24              | 3/8                   | 0.38    | 11/32                   | 0.34    |
| 1/4       | 04        | 7/16-20             | 7/16                  | 0.44    | 13/32                   | 0.39    |
| 5/16      | 05        | 1/2-20              | 1/2                   | 0.50    | 15/32                   | 0.45    |
| 3/8       | 06        | 9/16-18             | 9/16                  | 0.56    | 17/32                   | 0.51    |
| 1/2       | 08        | 3/4-16              | 3/4                   | 0.75    | 11/16                   | 0.69    |
| 5/8       | 10        | 7/8-14              | 7/8                   | 0.88    | 13/16                   | 0.81    |
| 3/4       | 12        | 1-1/16-12           | 1-1/16                | 1.06    | 1                       | 0.98    |
| 7/8       | 14        | 1-3/16-12           | 1-3/16                | 1.19    | 1-1/8                   | 1.13    |
| 1         | 16        | 1-5/16-12           | 1-5/16                | 1.31    | 1-1/4                   | 1.23    |
| 1-1/4     | 20        | 1-5/8-12            | 1-5/8                 | 1.63    | 1-9/16                  | 1.54    |
| 1-1/2     | 24        | 1-7/8-12            | 1-7/8                 | 1.88    | 1-13/16                 | 1.79    |
| 2         | 32        | 2-1/2-12            | 2-1/2                 | 2.50    | 2-7/16                  | 2.42    |

# Application Data

## Thread Identification

### American Connections SAE J512 Inverted

This connection is frequently used in automotive systems. The male connector can either be a 45° flare in the tube fitting form or a 42° seat in the machined adapter form. The female has a straight thread with a 42° inverted flare. The seal takes place on the flared surfaces. The threads hold the connection mechanically.



| Inch Size | Dash Size | Nominal Thread Size | Male Thread O.D. Inch |         | Female Thread I.D. Inch |         |
|-----------|-----------|---------------------|-----------------------|---------|-------------------------|---------|
|           |           |                     | Fraction              | Decimal | Fraction                | Decimal |
| 1/8       | 02        | 5/16-28             | 5/16                  | 0.32    | 9/32                    | 0.28    |
| 3/16      | 03        | 3/8-24              | 3/8                   | 0.38    | 11/32                   | 0.34    |
| 1/4       | 04        | 7/16-24             | 7/16                  | 0.44    | 13/32                   | 0.40    |
| 5/16      | 05        | 1/2-20              | 1/2                   | 0.50    | 15/32                   | 0.45    |
| 3/8       | 06        | 5/8-18              | 5/8                   | 0.63    | 9/16                    | 0.57    |
| 7/16      | 07        | 1 1/16-18           | 1 1/16                | 0.69    | 5/8                     | 0.63    |
| 1/2       | 08        | 3/4-18              | 3/4                   | 0.75    | 23/32                   | 0.70    |
| 5/8       | 10        | 7/8-18              | 7/8                   | 0.88    | 13/16                   | 0.82    |
| 3/4       | 12        | 1 1/16-16           | 1 1/16                | 1.06    | 1                       | 1.00    |

# Application Data

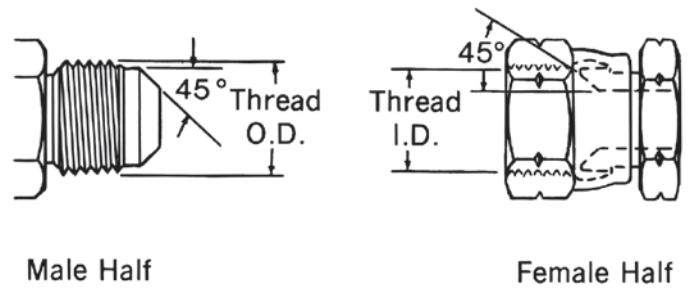
## Thread Identification

### American Connections SAE J512 45°

This connection is commonly used in refrigeration, automotive and truck piping systems. The connector is frequently made of brass. Both the male and female connectors have 45° seats. The seal takes place between the male flare the female cone seat. The threads hold the connection mechanically.

#### Caution:

In the -02, -03, -04, -05, -08 and -10 sizes, the threads of the SAE 45° flare and the SAE 37° flare are the same. However, the sealing surface angles are not the same.



| Inch Size | Dash Size | Nominal Thread Size | Male Thread O.D. Inch |         | Female Thread I.D. Inch |         |
|-----------|-----------|---------------------|-----------------------|---------|-------------------------|---------|
|           |           |                     | Fraction              | Decimal | Fraction                | Decimal |
| 1/8       | 02        | 5/16-24             | 5/16                  | 0.31    | 9/32                    | 0.27    |
| 3/16      | 03        | 3/8-24              | 3/8                   | 0.38    | 11/32                   | 0.34    |
| 1/4       | 04        | 7/16-20             | 7/16                  | 0.44    | 13/32                   | 0.39    |
| 5/16      | 05        | 1/2-20              | 1/2                   | 0.50    | 15/32                   | 0.45    |
| 3/8       | 06        | 5/8-18              | 5/8                   | 0.63    | 9/16                    | 0.57    |
| 1/2       | 08        | 3/4-16              | 3/4                   | 0.75    | 11/16                   | 0.69    |
| 5/8       | 10        | 7/8-14              | 7/8                   | 0.88    | 13/16                   | 0.81    |
| 3/4       | 12        | 1-1/16-14           | 1-1/16                | 1.06    | 1                       | 0.99    |
| 7/8       | 14        | 1-1/4-12            | 1-1/4                 | 1.25    | 1-5/32                  | 1.16    |
| 1         | 16        | 1-3/8-12            | 1-3/8                 | 1.38    | 1-9/32                  | 1.29    |

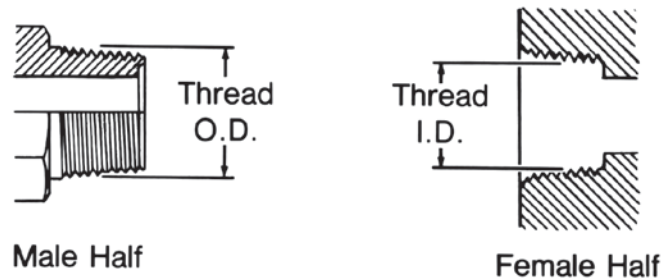
# Application Data

## Thread Identification

### British Connections

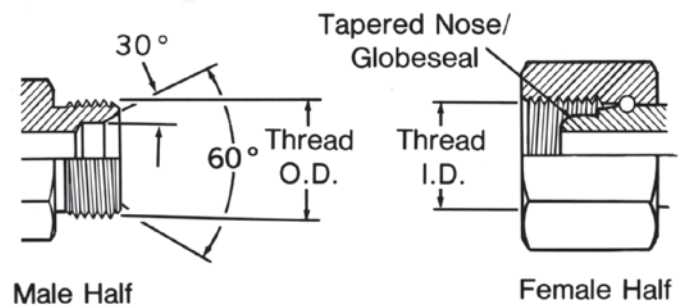
#### British Standard Pipe (BSP)

This BSPT (tapered) connection is similar to the NPT, except that the thread pitches are different in most sizes, and the thread form and O.D.s are close but not the same. Sealing is accomplished by thread distortion. A thread sealant is recommended.



The BSP (parallel) male is similar to the NPSM male except the thread pitches are different in most sizes.

The female swivel BSPP has a tapered nose/Globeseal flareless swivel which seals on the cone seat of the male.



### BSPT/BSPP Threads

| Inch Size | Dash Size | Nominal Thread Size* | Male Thread O.D. Inch |         | Female thread I.D. Inch |         |
|-----------|-----------|----------------------|-----------------------|---------|-------------------------|---------|
|           |           |                      | Fraction              | Decimal | Fraction                | Decimal |
| 1/8       | 02        | 1/8-28               | 3/8                   | 0.38    | 11/32                   | 0.35    |
| 1/4       | 04        | 1/4-19               | 33/64                 | 0.52    | 15/32                   | 0.47    |
| 3/8       | 06        | 3/8-19               | 21/32                 | 0.65    | 19/32                   | 0.60    |
| 1/2       | 08        | 1/2-14               | 13/16                 | 0.82    | 3/4                     | 0.75    |
| 5/8       | 10        | 5/8-14               | 7/8                   | 0.88    | 13/16                   | 0.80    |
| 3/4       | 12        | 3/4-14               | 11/32                 | 1.04    | 31/32                   | 0.97    |
| 1         | 16        | 1-11                 | 15/16                 | 1.30    | 1-7/32                  | 1.22    |
| 1-1/4     | 20        | 1-1/4-11             | 1-21/32               | 1.65    | 1-9/16                  | 1.56    |
| 1-1/2     | 24        | 1-1/2-11             | 1-7/8                 | 1.88    | 1-25/32                 | 1.79    |
| 2         | 32        | 2-11                 | 2-11/32               | 2.35    | 2-1/4                   | 2.26    |

\*Frequently, the thread size is expressed as a fractional dimension preceded by the letter "G" or the letter "R".

The "G" represents a parallel thread and the "R" indicates a tapered thread.

For example, BSPP 3/8-19 may be expressed as G 3/8, and BSPT 3/8-19 may be expressed as R3/8.



**To select tubing for a particular installation, two factors must be determined...**

### **Tubing Types**

1. Tubing Type:  
material and construction
2. Size:  
Inside diameter (I.D.) and wall thickness.  
Information listed below will aid in your tubing selection. Commercial tubing is available in a wide variety of materials, types of construction and quality. Each is best suited for certain specific applications.

#### **Aluminum Tubing**

Seamless annealed is approved by SAE for low pressure applications.

#### **Copper Tubing:**

Seamless fully annealed coils and fully annealed or quarter-hard straight lengths can be used for systems that do not use petroleum based fluids (copper acts as an oil-oxidation catalyst, causing sludge). Copper also tends to work harden when flared or bent and has poor resistance to vibration. Therefore, the use of copper tubing is limited to low-pressure stationary applications and air circuits.

#### **Special Alloy Tubing:**

May be required for specific corrosion problems. Information on these applications can be obtained from your tubing supplier or from tubing manufacturers.

### **Tubing Size**

The two variables in tubing size are the inside diameter (ID) and the wall thickness. Each of these is dependent upon a number of factors.

#### **Inside Diameter –**

The tubing I.D. will determine the flow and velocity of the fluid in the system.

Flow is the volume of fluid that is to be moved through the line to perform a given job within a specified time. Flow rate is expressed in gallons per minute (gpm).

Velocity is the rate of speed at which the fluid passes through the line. It is expressed in feet per second (fps). With a given flow rate, the velocity will increase as the inside diameter of the tubing decreases.

#### **Note:**

To determine the appropriate tubing I.D. for specific flow rate and velocity, refer to the Velocity vs. Flow chart on page 21.

#### **Wall Thickness**

The required wall thickness of the tubing depends upon operating pressure, safety factor, temperatures, and tubing material.

Operating Pressure is the pressure of the fluid in the system. It is expressed in pounds per square inch (psi).

Safety Factor is a multiplier applied to the wall thickness that compensates for additional mechanical strains and hydraulic shocks to which the tubing may be subjected during operation.

#### **Note:**

To determine the appropriate wall thickness, refer to the data on page 22.

#### **Pressure Drop**

Total pressure supplied to a line must equal usable pressure (or output) plus the pressure that is lost through fluid transmission, which is referred to as pressure drop. These pressure drops cause loss of energy and should be kept to a minimum. Elements which cause pressure drop in the transmission of fluids include sudden enlargements or contractions, bends, fittings and valves. Mathematical analysis of pressure drop, although possible, is not precise because of the interrelationship of factors such as fluid velocity, density, flow area and friction coefficients. Therefore, to obtain optimum efficiency, the system (or the questionable portions of the system) should be mocked-up to obtain empirical pressure drop data.

# Application Data

## Tubing Selection

 Refer to safety information regarding proper selection of tubing and tube connectors on page 5.

### Problem

Following is a typical problem that illustrates, step by step, the procedure for determining tube size.

**Select Bundyweld tubing with the appropriate I.D. and wall thickness for the following conditions:**

Flow — 5 gpm  
Velocity — not to exceed 10 fps  
Pressure — 2000 psi  
Safety Factor — 4:1

### Solution

1. Using the Flow/Velocity chart on Page 21, follow the horizontal flow line (5 gpm) until it intersects the vertical velocity line (10fps). From this point, follow the diagonal line upward to get the required tube I.D. (.444). If the horizontal flow line and the vertical velocity line intersect between two diagonal lines, normally the larger inside diameter would be selected since it would mean less velocity.
2. Refer to the chart of Standard Size Hydraulic Tubing, below. Note that .444 I.D. tubing is not listed. If you want to use standard tubing, select one with a larger I.D. Do not select a smaller size since this would increase

the velocity to over the 10 fps limit. Therefore, by going to the next largest size, you would select the 5/8" O.D. tubing having an I.D. of .459 and a wall thickness of .083.

3. To determine whether this tubing will meet the pressure and safety factor requirements, refer to the Recommended Wall Thickness data on page 18. For 5/8" O.D. tubing at 2000 psi, the chart for Bundyweld indicates that the minimum wall thickness with a safety factor of 4:1 is .05952. Since you have selected a tubing with a .083 wall, this would easily fulfill the requirements. However, for savings on weight and cost, you can select

another tubing with a thinner wall that will still meet the performance requirements. Therefore, refer again to the chart on standard size tubing and select a tubing with a wall thickness closer to the minimum requirements. This would be the 5/8" O.D. tubing with a .509 I.D. and a .058 wall. This tubing will handle the pressure requirements of 2000 psi with a safety factor of 4:1, and also provides the required flow while keeping the velocity within the 10 fps limitation.

### Standard Size Hydraulic Tubing

| Tube O.D. | Tube I.D. | Tube Wall | Tube O.D. | Tube I.D. | Tube Wall | Tube O.D. | Tube I.D. | Tube Wall | Tube O.D. | Tube I.D. | Tube Wall |
|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|
| 1/8"      | .055      | .035      | 3/8"      | .245      | .065      | 5/8"      | .435      | .095      | 7/8"      | .657      | .109      |
|           | .061      | .032      |           | .259      | .058      |           | .459      | .083      |           | .685      | .095      |
|           | .065      | .030      |           | .277      | .049      |           | .481      | .072      |           | .709      | .083      |
|           | .069      | .028      |           | .291      | .042      |           | .495      | .065      |           | .731      | .072      |
| 3/16"     | .117      | .035      | 1/2"      | .305      | .035      | 3/4"      | .509      | .058      | 1"        | .745      | .065      |
|           | .123      | .032      |           | .311      | .032      |           | .527      | .049      |           | .759      | .058      |
|           | .127      | .030      |           | .310      | .095      |           | .541      | .042      |           | .777      | .049      |
| 1/4"      | .120      | .065      |           | .334      | .083      |           | .555      | .035      |           | .760      | .120      |
|           | .134      | .058      | 3/4"      | .358      | .072      |           | .532      | .109      | 3/4"      | .782      | .109      |
|           | .152      | .049      |           | .370      | .065      |           | .560      | .095      |           | .810      | .095      |
|           | .166      | .042      |           | .384      | .058      |           | .584      | .083      |           | .834      | .083      |
|           | .180      | .035      |           | .402      | .049      |           | .606      | .072      |           | .856      | .072      |
|           | .190      | .030      |           | .416      | .042      |           | .620      | .065      |           | .870      | .065      |
| 5/16"     | .182      | .065      | 1"        | .430      | .035      |           | .634      | .058      |           | .884      | .058      |
|           | .196      | .058      |           | .436      | .032      |           | .652      | .049      |           | .902      | .049      |
|           | .214      | .049      |           |           |           |           | .680      | .035      |           |           |           |
|           | .228      | .042      |           |           |           |           |           |           |           |           |           |
|           | .242      | .035      |           |           |           |           |           |           |           |           |           |
|           | .248      | .032      |           |           |           |           |           |           |           |           |           |

# Application Data

## Tubing Selection

### Flow/Velocity Chart

#### To Find Required Tube I.D.

Flow—20 gpm  
Velocity—9 fps

Follow horizontal flow line (20 gpm) until it intersects vertical velocity line (9 fps). From this point follow diagonal line to get required Tube I.D. —(.944).

#### To Find Permissible Flow

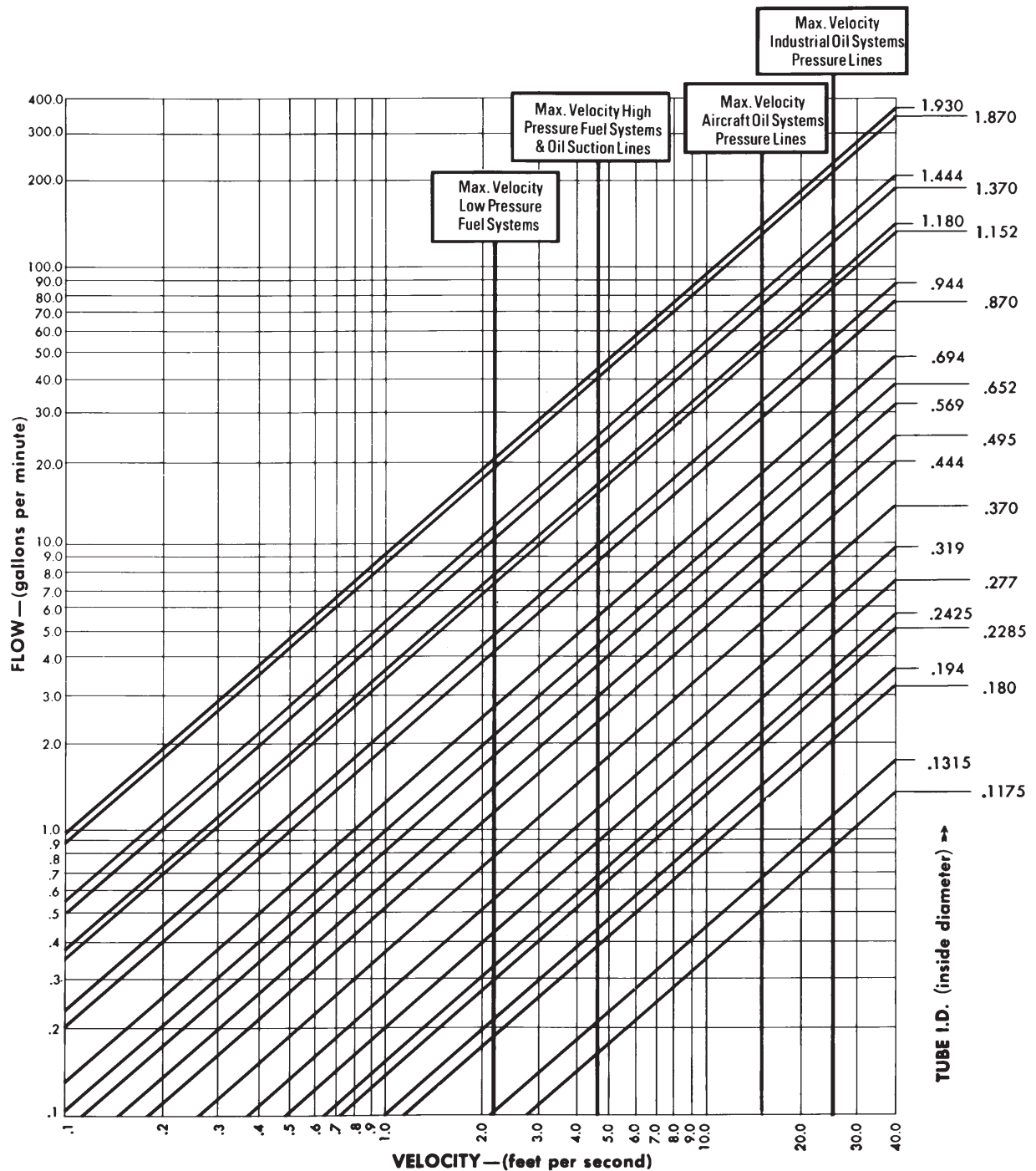
Velocity—15 fps  
Tube I.D.—.495

Follow vertical velocity line (15 fps) until it intersects diagonal line representing .495 tube I.D. Then project this point horizontally to get the permissible flow—(9 gpm).

#### To Find Velocity of Fluid in System

Flow—6 gpm  
Tube I.D.—.694

Follow horizontal flow line (6 gpm) until it intersects diagonal line representing .694 tube I.D. Then project this point vertically downward to get the velocity of fluid —(5 fps).



# Application Data

## Tubing Selection

With the following recommended wall thickness tables the tubing wall can be selected that is best suited for a particular application. The data given in these tables are raw figures based on the equation:

$$t = \frac{Dp(FS)}{2S}$$

- t** – wall thickness (inches)  
**D** – O.D. of tube (inches)  
**p** – pressure (psi)  
**FS** – Safety Factor  
**S** – tensile strength of tubing material

Therefore, many of the wall thicknesses given in these tables are not found on standard tubing, but serve to establish the minimum wall required.

### Safety Factor

The standard safety factors indicate three grades of severity of service:

- 4:1** – mechanical and hydraulic shocks not excessive  
**6:1** – considerable mechanical strain and hydraulic shock  
**8:1** – hazardous applications with severe service conditions

The wall thickness shown in these tables are based on ultimate strength of material and a safety factor of 4:1.

To obtain the recommended wall for a specific pressure based on a safety factor of 6:1, multiply the wall thickness indicated in the table by 1.5. For a safety factor of 8:1, multiply by 2

### Temperature

The wall thickness found by using these tables can be corrected for temperature by multiplying the wall thickness by the appropriate correction factor given in the chart below. The table is based on strength reduction due to increased temperature.

 Refer to safety information regarding proper selection of tubing and tube connectors on page 5.

| Recommended Wall Thickness |        |          |
|----------------------------|--------|----------|
| Temperature                | Copper | Aluminum |
| +100F.                     | 1.00   | 1.00     |
| +200F.                     | 1.08   | 1.00     |
| +300F.                     | 1.22   | 1.08     |
| +400F.                     | 2.30   | 1.41     |
| +500F.                     | –      | 2.10     |
| +600F.                     | –      | –        |
| +700F.                     | –      | –        |
| +800F.                     | –      | –        |
| +900F.                     | –      | –        |
| +1000F.                    | –      | –        |

| Bundyweld<br>Based on 42,000#/IN. <sup>2</sup> Strength (F S=4) |               |                        |        |        |        |
|-----------------------------------------------------------------|---------------|------------------------|--------|--------|--------|
| O.D.                                                            | Tube<br>1,000 | Working Pressure (psi) |        |        |        |
|                                                                 |               | 2,000                  | 3,000  | 4,000  | 5,000  |
| 1/8                                                             | .00595        | .01190                 | .01786 | .02381 | .02976 |
| 3/16                                                            | .00893        | .01786                 | .02679 | .03571 | .04464 |
| 1/4                                                             | .01190        | .02381                 | .03571 | .04762 | .05952 |
| 5/16                                                            | .01488        | .02976                 | .04464 | .05952 | .07440 |
| 3/8                                                             | .01786        | .03571                 | .05357 | .07143 | .08929 |
| 1/2                                                             | .02381        | .04762                 | .07143 | .09524 | .11905 |
| 5/8                                                             | .02976        | .05952                 | .08929 | .11905 | .14881 |

| Aluminum 3003 (H-14)<br>Based on 20,000#/IN. <sup>2</sup> , Strength (F.S. –4) |                        |        |        |        |       | Aluminum 5052 (H-32)<br>Based on 31,000#/IN. <sup>2</sup> , Strength (F.S. –4) |        |        |        |        |
|--------------------------------------------------------------------------------|------------------------|--------|--------|--------|-------|--------------------------------------------------------------------------------|--------|--------|--------|--------|
| Tube<br>O.D.                                                                   | Working Pressure (psi) |        |        |        |       | Working Pressure (psi)                                                         |        |        |        |        |
|                                                                                | 1,000                  | 2,000  | 3,000  | 4,000  | 5,000 | 1,000                                                                          | 2,000  | 3,000  | 4,000  | 5,000  |
| 1/8                                                                            | .01250                 | .02500 | .3750  | .05000 |       | .00806                                                                         | .01613 | .02419 | .03226 | .04032 |
| 3/16                                                                           | .01875                 | .03750 | .05650 | .07500 |       | .01210                                                                         | .02419 | .03629 | .04839 | .06048 |
| 1/4                                                                            | .02500                 | .05000 | .07500 | .10000 |       | .01613                                                                         | .03226 | .04839 | .06452 | .08065 |
| 5/16                                                                           | .03125                 | .06250 | .09375 | .12500 |       | .02016                                                                         | .04032 | .06048 | .08065 | .10081 |
| 3/8                                                                            | .03750                 | .07500 | .11250 | .15000 |       | .02419                                                                         | .04839 | .07258 | .09677 | .12097 |
| 1/2                                                                            | .05000                 | .10000 | .15000 | .20000 |       | .03227                                                                         | .06452 | .09677 | .12903 | .16129 |
| 5/8                                                                            | .06250                 | .12500 | .18750 | .25000 |       | .04032                                                                         | .08065 | .12097 | .16129 | .20161 |
| 3/4                                                                            | .07500                 | .15000 | .22500 | .30000 |       | .04839                                                                         | .09677 | .14516 | .19355 | .24194 |
| 7/8                                                                            | .08750                 | .17500 | .26250 | .35000 |       | .05645                                                                         | .11290 | .16935 | .22581 | .28226 |
| 1                                                                              | .10000                 | .20000 | .30000 | .40000 |       | .06452                                                                         | .12903 | .19355 | .25806 | .32258 |
| 1-1/4                                                                          | .12500                 | .25000 | .37500 | .50000 |       | .08065                                                                         | .16129 | .24194 | .32258 | .40323 |
| 1-1/2                                                                          | .15000                 | .30000 | .45000 | .60000 |       | .09677                                                                         | .19355 | .29032 | .38710 | .48387 |
| 2                                                                              | .20000                 | .40000 | .60000 | .80000 |       | .12903                                                                         | .25806 | .38710 | .51613 | .64516 |

| Annealed Copper<br>Based on 30,000#/IN. <sup>2</sup> , Strength (F.S. –4) |                        |        |        |        |        | Copper (UNS C12200 Light Drawn)<br>Based on 40,000#/IN. <sup>2</sup> , Strength (F.S. –4) |        |        |        |        |
|---------------------------------------------------------------------------|------------------------|--------|--------|--------|--------|-------------------------------------------------------------------------------------------|--------|--------|--------|--------|
| Tube<br>O.D.                                                              | Working Pressure (psi) |        |        |        |        | Working Pressure (psi)                                                                    |        |        |        |        |
|                                                                           | 1,000                  | 2,000  | 3,000  | 4,000  | 5,000  | 1,000                                                                                     | 2,000  | 3,000  | 4,000  | 5,000  |
| 1/8                                                                       | .00833                 | .01667 | .02500 | .03333 | .04167 | .00625                                                                                    | .01250 | .01875 | .02500 | .03125 |
| 3/16                                                                      | .01250                 | .02499 | .03750 | .04999 | .06250 | .00938                                                                                    | .01875 | .02812 | .03750 | .04688 |
| 1/4                                                                       | .01667                 | .03333 | .05000 | .06666 | .08333 | .01250                                                                                    | .02500 | .03750 | .05000 | .06250 |
| 5/16                                                                      | .02083                 | .04167 | .06250 | .08333 | .10417 | .01562                                                                                    | .03125 | .04688 | .06250 | .07812 |
| 3/8                                                                       | .02499                 | .04999 | .07500 | .09999 | .12499 | .01875                                                                                    | .03750 | .05625 | .07500 | .09375 |
| 1/2                                                                       | .03333                 | .06667 | .10000 | .13333 | .16667 | .02500                                                                                    | .05000 | .07500 | .10000 | .12500 |
| 5/8                                                                       | .04167                 | .08333 | .12500 | .16666 | .20883 | .03125                                                                                    | .06250 | .09375 | .12500 | .15625 |
| 3/4                                                                       | .04999                 | .09999 | .15000 | .19999 | .24999 | .03750                                                                                    | .07500 | .11250 | .15000 | .18750 |
| 7/8                                                                       | .05833                 | .11667 | .17500 | .23333 | .29166 | .04375                                                                                    | .08750 | .13125 | .17500 | .21875 |
| 1                                                                         | .06667                 | .13333 | .20000 | .26666 | .33333 | .05000                                                                                    | .10000 | .15000 | .20000 | .25000 |
| 1-1/4                                                                     | .08333                 | .16667 | .25000 | .33333 | .41667 | .06250                                                                                    | .12500 | .18750 | .25000 | .31250 |
| 1-1/2                                                                     | .09999                 | .19999 | .30000 | .39999 | .49999 | .07500                                                                                    | .15000 | .22500 | .30000 | .37500 |
| 2                                                                         | .13333                 | .26667 | .40000 | .53333 | .66667 | .10000                                                                                    | .20000 | .30000 | .40000 | .50000 |

### Shaded Areas

Tubing wall thickness listed in the shaded areas are generally either too light or too heavy for practical applications, and are listed only to provide data for accurate computation.

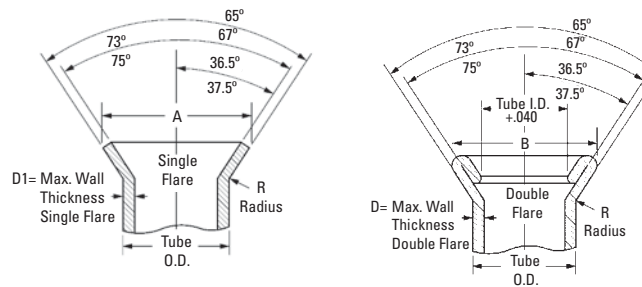
# Application Data

## Flare Dimensions

### JIC 37° Flare Tubes

(SAE J533)

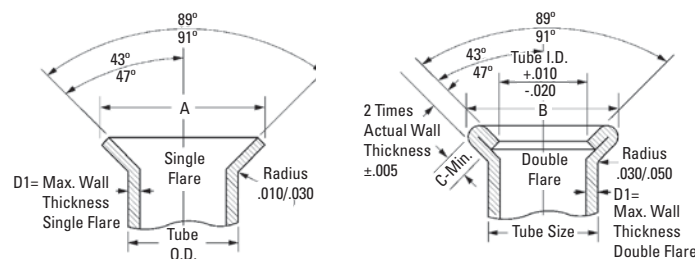
| Tube Size<br>O.D. | Single Flare<br>A Diameter |       | Double Flare<br>B Diameter |       | R<br>Radius<br>±.020 | Maximum<br>Wall Thickness |                      |
|-------------------|----------------------------|-------|----------------------------|-------|----------------------|---------------------------|----------------------|
|                   | Max.                       | Min.  | Max.                       | Min.  |                      | Single<br>Flare<br>D      | Double<br>Flare<br>D |
| 1/8               | 0.200                      | 0.180 | 0.200                      | 0.180 | 0.030                | 0.035                     | 0.025                |
| 3/16              | 0.280                      | 0.260 | 0.280                      | 0.260 | 0.030                | 0.035                     | 0.028                |
| 1/4               | 0.360                      | 0.340 | 0.360                      | 0.340 | 0.030                | 0.065                     | 0.035                |
| 5/16              | 0.430                      | 0.400 | 0.430                      | 0.400 | 0.030                | 0.065                     | 0.035                |
| 3/8               | 0.490                      | 0.460 | 0.490                      | 0.460 | 0.040                | 0.065                     | 0.049                |
| 1/2               | 0.660                      | 0.630 | 0.660                      | 0.630 | 0.060                | 0.083                     | 0.049                |
| 5/8               | 0.790                      | 0.760 | 0.790                      | 0.760 | 0.060                | 0.083                     | 0.049                |
| 3/4               | 0.950                      | 0.920 | 0.960                      | 0.920 | 0.080                | 0.109                     | 0.049                |
| 7/8               | 1.070                      | 1.040 | 1.070                      | 1.040 | 0.080                | 0.109                     | 0.065                |
| 1                 | 1.200                      | 1.170 | 1.200                      | 1.170 | 0.090                | 0.120                     | 0.065                |
| 1 1/4             | 1.510                      | 1.480 | 1.510                      | 1.480 | 0.090                | 0.120                     | 0.065                |
| 1 1/2             | 1.730                      | 1.700 | 1.730                      | 1.700 | 0.110                | 0.120                     | 0.065                |
| 2                 | 2.360                      | 2.330 | 2.360                      | 2.330 | 0.110                | 0.134                     | 0.065                |



### SAE 45° Flare Tubes

(SAE J533)

| Tube Size | Single Flare<br>A Diameter |       | Single Flare<br>B Diameter |       | Double<br>Coined<br>Flare<br>Seat<br>Length C | Maximum<br>Wall Thickness |                                   |
|-----------|----------------------------|-------|----------------------------|-------|-----------------------------------------------|---------------------------|-----------------------------------|
|           | Max.                       | Min.  | Max.                       | Min.  |                                               | Single<br>Flare<br>D      | Double<br>Flare<br>D <sub>1</sub> |
| 1/8       | 0.171/                     | 0.181 | 0.198/                     | 0.213 | 0.040                                         | 0.035                     | 0.025                             |
| 3/16      | 0.239/                     | 0.249 | 0.265/                     | 0.280 | 0.040                                         | 0.035                     | 0.028                             |
| 1/4       | 0.315/                     | 0.325 | 0.345/                     | 0.360 | 0.040                                         | 0.049                     | 0.035                             |
| 5/16      | 0.388/                     | 0.404 | 0.410/                     | 0.425 | 0.062                                         | 0.049                     | 0.035                             |
| 3/8       | 0.471/                     | 0.487 | 0.485/                     | 0.500 | 0.062                                         | 0.065                     | 0.049                             |
| 7/16      | 0.545/                     | 0.561 | 0.555/                     | 0.570 | 0.062                                         | 0.065                     | 0.049                             |
| 1/2       | 0.607/                     | 0.623 | 0.625/                     | 0.640 | 0.062                                         | 0.083                     | 0.049                             |
| 9/16      | 0.660/                     | 0.676 | 0.697/                     | 0.712 | 0.062                                         | 0.083                     | 0.049                             |
| 5/8       | 0.732/                     | 0.748 | 0.757/                     | 0.772 | 0.062                                         | 0.095                     | 0.049                             |
| 3/4       | 0.900/                     | 0.916 | 0.897/                     | 0.912 | 0.062                                         | 0.109                     | 0.049                             |
| 7/8       | 1.025/                     | 1.041 | —                          | —     | —                                             | 0.109                     | —                                 |
| 1         | 1.141/                     | 1.157 | —                          | —     | —                                             | 0.120                     | —                                 |



# Application Data

## Tubing Installation

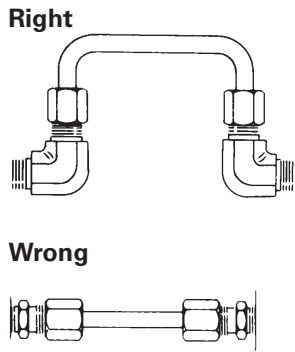


Figure 1

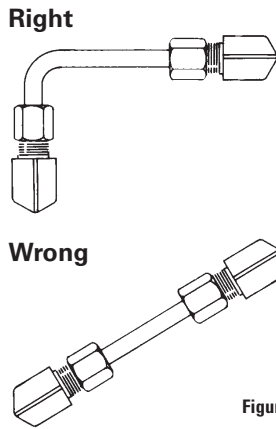


Figure 2

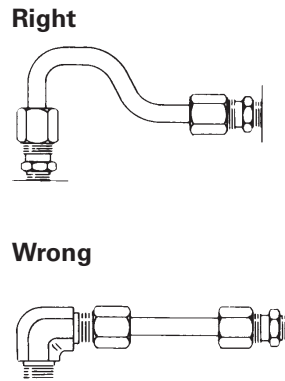


Figure 3

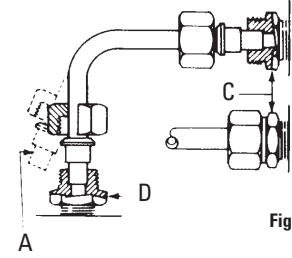


Figure 4

### Note:

Springing the tubing to force alignment places strain on fitting joints.

Nearly all industrial equipment now in service makes some use of fluid lines. From an economic point of view, the best fluid lines system is that which is easiest to maintain at the lowest original cost. The use of tubing and tube connectors on lines up to 2" diameter is usually more economical than the use of pipe and pipe connectors in modern installations. A few of the more important reasons follow:

1. Size for size, tubing is lighter weight, easier to handle and can be bent more easily than iron pipe.
2. Ductile hydraulic tubing reduces the number of connections required, thus reducing material and labor costs. Bent tubing also reduces pressure drop and turbulence in the system.
3. Fewer joints means lower costs and fewer points of potential leakage.
4. The use of tube connectors makes every joint a

union, permitting easier, faster maintenance and repair work.

5. Modern flared and flareless tube fittings eliminate the need for threading, soldering, or welding.

### Tube Bending

Tubing should be bent whenever possible to reduce the number of connectors.

Copper tubing can be bent easily with a hand bender. Steel tubing can be bent in sizes 1/8" to 5/8" O.D. by using a hand bender designed for steel tubing. For production quantities, or for sizes larger than 5/8" O.D., a power bender is generally used.

Tubing should be bent accurately. Tubing manufacturers will advise the correct radii for various types and wall thicknesses of tubing. Kinks, flattened bends, wrinkles and tube breakage or loss should be avoided by the use of proper tube bending equipment.

### Precautions

Avoid straight line connections wherever possible, especially in short runs.

Design piping systems symmetrically. They are easier to install and present a neat appearance.

Care should be taken to eliminate stress from tubing lines. Long tubing runs should be supported by brackets or clips. All parts installed on tubing lines such as heavy fittings, valves, etc., should be bolted down to eliminate tubing fatigue.

Before installing tubing, inspect the tube to see that it conforms to the required specifications, is of the correct diameter and wall thickness and is not out of round.

Cut tube ends reasonably square and lightly deburr inside and outside edge. Chamfer on outside edge will destroy bearing of tube end on the connector seat.

To avoid difficulty in assembly and disconnecting, a sufficient straight length of

tube must be allowed from the end of the tube to the start of the bend. Allow twice the length of the nut as a minimum.

**Tubes should be formed to assemble with true alignment to the center line of the fittings, without distortion or tension.** Tubing which has to be sprung from position, "A," (see Fig. 4), to be inserted into the connector has not been properly fabricated, and when so installed and connected, places the tubing under stress.

When assembling the tubing, insert the longer leg to the connector as at "C" (Fig. 4). With the nut free, the short leg of the tubing can be easily moved and brought to proper position with and inserted into the seat in connector "D". The nuts can then be tightened as required.



# Application Data

## Chemical Compatibility Chart

**⚠** Refer to safety information regarding proper selection of tubing and tube connectors on page 5.

These tables alphabetically list commonly used materials of various chemical composition. After each agent listing you will find the basic tubing and connector materials rated according to their chemical resistance to each individual agent. The chart is intended to be used as a guide only. Many factors (concentration, temperature, intermittent or continuous exposure, etc.) have a

bearing upon the suitability of any tubing or connector for any specific application, and these factors must be considered by you as you review the chemical compatibility chart.

Where unusual conditions exist or where questions arise, consult Eaton for expert assistance on your tubing application requirements.

### Note:

All data given herein is believed to be accurate and reliable but presented without guarantee, warranty, or responsibility of any kind, express or implied, on our part. Chemical resistance will vary with the wide diversity of possible mixtures and service conditions. It is not therefore possible to give any guarantee whatsoever in individual cases. Eaton Eclipse<sup>®</sup> and Solstice<sup>™</sup> tubing should only be used in air brake applications.

| Fluid                          | Nylon 11<br>MTP160                  | Nylon 6/6<br>PT230 | PVC<br>PT200 | Polyethylene<br>PT240 (LDPE) | Brass |
|--------------------------------|-------------------------------------|--------------------|--------------|------------------------------|-------|
| Acetaldehyde                   | G                                   | F                  | X            | X                            | G     |
| Acetic Acid (Concentrated)     | X                                   | X                  | X            | X                            | X     |
| Acetic Acid (Dilute)           | F                                   | X                  | F            | G                            | X     |
| Acetic Anhydride               | X                                   | X                  | X            | X                            | X     |
| Acetone                        | G                                   | F                  | X            | G                            | G     |
| Acrylonitrile                  | G                                   | —                  | G            | —                            | —     |
| Air                            | G                                   | G                  | G            | G                            | G     |
| Alcohols                       |                                     |                    |              |                              |       |
| Amyl Alcohol                   | G                                   | G                  | X            | G                            | G     |
| Butyl Alcohol, Butanol         | G                                   | G                  | X            | G                            | G     |
| Ethyl Alcohol, Ethanol         | G                                   | G                  | F            | G                            | G     |
| Isopropyl Alcohol, Isopropanol | G                                   | G                  | G            | G                            | G     |
| Methyl Alcohol, Methanol       | G                                   | G                  | X            | G                            | G     |
| Aluminum Chloride              | X                                   | X                  | G            | G                            | X     |
| Aluminum Fluoride              | X                                   | X                  | G            | G                            | X     |
| Aluminum Hydroxide             | G                                   | G                  | G            | G                            | X     |
| Aluminum Nitrate               | G                                   | F                  | G            | G                            | X     |
| Aluminum Sulfate               | G                                   | F                  | G            | G                            | X     |
| Alums                          | F                                   | G                  | G            | G                            | X     |
| Ammonia, Anhydrous             | Use approved anhydrous ammonia hose |                    |              |                              | X     |
| Ammonia Solution (10%)         | G                                   | X                  | G            | G                            | X     |
| Ammonium Chloride              | X                                   | X                  | G            | G                            | X     |
| Ammonium Hydroxide             | G                                   | X                  | X            | G                            | X     |
| Ammonium Nitrate               | G                                   | G                  | G            | G                            | X     |
| Ammonium Phosphate             | G                                   | G                  | F            | G                            | X     |
| Ammonium Sulfate               | G                                   | G                  | G            | G                            | X     |
| Amyl Acetate                   | G                                   | G                  | X            | X                            | G     |
| Amyl Alcohol                   | G                                   | G                  | X            | G                            | G     |
| Aniline                        | X                                   | X                  | X            | X                            | X     |
| Aniline Dyes                   | X                                   | X                  | X            | X                            | X     |
| Animal Oils and Fats           | G                                   | —                  | G            | X                            | G     |
| Anti-Freeze (Glycol Base)      | G                                   | —                  | G            | F                            | G     |
| Aqua Regia                     | X                                   | X                  | X            | X                            | —     |
| Aromatic Hydrocarbons          | G                                   | G                  | X            | G                            | G     |
| Asphalt Emulsion               | G                                   | —                  | X            | —                            | G     |
| Barium Chloride                | G                                   | —                  | G            | G                            | G     |
| Barium Hydroxide               | G                                   | G                  | G            | G                            | X     |
| Barium Sulfate                 | G                                   | G                  | G            | G                            | G     |
| Barium Sulfide                 | X                                   | —                  | G            | G                            | X     |
| Beet Sugar Liquors             | G                                   | G                  | G            | G                            | X     |
| Benzaldehyde                   | G                                   | G                  | X            | X                            | F     |

### Codes:

G = Good Resistance  
 F = Fair Resistance  
 X = Incompatible  
 — = No data available  
 + = Call Technical Support  
     for specific application

# Application Data

## Chemical Compatibility Chart

 Refer to safety information regarding proper selection of tubing and tube connectors on page 5.

| Fluid                           | Nylon 11<br>MTP 160      | Nylon 6/6<br>PT230 | PVC<br>PT200 | Polyethylene<br>PT240 (LDPE) | Brass |
|---------------------------------|--------------------------|--------------------|--------------|------------------------------|-------|
| Benzene, Benzol                 | G                        | G                  | X            | X                            | G     |
| Benzoic Acid                    | X                        | X                  | X            | G                            | G     |
| Black Sulfate Liquor            | X                        | X                  | X            | G                            | X     |
| Bleach Solution                 | X                        | X                  | F            | G                            | X     |
| Borax Solution                  | G                        | —                  | G            | G                            | G     |
| Boric Acid                      | G                        | G                  | G            | G                            | G     |
| Brake Fluid (Glycol Ether Base) | G                        | —                  | X            | X                            | G     |
| Brine                           | G                        | —                  | G            | G                            | G     |
| Bromine                         | X                        | X                  | X            | X                            | X     |
| Butane                          | Use Butane approved hose |                    |              |                              |       |
| Butyl Acetate                   | G                        | —                  | X            | X                            | G     |
| Butyl Alcohol, Butanol          | G                        | G                  | X            | G                            | G     |
| Calcium Bisulfite               | G                        | X                  | G            | G                            | X     |
| Calcium Chloride                | G                        | X                  | G            | G                            | X     |
| Calcium Hydroxide               | G                        | G                  | G            | G                            | G     |
| Calcium Hypochlorite            | X                        | X                  | G            | G                            | G     |
| Cane Sugar Liquors              | G                        | —                  | G            | G                            | G     |
| Carbon Dioxide (Dry)            | G                        | G                  | G            | G                            | G     |
| Carbon Dioxide (Wet)            | G                        | G                  | G            | G                            | F     |
| Carbon Disulfide (Bisulfide)    | X                        | X                  | X            | X                            | G     |
| Carbon Monoxide (Hot)           | X                        | X                  | X            | X                            | G     |
| Carbon Tetrachloride            | G                        | G                  | X            | X                            | G     |
| Carbonic Acid                   | G                        | —                  | G            | G                            | X     |
| Castor Oil                      | G                        | —                  | G            | X                            | G     |
| Cellosolve Acetate              | G                        | —                  | X            | —                            | X     |
| Chlorinated Solvents            | F                        | G                  | X            | X                            | G     |
| Chloroacetic Acid               | X                        | X                  | X            | X                            | X     |
| Chlorobenzene                   | X                        | X                  | X            | X                            | F     |
| Chlorine Gas (Dry)              | X                        | X                  | X            | X                            | G     |
| Chlorine Gas (Wet)              | X                        | X                  | X            | X                            | X     |
| Chloroform                      | F                        | G                  | X            | X                            | G     |
| Chlorosulfonic Acid             | X                        | X                  | X            | X                            | X     |
| Chromic Acid (under 25%)        | X                        | X                  | F            | F                            | X     |
| Chromic Acid (over 25%)         | X                        | X                  | X            | X                            | X     |
| Citric Acid                     | X                        | F                  | G            | G                            | X     |
| Coke Oven Gas                   | G                        | —                  | X            | G                            | F     |
| Copper Chloride                 | X                        | X                  | G            | G                            | X     |
| Copper Cyanide                  | G                        | G                  | G            | G                            | X     |
| Copper Sulfate                  | G                        | G                  | G            | G                            | X     |
| Corn Syrup (Non-food)           | G                        | —                  | G            | G                            | —     |
| Cottonseed Oil                  | G                        | —                  | F            | G                            | G     |
| Creosote                        | X                        | X                  | X            | X                            | F     |
| Cresol                          | X                        | X                  | X            | X                            | —     |
| Cyclohexanol                    | G                        | G                  | X            | F                            | G     |
| Dextrose (Food Grade)           | X                        | X                  | X            | G                            | —     |
| Dichlorobenzene                 | G                        | —                  | X            | X                            | —     |
| Diesel Fuel                     | G                        | —                  | X            | X                            | G     |
| Diethanolamine                  | G                        | —                  | X            | —                            | X     |
| Diethylenetriamine              | X                        | X                  | X            | G                            | —     |
| Dowtherm A                      | X                        | X                  | X            | X                            | X     |
| Enamel (Solvent Base)           | G                        | —                  | X            | G                            | G     |
| Ethanolamine                    | G                        | —                  | X            | G                            | X     |
| Ethers (Ethyl Ether)            | G                        | —                  | X            | X                            | G     |
| Ethyl Alcohol                   | G                        | G                  | F            | G                            | G     |
| Ethyl Acetate                   | G                        | G                  | X            | G                            | G     |
| Ethyl Acrylate                  | X                        | —                  | X            | —                            | —     |
| Ethyl Methacrylate              | X                        | —                  | X            | —                            | —     |
| Ethylamine                      | X                        | X                  | X            | G                            | G     |

### Codes:

G = Good Resistance  
F = Fair Resistance  
X = Incompatible  
— = No data available  
+ = Call Technical Support for specific application

# Application Data

## Chemical Compatibility Chart

 Refer to safety information regarding proper selection of tubing and tube connectors on page 5.

| Fluid                          | Nylon 11<br>MTP 160                        | Nylon 6/6<br>PT230 | PVC<br>PT200 | Polyethylene<br>PT240 (LDPE) | Brass |
|--------------------------------|--------------------------------------------|--------------------|--------------|------------------------------|-------|
| Ethyl Cellulose                | F                                          | —                  | X            | G                            | G     |
| Ethyl Chloride                 | G                                          | —                  | X            | X                            | G     |
| Ethylenediamine                | X                                          | X                  | X            | G                            | G     |
| Ethylene Dibromide             | F                                          | —                  | X            | —                            | —     |
| Ethylene Dichloride            | F                                          | —                  | X            | X                            | F     |
| Ethylene Glycol                | G                                          | G                  | G            | G                            | G     |
| Ethylene Oxide                 | G                                          | —                  | X            | X                            | X     |
| Fatty Acids                    | G                                          | G                  | G            | G                            | F     |
| Ferric Chloride 5%             | G                                          | G                  | G            | G                            | X     |
| Ferric Sulfate                 | G                                          | G                  | G            | G                            | X     |
| Fertilizer Salts Solution      | F                                          | —                  | G            | G                            | —     |
| Formaldehyde                   | G                                          | G                  | X            | G                            | G     |
| Formic Acid                    | X                                          | X                  | X            | G                            | F     |
| Freon 12                       | Use approved Freon 12 hose                 |                    |              |                              | G     |
| Freon 134a                     | Use approved Freon 134a hose               |                    |              |                              | —     |
| Fuel Oil                       | G                                          | —                  | F            | X                            | G     |
| Furfural                       | X                                          | X                  | X            | X                            | G     |
| Gasoline (Refined)             | G                                          | G                  | X            | X                            | G     |
| Gasoline (Unleaded)            | G                                          | G                  | X            | X                            | G     |
| Gasoline (10% Ethanol)         | G                                          | G                  | X            | X                            | G     |
| Gasoline (10% Methanol)        | G                                          | G                  | X            | X                            | G     |
| Glucose (non-food)             | G                                          | G                  | G            | G                            | G     |
| Glycerine, Glycerol (Non-food) | G                                          | G                  | G            | G                            | G     |
| Greases                        | G                                          | G                  | G            | G                            | G     |
| Green Sulfate Liquor           | X                                          | X                  | G            | G                            | X     |
| Heptane                        | G                                          | G                  | X            | X                            | G     |
| Hexane                         | G                                          | G                  | X            | X                            | G     |
| Houghto Safe 273 to 640        | G                                          | —                  | F            | G                            | G     |
| Houghto Safe 5046, 5047F       | G                                          | —                  | G            | G                            | G     |
| Houghto Safe 1000 Series       | G                                          | —                  | X            | X                            | G     |
| Hydraulic Oils                 |                                            |                    |              |                              |       |
| Straight Petroleum Base        | G                                          | G                  | G            | G                            | G     |
| Water Petroleum Emulsion       | G                                          | —                  | —            | F                            | G     |
| Water Glycol                   | G                                          | G                  | X            | —                            | G     |
| Straight Phosphate Ester       | G                                          | G                  | X            | X                            | G     |
| Phos. Ester/Petroleum Blend    | G                                          | G                  | X            | X                            | G     |
| Polyol Ester                   | G                                          | —                  | —            | —                            | G     |
| Hydrobromic Acid (under 48%)   | X                                          | X                  | G            | G                            | X     |
| Hydrochloric Acid              | X                                          | X                  | G            | G                            | X     |
| Hydrocyanic Acid               | X                                          | X                  | G            | G                            | G     |
| Hydrofluoric Acid (under 50%)  | X                                          | X                  | F            | F                            | X     |
| Hydrofluoric Acid (over 50%)   | X                                          | X                  | X            | X                            | X     |
| Hydrofluosilicic Acid          | X                                          | X                  | G            | G                            | X     |
| Hydrogen                       | Use approved hydrogen hose or metal tubing |                    |              |                              | G     |
| Hydrogen Peroxide              | X                                          | X                  | —            | G                            | X     |
| Hydrogen Sulfide               | X                                          | X                  | G            | G                            | G     |
| Hydrolube                      | G                                          | —                  | G            | G                            | G     |
| Iodine                         | X                                          | X                  | X            | X                            | X     |
| Isocyanates                    | X                                          | X                  | X            | X                            | —     |
| Isopropyl Alcohol, Isopropanol | G                                          | G                  | G            | G                            | G     |
| Isopropylamine                 | X                                          | —                  | X            | —                            | G     |
| Iso-Octane                     | G                                          | G                  | X            | X                            | G     |
| Jet Fuel (Transfer Only)       | G                                          | G                  | X            | X                            | G     |
| Kerosene                       | G                                          | G                  | X            | X                            | G     |
| Lacquer                        | G                                          | G                  | X            | F                            | G     |
| Lacquer Solvents               | G                                          | G                  | X            | F                            | G     |
| Lactic Acid                    | G                                          | G                  | G            | G                            | F     |
| Lime Sulfur                    | G                                          | F                  | G            | G                            | X     |

### Codes:

G = Good Resistance  
F = Fair Resistance  
X = Incompatible  
— = No data available  
+ = Call Technical Support  
for specific application

# Application Data

## Chemical Compatibility Chart

 Refer to safety information regarding proper selection of tubing and tube connectors on page 5.

| FLUID                                 | Nylon 11<br>MTP 160                  | NYLON 6/6<br>PT230 | PVC<br>PT200 | POLYETHYLENE<br>PT240 (LDPE) | BRASS |
|---------------------------------------|--------------------------------------|--------------------|--------------|------------------------------|-------|
| Lindol                                | G                                    | G                  | —            | —                            | F     |
| Linseed Oil                           | G                                    | G                  | G            | G                            | G     |
| Lubricating Oils                      | G                                    | G                  | G            | G                            | G     |
| Lye                                   | G                                    | F                  | G            | G                            | F     |
| Magnesium Chloride                    | G                                    | G                  | G            | G                            | F     |
| Magnesium Hydroxide                   | G                                    | G                  | G            | G                            | G     |
| Magnesium Sulfate                     | G                                    | G                  | G            | G                            | G     |
| Mercuric Chloride                     | X                                    | X                  | F            | G                            | X     |
| Mercury                               | G                                    | G                  | F            | G                            | X     |
| Methyl Alcohol, Methanol              | G                                    | G                  | X            | G                            | G     |
| Methyl Acrylate                       | X                                    | X                  | X            | —                            | G     |
| Methyl Bromide                        | G                                    | F                  | X            | X                            | G     |
| Methyl Chloride                       | G                                    | G                  | X            | X                            | G     |
| Methylene Chloride                    | F                                    | F                  | X            | X                            | G     |
| Methyl t-Butyl Ether (MTBE)           | G                                    | G                  | X            | —                            | —     |
| Methyl Ethyl Ketone                   | G                                    | G                  | X            | G                            | G     |
| Methyl Isobutyl Ketone                | G                                    | G                  | X            | G                            | G     |
| Methyl Isopropyl Ketone               | G                                    | G                  | X            | G                            | G     |
| Methyl Methacrylate                   | X                                    | —                  | X            | —                            | —     |
| Mineral Oil                           | G                                    | G                  | F            | X                            | G     |
| Mineral Spirits                       | G                                    | G                  | X            | G                            | G     |
| Naphtha                               | G                                    | G                  | X            | G                            | —     |
| Napthalene                            | G                                    | G                  | X            | X                            | G     |
| Nickel Acetate                        | G                                    | G                  | G            | G                            | F     |
| Nickel Chloride                       | G                                    | G                  | G            | G                            | X     |
| Nickel Sulfate                        | G                                    | G                  | G            | G                            | G     |
| Nitric Acid (under 35%)               | X                                    | X                  | G            | F                            | X     |
| Nitric Acid (35% to 60%)              | X                                    | X                  | F            | X                            | X     |
| Nitric Acid (over 60%)                | X                                    | X                  | X            | X                            | X     |
| Nitrobenzene                          | X                                    | —                  | X            | X                            | G     |
| Nitrogen Gas                          | G                                    | G                  | G            | G                            | G     |
| Nitrous Oxide                         | F                                    | F                  | X            | X                            | G     |
| Oleic Acid                            | G                                    | G                  | F            | G                            | G     |
| Oleum (Fuming Sulfuric Acid)          | X                                    | X                  | X            | X                            | X     |
| Oxalic Acid                           | X                                    | X                  | G            | G                            | F     |
| Oxygen (non-breathing, non-welding) + | G                                    | G                  | G            | G                            | G     |
| Ozone (300 pphm)                      | X                                    | X                  | X            | X                            | —     |
| Paint (Solvent Base)                  | G                                    | G                  | X            | F                            | G     |
| Palmitic Acid                         | G                                    | G                  | F            | G                            | X     |
| Paper Mill Liquors                    | X                                    | X                  | X            | X                            | —     |
| Pentane                               | G                                    | —                  | X            | X                            | G     |
| Perchloroethylene                     | F                                    | G                  | X            | X                            | G     |
| Petroleum Ether                       | G                                    | G                  | X            | X                            | G     |
| Petroleum Oils                        | G                                    | G                  | G            | G                            | G     |
| Phenol                                | X                                    | X                  | X            | X                            | G     |
| Phosphoric Acid (to 85%)              | X                                    | X                  | G            | G                            | G     |
| Picric Acid (Molten)                  | X                                    | X                  | X            | X                            | X     |
| Picric Acid (Solution)                | X                                    | X                  | X            | X                            | X     |
| Potassium Chloride                    | G                                    | G                  | G            | G                            | F     |
| Potassium Cyanide                     | G                                    | G                  | G            | G                            | X     |
| Potassium Dichromate                  | F                                    | —                  | G            | G                            | F     |
| Potassium Hydroxide                   | G                                    | F                  | G            | G                            | F     |
| Potassium Permanganate                | X                                    | X                  | G            | G                            | —     |
| Potassium Sulfate                     | G                                    | G                  | G            | G                            | F     |
| Propane Liquid                        | Use hose approved for Propane Liquid |                    |              |                              | G     |
| Propylene Glycol                      | G                                    | —                  | F            | G                            | F     |
| Pyridine                              | X                                    | X                  | X            | G                            | F     |
| Sea Water                             | G                                    | G                  | G            | G                            | G     |

### Codes:

G = Good Resistance  
 F = Fair Resistance  
 X = Incompatible  
 — = No data available  
 + = Call Technical Support for specific application

# Application Data

## Chemical Compatibility Chart

 Refer to safety information regarding proper selection of tubing and tube connectors on page 5.

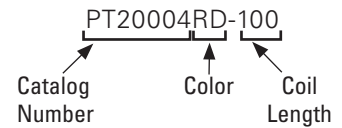
| Fluid                           | Nylon 11<br>MTP 160 | Nylon 6/6<br>PT230 | PVC<br>PT200 | Polyethylene<br>PT240 (LDPE) | Brass |
|---------------------------------|---------------------|--------------------|--------------|------------------------------|-------|
| Silver Nitrate                  | G                   | G                  | G            | G                            | X     |
| Skydrol                         | G                   | G                  | X            | X                            | G     |
| Soap Solution                   | G                   | G                  | G            | X                            | G     |
| Sodium Bicarbonate              | G                   | G                  | G            | G                            | G     |
| Sodium Bisulfate                | G                   | G                  | G            | G                            | F     |
| Sodium Bisulfite                | G                   | G                  | G            | G                            | F     |
| Sodium Borate                   | G                   | G                  | G            | G                            | G     |
| Sodium Carbonate                | G                   | G                  | G            | G                            | G     |
| Sodium Chloride                 | G                   | G                  | G            | G                            | X     |
| Sodium Cyanide                  | G                   | G                  | G            | G                            | X     |
| Sodium Hydroxide                | G                   | F                  | G            | G                            | F     |
| Sodium Hypochlorite             | X                   | X                  | G            | G                            | X     |
| Sodium Nitrate                  | G                   | G                  | G            | G                            | F     |
| Sodium Perborate                | G                   | F                  | G            | G                            | X     |
| Sodium Peroxide                 | X                   | X                  | X            | X                            | X     |
| Sodium Phosphates               | G                   | G                  | G            | G                            | G     |
| Sodium Silicate                 | G                   | G                  | G            | G                            | G     |
| Sodium Sulfate                  | G                   | G                  | G            | G                            | G     |
| Sodium Sulfide                  | G                   | G                  | G            | G                            | X     |
| Sodium Thiosulfate              | G                   | G                  | G            | G                            | X     |
| Soybean Oil                     | G                   | —                  | F            | G                            | G     |
| Stannic Chloride                | F                   | X                  | G            | G                            | X     |
| Steam 450° F                    | X                   | X                  | X            | X                            | F     |
| Stearic Acid                    | G                   | G                  | F            | G                            | X     |
| Stoddard Solvent                | G                   | G                  | X            | X                            | G     |
| Styrene                         | G                   | G                  | X            | X                            | G     |
| Sulfur 70° F                    | G                   | G                  | F            | G                            | X     |
| Sulfur 200° F                   | X                   | X                  | X            | X                            | X     |
| Sulfur Chloride                 | X                   | X                  | X            | G                            | X     |
| Sulfur Dioxide                  | X                   | X                  | X            | X                            | G     |
| Sulfuric Acid (under 50%)       | X                   | X                  | G            | G                            | X     |
| Sulfuric Acid (51% to 70%)      | X                   | X                  | G            | X                            | X     |
| Sulfuric Acid (71% to 95%)      | X                   | X                  | X            | X                            | X     |
| Sulfuric Acid (96% to 98%)      | X                   | X                  | X            | X                            | X     |
| Tannic Acid                     | X                   | X                  | G            | G                            | G     |
| Tar                             | G                   | G                  | X            | X                            | G     |
| Tartaric Acid                   | G                   | G                  | G            | G                            | F     |
| Tetrachloroethane               | F                   | —                  | X            | F                            | —     |
| Tetrahydrofuran (THF)           | G                   | —                  | X            | X                            | —     |
| Toluene                         | G                   | G                  | X            | G                            | G     |
| Transmission Oil (Petrol. Base) | G                   | G                  | G            | G                            | G     |
| Trichloroethane                 | F                   | G                  | X            | G                            | G     |
| Trichloroethylene               | F                   | G                  | X            | G                            | G     |
| Tung Oil                        | G                   | —                  | —            | —                            | G     |
| Turpentine                      | G                   | G                  | X            | G                            | G     |
| Urea (Water Solution)           | G                   | G                  | G            | G                            | —     |
| Uric Acid                       | G                   | G                  | G            | G                            | —     |
| Varnish                         | G                   | G                  | X            | G                            | G     |
| Vegetable Oil (Non-food)        | G                   | G                  | F            | G                            | G     |
| Vinegar                         | G                   | X                  | G            | G                            | X     |
| Vinyl Acetate                   | G                   | —                  | X            | —                            | F     |
| Water (non-potable)             | G                   | G                  | G            | G                            | G     |
| Water-Glycol Mixture            | G                   | G                  | X            | —                            | G     |
| Water-Petroleum Mixture         | G                   | G                  | —            | F                            | G     |
| Xylene                          | G                   | G                  | X            | G                            | G     |
| Zinc Chloride                   | X                   | X                  | G            | G                            | X     |
| Zinc Sulfate                    | G                   | G                  | G            | G                            | X     |

### Codes:

G = Good Resistance  
F = Fair Resistance  
X = Incompatible  
— = No data available  
+ = Call Technical Support  
for specific application

**Note:**  
For plastic tube cutter,  
see page 143.

**Part Number Key:**



**PT200 Polyvinyl Chloride**



**Typical Application:**

Soft, pliable, plasticized PVC Resin Tubing, for practically any low pressure laboratory, industrial, agricultural or domestic application.

**Temperature Range:**

-5°F to +105°F  
(-20°C to +41°C)

**Available Colors:**

Clear (suffix NA)

**Connectors:**

Polyline pgs. 58-61

SelfAlign pgs. 52-57  
with 2030x insert

Compression pgs. 46-51  
with 2030x insert

Molded Compression pgs.  
132-139

| Catalog Number | Tube O.D. (in) | Tube Wall (in) | Max. Work. Pres. PSI 75° | Min. Burst Pres. PSI 75° | Min. Bend Radius 70° F | Lbs. Per 100 Ft. | Coil Length(s) (Ft) |
|----------------|----------------|----------------|--------------------------|--------------------------|------------------------|------------------|---------------------|
| PT20004        | 1/4 (.250)     | .062           | 65                       | 195                      | 1.0"                   | 2.00             | 100                 |
| PT20044        | 1/4 (.250)     | .040           | 55                       | 165                      | 1.0"                   | 2.00             | 100                 |
| PT20005        | 5/16 (.312)    | .062           | 55                       | 165                      | 1.25"                  | 2.60             | 100                 |
| PT20006        | 3/8 (.375)     | .062           | 55                       | 165                      | 1.5"                   | 3.30             | 100                 |
| PT20008        | 1/2 (.500)     | .062           | 45                       | 135                      | 2.0"                   | 4.60             | 100                 |
| PT20010        | 5/8 (.625)     | .062           | 30                       | 90                       | 2.5"                   | 5.90             | 100                 |
| PT20012        | 3/4 (.750)     | .094           | 40                       | 120                      | 3.0"                   | 10.3             | 100                 |
| PT20016        | 1(1.00)        | .125           | 35                       | 105                      | 4.0"                   | 18.5             | 100                 |

**PT230 Polyamide "Nylon 6/6"**



Natural off-white compound covered under 21CFR177.1500 regulations for food contact.

**Typical Application:**

Semi-rigid general purpose tubing.

**Temperature Range:**

-40°F to +180°F  
(-40°C to +82°C)

**Available Colors:**

Natural off-white (NA) and black (BK). FDA colors available on request.

**Contains:**

Ultra-Violet Stabilizer in black tubing.

**Connectors:**

SelfAlign pgs. 52-57

Compression pgs. 46-51

Push>Connect pgs. 62-72

Push>Connect Flow Controls pgs. 73-74

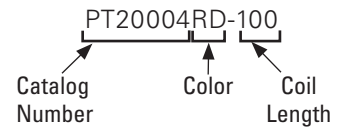
Push>Connect Plus pgs. 75-76

| Catalog Number | Tube O.D. (in) | Tube Wall (in) | Max. Work. Pres. PSI 70° | Min. Burst Pres. PSI 70° | Min. Bend Radius 70° F | Lbs. Per 100 Ft. | Coil Length(s) (Ft) |
|----------------|----------------|----------------|--------------------------|--------------------------|------------------------|------------------|---------------------|
| PT23002        | 1/8 (.125)     | .015           | 300                      | 1,000                    | 0.75"                  | 0.3              | 100, 1,000          |
| PT23003        | 3/16 (.188)    | .023           | 300                      | 1,000                    | 1.25"                  | 0.6              | 100, 1,000          |
| PT23004        | 1/4 (.250)     | .030           | 300                      | 1,000                    | 1.50"                  | 1.0              | 100, 1,000          |
| PT23005        | 5/16 (.312)    | .036           | 300                      | 1,000                    | 2.00"                  | 1.5-1.6          | 100, 1,000          |
| PT23006        | 3/8 (.375)     | .040           | 300                      | 1,000                    | 2.25"                  | 2.1              | 100, 1,000          |



**Note:**  
For plastic tube cutter,  
see page 143.

**Part Number Key:**



**PT240 Polyethylene**



Meets FDA for food contact. Natural off-white compound covered under 21CFR177.1520 regulations for food contact.

**Typical Application:**

Economical, flexible, low density Polyethylene has a wide range of uses in industrial and agricultural applications.

**Temperature Range:**

-40°F to +135°F  
(-40°C to +57°C)

**Available Colors:**

Natural off-white (NA), black (BK), yellow (YW), orange (OR), blue (BU), red (RD), green (GN). FDA colors available on request. Refer to current price list for availability of colors.

**Contains:**

Ultra-Violet Stabilizer in black tubing.

**Connectors:**

Minibarbs pgs. 77-80  
Polyline pgs. 58-61  
SelfAlign pgs. 52-57 with 2030 insert  
Compression pgs. 46-51 with 2030 insert  
Push>Connect pgs. 62-72  
Push>Connect Flow Controls pgs. 73-74  
Push>Connect Plus pgs. 75-76  
Molded Compression pgs. 132-139

| Catalog Number | Tube O.D. (in) | Tube Wall (in) | Max. Work. Pres. PSI 70° | Min. Burst Pres. PSI 70° | Min. Bend Radius 70° F | Lbs. Per 100 Ft. | Coil Length(s) (Ft) |
|----------------|----------------|----------------|--------------------------|--------------------------|------------------------|------------------|---------------------|
| PT24004        | 1/4 (.250)     | .062           | 200                      | 600                      | 0.75"                  | 1.50             | 100, 1,000          |
| PT24044        | 1/4 (.250)     | .040           | 133                      | 400                      | 0.62"                  | 1.00             | 100, 1,000          |
| PT24005        | 5/16 (.312)    | .062           | 135                      | 480                      | 1.00"                  | 1.90             | 100, 1,000          |
| PT24006        | 3/8 (.375)     | .062           | 135                      | 400                      | 1.50"                  | 2.40             | 100, 1,000          |
| PT24008        | 1/2 (.500)     | .062           | 100                      | 300                      | 2.00"                  | 3.40             | 100, 500            |
| PT24010        | 5/8 (.625)     | .062           | 80                       | 240                      | 2.50"                  | 4.40             | 100                 |
| PT24012        | 3/4 (.750)     | .094           | 70                       | 210                      | 3.00"                  | 7.60             | 100                 |
| PT24016        | 1 (1.000)      | .125           | 100                      | 300                      | 5.00"                  | 13.4             | 100                 |

**TP160 Polyamide "Nylon 11"**



**Typical Application:**

Flexible nylon tubing. Used for instrumentation; lubrication and air lines; gas, chemical and oil processing; low pressure hydraulics.

**Temperature Range:**

-40°F to +200°F  
(-40°C to +93°C)

**Available Colors:**

Black (BK) or natural (NA).

**Contains:**

Ultra-Violet Stabilizer

**Connectors:**

SelfAlign pgs. 52-57  
Compression pgs. 46-51

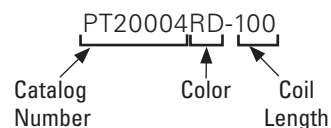
**Connectors (cont.):**

Push>Connect pgs. 62-72  
Push>Connect Flow Controls pgs. 58, 73-74  
Push>Connect Plus pgs. 75-76  
Molded Compression pgs. 132-139

| Catalog Number | Tube O.D. (in) | Tube Wall (in) | Max. Work. Pres. PSI 70° | Min. Burst Pres. PSI 70° | Min. Bend Radius 70° F | Lbs. Per 100 Ft. | Coil Length(s) (Ft) |
|----------------|----------------|----------------|--------------------------|--------------------------|------------------------|------------------|---------------------|
| TP16002        | 1/8 (.125)     | .023           | 250                      | 1,000                    | .62"                   | .30              | 100, 1,000          |
| TP16025        | 5/32 (.156)    | .029           | 250                      | 1,000                    | 1"                     | .75              | 100, 1,000          |
| TP16004        | 1/4 (.250)     | .040           | 250                      | 1,000                    | 1.25"                  | 1.2              | 100, 1,000          |
| TP16005        | 5/16 (.312)    | .040           | 250                      | 1,000                    | 2"                     | 2.0              | 100, 1,000          |
| TP16006        | 3/8 (.375)     | .062           | 250                      | 1,000                    | 3"                     | 2.7              | 100, 1,000          |
| TP16008        | 1/2 (.500)     | .062           | 250                      | 1,000                    | 4.5"                   | 3.8              | 100, 500            |

**Note:**  
For plastic tube cutter,  
see page 143.

**Part Number Key:**



**MTP160 Polyamide "Nylon  
11" Metric Tubing**



**Typical Application:**

Flexible nylon tubing. Used for instrumentation; lubrication and air lines; gas, chemical and oil processing; low pressure hydraulics.

**Temperature Range:**

-40°F to +200°F  
(-40°C to +93°C)

**Available Colors:**

Natural (NA).

**Contains:**

Ultra-Violet Stabilizer

**Connector:**

Metric Push>Connect  
pgs. 69-72

| Catalog Number | Tube O.D. (mm) | Tube Wall (mm) | Max. Work. Pres. PSI 75° | Min. Burst Pres. PSI 75° | Min. Bend Radius 75° F | Lbs. Per 100 Ft. | Coil Length(s) (Ft) |
|----------------|----------------|----------------|--------------------------|--------------------------|------------------------|------------------|---------------------|
| MTP16004       | 4              | .65            | 250                      | 1,000                    | .75"                   | 0.6              | 100                 |
| MTP16005       | 5              | 1              | 250                      | 1,000                    | 1"                     | 0.9              | 100                 |
| MTP16006       | 6              | 1              | 250                      | 1,000                    | 1.5"                   | 1.1              | 100                 |
| MTP16008       | 8              | 1              | 250                      | 1,000                    | 2.25"                  | 1.5              | 100                 |
| MTP16010       | 10             | 1              | 200                      | 800                      | 3"                     | 1.9              | 100                 |
| MTP16012       | 12             | 1              | 112                      | 450                      | 3.5"                   | 2.3              | 100                 |

## Eclipse® Air Brake Tubing

Meets SAE J844, 1131, J2494-3 and DOT FMVSS106

### Synflex Eclipse Type A Air Brake Tubing

| #           |  |      |  |      |  |       |                        |      |  |       |  |            |
|-------------|-----------------------------------------------------------------------------------|------|-----------------------------------------------------------------------------------|------|-----------------------------------------------------------------------------------|-------|------------------------|------|-----------------------------------------------------------------------------------|-------|-----------------------------------------------------------------------------------|------------|
| Part Number | Nominal O.D.                                                                      |      | Nominal I.D.                                                                      |      | Minimum Bend Radius                                                               |       | Nominal Wall Thickness |      | Minimum Burst Pressure                                                            |       | Weight                                                                            |            |
|             | mm                                                                                | in   | mm                                                                                | in   | mm                                                                                | in    | mm                     | in   | kpa                                                                               | psi   | kg/100 m                                                                          | lbs/100 ft |
| 4245-022    | 3.18                                                                              | 1/8  | 2.01                                                                              | .079 | 6.35                                                                              | 1/4   | 0.58                   | .023 | 6,900                                                                             | 1,000 | .49                                                                               | .33        |
| 4245-025    | 3.96                                                                              | 5/32 | 2.34                                                                              | .092 | 12.70                                                                             | 1/2   | 0.79                   | .031 | 8,300                                                                             | 1,200 | .83                                                                               | .56        |
| 4245-03     | 4.77                                                                              | 3/16 | 2.97                                                                              | .117 | 19.05                                                                             | 3/4   | 0.89                   | .035 | 8,300                                                                             | 1,200 | 1.06                                                                              | .71        |
| 4245-05     | 7.95                                                                              | 5/16 | 5.89                                                                              | .232 | 28.58                                                                             | 1-1/8 | 1.02                   | .040 | 6,900                                                                             | 1,000 | 2.29                                                                              | 1.54       |

### Synflex Eclipse Type B Air Brake Tubing

| #           |  |     |  |      |  |     |                        |      |  |       |  |            |
|-------------|-----------------------------------------------------------------------------------|-----|-----------------------------------------------------------------------------------|------|-----------------------------------------------------------------------------------|-----|------------------------|------|-------------------------------------------------------------------------------------|-------|-------------------------------------------------------------------------------------|------------|
| Part Number | Nominal O.D.                                                                      |     | Nominal I.D.                                                                      |      | Minimum Bend Radius                                                               |     | Nominal Wall Thickness |      | Minimum Burst Pressure                                                              |       | Weight                                                                              |            |
|             | mm                                                                                | in  | mm                                                                                | in   | mm                                                                                | in  | mm                     | in   | kpa                                                                                 | psi   | kg/100 m                                                                            | lbs/100 ft |
| 3270-06     | 9.53                                                                              | 3/8 | 6.38                                                                              | .251 | 38.10                                                                             | 1.5 | 1.57                   | .062 | 9,700                                                                               | 1,400 | 4.2                                                                                 | 2.8        |
| 3270-08     | 12.70                                                                             | 1/2 | 9.55                                                                              | .376 | 50.80                                                                             | 2.0 | 1.57                   | .062 | 6,600                                                                               | 950   | 5.8                                                                                 | 3.8        |
| 3270-10     | 15.88                                                                             | 5/8 | 11.20                                                                             | .441 | 63.50                                                                             | 2.5 | 2.34                   | .092 | 6,200                                                                               | 900   | 10.4                                                                                | 7.0        |
| 3270-12     | 19.05                                                                             | 3/4 | 14.38                                                                             | .566 | 76.20                                                                             | 3.0 | 2.34                   | .092 | 5,500                                                                               | 800   | 12.8                                                                                | 8.6        |

#### Features

- Superior abrasion resistance
- Easy to cut
- Enhanced flexibility and extension
- Flow performance

#### Applications

- Truck air brake systems
- Trailer air brake systems

- Auxiliary air systems
- Formed tubes
- Formed and straight air brake harness assemblies

#### Construction

- Distinctive patented construction
- 100% polyamide construction with polyester yarn reinforcement

- UV stabilized
- Thermoformable
- Available in standard and custom colors
- Available in all standard sizes

#### Temperature Range

- -65°F to 200°F (-54°C to 93°C).

#### Connectors:

QCAB pages 81-89 1400 series Air Brake pages 90-95

For 1/8" Tubing use SelfAlign.

**Note:** SelfAlign Connectors are not designed to meet DOT standards.

### Solstice™ Type A Air Brake Tubing

Meets or exceeds the performance requirements SAE J844, J1131, J2494-3, and DOT FMVSS106 Synflex Solstice Type Air Brake Tubing

| #           |  |    |  |      |  |    |                        |      |  |       |  |            |
|-------------|-------------------------------------------------------------------------------------|----|-------------------------------------------------------------------------------------|------|-------------------------------------------------------------------------------------|----|------------------------|------|-------------------------------------------------------------------------------------|-------|--------------------------------------------------------------------------------------|------------|
| Part Number | Nominal O.D.                                                                        |    | Nominal I.D.                                                                        |      | Min. Bend Radius                                                                    |    | Nominal Wall Thickness |      | Min Burst Pressure                                                                  |       | Weight                                                                               |            |
|             | mm                                                                                  | in | mm                                                                                  | in   | mm                                                                                  | in | mm                     | in   | kpa                                                                                 | psi   | kg/100m                                                                              | lbs/100 ft |
| 4247-041    | 6.35                                                                                | ¼  | 4.32                                                                                | .170 | 25.40                                                                               | 1  | 1.02                   | 0.04 | 8,300                                                                               | 1,200 | 2.20                                                                                 | 1.50       |

#### Applications

- Truck air brake systems
- Trailer air brake systems
- Auxiliary air systems
- Formed tubes
- Formed and straight air brake harness assemblies

#### Features

- Highly engineered thermoplastic material
- Monowall tubing
- UV stabilized
- Thermoformable
- Available in standard and custom colors

#### Temperature Range

- (-40°F to 200°F)
- -40°C to 93°C

#### Connectors:

QCAB pages 81-89 1400 Series Air Brake pages 90-95

| <b>Eclipse ABT<br/>Part #</b> | <b>O.D.</b> | <b>Master Pack<br/>Color</b> | <b>Master Pack<br/>Quantities</b> | <b>Configuration</b> |
|-------------------------------|-------------|------------------------------|-----------------------------------|----------------------|
| 4245-02207                    | 1/8"        | black                        | 12,000 ft                         | 6 reels of 2000 ft   |
| 4245-02227                    | 1/8"        | red                          | 12,000 ft                         | 6 reels of 2000 ft   |
| 4245-02257                    | 1/8"        | green                        | 12,000 ft                         | 6 reels of 2000 ft   |
| 4245-02267                    | 1/8"        | blue                         | 12,000 ft                         | 6 reels of 2000 ft   |
| 4245-02506                    | 5/32"       | black                        | 6,000 ft                          | 6 reels of 1000 ft   |
| 4245-02526                    | 5/32"       | red                          | 6,000 ft                          | 6 reels of 1000 ft   |
| 4245-02546                    | 5/32"       | yellow                       | 6,000 ft                          | 6 reels of 1000 ft   |
| 4245-02556                    | 5/32"       | green                        | 6,000 ft                          | 6 reels of 1000 ft   |
| 4245-02566                    | 5/32"       | blue                         | 6,000 ft                          | 6 reels of 1000 ft   |
| 4245-03306                    | 3/16"       | black                        | 6,000 ft                          | 6 reels of 1000 ft   |
| 4245-03326                    | 3/16"       | red                          | 6,000 ft                          | 6 reels of 1000 ft   |
| 4245-03356                    | 3/16"       | green                        | 6,000 ft                          | 6 reels of 1000 ft   |
| 4247-04106                    | 1/4"        | Black                        | 6,000 ft                          | 6 reels of 1000 ft   |
| 4247-04156                    | 1/4"        | Green                        | 6,000 ft                          | 6 reels of 1000 ft   |
| 4247-04126                    | 1/4"        | Red                          | 6,000 ft                          | 6 reels of 1000 ft   |
| 4247-04166                    | 1/4"        | Blue                         | 6,000 ft                          | 6 reels of 1000 ft   |
| 4247-041C6                    | 1/4"        | Brown                        | 6,000 ft                          | 6 reels of 1000 ft   |
| 4247-04146                    | 1/4"        | Yellow                       | 6,000 ft                          | 6 reels of 1000 ft   |
| 4247-04136                    | 1/4"        | Orange                       | 6,000 ft                          | 6 reels of 1000 ft   |
| 4247-041D6                    | 1/4"        | Purple                       | 6,000 ft                          | 6 reels of 1000 ft   |
| 4247-04116                    | 1/4"        | White                        | 6,000 ft                          | 6 reels of 1000 ft   |
| 4247-041F6                    | 1/4"        | Silver                       | 6,000 ft                          | 6 reels of 1000 ft   |
| 4245-05204                    | 5/16"       | black                        | 3,000 ft                          | 6 reels of 500 ft    |
| 4245-05224                    | 5/16"       | red                          | 3,000 ft                          | 6 reels of 500 ft    |
| 4245-05244                    | 5/16"       | yellow                       | 3,000 ft                          | 6 reels of 500 ft    |
| 4245-05254                    | 5/16"       | green                        | 3,000 ft                          | 6 reels of 500 ft    |
| 4245-05264                    | 5/16"       | blue                         | 3,000 ft                          | 6 reels of 500 ft    |
| 3270-06104                    | 3/8"        | black                        | 3,000 ft                          | 6 reels of 500 ft    |
| 3270-06124                    | 3/8"        | red                          | 3,000 ft                          | 6 reels of 500 ft    |
| 3270-06134                    | 3/8"        | orange                       | 3,000 ft                          | 6 reels of 500 ft    |
| 3270-06144                    | 3/8"        | yellow                       | 3,000 ft                          | 6 reels of 500 ft    |
| 3270-06154                    | 3/8"        | green                        | 3,000 ft                          | 6 reels of 500 ft    |
| 3270-06164                    | 3/8"        | blue                         | 3,000 ft                          | 6 reels of 500 ft    |
| 3270-08104                    | 1/2"        | black                        | 1,500 ft                          | 3 reels of 500 ft    |
| 3270-08124                    | 1/2"        | red                          | 1,500 ft                          | 3 reels of 500 ft    |
| 3270-08134                    | 1/2"        | orange                       | 1,500 ft                          | 3 reels of 500 ft    |
| 3270-08144                    | 1/2"        | yellow                       | 1,500 ft                          | 3 reels of 500 ft    |
| 3270-08154                    | 1/2"        | green                        | 1,500 ft                          | 3 reels of 500 ft    |
| 3270-08164                    | 1/2"        | blue                         | 1,500 ft                          | 3 reels of 500 ft    |
| 3270-10103                    | 5/8"        | black                        | 750 ft                            | 3 reels of 250 ft    |
| 3270-10123                    | 5/8"        | red                          | 750 ft                            | 3 reels of 250 ft    |
| 3270-10133                    | 5/8"        | orange                       | 750 ft                            | 3 reels of 250 ft    |
| 3270-10143                    | 5/8"        | yellow                       | 750 ft                            | 3 reels of 250 ft    |
| 3270-10153                    | 5/8"        | green                        | 750 ft                            | 3 reels of 250 ft    |
| 3270-10163                    | 5/8"        | blue                         | 750 ft                            | 3 reels of 250 ft    |
| 3270-12103                    | 3/4"        | black                        | 750 ft                            | 3 reels of 250 ft    |
| 3270-12123                    | 3/4"        | red                          | 750 ft                            | 3 reels of 250 ft    |
| 3270-12133                    | 3/4"        | orange                       | 750 ft                            | 3 reels of 250 ft    |
| 3270-12153                    | 3/4"        | green                        | 750 ft                            | 3 reels of 250 ft    |
| 3270-12163                    | 3/4"        | blue                         | 750 ft                            | 3 reels of 250 ft    |

# Brass Products

## Introduction

Eaton brass tube fittings are made from high quality UNS CA-360 brass bar. Eaton brass connectors are precision machined to meet SAE standards and specifications. Large, uniform wrench pad areas have standard dimensions for easy assembly and disassembly using standard open-end wrenches. On fittings where pipe threads are used, the fittings are standardized on Dryseal American National Standard Taper. Eaton offers the only complete line of brass connectors with these outstanding advantages.

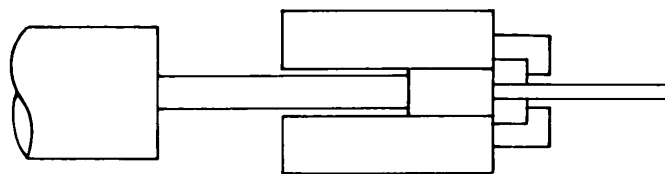
### Hot Extrusion

A cast billet is heated and extruded through a die containing the desired configuration. This process recrystallizes the weaker cast structure into the stronger pressed structure of the shaped extrusion.

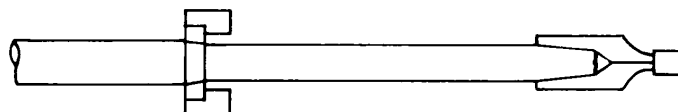
### Cold Draw

The hot extruded shape is pulled through a die with the same configuration but less cross sectional area. This further recrystallizes and refines the structure while increasing the strength and elongation. In addition, the dimensions are brought to close tolerances.

Hot Extrusion

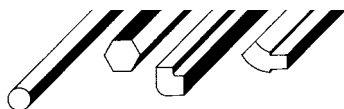


Cold Draw



### Shapes

The dies through which the billets are forced may be one of hundreds of shapes. Four of the most common shapes, used in the manufacture of Eaton connectors, are illustrated.



### Saw and Machine

The cold bar stock is then cut into individual pieces for precision machining. After the part is machined, it is ready for the market as a strong, tough, high quality connector. Only by using this process is it possible to get the big all-flat sides on elbows and tees, instead of the usual small wrench pads, or lack of flats all together.



### Microstructure

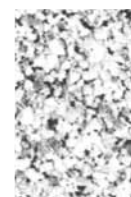
The photomicrographs illustrate the change in microstructure from the low strength low ductility dendritic structure of the cast billet, to the recrystallized structure of the hot extrusion, to the refined structure of the high strength high ductility cold drawn rod.



As Cast – 50x



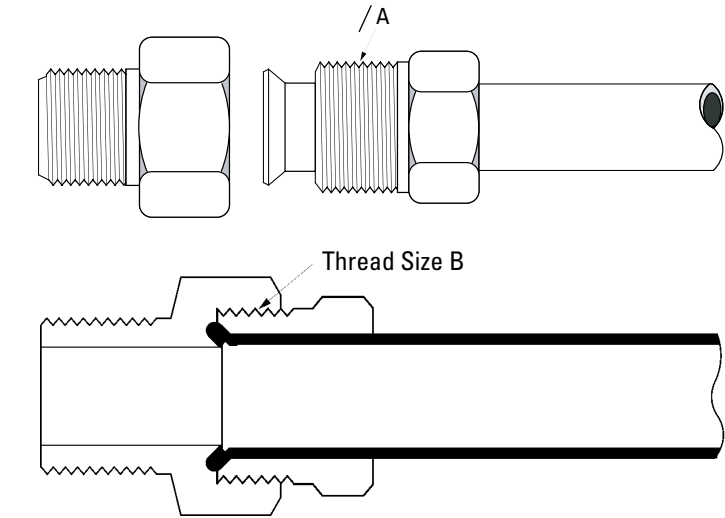
Hot Extruded – 200x



Cold Drawn – 200x

**Note:**  
For additional technical questions, contact Technical Support at 1-888-258-0222.

 Refer to safety information regarding proper selection of tubing and tube connectors on page 5.



| Tube O.D.     | 1/8     | 3/16   | 1/4     | 5/16   | 3/8    | 7/16      | 1/2    | 5/8    | 3/4       | 7/8       | 1         |
|---------------|---------|--------|---------|--------|--------|-----------|--------|--------|-----------|-----------|-----------|
| Thread Size-B | 5/16-28 | 3/8-24 | 7/16-24 | 1/2-20 | 5/8-18 | 1 1/16-18 | 3/4-18 | 7/8-18 | 1-1/16-16 | 1-3/16-16 | 1-5/16-16 |

**Typical Application:**

Hydraulic brake, power steering, fuel lines and transmission cooler lines, LP and natural gas (special order).

**Pressure:**

Working pressure up to 2000 psi depending on tube size. Will withstand burst pressure of standard tubing - up to 5000 psi with Bundy-weld (double flared) and 3500 psi with copper tubing, depending on size.

**Vibration:**

Excellent resistance.

**Temperature Range:**

-65°F to +250°F (-53°C to +121°C) range at maximum operating pressures.

**Material:**

CA360 Brass.

**Used With:**

Copper, brass, aluminum and steel hydraulic tubing that can be flared. See pages 25-29 for material compatibility.

**Advantages:**

Very low cost and reusable. Seats and threads are internal and protected. Compact, excellent vibration life. Short nut affords very close tube bends. Steel or brass tube nut.

**Conformance:**

Listed by Underwriter's Laboratories (available on special order) for fuel equipment, refrigeration and gas. Meets specifications and standards of ASA, ASME, SAE and MS (Military Standards).

**How to Order:**

Order individually by catalog number.

**Note:**

Refer to current price list for availability of cataloged items. Configurations and dimensions subject to change without notice. Additional information can be found in SAE J512.

**Label Set:**

W-8022 (adhesive)  
CL-490 (non-adhesive)

**Assembly Instructions:**

1. Cut tubing to desired length. Make sure all burrs are removed and the ends are cut square.
2. Slide nut on tube. Threaded end "A" of nut must face out.
3. Flare end of tube with a 45° flaring tool. See page 23 for flare data.
  - a. Measure flare diameter.
  - b. Examine flare for excessive thin out.
  - c. On thin wall, welded or brazed tubing, use double flare to prevent pinch-off and cracked flares.
4. Lubricate threads and assemble to connector body. Nut should be turned hand tight.
5. Tighten assembly with a wrench until a solid feeling is encountered. From that point, apply a one-sixth turn.

**Note:**

Do not over-torque as it may damage the connectors or split the tubing at the flare.



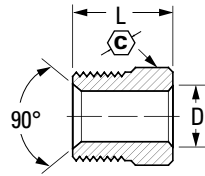
# Brass Products

## Inverted Flare

### Tube Nut

(Steel)

(Ref. SAE No. 040110)



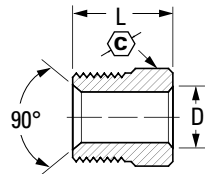
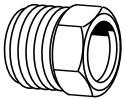
| Tube O.D. | Catalog Number |        | D     | L    |
|-----------|----------------|--------|-------|------|
| 1/8       | 105x2          | 5/16   | 0.132 | 0.52 |
| 3/16      | 105x3          | 3/8    | 0.196 | 0.56 |
| 1/4       | 105x4          | 7/16   | 0.259 | 0.56 |
| 5/16      | 105x5          | 1/2    | 0.321 | 0.62 |
| 3/8       | 105x6          | 5/8    | 0.384 | 0.66 |
| 3/8       | 105x6x7*       | 11/16  | 0.387 | 0.66 |
| 7/16      | 105x7          | 11/16  | 0.444 | 0.68 |
| 1/2       | 105x8          | 3/4    | 0.508 | 0.74 |
| 5/8       | 105x10         | 7/8    | 0.632 | 0.80 |
| 3/4       | 105x12         | 1-1/16 | 0.757 | 0.88 |
| 7/8       | 105x14         | 1-3/16 | 0.882 | 1.06 |
| 1         | 105x16         | 1-3/8  | 1.008 | 1.18 |

\*3/8" Tube to 11/16-18 Male Thread

### Tube Nut

(Brass)

(Ref. SAE No. 040110)

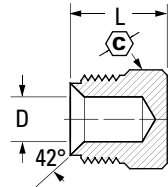
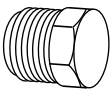


| Tube O.D. | Catalog Number |      | D    | L    |
|-----------|----------------|------|------|------|
| 3/16      | 100x3          | 3/8  | .196 | 0.56 |
| 1/4       | 100x4          | 7/16 | .259 | 0.56 |
| 5/16      | 100x5          | 1/2  | .321 | 0.62 |
| 3/8       | 100x6          | 5/8  | .384 | 0.66 |
| 1/2       | 100x8          | 3/4  | .508 | 0.74 |

### Plug

(Steel)

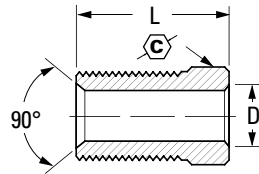
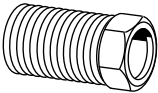
(Ref. SAE No. 040109)



| Tube O.D. | Catalog Number |      | D    | L    |
|-----------|----------------|------|------|------|
| 3/16      | 131x3          | 3/8  | .188 | 0.53 |
| 1/4       | 131x4          | 7/16 | .188 | 0.54 |
| 5/16      | 131x5          | 1/2  | .250 | 0.59 |
| 3/8       | 131x6          | 5/8  | .312 | 0.66 |

### Tube Nut Long

(Steel)

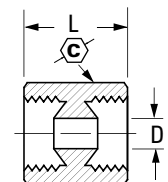
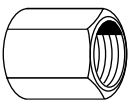


| Tube O.D. | Catalog Number |      | D    | L    |
|-----------|----------------|------|------|------|
| 3/16      | 7896x3         | 3/8  | .196 | .844 |
| 1/4       | 7896x4         | 7/16 | .257 | .812 |

Required for wheel cylinders with deep port connection.

### Union

(Ref. SAE No. 040101)



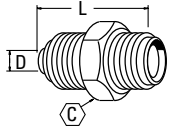
| Tube O.D. | Catalog Number |        | D    | L   |
|-----------|----------------|--------|------|-----|
| 1/8       | 302x2          | 13/32  | .078 | .59 |
| 3/16      | 302x3          | 15/32  | .125 | .62 |
| 1/4       | 302x4          | 17/32  | .188 | .62 |
| 5/16      | 302x5          | 19/32  | .219 | .70 |
| 3/8       | 302x6          | 3/4    | .281 | .80 |
| 1/2       | 302x8          | 29/32  | .406 | .91 |
| 5/8       | 302x10♦        | 1-1/16 | .531 | .97 |

♦MTO - Made To Order

# Brass Products

## Inverted Flare

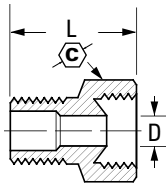
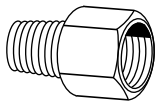
### Adapter SAE 45° Flare to Inv. Flare



| SAE Tube Size | Inverted Male | Catalog Number |       | D    | L     |
|---------------|---------------|----------------|-------|------|-------|
| 1/4           | 3/16          | 1518           | 7/16  | .189 | 1.031 |
| 1/4           | 1/4           | 1522           | 7/16  | .188 | 1.031 |
| 3/8           | 5/16          | 1553           | 5/8   | .234 | 1.340 |
| 3/8           | 3/8           | 1563           | 5/8   | .282 | 1.380 |
| 3/8           | 7/16          | 1554           | 11/16 | .282 | 1.400 |

### Male Connector

(Ref. SAE No. 040102)



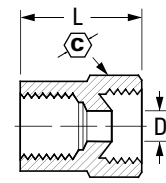
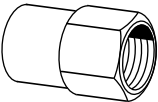
Pipe end drill may be reduced or increased from seat dimension 'D'.

| Tube O.D. | Male Pipe Thread | Catalog Number |        | D    | L    |
|-----------|------------------|----------------|--------|------|------|
| 1/8       | 1/8              | 202x2          | 13/32  | .078 | 0.62 |
| 3/16      | 1/8              | 202x3          | 15/32  | .125 | 0.70 |
| 1/4       | 1/8              | 202x4          | 17/32  | .188 | 0.74 |
| 1/4       | 1/4              | 202x4x4        | 9/16   | .188 | 0.89 |
| 5/16      | 1/8              | 202x5          | 19/32  | .219 | 0.79 |
| 5/16      | 1/4              | 202x5x4        | 19/32  | .220 | 0.98 |
| 3/8       | 1/8              | 202x6x2        | 3/4    | .281 | 0.89 |
| 3/8       | 1/4              | 202x6          | 3/4    | .281 | 1.03 |
| 3/8       | 3/8              | 202x6x6        | 3/4    | .281 | 1.01 |
| 1/2       | 1/4              | 202x8x4        | 29/32  | .406 | 1.08 |
| 1/2       | 3/8              | 202x8          | 29/32  | .406 | 1.07 |
| 1/2       | 1/2              | 202x8x8        | 29/32  | .406 | 1.26 |
| 5/8       | 1/2              | 202x10         | 1-1/16 | .531 | 1.32 |
| 3/4       | 3/4              | 202x12         | 1-1/4  | .625 | 1.39 |
| 7/8       | 3/4              | 202x14         | 1-3/8  | .750 | 1.38 |
| 1         | 1                | 202x16♦        | 1-1/2  | .812 | 1.62 |

♦MT0 - Made To Order

### Female Connector

(Ref. SAE No. 040103)

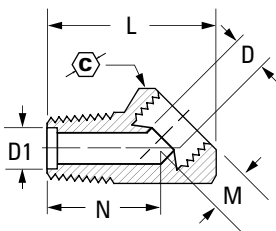
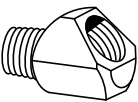


| Tube O.D. | Fem. Pipe Thread | Catalog Number |       | D    | L    |
|-----------|------------------|----------------|-------|------|------|
| 3/16      | 1/8              | 252x3          | 1/2   | .125 | 0.75 |
| 1/4       | 1/8              | 252x4          | 17/32 | .188 | 0.75 |
| 5/16      | 1/8              | 252x5          | 19/32 | .219 | 0.78 |
| 3/8       | 1/4              | 252x6♦         | 3/4   | .281 | 1.03 |
| 1/2       | 3/8              | 252x8♦         | 29/32 | .406 | 1.09 |

♦MT0 - Made To Order

### 45° Male Elbow

(Ref. SAE No. 040302)



| Tube O.D. | Male Pipe Thread | Catalog Number |       | D    | D1   | L    | M    | N    |
|-----------|------------------|----------------|-------|------|------|------|------|------|
| 3/16      | 1/8              | 352x3          | 17/32 | .125 | .156 | 0.88 | 0.25 | 0.55 |
| 1/4       | 1/8              | 352x4          | 9/16  | .188 | .188 | 0.94 | 0.27 | 0.58 |
| 5/16      | 1/8              | 352x5          | 5/8   | .219 | .203 | 1.00 | 0.34 | 0.56 |
| 5/16      | 1/4              | 352x5x4♦       | 5/8   | .219 | .203 | 1.16 | 0.23 | 0.83 |
| 3/8       | 1/4              | 352x6          | 25/32 | .281 | .219 | 1.34 | 0.41 | 0.84 |
| 1/2       | 3/8              | 352x8♦         | 7/8   | .406 | .375 | 1.44 | 0.38 | 0.91 |

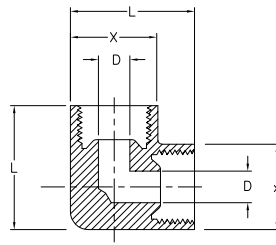
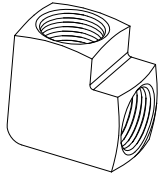
♦MT0 - Made To Order

# Brass Products

## Inverted Flare

### 90° Union Elbow

(Ref. SAE No. 040201)

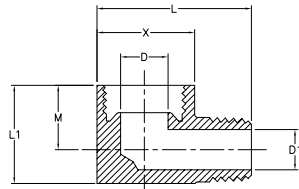
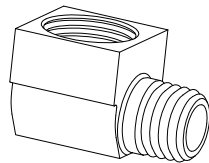


| Tube O.D. | Catalog Number | D    | L    | X    |
|-----------|----------------|------|------|------|
| 1/4       | 502x4          | .188 | 0.77 | 0.53 |
| 5/16      | 502x5♦         | .219 | 0.87 | 0.60 |
| 3/8       | 502x6♦         | .281 | 1.04 | 0.72 |

♦MTO - Made To Order

### 90° Male Elbow

(Ref. SAE No. 040202)



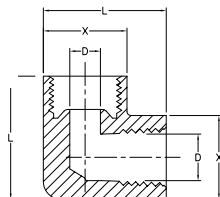
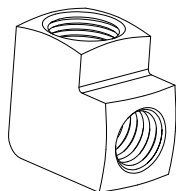
| Tube O.D. | Male Pipe Thread | Catalog Number | D    | D1   | L    | L1   | M    | X    |
|-----------|------------------|----------------|------|------|------|------|------|------|
| 1/8       | 1/8              | 402x2          | .078 | .116 | 0.80 | 0.47 | 0.27 | 0.42 |
| 3/16      | 1/8              | 402x3          | .125 | .125 | 0.85 | 0.47 | 0.27 | 0.47 |
| 1/4       | 1/8              | 402x4          | .188 | .177 | 0.92 | 0.55 | 0.33 | 0.53 |
| 1/4       | 1/8              | 431x4*         | .188 | .062 | 0.91 | 0.53 | 0.33 | 0.53 |
| 1/4       | 1/4              | 402x4x4        | .188 | .188 | 1.09 | 0.58 | 0.28 | 0.56 |
| 5/16      | 1/8              | 402x5          | .219 | .219 | 0.98 | 0.67 | 0.47 | 0.59 |
| 5/16      | 1/4              | 402x5x4        | .219 | .219 | 1.16 | 0.75 | 0.45 | 0.59 |
| 3/8       | 1/8              | 402x6x2        | .281 | .219 | 1.14 | 0.75 | 0.54 | 0.76 |
| 3/8       | 1/4              | 402x6          | .281 | .281 | 1.32 | 0.82 | 0.53 | 0.76 |
| 3/8       | 3/8              | 402x6x6        | .281 | .312 | 1.32 | 0.84 | 0.50 | 0.75 |
| 1/2       | 1/4              | 402x8x4♦       | .406 | .281 | 1.47 | 0.94 | 0.59 | 0.91 |
| 1/2       | 3/8              | 402x8          | .406 | .375 | 1.48 | 0.94 | 0.59 | 0.92 |
| 1/2       | 1/2              | 402x8x8        | .406 | .406 | 1.67 | 1.09 | 0.66 | 0.91 |
| 5/8       | 3/8              | 402x10x6♦      | .531 | .437 | 1.62 | 1.11 | 0.67 | 1.06 |
| 5/8       | 1/2              | 402x10♦        | .531 | .500 | 1.82 | 1.11 | 0.67 | 1.06 |
| 3/4       | 1/2              | 402x12x8       | .626 | .531 | 2.09 | 1.30 | 0.85 | 1.25 |
| 7/8       | 3/4              | 402x14         | .750 | .750 | 2.12 | 1.46 | 0.94 | 1.38 |
| 1         | 1                | 402x16         | .812 | .812 | 2.44 | 1.70 | 1.02 | 1.50 |

\*.062 dia. restricted hole through pipe end. Available on special order with any restricted hole size up to .172 dia.

♦MTO - Made To Order

### 90° Female Elbow

(Ref. SAE No. 040203)



| Tube O.D. | Fem. Pipe Thread | Catalog Number | D    | L    | X    |
|-----------|------------------|----------------|------|------|------|
| 3/16      | 1/8              | 452x3♦         | .125 | 0.81 | 0.50 |
| 1/4       | 1/8              | 452x4          | .188 | 0.81 | 0.53 |
| 5/16      | 1/8              | 452x5          | .219 | 0.88 | 0.60 |
| 3/8       | 1/4              | 452x6          | .281 | 1.05 | 0.75 |

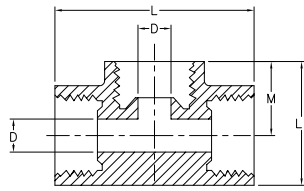
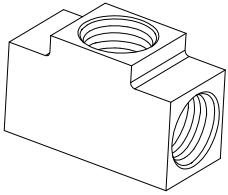
♦MTO - Made To Order

# Brass Products

## Inverted Flare

### Union Tee

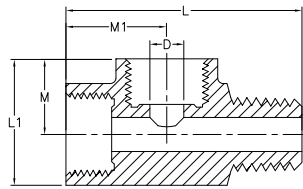
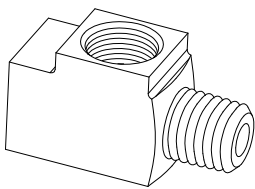
(Ref. SAE No. 040401)



| Tube O.D. | Catalog Number | D    | L    | L1   | M    |
|-----------|----------------|------|------|------|------|
| 1/8       | 702x2          | .078 | 0.94 | 0.53 | .330 |
| 3/16      | 702x3          | .125 | 1.09 | 0.64 | .390 |
| 1/4       | 702x4          | .189 | 1.13 | 0.70 | .420 |
| 5/16      | 702x5          | .219 | 1.25 | 0.75 | .450 |
| 3/8       | 702x6          | .282 | 1.48 | 0.95 | .560 |

### Male Run Tee

(Ref. SAE No. 040424)

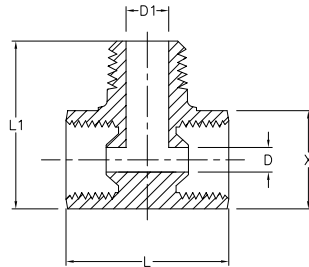
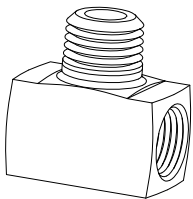


| Tube O.D. | Male Pipe Thread | Catalog Number | D    | L    | L1   | M    | M1   |
|-----------|------------------|----------------|------|------|------|------|------|
| 3/16      | 1/8              | 752x3♦         | .125 | 1.25 | 0.62 | 0.39 | 0.53 |
| 1/4       | 1/8              | 752x4          | .189 | 1.31 | 0.70 | 0.42 | 0.56 |
| 5/16      | 1/8              | 752x5♦         | .219 | 1.47 | 0.75 | 0.45 | 0.62 |
| 3/8       | 1/4              | 752x6♦         | .281 | 1.83 | 0.94 | 0.56 | 0.75 |
| 1/2       | 3/8              | 752x8♦         | .406 | .406 | 1.39 | 1.47 | 0.91 |

♦MT0 - Made To Order

### Male Branch Tee

(Ref. SAE No. 040425)

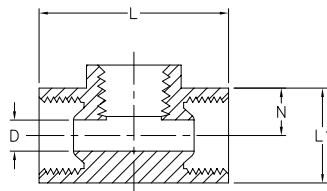
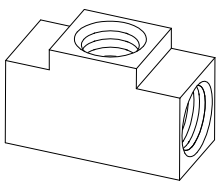


| Tube O.D. | Male Pipe Thread | Catalog Number | D    | D1   | L    | L1   | X    |
|-----------|------------------|----------------|------|------|------|------|------|
| 3/16      | 1/8              | 602x3          | .125 | .219 | 0.83 | 0.86 | 0.50 |
| 1/4       | 1/8              | 602x4          | .189 | .219 | 0.84 | 0.96 | 0.57 |
| 5/16      | 1/8              | 602x5          | .219 | .219 | 0.96 | 0.96 | 0.58 |
| 3/8       | 1/4              | 602x6          | .281 | .344 | 1.16 | 1.33 | 0.78 |
| 1/2       | 3/8              | 602x8♦         | .406 | .406 | 1.39 | 1.47 | 0.91 |

♦MT0 - Made To Order

### Female Branch Tee

(Ref. SAE No. 040427)



| Tube O.D. | Fem. Pipe Thread | Catalog Number | D    | L    | L1   | N    |
|-----------|------------------|----------------|------|------|------|------|
| 3/16      | 1/8              | 652x3          | .125 | 1.10 | 0.62 | 0.39 |
| 1/4       | 1/8              | 652x4♦         | .189 | 1.13 | 0.70 | 0.42 |

♦MT0 - Made To Order

# Brass Products

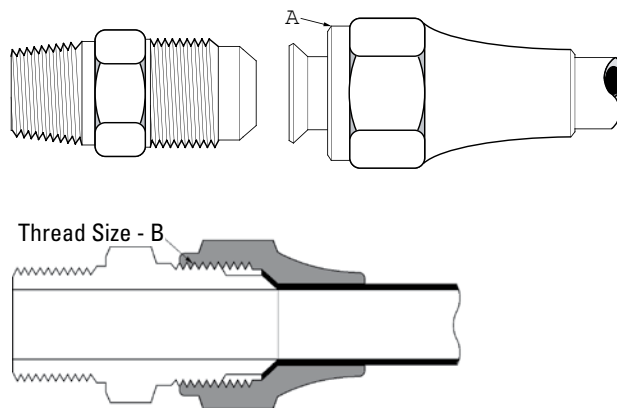
## SAE 45° Flare

### Note:

For additional technical questions, contact Technical Support at 1-888-258-0222.



Refer to safety information regarding proper selection of tubing and tube connectors on page 5.



| Tube O.D.     | 1/8     | 3/16   | 1/4     | 5/16   | 3/8    | 7/16     | 1/2    | 5/8    | 3/4       |
|---------------|---------|--------|---------|--------|--------|----------|--------|--------|-----------|
| Thread Size-B | 5/16-24 | 3/8-24 | 7/16-20 | 1/2-20 | 5/8-18 | 11/16-18 | 3/4-16 | 7/8-14 | 1-1/16-14 |

### Typical Application:

LP and natural gas, flammable liquids (special order), instrumentation, refrigeration, power steering, hydraulic and pneumatic systems.

### Pressure:

Working pressure up to 2000 psi depending on tube size. Will withstand burst pressure of standard tubing - up to 5000 psi with Bundy-weld (double flared) and 3500 psi with copper tubing, depending on size.

### Vibration:

Good resistance - use long nut when greater vibration resistance is required.

### Temperature Range:

-65°F to +250°F (-53°C to +121°C) range at maximum operating pressures.

### Material:

CA360 Brass.

### Used With:

Copper, brass, aluminum and steel hydraulic tubing that can be flared. See pages 25-29 for material compatibility.

### Advantages:

Low cost and reusability, long or short nut. Good resistance to vibration.

### Conformance:

Listed by Underwriter's Laboratories (available on special order) for flammable liquids, refrigeration and gas. Meets specifications and standards of ASA, ASME, SAE and MS (Military Standards).

### How to Order:

Order individually by catalog number.

### Note:

Refer to current price list for availability of cataloged items. Configurations and dimensions subject to change without notice. Quotations of non-stock items available upon request. Additional information can be found in SAE J512.

### Assembly Instructions:

1. Cut tubing to desired length. Make sure all burrs are removed and the ends are cut square.
2. Slide nut on tube. Threaded end "A" of nut must face out.
3. Flare end of tube with a 45° flaring tool. See page 23 for flare data.
  - a. Measure flare diameter.
  - b. Examine flare for excessive thin out.
4. Lubricate threads and assemble to connector body. Nut should be turned hand tight.
5. Tighten assembly with a wrench until a solid feeling is encountered. From that point, apply a one-sixth turn.

### Note:

Do not over-torque as it may damage the connector or split the tubing at the flare.

### Label Set:

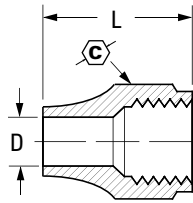
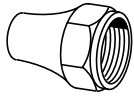
W-8022 (adhesive)  
CL-490 (non-adhesive)

# Brass Products

## SAE 45° Flare

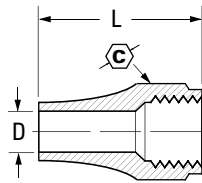
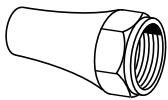
### Nut

(Ref. SAE No. 010110)

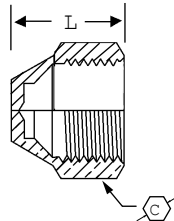
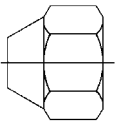


### Long Nut

(Ref. SAE No. 010111)

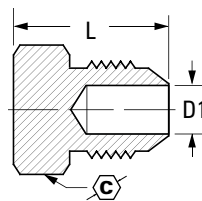
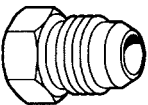


### Cap



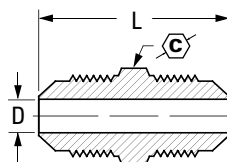
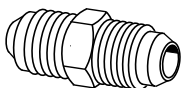
### Plug

(Ref. SAE No. 010109)



### Union

(Ref. SAE No. 010101)



### Note:

For additional technical questions, contact Technical Support at 1-888-258-0222.



Refer to safety information regarding proper selection of tubing and tube connectors on page 5.

| Tube O.D. | Catalog Number |  | D    | L    |
|-----------|----------------|-------------------------------------------------------------------------------------|------|------|
| 1/8       | 1110x2         | 3/8                                                                                 | .133 | 0.50 |
| 3/16      | 1110x3         | 7/16                                                                                | .195 | 0.62 |
| 1/4       | 1110x4         | 9/16                                                                                | .258 | 0.75 |
| 5/16      | 1110x5         | 5/8                                                                                 | .320 | 0.88 |
| 3/8       | 1110x6 ♦       | 3/4                                                                                 | .383 | 1.00 |
| 7/16      | 1110x7         | 13/16                                                                               | .445 | 1.06 |
| 1/2       | 1110x8         | 7/8                                                                                 | .508 | 1.12 |
| 5/8       | 1110x10 ♦      | 1-1/16                                                                              | .633 | 1.31 |
| 3/4       | 1110x12        | 1-1/4                                                                               | .758 | 1.50 |

♦MT0 - Made To Order

| Tube O.D. | Catalog Number |  | D    | L    |
|-----------|----------------|-------------------------------------------------------------------------------------|------|------|
| 3/16      | 41x3           | 7/16                                                                                | .195 | 0.81 |
| 1/4       | 41x4           | 9/16                                                                                | .258 | 0.94 |
| 5/16      | 41x5           | 5/8                                                                                 | .320 | 1.12 |
| 3/8       | 41x6           | 3/4                                                                                 | .383 | 1.31 |
| 1/2       | 41x8           | 7/8                                                                                 | .508 | 1.62 |
| 5/8       | 41x10 ♦        | 1-1/16                                                                              | .633 | 1.88 |

♦MT0 - Made To Order

| Tube O.D. | Catalog Number |  | L    |
|-----------|----------------|-------------------------------------------------------------------------------------|------|
| 1/8       | 40x2           | 7/16                                                                                | 0.40 |
| 3/16      | 40x3           | 1/2                                                                                 | 0.47 |
| 1/4       | 40x4           | 7/16                                                                                | 0.53 |
| 5/16      | 40x5           | 5/8                                                                                 | 0.62 |
| 3/8       | 40x6           | 3/4                                                                                 | 0.69 |
| 1/2       | 40x8           | 7/8                                                                                 | 0.84 |
| 5/8       | 40x10          | 1-1/16                                                                              | 0.97 |
| 3/4       | 40x12          | 1-5/16                                                                              | 1.09 |

| Tube O.D. | Catalog Number |  | L    | D1 (opt.) |
|-----------|----------------|---------------------------------------------------------------------------------------|------|-----------|
| 1/8       | 39x2           | 5/16                                                                                  | 0.47 | .079      |
| 3/16      | 39x3           | 3/8                                                                                   | 0.58 | .126      |
| 1/4       | 39x4           | 7/16                                                                                  | 0.69 | .189      |
| 5/16      | 39x5           | 1/2                                                                                   | 0.79 | .220      |
| 3/8       | 39x6           | 5/8                                                                                   | 0.88 | .282      |
| 1/2       | 39x8           | 3/4                                                                                   | 1.06 | .408      |
| 5/8       | 39x10          | 7/8                                                                                   | 1.19 | .502      |
| 3/4       | 39x12          | 1-1/16                                                                                | 1.31 | .627      |

| Tube O.D. | Catalog Number |  | D    | L    |
|-----------|----------------|---------------------------------------------------------------------------------------|------|------|
| 1/8       | 42x2 ♦         | 5/16                                                                                  | .078 | 0.92 |
| 3/16      | 42x3           | 3/8                                                                                   | .125 | 1.06 |
| 1/4       | 42x4           | 7/16                                                                                  | .188 | 1.19 |
| 5/16      | 42x5           | 1/2                                                                                   | .219 | 1.34 |
| 3/8       | 42x6           | 5/8                                                                                   | .281 | 1.50 |
| 1/2       | 42x8           | 3/4                                                                                   | .406 | 1.81 |
| 5/8       | 42x10          | 7/8                                                                                   | .500 | 2.12 |
| 3/4       | 42x12 ♦        | 1-1/16                                                                                | .625 | 2.44 |

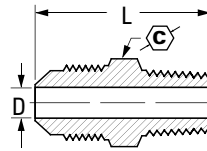
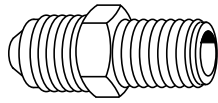
♦MT0 - Made To Order

# Brass Products

## SAE 45° Flare

### Male Connector

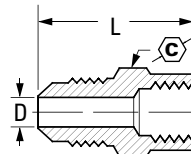
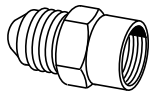
(Ref. SAE No. 010102)



| Tube O.D. | Male Pipe Thread | Catalog Number | C      | D    | L1   | D1   |
|-----------|------------------|----------------|--------|------|------|------|
| 1/8       | 1/8              | 48x2           | 7/16   | .078 | 0.90 | .219 |
| 3/16      | 1/8              | 48x3           | 7/16   | .125 | 1.00 | .219 |
| 1/4       | 1/8              | 48x4           | 7/16   | .188 | 1.06 | .219 |
| 1/4       | 1/4              | 48x4x4         | 9/16   | .188 | 1.26 | .312 |
| 5/16      | 1/8              | 48x5           | 1/2    | .219 | 1.16 | .219 |
| 5/16      | 1/4              | 48x5x4         | 9/16   | .219 | 1.34 | .281 |
| 3/8       | 1/8              | 48x6x2         | 5/8    | .281 | 1.25 | .406 |
| 3/8       | 1/4              | 48x6           | 5/8    | .281 | 1.44 | .562 |
| 3/8       | 3/8              | 48x6x6         | 11/16  | .281 | 1.44 | .312 |
| 3/8       | 1/2              | 48x6x8         | 7/8    | .281 | 1.69 | .219 |
| 1/2       | 1/4              | 48x8x4         | 3/4    | .406 | 1.62 | .281 |
| 1/2       | 3/8              | 48x8           | 3/4    | .406 | 1.62 | .406 |
| 1/2       | 1/2              | 48x8x8         | 7/8    | .406 | 1.81 | .562 |
| 5/8       | 3/8              | 48x10x6        | 7/8    | .500 | 1.81 | .406 |
| 5/8       | 1/2              | 48x10          | 7/8    | .500 | 2.00 | .500 |
| 3/4       | 1/2              | 48x12          | 1-1/16 | .562 | 2.18 | .562 |
| 3/4       | 3/4              | 48x12x12       | 1-1/16 | .625 | 2.18 | .751 |

### Female Connector

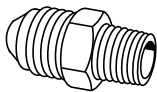
(Ref. SAE No. 010103)



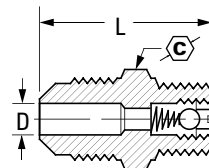
| Tube O.D. | Fem. Pipe Thread | Catalog Number | C     | D    | L    |
|-----------|------------------|----------------|-------|------|------|
| 3/16      | 1/8              | 46x3♦          | 9/16  | .125 | 0.97 |
| 1/4       | 1/8              | 46x4           | 9/16  | .188 | 1.03 |
| 1/4       | 1/4              | 46x4x4         | 11/16 | .188 | 1.25 |
| 5/16      | 1/8              | 46x5           | 9/16  | .219 | 1.06 |
| 5/16      | 1/4              | 46x5x4♦        | 11/16 | .219 | 1.28 |
| 3/8       | 1/4              | 46x6           | 11/16 | .281 | 1.31 |
| 3/8       | 3/8              | 46x6x6         | 13/16 | .281 | 1.38 |
| 3/8       | 1/2              | 46x6x8♦        | 1     | .281 | 1.62 |
| 1/2       | 3/8              | 46x8           | 13/16 | .406 | 1.50 |
| 1/2       | 1/2              | 46x8x8♦        | 1     | .406 | 1.75 |
| 5/8       | 3/8              | 46x10x6♦       | 7/8   | .500 | 1.59 |
| 5/8       | 1/2              | 46x10w         | 1     | .500 | 1.81 |
| 5/8       | 3/4              | 46x10x12♦      | 1-1/4 | .500 | 1.90 |

♦MTO - Made To Order

### Male Ball Check Connector



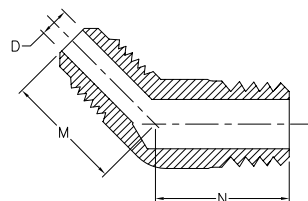
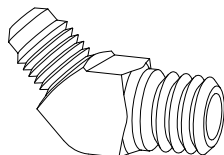
Ball & Spring position may be reversed to change flow/check direction. Min pressure 3 psi.



| Tube O.D. | Male Pipe Thread | Catalog Number | C    | D    | L    |
|-----------|------------------|----------------|------|------|------|
| 1/4       | 1/8              | 43x4           | 7/16 | .125 | 1.06 |
| 3/8       | 1/4              | 43x6           | 5/8  | .219 | 1.31 |

### 45° Male Elbow

(Ref. SAE No. 010302)



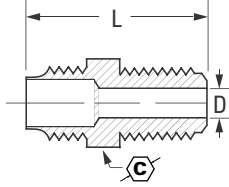
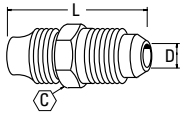
| Tube O.D. | Male Pipe Thread | Catalog Number | D    | M    | N    |
|-----------|------------------|----------------|------|------|------|
| 1/4       | 1/8              | 54x4           | .188 | 0.67 | 0.64 |
| 1/4       | 1/4              | 54x4x4         | .188 | 0.73 | 0.87 |
| 5/16      | 1/8              | 54x5           | .219 | 0.78 | 0.64 |
| 3/8       | 1/4              | 54x6           | .283 | 0.89 | 0.86 |
| 1/2       | 3/8              | 54x8           | .407 | 1.06 | 0.96 |
| 1/2       | 1/2              | 54x8x8         | .406 | 1.12 | 1.17 |
| 5/8       | 3/8              | 54x10x6        | .500 | 1.23 | 0.98 |
| 5/8       | 1/2              | 54x10          | .500 | 1.23 | 1.17 |



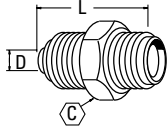
# Brass Products

## SAE 45° Flare

### AC Type Adapter

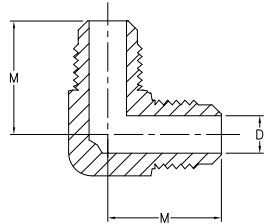
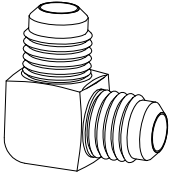


### Adapter SAE 45° Flare to Inv. Flare



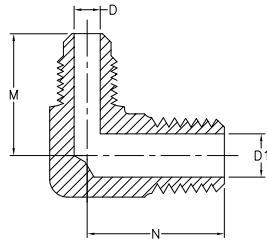
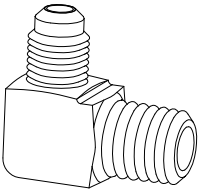
### 90° Union Elbow

(Ref. SAE No. 010201)



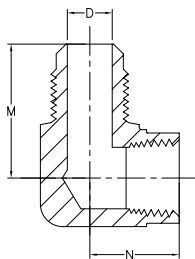
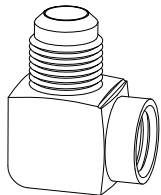
### 90° Male Elbow

(Ref. SAE No. 010202)



### 90° Female Elbow

(Ref. SAE No. 010203)



| Tube Size | SAE Tube Size | Catalog Number |      | D    | L     |
|-----------|---------------|----------------|------|------|-------|
| 1/4       | 1/4           | 1521           | 7/16 | .188 | 1.094 |

| SAE Tube Size | Inverted Male | Catalog Number |       | D    | L     |
|---------------|---------------|----------------|-------|------|-------|
| 1/4           | 3/16          | 1518           | 7/16  | .189 | 1.031 |
| 1/4           | 1/4           | 1522           | 7/16  | .188 | 1.031 |
| 3/8           | 5/16          | 1553           | 5/8   | .234 | 1.340 |
| 3/8           | 3/8           | 1563           | 5/8   | .282 | 1.380 |
| 3/8           | 7/16          | 1554           | 11/16 | .282 | 1.400 |

| Tube O.D. | Catalog Number | D    | M    |
|-----------|----------------|------|------|
| 1/2       | 55x8           | .406 | 1.23 |
| 3/4       | 55x12♦         | .625 | 1.64 |

♦MT0 - Made To Order

| Tube O.D. | Male Pipe Thread | Catalog Number | D    | D1   | M    | N    |
|-----------|------------------|----------------|------|------|------|------|
| 1/8       | 1/8              | 49x2           | .078 | .219 | 0.62 | 0.69 |
| 3/16      | 1/8              | 49x3           | .125 | .219 | 0.75 | 0.75 |
| 1/4       | 1/8              | 49x4           | .188 | .219 | 0.81 | 0.76 |
| 1/4       | 1/4              | 49x4x4         | .188 | .312 | 0.88 | 0.99 |
| 1/4       | 3/8              | 49x4x6         | .188 | .406 | 0.94 | 1.03 |
| 5/16      | 1/8              | 49x5           | .219 | .219 | 0.91 | 0.78 |
| 5/16      | 1/4              | 49x5x4         | .219 | .312 | 0.95 | 0.92 |
| 3/8       | 1/8              | 49x6x2         | .283 | .219 | 1.03 | 0.91 |
| 3/8       | 1/4              | 49x6           | .281 | .312 | 0.97 | 1.06 |
| 3/8       | 3/8              | 49x6x6         | .281 | .406 | 1.06 | 1.09 |
| 3/8       | 1/2              | 49x6x8         | .281 | .438 | 1.16 | 1.28 |
| 1/2       | 1/4              | 49x8x4         | .406 | .312 | 1.23 | 1.19 |
| 1/2       | 3/8              | 49x8           | .406 | .406 | 1.23 | 1.12 |
| 1/2       | 1/2              | 49x8x8         | .406 | .406 | 1.25 | 1.32 |
| 5/8       | 3/8              | 49x10x6        | .502 | .406 | 1.42 | 1.23 |
| 5/8       | 1/2              | 49x10          | .502 | .562 | 1.42 | 1.37 |
| 3/4       | 1/2              | 49x12          | .626 | .562 | 1.62 | 1.48 |
| 3/4       | 3/4              | 49x12x12       | .625 | .750 | 1.59 | 1.62 |

| Tube O.D. | Fem. Pipe Thread | Catalog Number | D    | M    | N    |
|-----------|------------------|----------------|------|------|------|
| 1/4       | 1/8              | 50x4           | .189 | 0.88 | 0.47 |
| 1/4       | 1/4              | 50x4x4         | .188 | 0.97 | 0.66 |
| 3/8       | 1/4              | 50x6           | .283 | 1.09 | 0.69 |

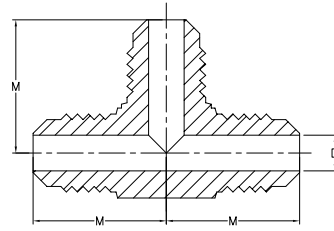
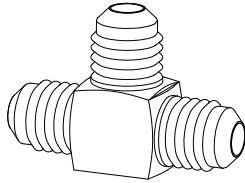
♦MT0 - Made To Order

# Brass Products

## SAE 45° Flare

### Union Tee

(Ref. SAE No. 010401)

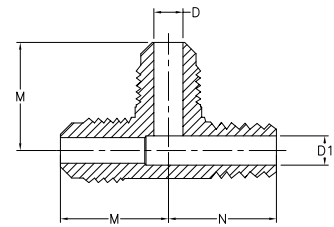
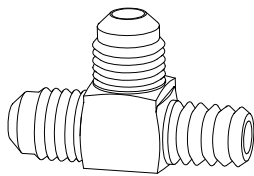


| Tube O.D. | Catalog Number | D    | M    |
|-----------|----------------|------|------|
| 3/16      | 44x3♦          | .125 | 0.73 |
| 1/4       | 44x4           | .188 | 0.88 |
| 3/8       | 44x6♦          | .283 | 1.06 |
| 1/2       | 44x8           | .407 | 1.20 |

♦MTO - Made To Order

### Male Run Tee

(Ref. SAE No. 010424)

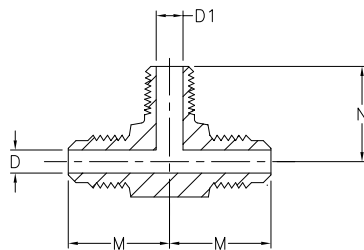
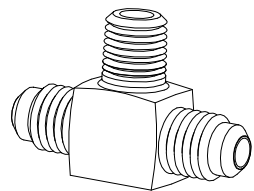


| Tube O.D. | Male Pipe Thread | Catalog Number | D    | D1 Opt. | M    | N    |
|-----------|------------------|----------------|------|---------|------|------|
| 1/4       | 1/8              | 51x4           | .188 | .219    | 0.88 | 0.76 |

♦MTO - Made To Order

### Male Branch Tee

(Ref. SAE No. 010425)

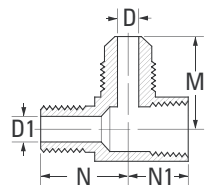
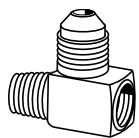


| Tube O.D. | Male Pipe Thread | Catalog Number | D    | D1   | M    | N    |
|-----------|------------------|----------------|------|------|------|------|
| 1/4       | 1/8              | 45x4           | .188 | .222 | 0.83 | 0.78 |
| 3/8       | 3/8              | 45x6x6x6♦      | .283 | .406 | 1.06 | 1.09 |
| 1/2       | 3/8              | 45x8♦          | .407 | .406 | 1.22 | 1.12 |
| 1/2       | 1/2              | 45x8x8x8♦      | .406 | .562 | 1.28 | 1.38 |

♦MTO - Made To Order

### Adapter Tee

(Female to Male Pipe on Run)

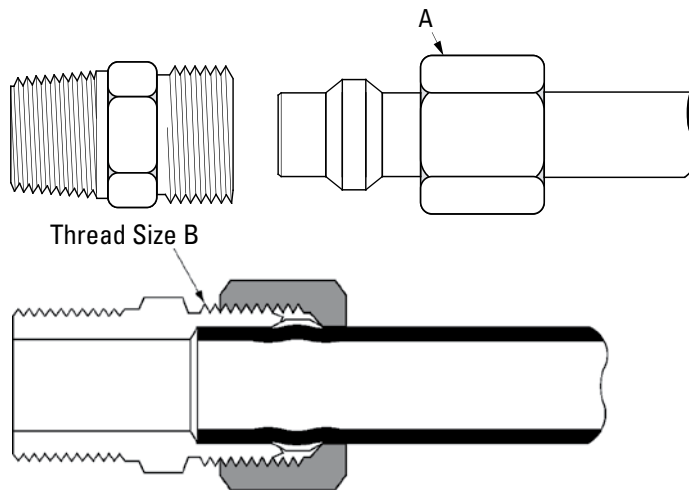


| Tube O.D. | Male Pipe Thread | Catalog Number | D    | D1   | M    | N    | N1   |
|-----------|------------------|----------------|------|------|------|------|------|
| 1/4       | 1/8              | 56x4w          | .188 | .188 | 0.78 | 0.76 | 0.46 |

♦MTO - Made To Order

**Note:**  
For additional technical questions, contact Technical Support at 1-888-258-0222.

**⚠** Refer to safety information regarding proper selection of tubing and tube connectors on page 5.



| Tube O.D.     | 1/8     | 3/16   | 1/4     | 5/16   | 3/8     | 7/16   | 1/2      | 5/8      | 3/4  | 1        |
|---------------|---------|--------|---------|--------|---------|--------|----------|----------|------|----------|
| Thread Size-B | 5/16-24 | 3/8-24 | 7/16-24 | 1/2-24 | 9/16-24 | 5/8-24 | 11/16-20 | 13/16-18 | 1-18 | 1-1/4-18 |

### Typical Application:

Instrumentation, hydraulic and pneumatic systems.

### Pressure:

Working pressure up to 2000 psi with a 4:1 safety factor depending on tube size. When using plastic tubing, use the working pressure for type used.

### Vibration:

Fair resistance - use long nut when greater vibration resistance is needed.

### Temperature Range:

65°F to +250°F (-53°C to +121°C) with metal tubing. When using compatible plastic tubing do not exceed the tubing temperature range. (Refer to tubing temperature range.)

### Material:

CA360 Brass.

### Used With:

Aluminum, copper and plastic tubing.

Plastic tubing, except for PT230 and TP160, requires 2030x insert. Not recommended for steel tubing. See pages 25-29 for material compatibility, and pages 30-33 for plastic tubing.

### Advantages:

Low cost. Easy to assemble, no flaring. Available with long or short nut. Broad selection of styles and sizes.

### Conformance:

Meets specifications and standards of ASA, ASME and SAE.

### How to Order:

Compression connectors are ordered as complete assemblies (body, nut and sleeve). To order assembly supplied with long nuts, simply add the prefix "1" to the catalog number. Example: 68x4 with long nut becomes 168x4. Nuts and sleeves can be ordered separately by catalog number. To order bodies only (less nut and sleeve). prefix catalog number with letter "B". Example: B68x4.

### Note:

Refer to current price list for availability of cataloged items. Quotations and delivery of non-stock items supplied on request. Configurations and dimensions subject to change without notice. Additional information can be found in SAE J512.

### Assembly Instructions:

1. Cut tubing to desired length.
2. Slide nut and then sleeve on tube. Threaded end "A" of nut must face toward connector.
3. Insert tubing into connector body. Be sure tubing is bottomed on connector shoulder.
4. Lubricate threads and assemble nut to connector body.
5. Tighten nut hand tight. From that point, tighten with a wrench the number of turns indicated in the chart below.

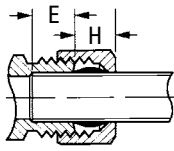
| Tube Size      | Additional turns From Hand Tight |
|----------------|----------------------------------|
| 1/8" thru 1/4" | 1-1/4                            |
| 5/16"          | 1-3/4                            |
| 3/8" thru 1"   | 2-1/4                            |

### Label Set:

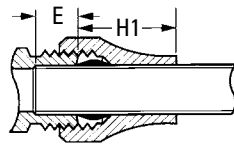
W-8022 (adhesive)  
CL-490 (non-adhesive)

# Brass Products

## Compression

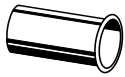


H and H1 are hand tight dimensions.

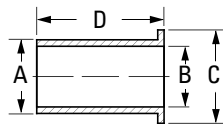


| Tube O.D. | E Tube Stop Depth | H    | H1 (Long Nut) |
|-----------|-------------------|------|---------------|
| 1/8       | 0.19              | 0.23 | —             |
| 3/16      | 0.22              | 0.25 | 0.47          |
| 1/4       | 0.25              | 0.29 | 0.56          |
| 5/16      | 0.28              | 0.30 | 0.66          |
| 3/8       | 0.31              | 0.27 | 0.70          |
| 1/2       | 0.38              | 0.42 | 0.88          |
| 5/8       | 0.38              | 0.42 | 0.92          |
| 3/4       | 0.44              | 0.49 | 1.18          |

### Tube Support for Plastic Tubing



Use only with PT200 and PT240 Tubing.



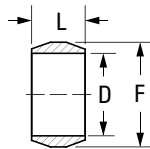
| Tube O.D. | Catalog Number | DIA. A | DIA. B | DIA. C | Length D |
|-----------|----------------|--------|--------|--------|----------|
| 1/4       | 2030x4*        | 1/8    | 3/32   | 11/64  | 19/32    |
| 1/4       | 2030x44**      | 11/64  | 9/64   | 7/32   | 17/32    |
| 5/16      | 2030x5         | 3/16   | 5/32   | 15/64  | 5/8      |
| 3/8       | 2030x6         | 1/4    | 7/32   | 11/32  | 41/64    |
| 1/2       | 2030x8         | 3/8    | 11/32  | 7/16   | 13/16    |
| 5/8       | 2030x10        | 1/2    | 29/64  | 35/64  | 13/16    |
| 3/4       | 2030x12        | 9/16   | 33/64  | 11/16  | 1-1/32   |

\* For Tubing with .126 I.D./ .062 wall thickness.

\*\* For tubing with .170 I.D./ .040 wall thickness.

### Compression Sleeve

(Ref. SAE No. 060115)

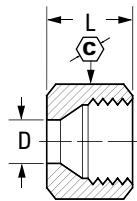
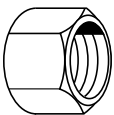


| Tube O.D. | Catalog Number | D    | F    | L    |
|-----------|----------------|------|------|------|
| 1/8       | 60x2           | 0.13 | 0.19 | 0.19 |
| 3/16      | 60x3           | 0.19 | 0.27 | 0.22 |
| 1/4       | 60x4           | 0.26 | 0.34 | 0.25 |
| 5/16      | 60x5           | 0.32 | 0.41 | 0.25 |
| 3/8       | 60x6           | 0.38 | 0.47 | 0.25 |
| 7/16      | 60x7           | 0.44 | 0.53 | 0.31 |
| 1/2       | 60x8           | 0.51 | 0.59 | 0.38 |
| 5/8       | 60x10          | 0.63 | 0.72 | 0.38 |
| 3/4       | 60x12♦         | 0.76 | 0.88 | 0.44 |

♦MTO - Made To Order

### Nut

(Ref. SAE No. 060110)



| Tube O.D. | Catalog Number | C      | D    | L    |
|-----------|----------------|--------|------|------|
| 1/8       | 61x2           | 3/8    | 0.13 | 0.38 |
| 3/16      | 61x3           | 7/16   | 0.19 | 0.41 |
| 1/4       | 61x4           | 1/2    | 0.26 | 0.44 |
| 5/16      | 61x5           | 9/16   | 0.32 | 0.44 |
| 3/8       | 61x6           | 5/8    | 0.38 | 0.47 |
| 7/16      | 61x7           | 11/16  | 0.44 | 0.50 |
| 1/2       | 61x8           | 13/16  | 0.51 | 0.62 |
| 5/8       | 61x10          | 15/16  | 0.63 | 0.62 |
| 5/8       | 61x12♦         | 1-3/16 | 0.76 | 0.69 |

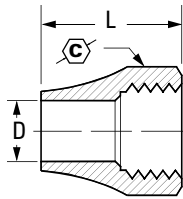
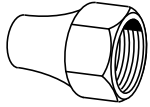
♦MTO - Made To Order

# Brass Products

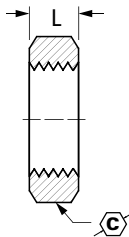
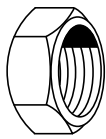
## Compression

### Long Nut

(Ref. SAE No. 060111)



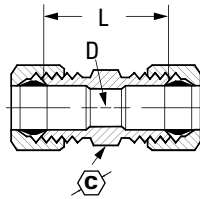
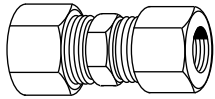
### Bulkhead Nut



Used on 74x Bulkhead Unions. Ref. page 49.

### Union

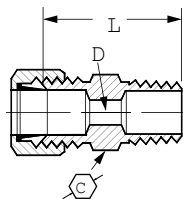
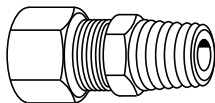
(Ref. SAE No. 060101BA)



Assembly with long nut 162x.  
Not available in the x3 style.

### Male Connector

(Ref. SAE No. 060102BA)



Assembly with long nut 168x.

| Tube O.D. | Catalog Number |  | D    | L    |
|-----------|----------------|--|------|------|
| 3/16      | 1611x3         |  | .193 | 0.62 |
| 1/4       | 1611x4         |  | .260 | 0.75 |
| 5/16      | 1611x5 ♦       |  | .320 | 0.84 |
| 3/8       | 1611x6         |  | .380 | 0.88 |
| 1/2       | 1611x8 ♦       |  | .510 | 1.06 |
| 5/8       | 1611x10 ♦      |  | .637 | 1.08 |
| 3/4       | 1611x12 ♦      |  | .760 | 1.38 |

♦MT0 - Made To Order

| Tube O.D. | Catalog Number |  | L    | Thread size |
|-----------|----------------|--|------|-------------|
| 1/4       | 0102x4         |  | 0.25 | 7/16-24     |
| 3/8       | 0102x6         |  | 0.25 | 9/16-24     |
| 1/2       | 0102x8         |  | 0.38 | 11/16-20    |

| Tube O.D. | Catalog Number |  | D    | L    |
|-----------|----------------|--|------|------|
| 1/8       | 62x2           |  | .094 | 0.66 |
| 3/16      | 62x3           |  | .125 | 0.76 |
| 1/4       | 62x4           |  | .188 | 0.79 |
| 5/16      | 62x5           |  | .250 | 0.88 |
| 3/8       | 62x6           |  | .312 | 0.97 |
| 1/2       | 62x8           |  | .406 | 1.10 |
| 5/8       | 62x10          |  | .500 | 1.25 |
| 3/4       | 62x12 ♦        |  | .562 | 1.44 |

♦MT0 - Made To Order

| Tube O.D. | Male Pipe Thread | Catalog Number |        | D    | D1 OPT. | L    |
|-----------|------------------|----------------|--------|------|---------|------|
| 1/8       | 1/16             | 68x2x1         | 3/8    | .094 | —       | 0.78 |
| 1/8       | 1/8              | 68x2           | 7/16   | .094 | .094    | 0.78 |
| 3/16      | 1/8              | 68x3           | 7/16   | .125 | .125    | 0.84 |
| 1/4       | 1/8              | 68x4           | 7/16   | .188 | .188    | 0.88 |
| 1/4       | 1/4              | 68x4x4         | 9/16   | .188 | .312    | 1.06 |
| 5/16      | 1/8              | 68x5           | 1/2    | .250 | .234    | 0.91 |
| 5/16      | 1/4              | 68x5x4         | 9/16   | .250 | .250    | 1.09 |
| 3/8       | 1/8              | 68x6x2         | 9/16   | .312 | .250    | 0.97 |
| 3/8       | 1/4              | 68x6           | 9/16   | .312 | .312    | 1.17 |
| 3/8       | 3/8              | 68x6x6         | 11/16  | .312 | .312    | 1.16 |
| 3/8       | 1/2              | 68x6x8         | 7/8    | .312 | .562    | 1.34 |
| 1/2       | 1/4              | 68x8x4         | 11/16  | .406 | .281    | 1.22 |
| 1/2       | 3/8              | 68x8           | 11/16  | .406 | .406    | 1.22 |
| 1/2       | 1/2              | 68x8x8         | 7/8    | .406 | .406    | 1.41 |
| 5/8       | 1/2              | 68x10          | 7/8    | .500 | .500    | 1.50 |
| 3/4       | 1/2              | 68x12 ♦        | 1      | .562 | .562    | 1.62 |
| 3/4       | 3/4              | 68x12x12 ♦     | 1-1/16 | .562 | .875    | 1.62 |

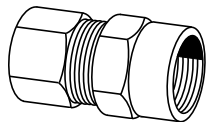
♦MT0 - Made To Order

# Brass Products

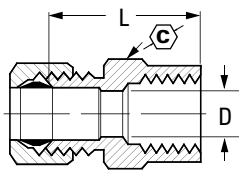
## Compression

### Female Connector

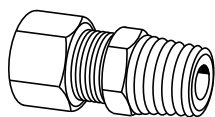
(Ref. SAE No. 060103BA)



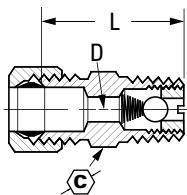
Assembly with long nut 166x.



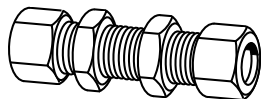
### Male Ball Check Connector



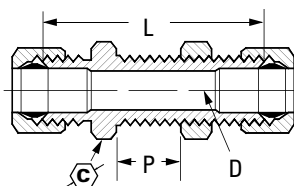
Assembly with long nut 163x. Min. working pressure 3 psi. Ball and spring position may be reversed to change flow/check direction. Ball check valves are neither tested nor adjusted prior to sale.



### Bulkhead Union



Assembly with long nut 174x. For Bulkhead Nuts, ref. page 48, included with assembly.



| Tube O.D. | Fem. Pipe Thread | Catalog Number |       | D    | L    |
|-----------|------------------|----------------|-------|------|------|
| 1/8       | 1/8              | 66x2           | 9/16  | .094 | 0.75 |
| 3/16      | 1/8              | 66x3           | 9/16  | .125 | 0.78 |
| 1/4       | 1/8              | 66x4           | 9/16  | .188 | 0.78 |
| 1/4       | 1/4              | 66x4x4         | 11/16 | .188 | 1.03 |
| 5/16      | 1/8              | 66x5           | 9/16  | .250 | 0.81 |
| 5/16      | 1/4              | 66x5x4 ♦       | 11/16 | .250 | 1.03 |
| 3/8       | 1/8              | 66x6x2         | 9/16  | .312 | 0.84 |
| 3/8       | 1/4              | 66x6           | 11/16 | .312 | 1.06 |
| 1/2       | 3/8              | 66x8           | 13/16 | .406 | 1.12 |

♦MTO - Made To Order

| Tube O.D. | Male Pipe Thread | Catalog Number |      | D    | L    |
|-----------|------------------|----------------|------|------|------|
| 1/4       | 1/8              | 63x4           | 7/16 | .125 | 0.88 |
| 3/8       | 1/4              | 63x6           | 9/16 | .219 | 1.16 |

| Tube O.D. | Catalog Number |       | D    | L    | Max. P |
|-----------|----------------|-------|------|------|--------|
| 1/4       | 74x4           | 9/16  | .188 | 1.57 | 0.52   |
| 3/8       | 74x6 ♦         | 11/16 | .312 | 1.76 | 0.55   |

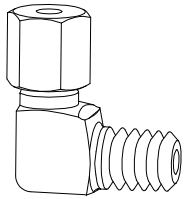
♦MTO - Made To Order

# Brass Products

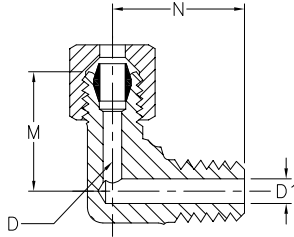
## Compression

### 90° Male Elbow

(Ref. SAE No. 060202BA)



Assembly with long nut 169x.

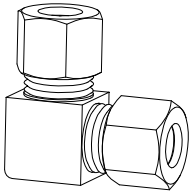


| Tube O.D. | Male Pipe Thread | Catalog Number | D    | D1   | M    | N    |
|-----------|------------------|----------------|------|------|------|------|
| 1/8       | 1/16             | 69x2x1         | .104 | .125 | 0.54 | 0.66 |
| 1/8       | 1/8              | 69x2           | .094 | .219 | 0.60 | 0.67 |
| 3/16      | 1/8              | 69x3           | .125 | .219 | 0.62 | 0.69 |
| 1/4       | 1/8              | 69x4           | .188 | .219 | 0.62 | 0.75 |
| 1/4       | 1/4              | 69x4x4         | .188 | .188 | 0.63 | 0.84 |
| 5/16      | 1/8              | 69x5           | .250 | .234 | 0.62 | 0.75 |
| 5/16      | 1/4              | 69x5x4         | .202 | .344 | 0.69 | 0.84 |
| 3/8       | 1/8              | 69x6x2         | .312 | .234 | 0.69 | 0.69 |
| 3/8       | 1/4              | 69x6           | .312 | .344 | 0.75 | 0.93 |
| 3/8       | 3/8              | 69x6x6         | .312 | .437 | 0.85 | 0.94 |
| 3/8       | 1/2              | 69x6x8         | .312 | .562 | 1.04 | 1.14 |
| 7/16      | 1/4              | 69x7♦          | .312 | .312 | 0.84 | 1.00 |
| 1/2       | 1/4              | 69x8x4         | .406 | .312 | 0.84 | 0.94 |
| 1/2       | 3/8              | 69x8           | .406 | .407 | 0.94 | 1.12 |
| 1/2       | 1/2              | 69x8x8         | .406 | .531 | 0.94 | 1.31 |
| 5/8       | 1/2              | 69x10          | .500 | .564 | 1.06 | 1.31 |
| 3/4       | 1/2              | 69x12♦         | .562 | .562 | 1.19 | 1.50 |
| 3/4       | 3/4              | 69x12x12♦      | .562 | .562 | 1.19 | 1.31 |

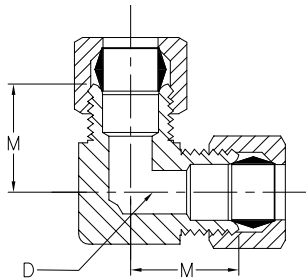
♦MT0 - Made To Order

### 90° Union Elbow

(Ref. SAE No. 060201BA)



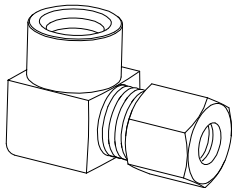
Assembly with long nut 165x.



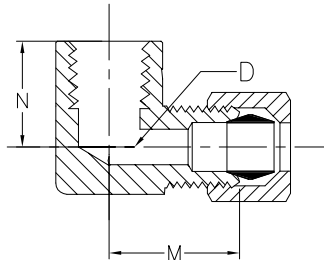
| Tube O.D. | Catalog Number | D    | M    |
|-----------|----------------|------|------|
| 1/4       | 65x4           | .188 | 0.60 |
| 5/16      | 65x5           | .250 | 0.62 |
| 3/8       | 65x6           | .312 | 0.75 |
| 1/2       | 65x8           | .406 | 0.94 |

### 90° Female Elbow

(Ref. SAE No. 060203BA)



Assembly with long nut 170x.



| Tube O.D. | Fem. Pipe Thread | Catalog Number | D    | M    | N    |
|-----------|------------------|----------------|------|------|------|
| 3/16      | 1/8              | 70x3           | .125 | 0.69 | 0.56 |
| 1/4       | 1/8              | 70x4           | .188 | 0.69 | 0.56 |
| 3/8       | 1/4              | 70x6♦          | .312 | 0.81 | 0.75 |
| 1/2       | 3/8              | 70x8♦          | .406 | 1.00 | 0.88 |

♦MT0 - Made To Order

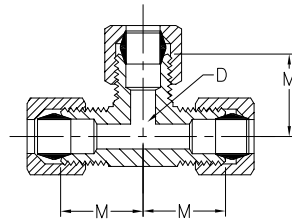
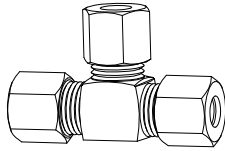


# Brass Products

## Compression

### Union Tee

(Ref. SAE No. 060401BA)

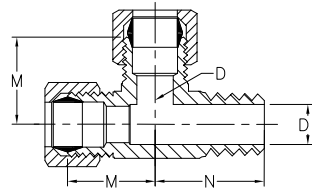
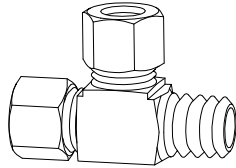


Assembly with long nut 164x.

| Tube O.D. | Catalog Number | D    | M    |
|-----------|----------------|------|------|
| 3/16      | 64x3           | .125 | 0.60 |
| 1/4       | 64x4           | .188 | 0.62 |
| 5/16      | 64x5           | .250 | 0.67 |
| 3/8       | 64x6           | .312 | 0.73 |
| 1/2       | 64x8           | .406 | 0.94 |

### Male Run Tee

(Ref. SAE No. 060424BA)



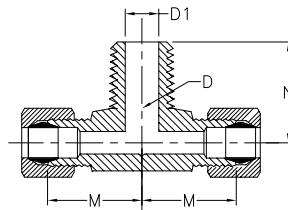
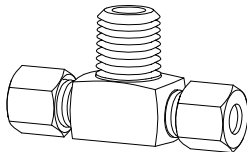
Assembly with long nut 171x.

| Tube O.D. | Male Pipe Thread | Catalog Number | D    | D1    | M    | N    |
|-----------|------------------|----------------|------|-------|------|------|
| 3/16      | 1/8              | 71x3           | .125 | .219* | 0.64 | 0.68 |
| 1/4       | 1/8              | 71x4           | .188 | .219* | 0.63 | 0.75 |
| 3/8       | 1/4              | 71x6           | .312 | .344* | 0.75 | 0.94 |

\*Optional Counterbore.

### Male Branch Tee

(Ref. SAE No. 060425BA)



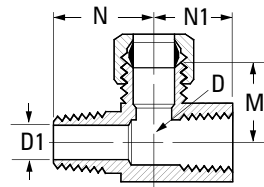
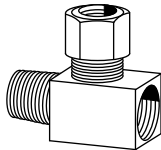
Assembly with long nut 172x.

| Tube O.D. | Male Pipe Thread | Catalog Number | D    | D1   | M    | N    |
|-----------|------------------|----------------|------|------|------|------|
| 3/16      | 1/8              | 72x3♦          | .125 | .219 | 0.62 | 0.69 |
| 1/4       | 1/8              | 72x4           | .188 | .219 | 0.63 | 0.74 |
| 1/4       | 1/4              | 72x4x4x4       | .188 | .281 | 0.78 | 0.85 |
| 5/16      | 1/8              | 72x5           | .250 | .234 | 0.66 | 0.70 |
| 3/8       | 1/4              | 72x6           | .312 | .344 | 0.78 | 0.91 |
| 1/2       | 3/8              | 72x8           | .406 | .406 | 0.96 | 1.08 |

♦MTO - Made To Order

### Adapter Tee

(Female to Male Pipe on Run)

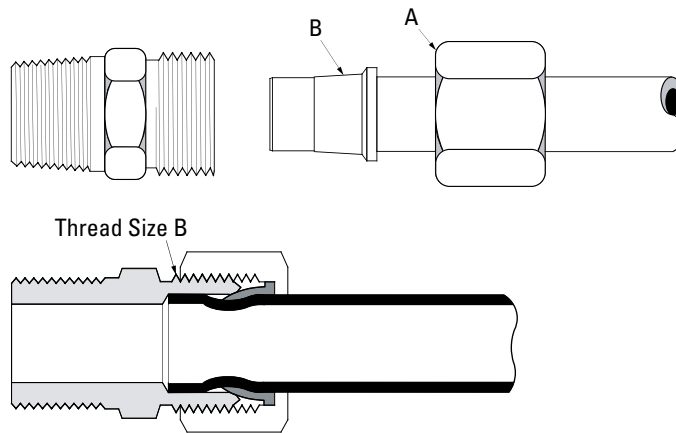


| Tube O.D. | M&F Pipe Thread | Catalog Number | D    | D1   | M    | N    | N1   |
|-----------|-----------------|----------------|------|------|------|------|------|
| 1/4       | 1/8             | 76x4♦          | .188 | .219 | 0.59 | 0.63 | 0.47 |

♦MTO - Made To Order

**Note:**  
For additional technical questions, contact Technical Support at 1-888-258-0222.

**⚠** Refer to safety information regarding proper selection of tubing and tube connectors on page 5.



| Tube O.D.     | 1/8     | 3/16   | 1/4     | 5/16   | 3/8     | 7/16   | 1/2      | 5/8      | 3/4  | 1        |
|---------------|---------|--------|---------|--------|---------|--------|----------|----------|------|----------|
| Thread Size-B | 5/16-24 | 3/8-24 | 7/16-24 | 1/2-24 | 9/16-24 | 5/8-24 | 11/16-20 | 13/16-18 | 1-18 | 1-1/4-18 |

**Typical Application:**

Instrumentation, hydraulic and pneumatic systems.

**Pressure:**

Working pressure up to 2000 psi with a 4:1 safety factor depending on tube size. When using plastic tubing, use the working pressure for type used.

**Vibration:**

Good resistance - use long nut when greater vibration resistance is needed.

**Temperature Range:**

-65°F to +250°F (-53°C to +121°C) with metal tubing. When using compatible plastic tubing do not exceed the tubing temperature range. (Refer to tubing temperature range.)

**Material:**

CA360 Brass.

**Used with:**

Aluminum, copper and plastic tubing.

Plastic tubing, except for PT230 and TP160, requires 2030x insert. Not recommended for steel tubing. See pages 25-29 for material compatibility, and pages 30-33 for plastic tubing.

**Advantages:**

Very low cost and reusable. Self aligning - no need to disassemble fitting to line up sleeve on tube. Low cost. Easy to assemble, no flaring. Available with long or short nut. Broad selection of styles and sizes.

**Conformance:**

An exclusive product design, user approvals only.

**How to Order:**

Selfalign connectors are ordered as complete assemblies (body, nut and sleeve). To order assembly supplied with long nuts, simply add the prefix "1" to the catalog number. Example: 681x4 with long nut becomes 1681x4. Nuts and sleeves can be ordered separately by catalog number. To order bodies only (less nut and sleeve), prefix catalog number with the letter "B" and drop suffix number. Example: B68x4.

**Note:**

Refer to current price list for availability of cataloged items. Quotations and delivery of non-stock items supplied on request. Configurations and dimensions subject to change without notice.

**Assembly Instructions:**

1. Cut tubing to desired length.
2. Slide nut and then sleeve on tube. Threaded end of nut "A" and small end of sleeve "B" must face toward fitting.
3. Insert tubing into connector body. Be sure tubing is bottomed on connector shoulder.
4. Lubricate threads and assemble nut to connector body.
5. Tighten with wrench to the "ring grip" point.
  - a. Ring Grip is the point when the cutting edge of the sleeve grips the tube. This is determined by turning tube slowly but firmly by hand while tightening the nut with a wrench until tube can no longer be turned by hand and a sharp increase in torque is noticed.
6. Tighten additional turns past "ring grip" as indicated on chart. Refer to page 53.

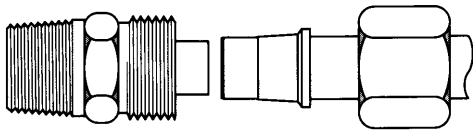
**Label Set:**

CL-500 (non-adhesive)

# Brass Products

## SelfAlign

### SelfAlign Assembly



Ring Grip is the point when the cutting edge of the sleeve grips the tube. This is determined by turning tube slowly but firmly by hand while tightening the nut with a wrench until tube can no longer be turned by hand and a sharp increase in torque is noted.

### SelfAlign Assembly Data Chart

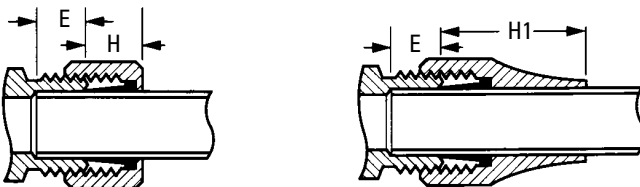
Annealed Copper and Soft Aluminum Tubing

Nylon Tubing

| Fitting Size | Wall | Turns* | Type "T" Thin Wall |        | Type "H" Thick Wall |        |
|--------------|------|--------|--------------------|--------|---------------------|--------|
|              |      |        | Wall               | Turns* | Wall                | Turns* |
| 2            | .030 | 1-1/3  | —                  | —      | —                   | —      |
| 3            | .030 | 1-1/3  | .023               | 1-2/3  | .039                | 1-1/3  |
| 4            | .030 | 1-2/3  | .030               | 2      | .050                | 1-2/3  |
| 5            | .032 | 1-2/3  | .036               | 1-2/3  | .062                | 2-2/3  |
| 6            | .032 | 2      | .040               | 1-2/3  | .075                | 2      |
| 8            | .032 | 2      | —                  | —      | —                   | —      |
| 10           | .035 | 2      | —                  | —      | —                   | —      |
| 12           | .049 | 2      | —                  | —      | —                   | —      |
| 16           | .065 | 2-1/4  | —                  | —      | —                   | —      |

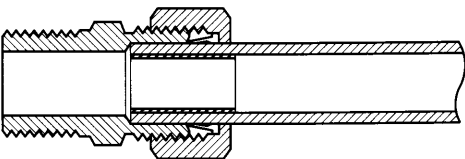
\*Turns from "Ring Grip"

### Nut Assembly Comparison

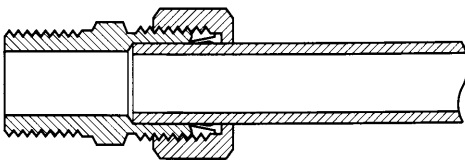


H and H1 are hand tight dimensions.

| Tube O.D. | E Tube Stop Depth | H (Std. Nut) | H1 (Long Nut) |
|-----------|-------------------|--------------|---------------|
| 1/8       | 0.19              | 0.24         | —             |
| 3/16      | 0.22              | 0.25         | 0.49          |
| 1/4       | 0.25              | 0.35         | 0.61          |
| 5/16      | 0.28              | 0.30         | 0.70          |
| 3/8       | 0.31              | 0.31         | 0.75          |
| 1/2       | 0.38              | 0.36         | 0.83          |
| 5/8       | 0.38              | 0.41         | 0.92          |
| 3/4       | 0.44              | 0.41         | 1.14          |



Selfalign fitting used with soft plastic tubing and brass insert.

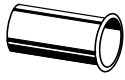


Selfalign fitting used on rigid plastic tubing, no insert.

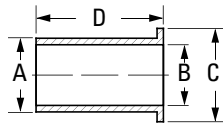
# Brass Products

## SelfAlign

### Tube Supports for Plastic Tubing



Use only with PT200 and PT240 Tubing.

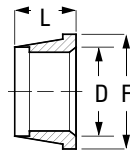


| Tube O.D. | Catalog Number | Dia. A | Dia. B | Dia. C | Length D |
|-----------|----------------|--------|--------|--------|----------|
| 1/4       | 2030x4*        | 1/8    | 3/32   | 11/64  | 19/32    |
| 1/4       | 2030x44**      | 11/64  | 9/64   | 7/32   | 17/32    |
| 5/16      | 2030x5         | 3/16   | 5/32   | 15/64  | 5/8      |
| 3/8       | 2030x6         | 1/4    | 7/32   | 11/32  | 41/64    |
| 1/2       | 2030x8         | 3/8    | 11/32  | 7/16   | 13/16    |
| 5/8       | 2030x10        | 1/2    | 29/64  | 35/64  | 13/16    |
| 3/4       | 2030x12        | 9/16   | 33/64  | 11/16  | 1-1/32   |

\*For tubing with .126 I.D./ .062 wall.

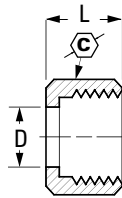
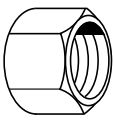
\*\*For tubing with .170 I.D./ .040 wall.

### Sleeve



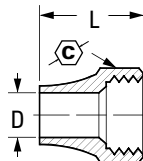
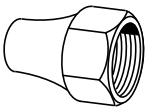
| Tube O.D. | Catalog Number | D     | F    | L    |
|-----------|----------------|-------|------|------|
| 1/8       | 601x2          | 0.130 | 0.25 | 0.20 |
| 3/16      | 601x3          | 0.193 | 0.31 | 0.20 |
| 1/4       | 601x4          | 0.256 | 0.38 | 0.26 |
| 5/16      | 601x5          | 0.318 | 0.44 | 0.26 |
| 3/8       | 601x6          | 0.381 | 0.50 | 0.26 |
| 1/2       | 601x8          | 0.507 | 0.62 | 0.30 |
| 5/8       | 601x10         | 0.630 | 0.72 | 0.36 |
| 3/4       | 601x12         | 0.755 | 0.88 | 0.38 |
| 1         | 601x16         | 1.005 | 1.19 | 0.50 |

### Nut



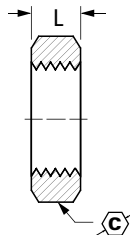
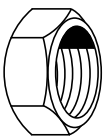
| Tube O.D. | Catalog Number |  | D    | L    |
|-----------|----------------|--------------------------------------------------------------------------------------|------|------|
| 1/8       | 611x2          | 3/8                                                                                  | 0.14 | 0.38 |
| 3/16      | 611x3          | 7/16                                                                                 | 0.19 | 0.38 |
| 1/4       | 611x4          | 1/2                                                                                  | 0.26 | 0.44 |
| 5/16      | 611x5          | 9/16                                                                                 | 0.32 | 0.44 |
| 3/8       | 611x6          | 5/8                                                                                  | 0.38 | 0.44 |
| 1/2       | 611x8          | 13/16                                                                                | 0.51 | 0.52 |
| 5/8       | 611x10         | 15/16                                                                                | 0.64 | 0.56 |

### Long Nut



| Tube O.D. | Catalog Number |  | D    | L    |
|-----------|----------------|---------------------------------------------------------------------------------------|------|------|
| 3/16      | 1611x3         | 7/16                                                                                  | .193 | 0.62 |
| 1/4       | 1611x4         | 9/16                                                                                  | .260 | 0.75 |
| 3/8       | 1611x6         | 11/16                                                                                 | .380 | 0.88 |

### Bulkhead Nut



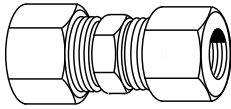
| Tube O.D. | Catalog Number |  | L   |
|-----------|----------------|---------------------------------------------------------------------------------------|-----|
| 1/4       | 0102x4         | 9/16                                                                                  | .25 |
| 3/8       | 0102x6         | 11/16                                                                                 | .25 |
| 1/2       | 0102x8         | 15/16                                                                                 | .38 |

Use on 741x Bulkhead Unions. Ref. page 56.

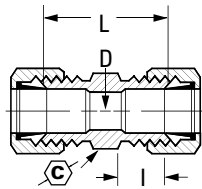
# Brass Products

## SelfAlign

### Union

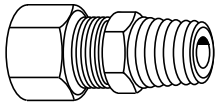


Assembly with long nut 1621x.

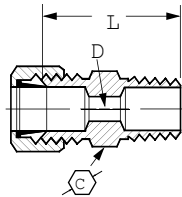


| Tube O.D. | Catalog Number |       | D    | I    | L    |
|-----------|----------------|-------|------|------|------|
| 1/8       | 621x2          | 5/16  | .094 | 0.25 | 0.66 |
| 3/16      | 621x3          | 3/8   | .125 | 0.28 | 0.76 |
| 1/4       | 621x4          | 7/16  | .188 | 0.31 | 0.79 |
| 5/16      | 621x5          | 1/2   | .250 | 0.34 | 0.88 |
| 3/8       | 621x6          | 9/16  | .312 | 0.38 | 0.97 |
| 1/2       | 621x8          | 11/16 | .406 | 0.44 | 1.10 |
| 5/8       | 621x10         | 13/16 | .500 | 0.50 | 1.25 |

### Male Connector

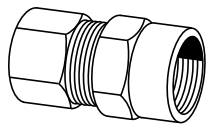


Assembly with long nut 1681x.

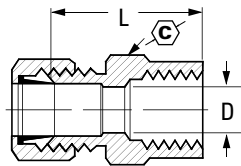


| Tube O.D. | Male Pipe Thread | Catalog Number |       | D    | L    |
|-----------|------------------|----------------|-------|------|------|
| 1/8       | 1/16             | 681x2x1        | 3/8   | .094 | 0.78 |
| 1/8       | 1/8              | 681x2          | 7/16  | .094 | 0.78 |
| 3/16      | 1/8              | 681x3          | 7/16  | .125 | 0.84 |
| 1/4       | 1/8              | 681x4          | 7/16  | .188 | 0.88 |
| 1/4       | 1/4              | 681x4x4        | 9/16  | .188 | 1.06 |
| 5/16      | 1/8              | 681x5          | 1/2   | .234 | 0.91 |
| 5/16      | 1/4              | 681x5x4        | 9/16  | .250 | 1.09 |
| 3/8       | 1/8              | 681x6x2        | 9/16  | .250 | 0.97 |
| 3/8       | 1/4              | 681x6          | 9/16  | .312 | 1.17 |
| 3/8       | 3/8              | 681x6x6        | 11/16 | .312 | 1.16 |
| 3/8       | 1/2              | 681x6x8        | 7/8   | .312 | 1.34 |
| 1/2       | 1/4              | 681x8x4        | 11/16 | .281 | 1.22 |
| 1/2       | 3/8              | 681x8          | 11/16 | .406 | 1.22 |
| 1/2       | 1/2              | 681x8x8        | 7/8   | .406 | 1.41 |
| 5/8       | 1/2              | 681x10         | 7/8   | .500 | 1.50 |

### Female Connector

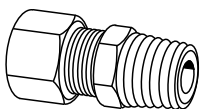


Assembly with long nut 1661x.



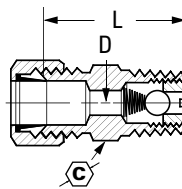
| Tube O.D. | Fem. Pipe Thread | Catalog Number |       | D    | L    |
|-----------|------------------|----------------|-------|------|------|
| 1/8       | 1/8              | 661x2          | 9/16  | .094 | 0.75 |
| 3/16      | 1/8              | 661x3          | 9/16  | .125 | 0.78 |
| 1/4       | 1/8              | 661x4          | 9/16  | .188 | 0.78 |
| 1/4       | 1/4              | 661x4x4        | 11/16 | .188 | 1.03 |
| 5/16      | 1/8              | 661x5          | 9/16  | .250 | 0.81 |
| 3/8       | 1/8              | 661x6x2        | 9/16  | .312 | 0.84 |
| 3/8       | 1/4              | 661x6          | 11/16 | .312 | 1.06 |
| 1/2       | 3/8              | 661x8          | 13/16 | .406 | 1.12 |

### Male Ball Check Connector



Assembly with long nut 1631x.

Min. pressure 3 psi. Ball and spring position may be reversed to change flow/check direction. Ballcheck valves are neither tested nor adjusted prior to sale.

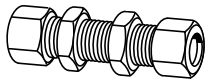


| Tube O.D. | Male Pipe Thread | Catalog Number |      | D    | L    |
|-----------|------------------|----------------|------|------|------|
| 1/4       | 1/8              | 631x4          | 7/16 | .125 | 0.88 |
| 3/8       | 1/4              | 631x6          | 9/16 | .219 | 1.16 |

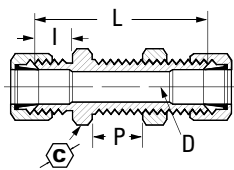
# Brass Products

## SelfAlign

### Bulkhead Union

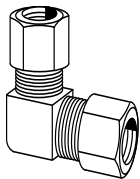


Assembly with long nut 1741x.

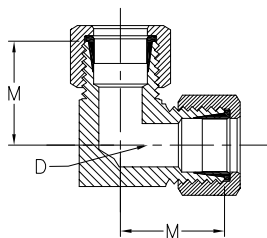


| Tube O.D. | Catalog Number | C    | D    | I    | L    | Max. P |
|-----------|----------------|------|------|------|------|--------|
| 1/4       | 741x4          | 9/16 | .188 | 0.33 | 1.58 | 0.52   |

### 90° Union Elbow

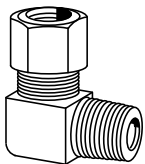


Assembly with long nut 1651x.

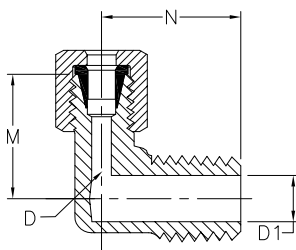


| Tube O.D. | Catalog Number | D    | M    |
|-----------|----------------|------|------|
| 1/4       | 651x4          | .188 | 0.60 |
| 3/8       | 651x6          | .312 | 0.75 |

### 90° Male Elbow

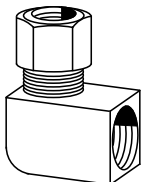


Assembly with long nut 1691x.

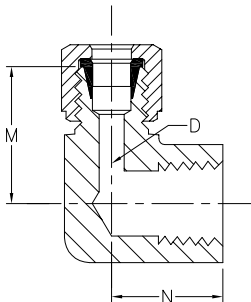


| Tube O.D. | Male Pipe Thread | Catalog Number | D    | D1   | M    | N    |
|-----------|------------------|----------------|------|------|------|------|
| 1/8       | 1/16             | 691x2x1        | .109 | .125 | 0.54 | 0.66 |
| 1/8       | 1/8              | 691x2          | .094 | .219 | 0.60 | 0.67 |
| 3/16      | 1/8              | 691x3          | .125 | .188 | 0.62 | 0.69 |
| 1/4       | 1/8              | 691x4          | .188 | .219 | 0.62 | 0.75 |
| 1/4       | 1/4              | 691x4x4        | .188 | .219 | 0.63 | 0.84 |
| 5/16      | 1/8              | 691x5          | .250 | .250 | 0.62 | 0.75 |
| 5/16      | 1/4              | 691x5x4        | .250 | .344 | 0.69 | 0.84 |
| 3/8       | 1/8              | 691x6x2        | .312 | .235 | 0.69 | 0.69 |
| 3/8       | 1/4              | 691x6          | .312 | .344 | 0.75 | 0.93 |
| 3/8       | 3/8              | 691x6x6        | .312 | .437 | 0.85 | 0.94 |
| 3/8       | 1/2              | 691x6x8        | .312 | .562 | 1.04 | 1.14 |
| 1/2       | 1/4              | 691x8x4        | .406 | .312 | 0.84 | 0.94 |
| 1/2       | 3/8              | 691x8          | .406 | .407 | 0.94 | 1.12 |
| 1/2       | 1/2              | 691x8x8        | .406 | .531 | 0.94 | 1.31 |
| 5/8       | 1/2              | 691x10         | .500 | .564 | 1.06 | 1.31 |

### 90° Female Elbow



Assembly with long nut 1701x.

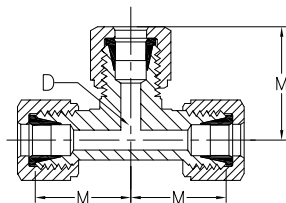
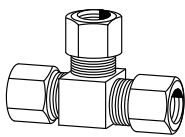


| Tube O.D. | Fem. Pipe Thread | Catalog Number | D    | M    | N    |
|-----------|------------------|----------------|------|------|------|
| 3/16      | 1/8              | 701x3          | .125 | 0.69 | 0.56 |
| 1/4       | 1/8              | 701x4          | .188 | 0.69 | 0.56 |

# Brass Products

## SelfAlign

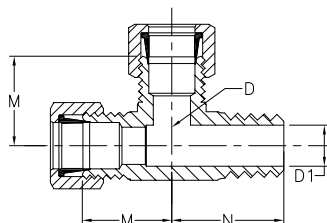
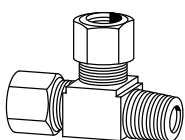
### Union Tee



Assembly with long nut 1641x.

| Tube O.D. | Catalog Number | D    | M    |
|-----------|----------------|------|------|
| 3/16      | 641x3          | .125 | 0.60 |
| 1/4       | 641x4          | .188 | 0.62 |
| 5/16      | 641x5          | .250 | 0.67 |
| 3/8       | 641x6          | .312 | 0.73 |
| 1/2       | 641x8          | .406 | 0.94 |

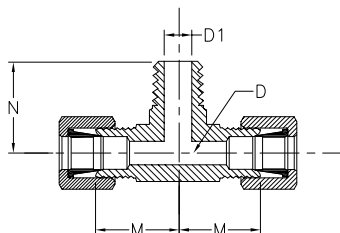
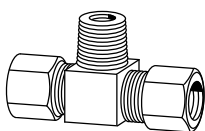
### Male Run Tee



Assembly with long nut 1711x.

| Tube O.D. | Male Pipe Thread | Catalog Number | D    | D1 Opt. | M    | N    |
|-----------|------------------|----------------|------|---------|------|------|
| 3/16      | 1/8              | 711x3          | .125 | .219    | 0.62 | 0.69 |
| 1/4       | 1/8              | 711x4          | .188 | .219    | 0.63 | 0.75 |
| 3/8       | 1/4              | 711x6          | .312 | .344    | 0.75 | 0.94 |

### Male Branch Tee

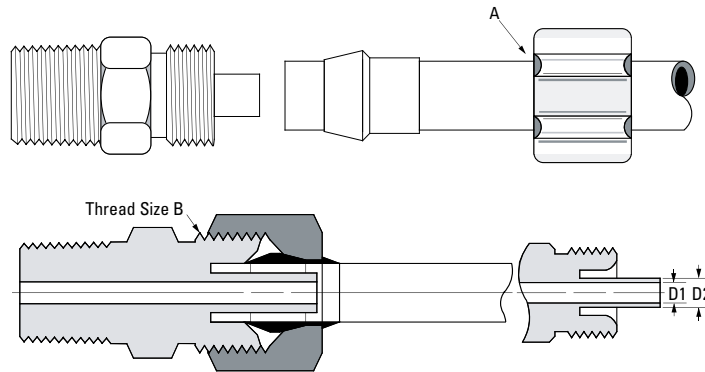


Assembly with long nut 1721x.

| Tube O.D. | Male Pipe Thread | Catalog Number | D    | D1   | M    | N    |
|-----------|------------------|----------------|------|------|------|------|
| 1/4       | 1/8              | 721x4          | .188 | .219 | 0.63 | 0.74 |
| 1/4       | 1/4              | 721x4x4x4      | .188 | .281 | 0.78 | 0.85 |
| 3/8       | 1/4              | 721x6          | .312 | .344 | 0.75 | 0.94 |
| 1/2       | 3/8              | 721x8          | .406 | .406 | 0.94 | 1.12 |



**⚠** Refer to safety information regarding proper selection of tubing and tube connectors on page 5.



| Size                     | x46    | x4     | x5      | x6     | x8       |
|--------------------------|--------|--------|---------|--------|----------|
| <b>Tube O.D.</b>         | 1/4    | 1/4    | 5/16    | 3/8    | 1/2      |
| <b>Thread Size-B</b>     | 3/8-24 | 3/8-24 | 7/16-24 | 1/2-24 | 11/16-20 |
| <b>Flow Dia. (D1)</b>    | .078   | .125   | .141    | .203   | .312     |
| <b>Support Dia. (D2)</b> | .120   | .166   | .180    | .245   | .370     |

**Typical Application:**

Pneumatic instrumentation circuits, lubricant and cooling lines.

**Pressure:**

Working pressure up to 500 psi with a 4:1 safety factor depending on tubing. When using plastic tubing, use the working pressure for type used.

**Vibration:**

Excellent resistance.

**Temperature Range:**

When using compatible plastic tubing do not exceed the tubing temperature range. (Refer to tubing temperature range.)

**Material:**

CA360 Brass body, plastic sleeve.

**Note:**

Not recommended for use with PT230, TP160 or Air Brake tubing.

**Used With:**

PT200 and PT240 plastic tubing. Not recommended for metal tubing. See pages 25-29 for material compatibility and pages 30-33 for plastic tubing.

**Advantages:**

No flaring of tubing required. Easy installation, captive sleeve, pre-assembled for installation and can be reassembled.

**Conformance:**

An exclusive product design. User approvals only.

**How to Order:**

Order 1/4" O.D. tubing with .040 wall, use suffix x4. Example: 1262x4. When .062 wall is desired, use suffix x46. Example: 1262x46.

Ordered as complete assemblies (body, nuts and sleeves) by catalog number. Nuts, sleeves and nut/sleeve assemblies can be ordered separately by catalog number.

**Note:**

Refer to current price list for availability of cataloged items. Quotations and delivery of non-stock items supplied on request. Configurations and dimensions subject to change without notice.

**Assembly Instructions:**

1. Cut tubing to desired length.
2. Slide nut/sleeve assembly on tube. Threaded end "A" of nut must face toward connector.
3. Bottom tubing into the connector.
4. Tighten nut, hand tight.

**Label Set:**

FS-2100 (adhesive)  
CL-498 (non-adhesive)

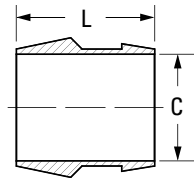
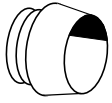
**Questions:**

For additional technical questions, contact Technical Support at 1-888-258-0222.

# Brass Products

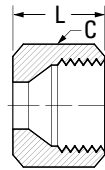
## Polyline Flareless

### Plastic Sleeve



| Tube O.D. | Catalog Number | C    | L    |
|-----------|----------------|------|------|
| 1/4       | 1260x4         | .259 | 0.34 |
| 5/16      | 1260x5         | .321 | 0.39 |
| 3/8       | 1260x6         | .384 | 0.41 |
| 1/2       | 1260x8         | .509 | 0.44 |

### Brass Nut

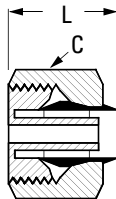
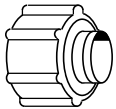


1/8" and 3/16" Nuts are flat Hex type.

| Tube O.D. | Catalog Number | Dia. C | L    |
|-----------|----------------|--------|------|
| 1/4       | 1261x4         | 7/16   | 0.34 |
| 5/16      | 1261x5♦        | 1/2    | 0.34 |
| 3/8       | 1261x6         | 9/16   | 0.38 |
| 1/2       | 1261x8♦        | 13/16  | 0.44 |

♦MTO - Made To Order

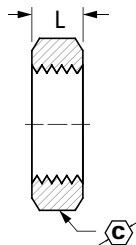
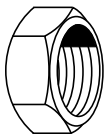
### Brass Nut/Plastic Sleeve Assembly



| Tube O.D. | Catalog Number | Dia. C | L    |
|-----------|----------------|--------|------|
| 1/4       | 1261x4A        | 7/16   | 0.43 |
| 5/16      | 1261x5A♦       | 1/2    | 0.45 |
| 3/8       | 1261x6A        | 9/16   | 0.49 |
| 1/2       | 1261x8A♦       | 13/16  | 0.46 |

♦MTO - Made To Order

### Brass Bulkhead Nut

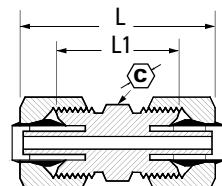
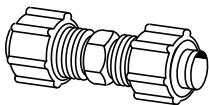


For use with 1274x Bulkhead Unions, ref. page 60.

| Tube O.D. | Catalog Number | C     | L    |
|-----------|----------------|-------|------|
| 1/4       | 1202x4♦        | 9/16  | 0.19 |
| 3/8       | 1202x6♦        | 11/16 | 0.19 |
| 1/2       | 1202x8♦        | 7/8   | 0.19 |

♦MTO - Made To Order

### Union



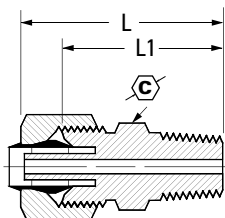
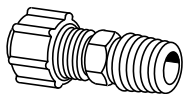
| Tube O.D. | Catalog Number | C     | L    | L1   |
|-----------|----------------|-------|------|------|
| 1/4       | 1262x4         | 3/8   | 1.00 | 0.69 |
| 3/8       | 1262x6         | 1/2   | 1.03 | 0.72 |
| 1/2       | 1262x8♦        | 11/16 | 1.28 | 0.84 |

♦MTO - Made To Order

# Brass Products

## Polyline Flareless

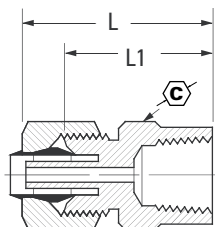
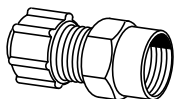
### Male Connector



| Tube O.D. | Male Pipe Thread | Catalog Number |  | L    | L1   |
|-----------|------------------|----------------|-------------------------------------------------------------------------------------|------|------|
| 1/4       | 1/16             | 1268x4x1       | 7/16                                                                                | 0.97 | 0.81 |
| 1/4       | 1/8              | 1268x4         | 7/16                                                                                | 0.97 | 0.81 |
| 1/4       | 1/4              | 1268x4x4       | 9/16                                                                                | 1.15 | 1.00 |
| 1/4       | 3/8              | 1268x4x6 ♦     | 11/16                                                                               | 1.18 | 1.03 |
| 5/16      | 1/8              | 1268x5w        | 7/16                                                                                | 0.97 | 0.81 |
| 5/16      | 1/4              | 1268x5x4 ♦     | 9/16                                                                                | 1.16 | 1.00 |
| 3/8       | 1/8              | 1268x6x2       | 1/2                                                                                 | 1.00 | 0.84 |
| 3/8       | 1/4              | 1268x6         | 9/16                                                                                | 1.19 | 1.03 |
| 3/8       | 3/8              | 1268x6x6       | 11/16                                                                               | 1.19 | 1.03 |
| 1/2       | 1/4              | 1268x8x4 ♦     | 11/16                                                                               | 1.31 | 1.09 |
| 1/2       | 3/8              | 1268x8         | 11/16                                                                               | 1.31 | 1.09 |
| 1/2       | 1/2              | 1268x8x8 ♦     | 11/16                                                                               | 1.62 | 1.03 |

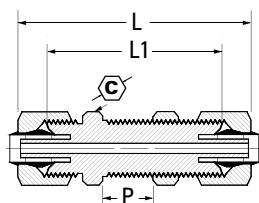
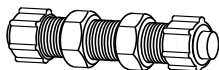
♦MTO - Made To Order

### Female Connector



| Tube O.D. | Fem. Pipe Thread | Catalog Number |  | L    | L1   |
|-----------|------------------|----------------|-------------------------------------------------------------------------------------|------|------|
| 1/4       | 1/8              | 1266x4         | 1/2                                                                                 | 0.87 | 0.72 |
| 1/4       | 1/4              | 1266x4x4       | 5/8                                                                                 | 1.09 | 0.93 |
| 3/8       | 1/4              | 1266x6         | 5/8                                                                                 | 1.09 | 0.94 |

### Bulkhead Union



| Tube O.D. | Catalog Number |  | L    | L1   | Max. P |
|-----------|----------------|---------------------------------------------------------------------------------------|------|------|--------|
| 1/4       | 1274x4 ♦       | 9/16                                                                                  | 1.56 | 1.25 | 0.38   |
| 3/8       | 1274x6 ♦       | 11/16                                                                                 | 1.68 | 1.38 | 0.47   |
| 1/2       | 1274x8 ♦       | 7/8                                                                                   | 2.09 | 1.66 | 0.63   |

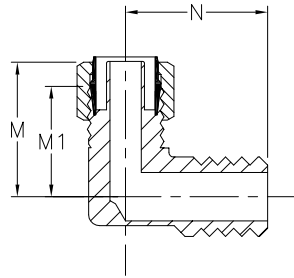
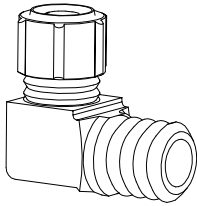
♦MTO - Made To Order

For Bulkhead Nuts, ref. page 59.

# Brass Products

## Polyline Flareless

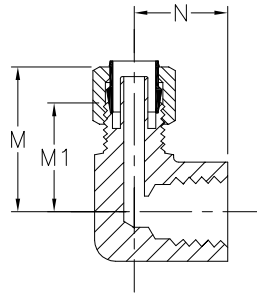
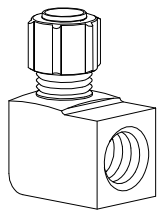
### Male Elbow



| Tube O.D. | Male Pipe Thread | Catalog Number | M    | M1   | N    |
|-----------|------------------|----------------|------|------|------|
| 1/4       | 1/16             | 1269x4x1       | 0.75 | 0.59 | 0.72 |
| 1/4       | 1/8              | 1269x4         | 0.75 | 0.59 | 0.72 |
| 1/4       | 1/4              | 1269x4x4       | 0.81 | 0.66 | 0.94 |
| 1/4       | 3/8              | 1269x4x6       | 0.84 | 0.69 | 1.08 |
| 5/16      | 1/8              | 1269x5♦        | 0.75 | 0.59 | 0.72 |
| 3/8       | 1/8              | 1269x6x2       | 0.86 | 0.72 | 0.75 |
| 3/8       | 1/4              | 1269x6         | 0.86 | 0.72 | 0.92 |
| 3/8       | 3/8              | 1269x6x6       | 0.86 | 0.72 | 1.08 |

♦MTO - Made To Order

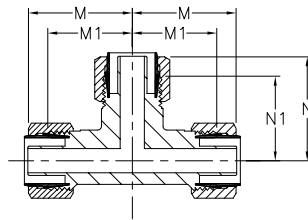
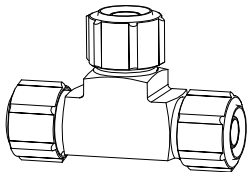
### Female Elbow



| Tube O.D. | Fem. Pipe Thread | Catalog Number | M    | M1   | N    |
|-----------|------------------|----------------|------|------|------|
| 1/4       | 1/8              | 1270x4         | 0.81 | 0.71 | 0.56 |
| 1/4       | 1/4              | 1270x4x4       | 0.96 | 0.75 | 0.69 |
| 3/8       | 1/4              | 1270x6♦        | 0.86 | 0.75 | 0.69 |

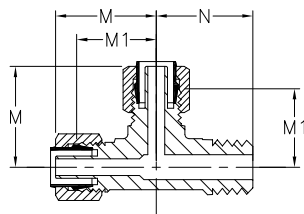
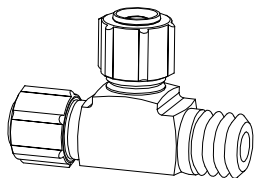
♦MTO - Made To Order

### Union Tee



| Tube O.D. | Catalog Number | M    | M1   | N    | N1   |
|-----------|----------------|------|------|------|------|
| 1/4       | 1264x4         | 0.75 | 0.59 | 0.75 | 0.59 |
| 3/8       | 1264x6         | 0.87 | 0.72 | 0.87 | 0.72 |

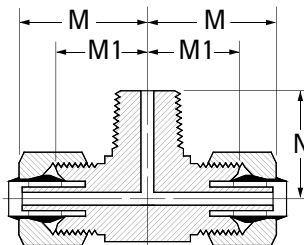
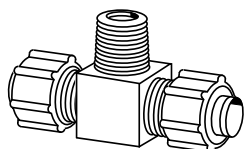
### Male Run Tee



| Tube O.D. | Male Pipe Thread | Catalog Number | M    | M1   | N    |
|-----------|------------------|----------------|------|------|------|
| 1/4       | 1/8              | 1271x4         | 0.75 | 0.59 | 0.72 |
| 1/4       | 1/4              | 1271x4x4x4♦    | 0.81 | 0.66 | 0.94 |
| 3/8       | 1/4              | 1271x6♦        | 0.87 | 0.72 | 1.00 |

♦MTO - Made To Order

### Male Branch Tee



| Tube O.D. | Male Pipe Thread | Catalog Number | M    | M1   | N    |
|-----------|------------------|----------------|------|------|------|
| 1/4       | 1/8              | 1272x4♦        | 0.75 | 0.59 | 0.72 |
| 1/4       | 1/4              | 1272x4x4x4♦    | 0.81 | 0.66 | 0.94 |
| 3/8       | 1/4              | 1272x6♦        | 0.87 | 0.72 | 1.00 |
| 1/2       | 3/8              | 1272x8♦        | 1.06 | 0.84 | 1.12 |

♦MTO - Made To Order

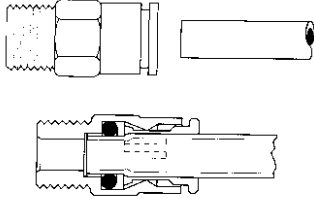
## Note:

For additional technical questions, contact Technical Support at 1-888-258-0222.



Refer to safety information regarding proper selection of tubing and tube connectors on page 5.

## Push>Connect



See Push>Connect Products on pages 59-63.

### Typical Application:

Compressed air, pneumatic instrumentation, circuit, lubricant and cooling lines.

### Pressure:

Up to 250 psi depending on tube size.

### Sealing Method:

O-Ring of Buna-N Construction.

### Temperature Range:

When using compatible plastic tubing do not exceed the tubing temperature range (Refer to tubing temperature range).

### Material:

Brass, Nickel Plated.

### Vacuum:

Fittings rated at 29.5 inches of mercury vacuum.

### Used With:

PT230 and TP160 nylon, and PT240 Polyethylene tubing. See pages 25-29 for material compatibility and pages 30-33 for plastic tubing.

### Advantages:

Ease of assembly. No tools required, reusability of connectors and the time savings of assembly and disassembly.

### Hex Dimensions:

All hexes are in inches.

### How to Order:

Individually by catalog number.

## Note:

Refer to current price list for availability of cataloged items. Quotations and delivery of non-stock items supplied on request. Configurations and dimensions subject to change without notice.

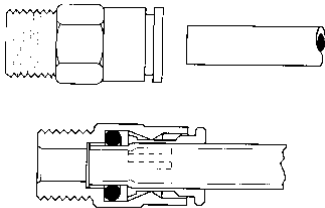
### Assembly Instructions:

1. To connect, simply push the tubing into the connector.
2. To disconnect, depress the collet ring with two fingers and withdraw.

### Label Set:

CL-499 (non-adhesive)

## Push>Connect Metric



See Push>Connect Products on pages 64-67.

| Nominal Size | 2         | 4         | 5MM     | 6         | 8         |
|--------------|-----------|-----------|---------|-----------|-----------|
| Thread       |           |           |         |           |           |
| MM           |           |           | M5 x .8 |           |           |
| BSPT         | 1/8 (2PT) | 1/4 (4PT) |         | 3/8 (6PT) | 1/2 (8PT) |
| BSPP         | 1/8 (2PP) | 1/4 (4PP) |         | 3/8 (6PP) | 1/2       |

### Typical Application:

Compressed air, pneumatic instrumentation, circuit, lubricant and cooling lines.

### Pressure:

Up to 250 psi depending on tube size.

### Sealing Method:

O-Ring of Buna-N Construction.

### Temperature Range:

-40°F to 200°F (-40°C to 93°C).

### Material:

Brass, Nickel Plated.

### Used With:

MTP160 nylon tubing. See pages 25-29 for material compatibility and pages 30-32 for plastic tubing.

### Advantages:

Ease of assembly. No tools required, reusability of fittings and the time savings of assembly and disassembly.

### Hex Dimensions:

All hexes are metric.

### How to Order:

Individually by catalog number.

## Note:

Refer to current price list for availability of cataloged items. Quotations and delivery of non-stock items supplied on request. Configurations and dimensions subject to change without notice.

### Assembly Instructions:

1. To connect, simply push the tubing into the connector.
2. To disconnect, depress the collet ring with two fingers and withdraw.

### Suffix Chart:

**MM** - Metric Screw Thread

**MMS** - Metric Screw Thread Swivel

**MRP** - Metric Red Plug

**PP** - British Parallel Plug

**PPS** - British Parallel Pipe Swivel

**PT** - British Tapered Pipe

**PTS** - British Tapered Pipe Swivel

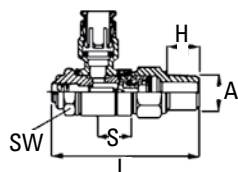
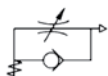
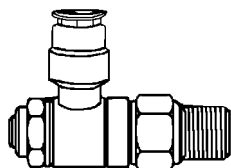
## Note:

For additional technical questions, contact Technical Support at 1-888-258-0222.



Refer to safety information regarding proper selection of tubing and tube connectors on page 5.

## Push>Connect Flow Controls



See Push>Connect Products on pages 73-74.

## Typical Application:

Compressed air, pneumatic instrumentation, circuit, lubricant and cooling lines. Also excellent for assembly equipment and cylinder control.

## Pressure:

Up to 250 psi depending on tube size.

## Sealing Method:

O-Ring of Buna-N Construction. (Viton available on request by special order.)

## Temperature Range:

0°F to +160°F  
(-17.8°C to +71°C)

## Material:

Brass, Nickel Plated.

## Used With:

PT230 and TP160 nylon, and PT240 Polyethylene tubing. See pages 25-29 for material compatibility and pages 30-33 for plastic tubing.

## Advantages:

Ease of assembly. No tools required, reusability of connectors and the time savings of assembly and disassembly. These flow controls have a simple design, but offer excellent ability to control the speed of a cylinder or motor.

## Hex Dimensions:

All hexes are in inches.

## How to Order:

Individually by catalog number.

## Note:

Refer to current price list for availability of cataloged items. Quotations and delivery of non-stock items supplied on request. Configurations and dimensions subject to change without notice.

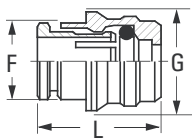
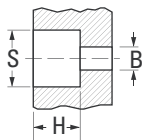
## Assembly Instructions:

1. To connect, simply push the tubing into the connector.
2. To disconnect, depress the collet ring with two fingers and withdraw.

## Cartridge



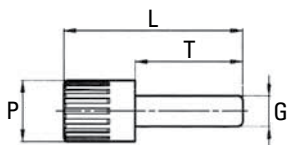
Cartridge body is not Nickel-plated.



| Tube O.D. | Catalog Number | F    | G    | L    | S    | H    | B    |
|-----------|----------------|------|------|------|------|------|------|
| 1/8       | 1161x2         | 0.34 | 0.35 | 0.59 | .344 | .433 | 0.14 |
| 5/32      | 1161x2.5       | 0.34 | 0.35 | 0.57 | .344 | .433 | 0.14 |
| 1/4       | 1161x4         | 0.46 | 0.48 | 0.65 | .470 | .472 | 0.16 |
| 5/16      | 1161x5         | 0.54 | 0.56 | 0.67 | .549 | .551 | 0.25 |
| 3/8       | 1161x6         | 0.62 | 0.64 | 0.79 | .627 | .590 | 0.32 |
| 1/2       | 1161x8         | 0.74 | 0.76 | 0.83 | .746 | .629 | 0.42 |

## Plug

(Plastic)



| G Tube O.D. | Catalog Number | L    | P    | T    |
|-------------|----------------|------|------|------|
| 1/8         | 1129x2         | 1.06 | 0.24 | 0.79 |
| 5/32        | 1129x2.5       | 1.14 | 0.32 | 0.79 |
| 1/4         | 1129x4         | 1.24 | 0.32 | 0.89 |
| 5/16        | 1129x5         | 1.36 | 0.47 | 0.96 |
| 3/8         | 1129x6         | 1.46 | 0.47 | 1.06 |
| 1/2         | 1129x8         | 1.59 | 0.63 | 1.12 |

## Double Union

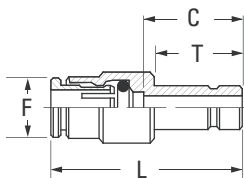


Joins Push>Connect Fittings.



| Tube O.D. | Catalog Number | L    |
|-----------|----------------|------|
| 1/8       | 1105x2         | 1.28 |
| 5/32      | 1105x2.5       | 1.28 |
| 1/4       | 1105x4         | 1.40 |
| 5/16      | 1105x5         | 1.59 |
| 3/8       | 1105x6         | 1.81 |
| 1/2       | 1105x8         | 1.89 |

## Reducer

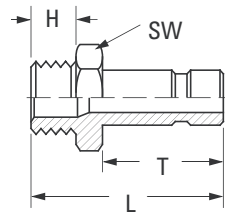


| Tube O.D. A | Tube O.D. B | Catalog Number | C    | F    | L    | T    |
|-------------|-------------|----------------|------|------|------|------|
| 1/8         | 1/4         | 1109x2x4       | 0.61 | 0.35 | 1.16 | 0.71 |
| 5/32        | 1/4         | 1109x2.5x4     | 0.61 | 0.35 | 1.16 | 0.71 |
| 1/4         | 3/8         | 1109x4x6       | 0.82 | 0.50 | 1.46 | 0.91 |
| 1/4         | 1/2         | 1109x4x8       | 0.68 | 0.50 | 1.32 | 0.91 |
| 3/8         | 1/2         | 1109x6x8       | 0.79 | 0.65 | 1.58 | 0.94 |

# Brass Products

Push>Connect

## Stem Adapter

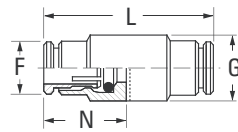


| Tube O.D. | Male Pipe | Catalog Number Thread | H    | T    | L    | SW (mm) |
|-----------|-----------|-----------------------|------|------|------|---------|
| 1/8       | 1/8       | 1180x2                | 0.37 | 0.65 | 1.20 | 12      |
| 1/8       | 1/4       | 1180x2x4              | 0.51 | 0.65 | 1.36 | 14      |
| 5/32      | 1/8       | 1180x2.5              | 0.37 | 0.65 | 1.20 | 12      |
| 5/32      | 1/4       | 1180x2.5x4            | 0.51 | 0.65 | 1.36 | 14      |
| 1/4       | 1/8       | 1180x4                | 0.37 | 0.71 | 1.26 | 12      |
| 1/4       | 1/4       | 1180x4x4              | 0.51 | 0.71 | 1.42 | 14      |
| 5/16      | 1/8       | 1180x5                | 0.37 | 0.81 | 1.36 | 12      |
| 5/16      | 1/4       | 1180x5x4              | 0.51 | 0.81 | 1.34 | 14      |
| 3/8       | 1/4       | 1180x6                | 0.51 | 0.91 | 1.61 | 17      |
| 3/8       | 3/8       | 1180x6x6              | 0.51 | 0.91 | 1.61 | 19      |
| 1/2       | 3/8       | 1180x8                | 0.51 | 0.94 | 1.65 | 19      |
| 1/2       | 1/2       | 1180x8x8              | 0.71 | 0.94 | 1.87 | 22      |

## Union

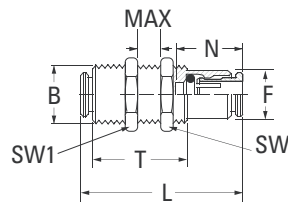


Joins tubing.



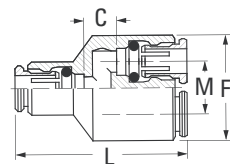
| Tube O.D. | Catalog Number | F    | G    | L    | N    |
|-----------|----------------|------|------|------|------|
| 1/8       | 1162x2         | 0.33 | 0.35 | 1.14 | 0.55 |
| 5/32      | 1162x2.5       | 0.33 | 0.35 | 1.14 | 0.55 |
| 1/4       | 1162x4         | 0.46 | 0.47 | 1.32 | 0.64 |
| 5/16      | 1162x5         | 0.54 | 0.55 | 1.46 | 0.69 |
| 3/8       | 1162x6         | 0.61 | 0.66 | 1.61 | 0.79 |
| 1/2       | 1162x8         | 0.72 | 0.75 | 1.71 | 0.83 |

## Bulkhead Union



| Tube O.D. | Catalog Number | B     | F    | L    | N    | MAX (mm) | SW (mm) | SW1 | T    |
|-----------|----------------|-------|------|------|------|----------|---------|-----|------|
| 1/8       | 1174x2         | M10x1 | 0.34 | 1.14 | 0.55 | 0.42     | 14      | 14  | 0.91 |
| 5/32      | 1174x2.5       | M10x1 | 0.34 | 1.14 | 0.55 | 0.41     | 14      | 14  | 0.87 |
| 1/4       | 1174x4         | M14x1 | 0.49 | 1.32 | 0.64 | 0.45     | 17      | 17  | 0.93 |
| 5/16      | 1174x5         | M16x1 | 0.56 | 1.42 | 0.69 | 0.45     | 19      | 19  | 0.93 |
| 3/8       | 1174x6         | M18x1 | 0.62 | 1.61 | 0.79 | 0.51     | 22      | 22  | 1.02 |
| 1/2       | 1174x8         | M20x1 | 0.74 | 1.71 | 0.83 | 0.57     | 24      | 24  | 1.08 |

## Union "Y"



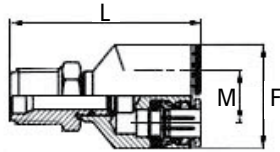
| Tube O.D. | Catalog Number | C    | F    | L    | M    |
|-----------|----------------|------|------|------|------|
| 1/8       | 1107x2         | 0.24 | 0.83 | 1.42 | 0.39 |
| 5/32      | 1107x2.5       | 0.24 | 0.83 | 1.34 | 0.39 |
| 1/4       | 1107x4         | 0.24 | 0.96 | 1.52 | 0.49 |



## Swivel Male "Y"



Swivel for installation purposes only.



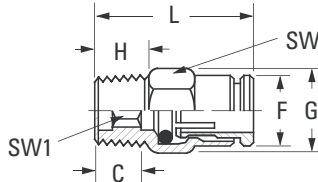
| Tube O.D. | Male Pipe Thread | Catalog Number | F    | M    | L    |
|-----------|------------------|----------------|------|------|------|
| 1/8       | 10-32*           | 1108x2A        | 0.83 | 0.39 | 1.04 |
| 1/8       | 1/8              | 1108x2         | 0.83 | 0.39 | 1.54 |
| 5/32      | 1/8              | 1108x2.5       | 0.83 | 0.39 | 1.54 |
| 1/4       | 1/8              | 1108x4         | 0.96 | 0.49 | 1.67 |

\*UNF Thread. Seals with nylon washer (included).

## Male Connector



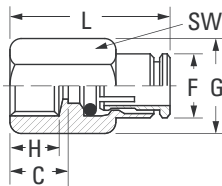
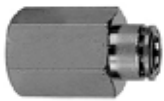
Allen wrench use permits close quarter installation not possible with a standard wrench.



| Tube O.D. | Male Pipe Thread | Catalog Number | C    | F    | G    | H    | L    | SW (mm) | SW1 (mm) |
|-----------|------------------|----------------|------|------|------|------|------|---------|----------|
| 1/8       | 1/8              | 1168x2         | 0.19 | 0.34 | 0.55 | 0.31 | 0.75 | 12      | 2.5      |
| 1/8       | 1/4              | 1168x2x4       | 0.35 | 0.34 | 0.62 | 0.47 | 0.90 | 14      | 2.5      |
| 5/32      | 1/8              | 1168x2.5       | 0.19 | 0.34 | 0.55 | 0.31 | 0.74 | 12      | 2.5      |
| 5/32      | 1/4              | 1168x2.5x4     | 0.35 | 0.34 | 0.62 | 0.49 | 0.90 | 14      | 2.5      |
| 1/4       | 1/8              | 1168x4         | 0.28 | 0.46 | 0.55 | 0.31 | 0.92 | 12      | 4        |
| 1/4       | 1/4              | 1168x4x4       | 0.40 | 0.46 | 0.62 | 0.49 | 1.04 | 14      | 4        |
| 1/4       | 3/8              | 1168x4x6       | 0.42 | 0.46 | 0.86 | 0.49 | 1.10 | 19      | 4        |
| 5/16      | 1/8              | 1168x5         | 0.39 | 0.53 | 0.62 | 0.31 | 1.08 | 14      | 5        |
| 5/16      | 1/4              | 1168x5x4       | 0.41 | 0.53 | 0.62 | 0.49 | 1.10 | 14      | 6        |
| 5/16      | 3/8              | 1168x5x6       | 0.41 | 0.53 | 0.86 | 0.49 | 1.10 | 19      | 6        |
| 3/8       | 1/8              | 1168x6x2       | 0.39 | 0.60 | 0.79 | 0.31 | 1.18 | 17      | 4        |
| 3/8       | 1/4              | 1168x6         | 0.55 | 0.60 | 0.79 | 0.47 | 1.34 | 17      | 7        |
| 3/8       | 3/8              | 1168x6x6       | 0.35 | 0.60 | 0.86 | 0.47 | 1.14 | 19      | 7        |
| 3/8       | 1/2              | 1168x6x8       | 0.39 | 0.60 | 1.00 | 0.61 | 1.16 | 22      | 7        |
| 1/2       | 3/8              | 1168x8         | 0.48 | 0.72 | 0.36 | 0.49 | 1.31 | 19      | 10       |
| 1/2       | 1/2              | 1168x8x8       | 0.42 | 0.72 | 1.00 | 0.61 | 1.26 | 22      | 10       |

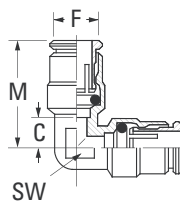
\*UNF Thread. Seals with nylon washer (included).

## Female Connector



| Tube O.D. | Fem. Pipe | Catalog Number | C    | F    | G    | H    | L    | SW (mm) |
|-----------|-----------|----------------|------|------|------|------|------|---------|
| 1/8       | 1/8       | 1166x2         | 0.39 | 0.35 | 0.51 | 0.34 | 0.95 | 12      |
| 1/8       | 1/4       | 1166x2x4       | 0.55 | 0.35 | 0.65 | 0.47 | 1.10 | 15      |
| 5/32      | 1/8       | 1166x2.5       | 0.39 | 0.35 | 0.51 | 0.34 | 0.95 | 12      |
| 5/32      | 1/4       | 1166x2.5x4     | 0.55 | 0.35 | 0.65 | 0.47 | 1.10 | 15      |
| 1/4       | 1/8       | 1166x4         | 0.39 | 0.46 | 0.51 | 0.34 | 1.02 | 12      |
| 1/4       | 1/4       | 1166x4x4       | 0.54 | 0.47 | 0.65 | 0.47 | 1.18 | 15      |
| 3/8       | 1/4       | 1166x6         | 0.51 | 0.60 | 0.73 | 0.47 | 1.30 | 17      |
| 3/8       | 3/8       | 1166x6x6       | 0.55 | 0.60 | 0.79 | 0.49 | 1.34 | 17      |

## Union Elbow



| Tube O.D. | Catalog Number | C    | F    | M    | SW (mm) |
|-----------|----------------|------|------|------|---------|
| 1/8       | 1165x2         | 0.14 | 0.35 | 0.69 | 8       |
| 5/32      | 1165x2.5       | 0.14 | 0.35 | 0.69 | 8       |
| 1/4       | 1165x4         | 0.16 | 0.50 | 0.79 | 9       |
| 5/16      | 1165x5         | 0.20 | 0.55 | 0.89 | 11      |
| 3/8       | 1165x6         | 0.26 | 0.65 | 1.04 | 13      |
| 1/2       | 1165x8         | 0.32 | 0.77 | 1.12 | 15      |

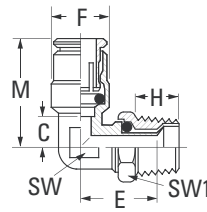
# Brass Products

Push>Connect

## Swivel Male Elbow



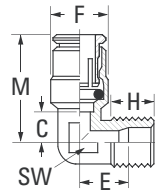
Swivel for installation purposes only.



| Tube O.D. | Male Pipe Thread | Catalog Number | C    | E    | F    | H    | M    | SW (mm) | SW1 (mm) |
|-----------|------------------|----------------|------|------|------|------|------|---------|----------|
| 1/8       | 1/8              | 1169x2S        | 0.14 | 0.65 | 0.35 | 0.32 | 0.69 | .32     | .47      |
| 1/8       | 1/4              | 1169x2x4S      | 0.14 | 0.69 | 0.35 | 0.47 | 0.70 | .32     | .55      |
| 5/32      | 1/8              | 1169x2.5S      | 0.14 | 0.65 | 0.35 | 0.32 | 0.69 | .32     | .47      |
| 1/4       | 1/8              | 1169x4S        | 0.16 | 0.67 | 0.50 | 0.32 | 0.79 | .35     | .47      |
| 1/4       | 1/4              | 1169x4x4S      | 0.16 | 0.71 | 0.50 | 0.47 | 0.79 | .35     | .55      |
| 1/4       | 3/8              | 1169x4x6S      | 0.16 | 0.67 | 0.50 | 0.47 | 0.79 | .35     | .75      |
| 5/16      | 1/8              | 1169x5S        | 0.20 | 0.71 | 0.55 | 0.32 | 0.87 | .43     | .47      |
| 5/16      | 1/4              | 1169x5x4S      | 0.20 | 0.75 | 0.55 | 0.47 | 0.87 | .43     | .55      |
| 5/16      | 3/8              | 1169x5x6S      | 0.20 | 0.73 | 0.55 | 0.47 | 0.87 | .43     | .75      |
| 3/8       | 1/8              | 1169x6x2S      | 0.26 | 0.81 | 0.65 | 0.32 | 1.04 | .51     | .55      |
| 3/8       | 1/4              | 1169x6S        | 0.25 | 0.85 | 0.65 | 0.47 | 1.04 | .51     | .55      |
| 3/8       | 3/8              | 1169x6x6S      | 0.26 | 0.83 | 0.65 | 0.47 | 1.04 | .51     | .75      |
| 3/8       | 1/2              | 1169x6x8S      | 0.26 | 0.91 | 0.65 | 0.61 | 1.04 | .51     | .87      |
| 1/2       | 1/4              | 1169x8x4S      | 0.32 | 0.91 | 0.77 | 0.47 | 1.12 | .59     | .67      |
| 1/2       | 3/8              | 1169x8S        | 0.32 | 0.87 | 0.77 | 0.47 | 1.12 | .59     | .75      |
| 1/2       | 1/2              | 1169x8x8S      | 0.32 | 0.95 | 0.77 | 0.61 | 1.12 | .59     | .87      |

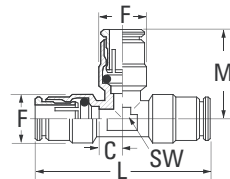
\*UNF Thread. Seals with nylon washer (included).

## Male Elbow



| Tube O.D. | Male Pipe Thread | Catalog Number | C    | E    | F    | H    | M    | SW (mm) |
|-----------|------------------|----------------|------|------|------|------|------|---------|
| 1/4       | 1/8              | 1169x4         | 0.16 | 0.57 | 0.50 | 0.47 | 0.79 | 9       |
| 1/4       | 1/4              | 1169x4x4       | 0.16 | 0.47 | 0.50 | 0.47 | 0.79 | 9       |
| 3/8       | 1/4              | 1169x6         | 0.26 | 0.55 | 0.65 | 0.47 | 1.04 | 13      |
| 3/8       | 3/8              | 1169x6x6       | 0.26 | 0.51 | 0.65 | 0.47 | 1.04 | 13      |

## Union Tee

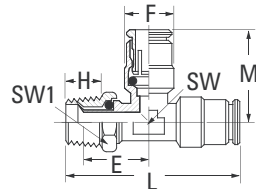


| Tube O.D. | Catalog Number | C    | F    | L    | M    | SW (mm) |
|-----------|----------------|------|------|------|------|---------|
| 1/8       | 1164x2         | 0.14 | 0.35 | 1.38 | 0.69 | 8       |
| 5/32      | 1164x2.5       | 0.14 | 0.35 | 1.38 | 0.69 | 8       |
| 1/4       | 1164x4         | 0.16 | 0.50 | 1.57 | 0.79 | 9       |
| 5/16      | 1164x5         | 0.20 | 0.55 | 1.77 | 0.89 | 11      |
| 3/8       | 1164x6         | 0.26 | 0.65 | 2.09 | 1.04 | 13      |
| 1/2       | 1164x8         | 0.32 | 0.77 | 2.24 | 1.12 | 15      |

## Male Run Tee Swivel



Swivel for installation purposes only.



| Tube O.D. | Male Pipe Thread | Catalog Number | E    | F    | H    | L    | M    | SW (mm) | SW1 (mm) |
|-----------|------------------|----------------|------|------|------|------|------|---------|----------|
| 1/8       | 10-32 *          | 1171x2AS       | 0.53 | 0.39 | 0.18 | 1.53 | 0.89 | 9       | 8        |
| 1/8       | 1/8              | 1171x2S        | 0.65 | 0.35 | 0.32 | 1.54 | 0.69 | 8       | 12       |
| 5/32      | 10-32 *          | 1171x2.5AS     | 0.53 | 0.39 | 0.18 | 1.50 | 0.79 | 9       | 8        |
| 5/32      | 1/8              | 1171x2.5S      | 0.65 | 0.35 | 0.32 | 1.54 | 0.69 | 8       | 12       |
| 5/32      | 1/4              | 1171x2.5x4S    | 0.69 | 0.35 | 0.26 | 1.63 | 0.69 | 8       | 14       |
| 1/4       | 1/8              | 1171x4S        | 0.67 | 0.46 | 0.49 | 1.65 | 0.79 | 9       | 12       |
| 1/4       | 1/4              | 1171x4x4S      | 0.71 | 0.50 | 0.32 | 1.75 | 0.79 | 9       | 14       |
| 1/4       | 3/8              | 1171x4x6S      | 0.69 | 0.50 | 0.47 | 1.77 | 0.79 | 9       | 19       |
| 3/8       | 1/4              | 1171x6S        | 0.85 | 0.65 | 0.47 | 2.15 | 1.04 | 13      | 14       |
| 3/8       | 3/8              | 1171x6x6S      | 0.83 | 0.65 | 0.47 | 2.17 | 1.04 | 13      | 19       |
| 3/8       | 1/2              | 1171x6x8S      | 0.91 | 0.65 | 0.61 | 2.28 | 1.04 | 13      | 22       |
| 1/2       | 1/4              | 1171x8x4S      | 0.91 | 0.79 | 0.47 | 2.29 | 1.12 | 15      | 13       |
| 1/2       | 3/8              | 1171x8S        | 0.87 | 0.79 | 0.47 | 2.29 | 1.12 | 15      | 19       |
| 1/2       | 1/2              | 1171x8x8S      | 0.95 | 0.79 | 0.61 | 2.40 | 1.12 | 15      | 22       |

\*UNF Thread. Seals with nylon washer (included).

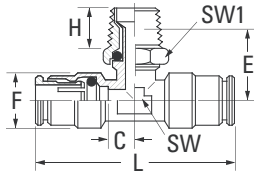
# Brass Products

Push>Connect

## Male Branch Tee Swivel



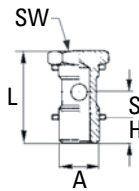
Swivel for installation purposes only.



| Tube O.D. | Male Pipe Thread | Catalog Number | C    | E    | F    | H    | I    | SW   | SW1  |
|-----------|------------------|----------------|------|------|------|------|------|------|------|
| 1/8       | 10-32*           | 1172x2AS       | 0.24 | 0.53 | 0.39 | 0.18 | 1.61 | 0.35 | 0.32 |
| 1/8       | 1/8              | 1172x2S        | 0.14 | 0.65 | 0.35 | 0.32 | 1.38 | 0.32 | 0.47 |
| 5/32      | 10-32*           | 1172x2.5AS     | 0.24 | 0.56 | 0.39 | 0.18 | 1.57 | 0.35 | 0.32 |
| 5/32      | 1/8              | 1172x2.5S      | 0.14 | 0.65 | 0.35 | 0.32 | 1.38 | 0.32 | 0.47 |
| 5/32      | 1/4              | 1172x2.5x4S    | 0.14 | 0.67 | 0.35 | 0.47 | 1.38 | 0.32 | 0.55 |
| 1/4       | 1/8              | 1172x4S        | 0.16 | 0.67 | 0.50 | 0.32 | 1.57 | 0.35 | 0.47 |
| 1/4       | 1/4              | 1172x4x4S      | 0.16 | 0.71 | 0.50 | 0.47 | 1.57 | 0.35 | 0.55 |
| 1/4       | 3/8              | 1172x4x6S      | 0.16 | 0.69 | 0.50 | 0.47 | 1.57 | 0.35 | 0.75 |
| 3/8       | 1/4              | 1172x6S        | 0.26 | 0.85 | 0.65 | 0.47 | 2.09 | 0.51 | 0.55 |
| 3/8       | 3/8              | 1172x6x6S      | 0.26 | 0.83 | 0.65 | 0.47 | 2.09 | 0.51 | 0.75 |
| 3/8       | 1/2              | 1172x6x8S      | 0.26 | 0.91 | 0.65 | 0.61 | 2.09 | 0.51 | 0.87 |
| 1/2       | 1/4              | 1172x8x4S      | 0.32 | 0.91 | 0.77 | 0.47 | 2.24 | 0.59 | 0.67 |
| 1/2       | 3/8              | 1172x8S        | 0.32 | 0.89 | 0.77 | 0.47 | 2.24 | 0.59 | 0.75 |
| 1/2       | 1/2              | 1172x8x8S      | 0.32 | 0.95 | 0.77 | 0.61 | 2.24 | 0.59 | 0.87 |

\*UNF Thread. Seals with nylon washer (included).

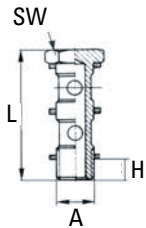
## Stud Manifolds



| Male Pipe Thread A | Catalog Number | H    | L    | S    | SW   |
|--------------------|----------------|------|------|------|------|
| 10-32*             | 1184x1xA       | 0.16 | 0.71 | 0.18 | 0.32 |
| 1/8                | 1184x1x2       | 0.24 | 1.06 | 0.34 | 0.55 |
| 3/8                | 1184x1x6       | 0.35 | 1.18 | 0.34 | 0.75 |

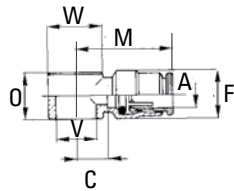
\*UNF Thread. Seals with nylon washer (included).

## Stud Manifolds



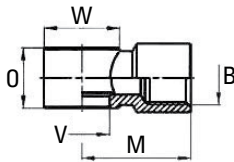
| Male Pipe Thread A | Catalog Number | H    | L    | SW   |
|--------------------|----------------|------|------|------|
| 1/4                | 1185x2x4       | 0.32 | 1.79 | 0.67 |

## Banjo



| Tube O.D. A | Catalog Number | C    | F    | M    | O    | V    | W    |
|-------------|----------------|------|------|------|------|------|------|
| 5/32        | 1181x2.5A      | 0.20 | 0.35 | 0.75 | 0.35 | 0.20 | 0.35 |
| 1/8         | 1181x2x2       | 0.32 | 0.39 | 0.89 | 0.57 | 0.39 | 0.55 |
| 1/4         | 1181x4x2       | 0.35 | 0.50 | 0.98 | 0.57 | 0.39 | 0.55 |
| 1/4         | 1181x4x4       | 0.43 | 0.50 | 1.06 | 0.57 | 0.52 | 0.71 |

## Female Banjo



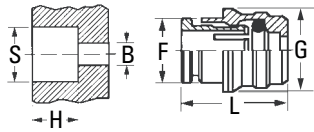
| Female Pipe Thread B | Catalog Number | V     | O    | M    | W    |
|----------------------|----------------|-------|------|------|------|
| 10-32*               | 1183xAxA       | 10-32 | 0.35 | 0.41 | 0.35 |
| 1/8                  | 1183x2x2       | 1/8   | 0.57 | 0.79 | 0.55 |
| 1/4                  | 1183x4x4       | 1/4   | 0.57 | 1.00 | 0.71 |
| 3/8                  | 1183x6x6       | 3/8   | 0.57 | 1.10 | 0.83 |

\*UNF Thread. Seals with nylon washer (included).

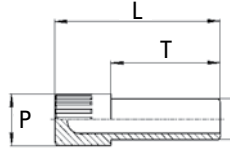
# Brass Products

## Push>Connect Metric

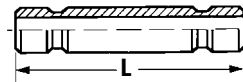
### Cartridge



### Plug (plastic)

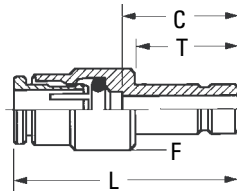


### Double Union



Joins Metric Push>Connect fittings.

### Reducer



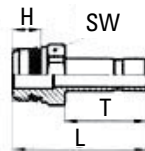
| Tube O.D. (mm) | Catalog Number | F    | G    | L    | S     | H    | B   |
|----------------|----------------|------|------|------|-------|------|-----|
| 5              | 1161x5M        | 9.60 | 10.0 | 15.5 | 9.750 | 11.5 | 3.5 |
| 6              | 1161x6M        | 11.8 | 12.2 | 16.5 | 11.95 | 12.0 | 4.0 |
| 8              | 1161x8M        | 13.8 | 14.2 | 18.0 | 13.95 | 14.0 | 6.0 |

| Tube O.D. (mm) | Catalog Number | L    | P  | T    |
|----------------|----------------|------|----|------|
| 4              | 1129x4MRP      | 29.0 | 8  | 20.0 |
| 5              | 1129x5MRP      | 29.5 | 8  | 20.5 |
| 6              | 1129x6MRP      | 31.5 | 8  | 22.5 |
| 8              | 1129x8MRP      | 34.5 | 12 | 24.5 |
| 10             | 1129x10MRP     | 37.0 | 12 | 27.0 |
| 12             | 1129x12MRP     | 40.5 | 16 | 28.5 |

| Tube O.D. (mm) | Catalog Number | L    |
|----------------|----------------|------|
| 4              | 1105x4M        | 32.5 |
| 6              | 1105x6M        | 35.5 |
| 8              | 1105x8M        | 40.5 |
| 10             | 1105x10M       | 46.0 |

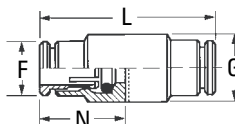
| Tube O.D. A (mm) | Tube O.D. B (mm) | Catalog Number | C    | F  | L    | T    |
|------------------|------------------|----------------|------|----|------|------|
| 4                | 6                | 1109x4Mx6M     | 15.5 | 9  | 29.5 | 18.0 |
| 6                | 8                | 1109x6Mx8M     | 18.0 | 13 | 34.0 | 20.5 |
| 6                | 10               | 1109x6Mx10M    | 20.5 | 13 | 36.5 | 23.0 |
| 8                | 10               | 1109x8Mx10M    | 20.5 | 14 | 39.0 | 23.0 |
| 8                | 12               | 1109x8Mx12M    | 21.5 | 14 | 39.0 | 24.0 |

### Stem Adapter



| Tube O.D. (mm) | BSPP D (mm) | Thd. Size    | Catalog Number | H   | T    | L    | SW |
|----------------|-------------|--------------|----------------|-----|------|------|----|
| 4              | 1/8         | 1180x4Mx2PP  |                | 5.5 | 16.5 | 27.8 | 12 |
| 5              | 1/8         | 1180x5Mx2PP  |                | 5.5 | 18.0 | 29.3 | 12 |
| 6              | 1/8         | 1180x6Mx2PP  |                | 5.5 | 18.0 | 29.3 | 12 |
| 6              | 1/4         | 1180x6Mx4PP  |                | 7.0 | 18.0 | 31.0 | 14 |
| 8              | 1/8         | 1180x8Mx2PP  |                | 5.5 | 20.5 | 31.8 | 12 |
| 8              | 1/4         | 1180x8Mx4PP  |                | 7.0 | 20.5 | 33.5 | 14 |
| 10             | 1/4         | 1180x10Mx4PP |                | 7.0 | 23.0 | 36.0 | 14 |
| 10             | 3/8         | 1180x10Mx6PP |                | 8.0 | 23.0 | 37.3 | 19 |
| 12             | 3/8         | 1180x12Mx6PP |                | 8.0 | 24.0 | 38.3 | 19 |

### Union



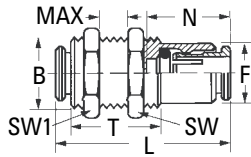
Joins metric tubing.

| Tube O.D. (mm) | Catalog Number | F    | G  | L    | N    |
|----------------|----------------|------|----|------|------|
| 4              | 1162x4M        | 8.40 | 9  | 29.0 | 14.0 |
| 5              | 1162x5M        | 9.80 | 11 | 32.0 | 15.0 |
| 6              | 1162x6M        | 11.7 | 12 | 34.0 | 15.5 |
| 8              | 1162x8M        | 13.7 | 14 | 37.0 | 17.5 |
| 10             | 1162x10M       | 15.4 | 17 | 41.5 | 20.0 |
| 12             | 1162x12M       | 18.3 | 19 | 43.5 | 21.0 |

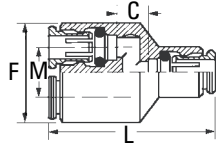
# Brass Products

Push>Connect Metric

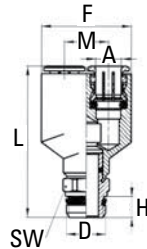
## Bulkhead Union



## Union "Y"



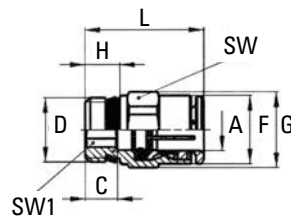
## Male "Y"



## Male Connector (Universal BSPT/BSPP)



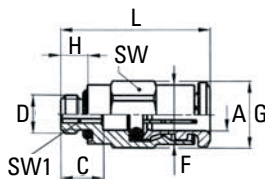
Allen wrench use permits close quarter installation not possible with a standard wrench.



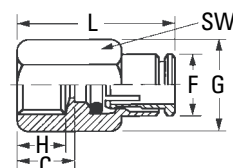
## Male Connector



Allen wrench use permits close quarter installation not possible with a standard wrench.



## Female Connector (BSPP)



| Tube O.D. (mm) | Catalog Number | B     | F    | L    | N    | MAX  | SW (mm) | SW1 (mm) | T    |
|----------------|----------------|-------|------|------|------|------|---------|----------|------|
| 4              | 1174x4M        | M10x1 | 8.40 | 29.0 | 14.5 | 10.5 | 14      | 14       | 20.0 |
| 5              | 1174x5M        | M12x1 | 9.80 | 31.0 | 15.0 | 10.5 | 17      | 17       | 20.0 |
| 6              | 1174x6M        | M14x1 | 11.7 | 33.0 | 16.0 | 10.5 | 17      | 17       | 20.0 |
| 8              | 1174x8M        | M16x1 | 13.7 | 36.0 | 17.5 | 11.5 | 19      | 19       | 21.0 |
| 10             | 1174x10M       | M18x1 | 15.4 | 41.5 | 20.0 | 13.0 | 22      | 22       | 23.5 |
| 12             | 1174x12M       | M20x1 | 18.3 | 43.5 | 21.0 | 14.5 | 24      | 24       | 25.0 |

| Tube O.D. (mm) | Catalog Number | F    | C    | L    | M    |
|----------------|----------------|------|------|------|------|
| 4              | 1107x4M        | 18.0 | 5.0  | 33.0 | 9.0  |
| 6              | 1107x6M        | 24.5 | 7.0  | 39.0 | 12.5 |
| 8              | 1107x8M        | 28.5 | 9.0  | 44.0 | 14.5 |
| 10             | 1107x10M       | 32.0 | 15.5 | 53.5 | 16.0 |

| Tube O.D. (mm) | Thread Size A BSP D | Catalog Number | F    | H   | M    | L    | SW (mm) |
|----------------|---------------------|----------------|------|-----|------|------|---------|
| 4              | 1/8                 | 1108x4Mx2PT    | 18.0 | 5.5 | 9    | 38.0 | 12      |
| 6              | 1/8                 | 1108x6Mx2PT    | 24.5 | 5.5 | 12.5 | 41.5 | 12      |

\*M5x0.8 metric screw thread. Seals with nylon washer (included).

| Tube O.D. (mm) | Thread Size A BSP D | Catalog Number | C    | F    | G    | H   | L    | SW (mm) | SW1 (mm) |
|----------------|---------------------|----------------|------|------|------|-----|------|---------|----------|
| 4              | 1/8                 | 1168x4Mx2PT    | 3.8  | 8.80 | 13.2 | 5.5 | 18.0 | 12      | 2.5      |
| 4              | 1/4                 | 1168x4Mx4PT    | 6.0  | 8.80 | 15.2 | 7.0 | 19.5 | 14      | 2.5      |
| 5              | 1/8                 | 1168x5Mx2PT    | 3.8  | 9.80 | 13.2 | 5.5 | 19.0 | 12      | 3.0      |
| 5              | 1/4                 | 1168x5Mx4PT    | 5.5  | 9.80 | 15.2 | 7.0 | 20.0 | 14      | 3.0      |
| 6              | 1/8                 | 1168x6Mx2PT    | 5.0  | 11.7 | 13.2 | 5.5 | 20.5 | 12      | 4.0      |
| 6              | 1/4                 | 1168x6Mx4PT    | 5.5  | 11.7 | 15.2 | 7.0 | 21.0 | 14      | 4.0      |
| 8              | 1/8                 | 1168x8Mx2PT    | 7.5  | 13.7 | 15.2 | 5.5 | 25.0 | 14      | 5.0      |
| 8              | 1/4                 | 1168x8Mx4PT    | 6.5  | 13.7 | 15.2 | 7.0 | 24.0 | 14      | 6.0      |
| 8              | 3/8                 | 1168x8Mx6PT    | 6.5  | 13.7 | 20.5 | 8.0 | 23.5 | 19      | 6.0      |
| 10             | 1/4                 | 1168x10Mx4PT   | 8.5  | 16.3 | 18.5 | 7.0 | 28.5 | 17      | 7.0      |
| 10             | 3/8                 | 1168x10Mx6PT   | 5.5  | 16.3 | 20.5 | 8.0 | 25.5 | 19      | 8.0      |
| 10             | 1/2                 | 1168x10Mx8PT   | 5.0  | 16.3 | 24.5 | 9.0 | 25.0 | 22      | 8.0      |
| 12             | 1/4                 | 1168x12Mx4PT   | 10.5 | 18.3 | 20.5 | 7.0 | 31.5 | 19      | 7.0      |
| 12             | 3/8                 | 1168x12Mx6PT   | 9.5  | 18.3 | 20.5 | 8.0 | 30.5 | 19      | 9.0      |
| 12             | 1/2                 | 1168x12Mx8PT   | 6.0  | 18.3 | 24.5 | 9.0 | 27.0 | 22      | 10.0     |

| Tube O.D. (mm) | Thread Size A BSP | Catalog Number | C   | F    | G    | H   | L    | SW (mm) | SW1 (mm) |
|----------------|-------------------|----------------|-----|------|------|-----|------|---------|----------|
| 5              | M5*               | 1168x5Mx5MM    | 5.5 | 8.8  | 9.9  | 3.5 | 20.5 | 9       | 2        |
| 6              | M5*               | 1168x6Mx5MM    | 5.5 | 11.7 | 13.2 | 3.5 | 21.5 | 12      | 2        |

\*M5x0.8 metric screw thread. Seals with nylon washer (included).

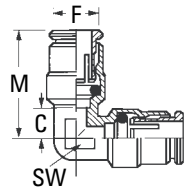
| Tube O.D. (mm) | Thread Size A BSPP | Catalog Number | C    | F    | G    | H    | L    | SW (mm) |
|----------------|--------------------|----------------|------|------|------|------|------|---------|
| 4              | 1/8                | 1166x4Mx2PP    | 10.0 | 9.0  | 13.0 | 7.5  | 24.0 | 12      |
| 4              | M5*                | 1166x4Mx5MM    | 6.5  | 7.8  | 8.8  | 5.0  | 20.5 | 8       |
| 6              | 1/8                | 1166x6Mx2PP    | 10.0 | 11.7 | 13.0 | 7.5  | 26.0 | 12      |
| 6              | 1/4                | 1166x6Mx4PP    | 11.5 | 11.9 | 16.5 | 11.0 | 27.5 | 15      |
| 8              | 1/8                | 1166x8Mx2PP    | 9.5  | 13.7 | 15.2 | 7.5  | 27.0 | 14      |
| 8              | 1/4                | 1166x8Mx4PP    | 11.5 | 13.7 | 16.5 | 11.0 | 29.0 | 15      |
| 10             | 1/4                | 1166x10Mx4PP   | 11.5 | 15.7 | 18.5 | 11.0 | 31.5 | 17      |

\*M5x0.8 is M profile thread. Seals with nylon washer (included).

# Brass Products

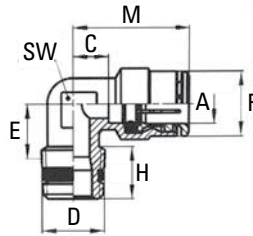
Push>Connect Metric

## Union Elbow



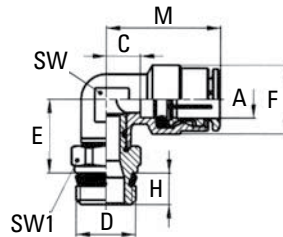
| Tube O.D. (mm) | Catalog Number | C   | F    | M    | SW (mm) |
|----------------|----------------|-----|------|------|---------|
| 4              | 1165x4M        | 3.5 | 9.0  | 17.5 | 8       |
| 5              | 1165x5M        | 6.0 | 11.0 | 21.0 | 9       |
| 6              | 1165x6M        | 4.0 | 12.7 | 20.0 | 9       |
| 8              | 1165x8M        | 5.0 | 14.0 | 22.5 | 11      |
| 10             | 1165x10M       | 6.5 | 16.5 | 26.5 | 13      |
| 12             | 1165x12M       | 7.5 | 19.5 | 28.5 | 15      |

## Male Elbow (Universal BSPT/BSPP)



| Tube O.D. (mm) | Thread Size | Catalog Number | C   | E    | F    | H    | M    | SW (mm) |
|----------------|-------------|----------------|-----|------|------|------|------|---------|
| 4              | 1/8         | 1169x4Mx2PT    | 3.5 | 8.5  | 9.0  | 7.5  | 17.5 | 8       |
| 4              | 1/4         | 1169x4Mx4PT    | 6.0 | 11.5 | 10.0 | 12   | 20.0 | 9       |
| 5              | 1/8         | 1169x5Mx2PT    | 6.0 | 9.5  | 11.0 | 7.5  | 21.0 | 9       |
| 5              | 1/4         | 1169x5Mx4PT    | 6.0 | 10.5 | 11.0 | 11.0 | 21.0 | 9       |
| 6              | 1/8         | 1169x6Mx2PT    | 4.0 | 9.0  | 12.7 | 7.5  | 20.0 | 9       |
| 6              | 1/4         | 1169x6Mx4PT    | 4.0 | 11.5 | 12.7 | 12   | 20.0 | 9       |
| 8              | 1/8         | 1169x8Mx2PT    | 5.0 | 10.5 | 14.0 | 7.5  | 22.5 | 11      |
| 8              | 1/4         | 1169x8Mx4PT    | 5.0 | 11.5 | 14.0 | 12.5 | 22.5 | 11      |
| 8              | 3/8         | 1169x8Mx6PT    | 7.5 | 13.0 | 15.0 | 11.5 | 25.0 | 12      |
| 10             | 1/4         | 1169x10Mx4PT   | 6.5 | 13.0 | 16.5 | 12   | 26.5 | 13      |
| 10             | 3/8         | 1169x10Mx6PT   | 6.5 | 12.5 | 16.5 | 11.5 | 26.5 | 13      |
| 12             | 1/4         | 1169x12Mx4PT   | 7.5 | 14.5 | 19.5 | 12   | 28.5 | 15      |
| 12             | 3/8         | 1169x12Mx6PT   | 7.5 | 14.5 | 19.5 | 12.5 | 28.5 | 15      |

## Male Elbow Swivel (Universal BSPT/BSPP)



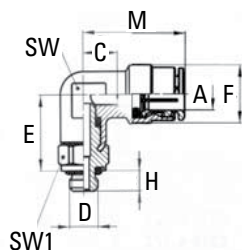
Swivel for installation purposes only.

| Tube O.D. (mm) | Thread Size | Catalog Number | C   | E    | F    | H   | M    | SW (mm) | SW1 (mm) |
|----------------|-------------|----------------|-----|------|------|-----|------|---------|----------|
| 4              | 1/8         | 1169x4Mx2PTS   | 3.5 | 14.5 | 9.0  | 5.5 | 17.5 | 8       | 12       |
| 4              | 1/4         | 1169x4Mx4PTS   | 3.5 | 14.5 | 9.0  | 7.0 | 17.5 | 8       | 14       |
| 5              | 1/8         | 1169x5Mx2PTS   | 6.0 | 14.5 | 11.0 | 5.5 | 21.0 | 9       | 12       |
| 5              | 1/4         | 1169x5Mx4PTS   | 6.0 | 14.5 | 11.0 | 7.0 | 21.0 | 9       | 14       |
| 6              | 1/8         | 1169x6Mx2PTS   | 4.0 | 15.0 | 12.7 | 5.5 | 20.0 | 9       | 12       |
| 6              | 1/4         | 1169x6Mx4PTS   | 4.0 | 15.0 | 12.7 | 7.0 | 20.0 | 9       | 14       |
| 8              | 1/8         | 1169x8Mx2PTS   | 5.0 | 16.0 | 14.0 | 5.5 | 22.5 | 11      | 12       |
| 8              | 1/4         | 1169x8Mx4PTS   | 5.0 | 16.0 | 14.0 | 7.0 | 22.5 | 11      | 14       |
| 8              | 3/8         | 1169x8Mx6PTS   | 5.0 | 16.5 | 14.0 | 8.0 | 22.5 | 11      | 19       |
| 10             | 1/4         | 1169x10Mx4PTS  | 6.5 | 18.5 | 16.5 | 7.0 | 26.5 | 13      | 14       |
| 10             | 3/8         | 1169x10Mx6PTS  | 6.5 | 19.0 | 16.5 | 8.0 | 26.5 | 13      | 19       |
| 10             | 1/2         | 1169x10Mx8PTS  | 6.5 | 19.5 | 16.5 | 9.0 | 26.5 | 13      | 22       |
| 12             | 1/4         | 1169x12Mx4PTS  | 7.5 | 20.0 | 19.5 | 7.0 | 28.5 | 15      | 17       |
| 12             | 3/8         | 1169x12Mx6PTS  | 7.5 | 20.0 | 19.5 | 8.0 | 28.5 | 15      | 19       |
| 12             | 1/2         | 1169x12Mx8PTS  | 7.5 | 20.5 | 19.5 | 9.0 | 28.5 | 15      | 22       |

## Male Elbow Swivel



Swivel for installation purposes only.



| Tube O.D. (mm) | Thread Size | Catalog Number | C | E    | F    | H | M  | SW (mm) | SW1 (mm) |
|----------------|-------------|----------------|---|------|------|---|----|---------|----------|
| 4              | M5*         | 1169x4Mx5MMS   | 6 | 12.5 | 11.0 | 4 | 21 | 9       | 8        |
| 5              | M5*         | 1169x5Mx5MMS   | 4 | 13.0 | 12.7 | 4 | 20 | 9       | 10       |

\*M5x0.8 metric screw thread. Seals with nylon washer (included).

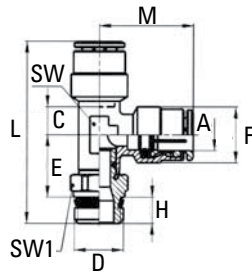
# Brass Products

Push>Connect Metric

## Male Run Tee Swivel (Universal BSPT/BSPP)

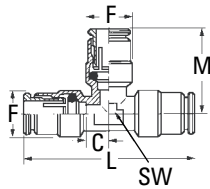


Swivel for installation purposes only.



| Tube<br>O.D. (mm) | Thd.<br>Size<br>BSP | D | Catalog<br>Number | C   | E    | F    | H   | I    | m    | SW<br>(mm) | SW1<br>(mm) |
|-------------------|---------------------|---|-------------------|-----|------|------|-----|------|------|------------|-------------|
| 4                 | 1/8                 |   | 1171x4Mx2PTS      | 3.5 | 14.5 | 9.0  | 5.5 | 37.5 | 17.5 | 8          | 12          |
| 5                 | 1/8                 |   | 1171x5Mx2PTS      | 6.0 | 14.5 | 11.0 | 5.5 | 41.0 | 21.0 | 9          | 12          |
| 5                 | 1/14                |   | 1171x5Mx4PTS      | 6.0 | 14.5 | 11.0 | 7.0 | 42.5 | 21.0 | 9          | 14          |
| 6                 | 1/8                 |   | 1171x6Mx2PTS      | 4.0 | 15.0 | 12.7 | 5.5 | 40.0 | 20.0 | 9          | 12          |
| 6                 | 1/4                 |   | 1171x6Mx4PTS      | 4.0 | 15.0 | 12.7 | 7.0 | 41.5 | 20.0 | 9          | 14          |
| 8                 | 3/8                 |   | 1171x8Mx6PTS      | 5.0 | 16.5 | 14.0 | 8.0 | 47.0 | 22.5 | 13         | 19          |
| 10                | 1/4                 |   | 1171x10Mx4PTS     | 6.5 | 18.5 | 16.5 | 7.0 | 52.0 | 26.5 | 13         | 14          |
| 10                | 3/8                 |   | 1171x10Mx6PTS     | 6.5 | 18.5 | 16.5 | 8.0 | 53.5 | 26.5 | 15         | 19          |
| 12                | 3/8                 |   | 1171x12Mx6PTS     | 7.5 | 19.5 | 19.5 | 8.0 | 56.5 | 28.5 | 16         | 19          |

## Union Tee

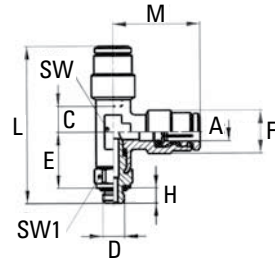


| Tube<br>O.D. (mm) | Catalog<br>Number | C   | F    | L  | M    | SW<br>(mm) |
|-------------------|-------------------|-----|------|----|------|------------|
| 4                 | 1164x4M           | 3.5 | 9.0  | 35 | 17.5 | 8          |
| 5                 | 1164x5M           | 6.0 | 11.0 | 42 | 21.0 | 9          |
| 6                 | 1164x6M           | 4.0 | 12.7 | 40 | 20.0 | 9          |
| 8                 | 1164x8M           | 5.0 | 14.0 | 45 | 22.5 | 11         |
| 10                | 1164x10M          | 6.5 | 16.5 | 53 | 26.5 | 13         |
| 12                | 1164x12M          | 7.5 | 19.5 | 57 | 28.5 | 15         |

## Male Run Tee Swivel



Swivel for installation purposes only.



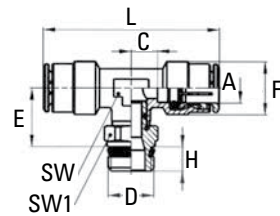
| Tube<br>O.D. (mm) | Thd.<br>Size<br>BSP | D | Catalog<br>Number | C   | E    | F  | H | I  | M    | SW<br>(mm) | SW1<br>(mm) |
|-------------------|---------------------|---|-------------------|-----|------|----|---|----|------|------------|-------------|
| 4                 | M5*                 |   | 1171x4Mx5MMS      | 3.5 | 12.5 | 9  | 4 | 34 | 17.5 | 8          | 8           |
| 5                 | M5*                 |   | 1171x5Mx5MMS      | 6.0 | 12.5 | 11 | 4 | 37 | 21.0 | 9          | 8           |

\*M5x0.8 metric screw thread. Seals with nylon washer (included).

## Male Branch Tee Swivel (Universal BSPT/BSPP)



Swivel for installation purposes only.

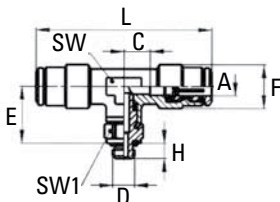


| Tube<br>O.D. (mm) | Thread<br>Size<br>BSP | D | Catalog<br>Number | C   | E    | F    | H   | I  | SW<br>(mm) | SW1<br>(mm) |
|-------------------|-----------------------|---|-------------------|-----|------|------|-----|----|------------|-------------|
| 4                 | 1/8                   |   | 1172x4Mx2PTS      | 3.5 | 14.5 | 9.0  | 5.5 | 35 | 8          | 12          |
| 5                 | 1/8                   |   | 1172x5Mx2PTS      | 6.0 | 14.5 | 11.0 | 5.5 | 42 | 9          | 12          |
| 5                 | 1/4                   |   | 1172x5Mx4PTS      | 6.0 | 14.5 | 11.0 | 7.0 | 42 | 9          | 14          |
| 6                 | 1/8                   |   | 1172x6Mx2PTS      | 4.0 | 15.0 | 12.7 | 5.5 | 40 | 9          | 12          |
| 6                 | 1/4                   |   | 1172x6Mx4PTS      | 4.0 | 15.0 | 12.7 | 7.0 | 40 | 9          | 14          |
| 8                 | 1/8                   |   | 1172x8Mx2PTS      | 5.0 | 16.0 | 14.0 | 5.5 | 45 | 11         | 12          |
| 8                 | 1/4                   |   | 1172x8Mx4PTS      | 5.0 | 16.0 | 14.0 | 7.0 | 45 | 11         | 14          |
| 8                 | 3/8                   |   | 1172x8Mx6PTS      | 5.0 | 16.5 | 14.0 | 8.0 | 45 | 11         | 19          |
| 10                | 1/4                   |   | 1172x10Mx4PTS     | 6.5 | 18.5 | 16.5 | 7.0 | 53 | 13         | 14          |
| 10                | 3/8                   |   | 1172x10Mx6PTS     | 6.5 | 19.0 | 16.5 | 8.0 | 53 | 13         | 19          |
| 12                | 1/4                   |   | 1172x12Mx4PTS     | 7.5 | 20.0 | 19.5 | 7.0 | 57 | 15         | 17          |
| 12                | 3/8                   |   | 1172x12Mx6PTS     | 7.5 | 20.0 | 19.5 | 8.0 | 57 | 15         | 19          |
| 12                | 1/2                   |   | 1172x12Mx8PTS     | 7.5 | 20.5 | 19.5 | 9.0 | 57 | 15         | 22          |

## Male Branch Tee Swivel



Swivel for installation purposes only.



| Tube<br>O.D. (mm) | Thread<br>Size | Catalog<br>Number | C   | E    | F | H | I  | SW<br>(mm) | SW1<br>(mm) |
|-------------------|----------------|-------------------|-----|------|---|---|----|------------|-------------|
| 4                 | M5*            | 1172x4Mx5MMS      | 3.5 | 14.5 | 9 | 4 | 35 | 8          | 8           |

\*M5x0.8 metric screw thread. Seals with nylon washer (included).



# Brass Products

## Push>Connect Flow Controls

### Note:

For additional technical questions, contact Technical Support at 1-888-258-0222.

### Note:

We reserve the right to alter these specifications without prior notice.

### Right Angle Flow Control and Needle Valves

SCU-MCU

### Technical Data

#### Valve:

Flow Regulator

#### Regulation:

Adjustable Screw

#### Material:

Brass; Nickel Plated

#### Seals:

Buna-N

### Threads:

10-32 UNF - 1/8 - 1/4 - 3/8  
NPTF

### Tube Sizes:

1/8 - 5/32 - 1/4 - 3/8

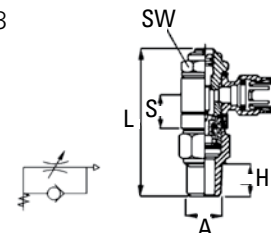
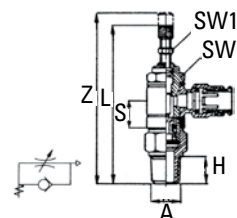
### Operating Pressures:

to 150 PSI

### Nominal Diameter:

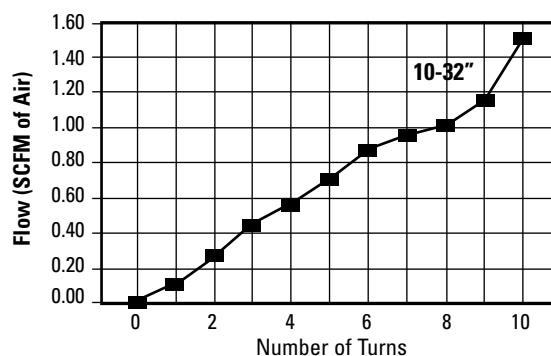
10-32 UNF = .059 - 1/8 = .078

1/4 = .157 - 3/8 = .275

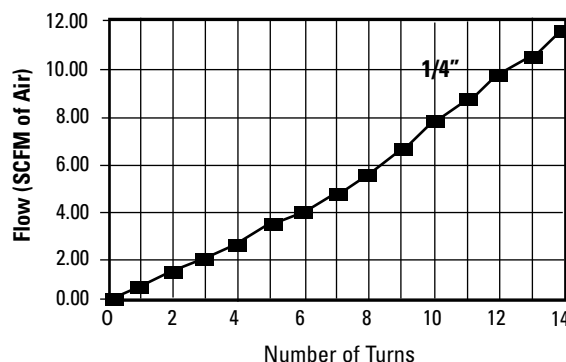
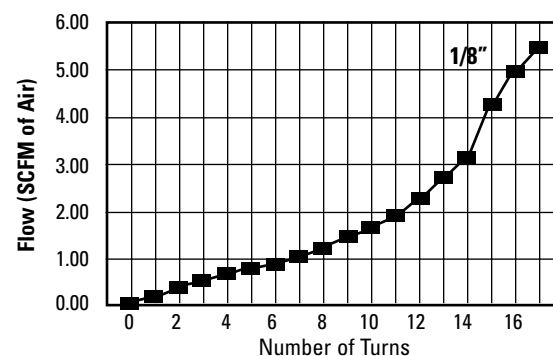


### Flow Control Valve Performance

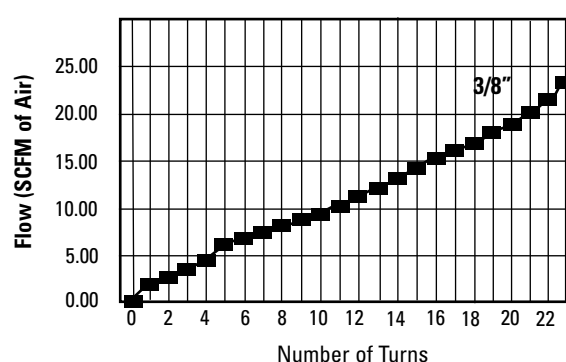
Air flow is determined with 85 PSI at the in port and with 70 PSI at the outlet



Air flow (SCFM) from B to A  
With adjustment open 1.9  
With adjustment closed 1.4



Air flow (SCFM) from B to A  
With adjustment open 15  
With adjustment closed 8



Air flow (SCFM) from B to A  
With adjustment open 23  
With adjustment closed 13

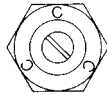


# Brass Products

Push>Connect Flow Controls

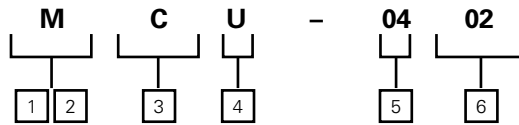
## Identification of flow control

These unidirectional flow controllers have been designed as small as possible so as to be mounted directly on valves or cylinders.



**SCU**  
**MCU**

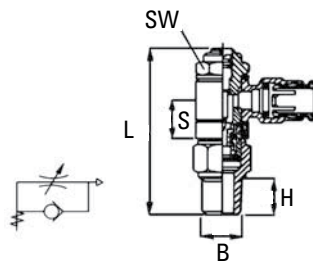
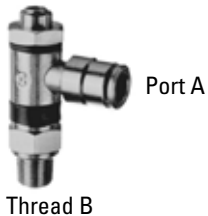
## Coding of Banjo flow controllers



**1, 2, Adjustment**  
M=Manual  
S=Screwdriver  
**3, Assembly**  
C=On cylinders

**4 Function**  
U= unidirectional  
(flow control)  
**5 Port A**  
**6 Thread B**

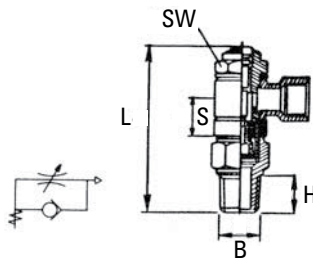
## SCU



| Catalog Tube Number | B O.D. | NPTF  | S    | H    | L     | SW (mm) |
|---------------------|--------|-------|------|------|-------|---------|
| A555SCUx2.5A*       | 5/32   | 10-32 | 0.22 | 0.18 | 1.141 | 8       |
| A55SCUx2.5x2        | 5/32   | 1/8   | 0.51 | 0.37 | 2.000 | 14      |
| A55SCUx4x2          | 1/4    | 1/8   | 0.51 | 0.37 | 2.000 | 14      |
| A55SCUx4x4          | 1/4    | 1/4   | 0.45 | 0.51 | 2.250 | 17      |
| A55SCUx6x4          | 3/8    | 1/4   | 0.45 | 0.51 | 2.250 | 17      |
| A55SCUx6x6          | 3/8    | 3/8   | 0.48 | 0.51 | 2.440 | 19      |

\*UNF Thread

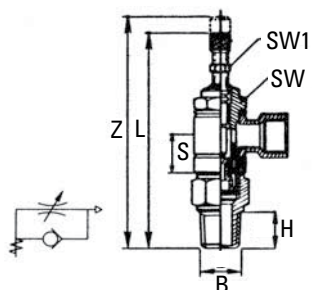
## SCU



| Catalog Female Number | Banjo B Thread | NPTF | S    | H    | L    | SW (mm) |
|-----------------------|----------------|------|------|------|------|---------|
| A557SCUx2x2           | 1/8            | 1/8  | 0.51 | 0.37 | 2.00 | 14      |
| A557SCUx4x4           | 1/4            | 1/4  | 0.45 | 0.51 | 2.25 | 17      |
| A557SCUx6x6           | 3/8            | 3/8  | 0.48 | 0.51 | 2.44 | 19      |

\*UNF Thread

## MCU



| Catalog Number | Banjo Female Thread | B NPTF | S    | H    | L    | Z    | SW (mm) | SW1 (mm) |
|----------------|---------------------|--------|------|------|------|------|---------|----------|
| A557MCUx2x2    | 1/8                 | 1/8    | 0.51 | 0.37 | 2.38 | 2.56 | 14      | 7        |
| A557MCUx6x6    | 3/8                 | 3/8    | 0.48 | 0.51 | 2.95 | 3.25 | 19      | 10       |

# Brass Products

## Push>Connect Plus

Eaton is proud to announce three design changes to Push>Connect products. The introduction of a low profile, sure-seal design for male NPTF threaded fittings is here. Also, an improved collet design will allow use with all types of tubing from Nylon to 90A durometer Polyurethane, including Polyethylene, and PVC tubing. Lastly, the male swivel design provides greater strength and stability.

Below is a summary of features and benefits for the newly named Push>Connect Plus.

### Perfect thread seal:

A captured Teflon® ring around the base of the hex

shoulder, seals similar to a reusable (SAE type) seal eliminates thread sealant and loose particles associated with thread sealant.

### Lower Profile:

Push>Connect Plus has a lower profile for those tight places. A shorter thread design eliminates exposed threads where dirt and bacteria can collect (ideal for food processing and hygienic applications).

### More Versatility:

The new brass collet is designed for use with all types of tubing from Nylon to 90A durometer Polyurethane, including Polyethylene, and PVC tubing.

### Note:

For additional technical questions, contact Technical Support at 1-888-258-0222.

### Super-quick Installations:

New short thread length means fewer turns and super-quick installations.

### Improved Swivel Design:

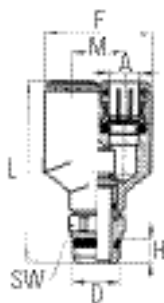
Strength and stability have been engineered into the new male swivel.

### Universal Thread:

Use with NPT, BSPP, and BSPT ports.

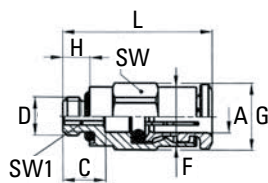
The new part will have a 'P' in the part number to signify the new design. An example of this change is previous #1169x4S becomes #1169Px4S. Current Push>Connect parts with 10-32UNF threads and ending in 'A' (eg.1168x2A) will continue with the current thread design.

### Swivel Male "Y"



| Tube O.D. | Male Pipe | Catalog Number Thread | F    | H    | M    | L    |
|-----------|-----------|-----------------------|------|------|------|------|
| 1/8       | 1/8       | 1108Px2S              | 0.83 | 0.20 | 0.39 | 1.28 |
| 5/32      | 1/8       | 1108Px2.5S            | 0.83 | 0.20 | 0.39 | 1.28 |
| 1/4       | 1/8       | 1108Px4S              | 0.96 | 0.20 | 0.49 | 1.40 |

### Male Connector



| Tube O.D. A | Male Pipe Thread D | Catalog Number | F     | G     | H     | L     | SW (mm) | SW1 (mm) |
|-------------|--------------------|----------------|-------|-------|-------|-------|---------|----------|
| 1/8         | 10-32*             | 1168Px2A       | 0.346 | 0.411 | 0.177 | 0.846 | 9       | 2.0      |
| 1/8         | 1/8                | 1168Px2        | 0.346 | 0.551 | 0.200 | 0.728 | 12      | 2.5      |
| 1/8         | 1/4                | 1168Px2x4      | 0.346 | 0.629 | 0.255 | 0.807 | 14      | 2.5      |
| 5/32        | 10-32*             | 1168x2.5A      | 0.346 | 0.411 | 0.177 | 0.807 | 9       | 2.0      |
| 5/32        | 1/8                | 1168Px2.5      | 0.346 | 0.551 | 0.200 | 0.728 | 12      | 2.5      |
| 5/32        | 1/4                | 1168Px2.5x4    | 0.346 | 0.629 | 0.255 | 0.807 | 14      | 2.5      |
| 1/4         | 10-32*             | 1168x4A        | 0.460 | 0.551 | 0.177 | 0.905 | 12      | 2.0      |
| 1/4         | 1/8                | 1168Px4        | 0.460 | 0.551 | 0.200 | 0.807 | 12      | 4.0      |
| 1/4         | 1/4                | 1168Px4x4      | 0.460 | 0.629 | 0.255 | 0.846 | 14      | 4.0      |
| 1/4         | 3/8                | 1168Px4x6      | 0.460 | 0.866 | 0.294 | 0.885 | 19      | 4.0      |
| 5/16        | 1/8                | 1168Px5        | 0.539 | 0.629 | 0.200 | 0.945 | 14      | 5.0      |
| 5/16        | 1/4                | 1168Px5x4      | 0.539 | 0.629 | 0.255 | 0.945 | 14      | 6.0      |
| 5/16        | 3/8                | 1168Px5x6      | 0.539 | 0.866 | 0.294 | 0.924 | 19      | 6.0      |
| 3/8         | 1/8                | 1168Px6x2      | 0.610 | 0.776 | 0.200 | 1.082 | 17      | 5.0      |
| 3/8         | 1/4                | 1168Px6        | 0.610 | 0.776 | 0.255 | 1.102 | 17      | 7.0      |
| 3/8         | 3/8                | 1168Px6x6      | 0.610 | 0.866 | 0.294 | 0.945 | 19      | 7.0      |
| 3/8         | 1/2                | 1168Px6x8      | 0.610 | 1.004 | 0.335 | 0.984 | 22      | 7.0      |
| 1/2         | 3/8                | 1168Px8        | 0.720 | 0.866 | 0.294 | 1.161 | 19      | 10.0     |
| 1/2         | 1/4                | 1168Px8x4      | 0.720 | 0.866 | 0.255 | 1.161 | 19      | 7.0      |
| 1/2         | 1/2                | 1168Px8x8      | 0.720 | 1.004 | 0.335 | 1.062 | 22      | 10.0     |

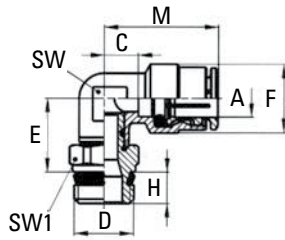
\*UNF Thread

\*Teflon® is a registered trademark of DuPont used license by Eaton.

## Swivel Male Elbow



Swivel for installation purposes only.



| Tube O.D. | Male Pipe Thd. | Catalog Number | C    | E    | F    | H    | M    | SW (mm) | SW1 (mm) |
|-----------|----------------|----------------|------|------|------|------|------|---------|----------|
| 1/8       | 1/8            | 1169Px2S       | 0.14 | 0.59 | 0.35 | 0.20 | 0.69 | 8       | 12       |
| 1/8       | 1/4            | 1169Px2x4S     | 0.14 | 0.63 | 0.35 | 0.26 | 0.69 | 8       | 14       |
| 5/32      | 1/8            | 1169Px2.5S     | 0.14 | 0.59 | 0.35 | 0.20 | 0.69 | 8       | 12       |
| 5/32      | 1/4            | 1169Px2.5x4S   | 0.14 | 0.63 | 0.35 | 0.26 | 0.69 | 8       | 14       |
| 1/4       | 1/8            | 1169Px4S       | 0.16 | 0.63 | 0.46 | 0.20 | 0.79 | 9       | 12       |
| 1/4       | 1/4            | 1169Px4x4S     | 0.16 | 0.65 | 0.46 | 0.26 | 0.79 | 9       | 14       |
| 1/4       | 3/8            | 1169Px4x6S     | 0.16 | 0.65 | 0.46 | 0.29 | 0.79 | 9       | 19       |
| 5/16      | 1/8            | 1169Px5S       | 0.20 | 0.65 | 0.54 | 0.20 | 0.89 | 11      | 12       |
| 5/16      | 1/4            | 1169Px5x4S     | 0.20 | 0.69 | 0.54 | 0.26 | 0.89 | 11      | 14       |
| 5/16      | 3/8            | 1169Px5x6S     | 0.20 | 0.69 | 0.54 | 0.29 | 0.89 | 11      | 19       |
| 3/8       | 1/8            | 1169Px6x2S     | 0.26 | 0.75 | 0.64 | 0.20 | 1.04 | 13      | 14       |
| 3/8       | 1/4            | 1169Px6S       | 0.26 | 0.77 | 0.64 | 0.26 | 1.04 | 13      | 14       |
| 3/8       | 3/8            | 1169Px6x6S     | 0.26 | 0.77 | 0.64 | 0.29 | 1.04 | 13      | 19       |
| 3/8       | 1/2            | 1169Px6x8S     | 0.26 | 0.79 | 0.64 | 0.34 | 1.04 | 13      | 22       |
| 1/2       | 1/4            | 1169Px8x4S     | 0.32 | 0.81 | 0.72 | 0.26 | 1.12 | 15      | 17       |
| 1/2       | 3/8            | 1169Px8S       | 0.32 | 0.81 | 0.72 | 0.29 | 1.12 | 15      | 19       |
| 1/2       | 1/2            | 1169Px8x8S     | 0.32 | 0.83 | 0.72 | 0.36 | 1.12 | 15      | 22       |

## Male Run Tee Swivel



Swivel for installation purposes only.

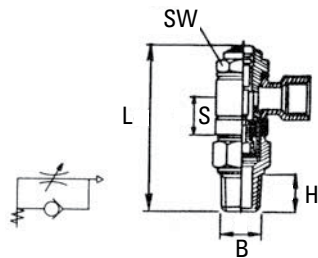


| Tube O.D. | Male Pipe Thd. | Catalog Number | C    | E    | F    | H    | I    | M    | SW (mm) | SW1 (mm) |
|-----------|----------------|----------------|------|------|------|------|------|------|---------|----------|
| 1/8       | 1/8            | 1171Px2S       | 0.14 | 0.59 | 0.35 | 0.20 | 1.46 | 0.69 | 8       | 12       |
| 5/32      | 1/8            | 1171Px2.5S     | 0.14 | 0.59 | 0.35 | 0.20 | 1.46 | 0.69 | 8       | 12       |
| 5/32      | 1/4            | 1171Px2.5x4S   | 0.14 | 0.63 | 0.35 | 0.26 | 1.57 | 0.69 | 8       | 14       |
| 1/4       | 1/8            | 1171Px4S       | 0.16 | 0.63 | 0.50 | 0.20 | 1.61 | 0.89 | 9       | 12       |
| 1/4       | 1/4            | 1171Px4x4S     | 0.16 | 0.65 | 0.50 | 0.26 | 1.70 | 0.79 | 9       | 14       |
| 1/4       | 3/8            | 1171Px4x6S     | 0.16 | 0.65 | 0.50 | 0.30 | 1.73 | 0.79 | 9       | 19       |
| 3/8       | 1/4            | 1171Px6S       | 0.26 | 0.77 | 0.65 | 0.26 | 2.07 | 1.04 | 13      | 14       |
| 3/8       | 3/8            | 1171Px6x6S     | 0.26 | 0.77 | 0.65 | 0.30 | 2.11 | 1.04 | 13      | 19       |
| 3/8       | 1/2            | 1171Px6x8S     | 0.26 | 0.79 | 0.65 | 0.33 | 2.16 | 1.04 | 13      | 22       |
| 1/2       | 1/4            | 1171Px8x4S     | 0.32 | 0.81 | 0.77 | 0.26 | 2.18 | 1.12 | 15      | 17       |
| 1/2       | 3/8            | 1171Px8S       | 0.32 | 0.81 | 0.77 | 0.30 | 2.22 | 1.12 | 15      | 19       |
| 1/2       | 1/2            | 1171Px8x8S     | 0.32 | 0.83 | 0.77 | 0.33 | 2.28 | 1.12 | 15      | 22       |

## Male Branch Tee Swivel



Swivel for installation purposes only.



| Tube O.D. | male pipe thd. | Catalog Number | C    | E    | F    | H    | L    | M  | SW (mm) | SW1 (mm) |
|-----------|----------------|----------------|------|------|------|------|------|----|---------|----------|
| 1/8       | 1/8            | 1172Px2S       | 0.14 | 0.59 | 0.35 | 0.20 | 1.38 | 8  | 12      |          |
| 5/32      | 1/8            | 1172Px2.5S     | 0.14 | 0.59 | 0.35 | 0.20 | 1.38 | 8  | 12      |          |
| 5/32      | 1/4            | 1172Px2.5x4S   | 0.14 | 0.63 | 0.35 | 0.26 | 1.38 | 8  | 14      |          |
| 1/4       | 1/8            | 1172Px4S       | 0.16 | 0.61 | 0.50 | 0.20 | 1.51 | 9  | 12      |          |
| 1/4       | 1/4            | 1172Px4x4S     | 0.16 | 0.65 | 0.50 | 0.26 | 1.51 | 9  | 14      |          |
| 1/4       | 3/8            | 1172Px4x6S     | 0.16 | 0.65 | 0.50 | 0.30 | 1.51 | 9  | 19      |          |
| 3/8       | 1/4            | 1172Px6S       | 0.26 | 0.77 | 0.65 | 0.26 | 2.09 | 13 | 14      |          |
| 3/8       | 3/8            | 1172Px6x6S     | 0.26 | 0.77 | 0.65 | 0.30 | 2.09 | 13 | 19      |          |
| 3/8       | 1/2            | 1172Px6x8S     | 0.26 | 0.79 | 0.65 | 0.32 | 2.09 | 13 | 22      |          |
| 1/2       | 3/8            | 1172Px8S       | 0.32 | 0.81 | 0.77 | 0.30 | 2.24 | 15 | 19      |          |

# Brass Products

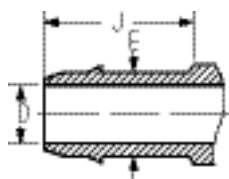
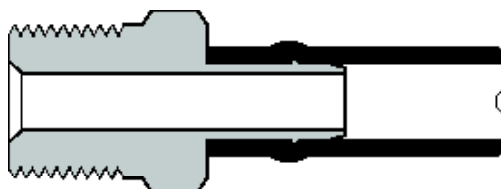
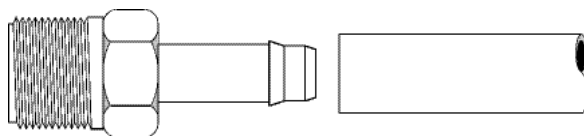
## Mini-Barb

### Note:

For additional technical questions, contact Technical Support at 1-888-258-0222.



Refer to safety information regarding proper selection of tubing and tube connectors on page 5.



Common Dimensions of Barbed End.

| Tubing O.D. | D    | E    | J    |
|-------------|------|------|------|
| 5/32        | .062 | .113 | .380 |
| *3/16       | .078 | .125 | .500 |
| 1/4         | .127 | .189 | .500 |
| 3/8         | .196 | .270 | .500 |
| 1/2         | .312 | .395 | .630 |

\*No barb on 3/16" size.

### Typical Application:

Temperature control circuits, test apparatus, lubricant, coolant lines, pneumatic circuits, vacuum and fluid systems.

### Pressure:

Will withstand burst pressures of plastic tubing.

### Vibration:

Excellent resistance.

### Temperature Range:

Depends on tubing used.

### Material:

CA360 Brass.

### Used With:

PT240 Polyethylene tubing. See pages 25-29 for material compatibility and pages 30-32 for plastic tubing.

### Advantages:

Quick connecting - no tube preparation. Hand assembly. Low cost one-piece push-on design. Barbed lip provides safe, positive connection. Compact size permits use in extremely tight areas.

### Conformance:

An exclusive item with Eaton. User approvals only.

### How to Order:

Individually by catalog number.

### Note:

Refer to current price list for availability of cataloged items. Quotations and delivery of non-stock items supplied on request. Configurations and dimensions subject to change without notice.

### Assembly Instructions:

1. Push the tubing over insert.
2. Bottom the tubing against connector body.

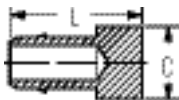
### Label Set:

FS-1000 (adhesive)  
CL-496 (non-adhesive)

# Brass Products

## Mini-Barb

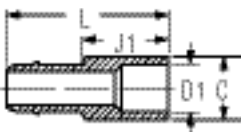
### Plug



| Tubing O.D. | Catalog Number | Dia. C | L    |
|-------------|----------------|--------|------|
| 1/4         | 1073x4         | 0.31   | 0.75 |
| 3/8         | 1073x6         | 0.40   | 0.75 |
| 1/2         | 1073x8♦        | 0.53   | 0.88 |

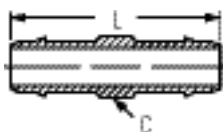
♦MT0 - Made To Order

### Solder Connector



| Tubing O.D. | Solder Conn. | Catalog Number | Dia. C | D1   | J1   | L    |
|-------------|--------------|----------------|--------|------|------|------|
| 1/4         | 1/4          | 1079x4x4       | 5/16   | 0.25 | 0.50 | 1.00 |

### Union

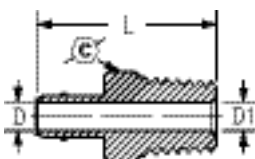
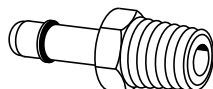


| Tubing O.D. | Catalog Number | Dia. C | L    |
|-------------|----------------|--------|------|
| 1/4x3/16*   | 1062x4x3       | 1/4    | 1.25 |
| 1/4         | 1062x4         | 1/4    | 0.81 |
| 1/4         | 1062x4L        | 1/4    | 1.25 |
| 3/8x1/4     | 1062x6x4       | 5/16   | 1.19 |
| 3/8         | 1062x6         | 5/16   | 1.19 |
| 1/2x1/4     | 1062x8x4♦      | 1/2    | 1.33 |
| 1/2x3/8     | 1062x8x6       | 1/2    | 1.33 |
| 1/2         | 1062x8         | 1/2    | 1.45 |

\*No barb on 3/16" end. "L" Suffix designates long Union.

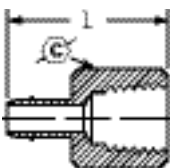
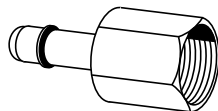
♦MT0 - Made To Order

### Male Connector



| Tubing O.D. | Male Pipe Thread | Catalog Number | C     | D    | D1 Opt. | L    |
|-------------|------------------|----------------|-------|------|---------|------|
| 5/32        | 1/8              | 1068x2.5x2     | 7/16  | 0.06 | 0.19    | 0.98 |
| 1/4         | 1/16             | 1068x4x1       | 5/16  | 0.12 | —       | 1.06 |
| 1/4         | 1/8              | 1068x4         | 7/16  | 0.12 | 0.19    | 1.06 |
| 1/4         | 1/4              | 1068x4x4       | 9/16  | 0.12 | 0.28    | 1.28 |
| 3/8         | 1/8              | 1068x6x2       | 7/16  | 0.19 | —       | 1.09 |
| 3/8         | 1/4              | 1068x6         | 9/16  | 0.19 | 0.28    | 1.28 |
| 1/2         | 3/8              | 1068x8         | 11/16 | 0.31 | —       | 1.38 |

### Female Connector

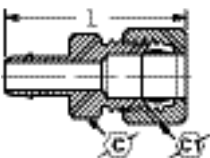
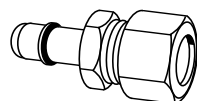


| Tubing O.D. | Fem. Pipe Thread | Catalog Number | C     | L    |
|-------------|------------------|----------------|-------|------|
| 1/4         | 1/8*             | 1066x4         | 1/2   | 1.00 |
| 1/4         | 1/4              | 1066x4x4       | 11/16 | 1.25 |
| 3/8         | 1/4              | 1066x6♦        | 11/16 | 1.25 |

\*PTF Short Thread

♦MT0 - Made To Order

### Compression Connector



| Tubing O.D. | Comp. Tube Size | Catalog Number | C    | C1  | L    |
|-------------|-----------------|----------------|------|-----|------|
| 3/16*       | 1/4             | 1078x3x4       | 7/16 | 1/2 | 1.29 |
| 1/4         | 1/4             | 1078x4x4       | 7/16 | 1/2 | 1.29 |

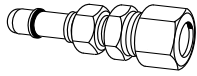
\*No Barb on 3/16" end

For replacement nuts and sleeves see page 47.

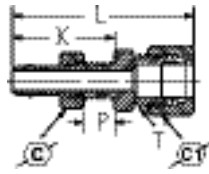
# Brass Products

## Mini-Barb

### Bulkhead Compression Connector



For replacement compression nuts and sleeves, see page 47.

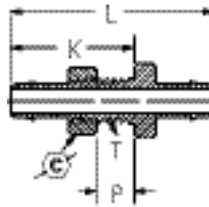


| Tubing O.D. | Comp. Tube Size | Catalog Number | C    | C1  | K    | L    | Max. P | Thread T    |
|-------------|-----------------|----------------|------|-----|------|------|--------|-------------|
| 1/4         | 1/4             | 1067x4x4       | 7/16 | 1/2 | 0.88 | 1.66 | 0.19   | 5/16-24 UNF |

### Bulkhead Union

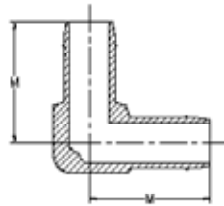


For replacement nuts and sleeves, see page 47 & 48.



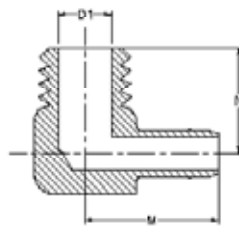
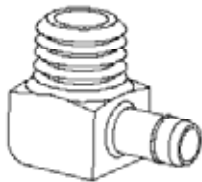
| Tubing O.D. | Thread T    | Catalog Number | C    | K    | L    | Max. P |
|-------------|-------------|----------------|------|------|------|--------|
| 1/4         | 5/16-24 UNF | 1074x4         | 7/16 | 1.06 | 1.74 | 0.31   |
| 3/8         | 3/8-24 UNF  | 1074x6         | 1/2  | 1.06 | 1.74 | 0.31   |

### Union Elbow



| Tubing O.D. | Catalog Number | M    |
|-------------|----------------|------|
| 1/4         | 1065x4         | 0.70 |
| 3/8         | 1065x6         | 0.67 |
| 1/2         | 1065x8         | 0.94 |

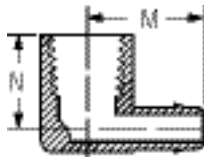
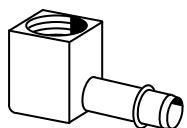
### 90° Male Elbow



| Tubing O.D. | Male Pipe Thread | Catalog Number | D1   | M    | N    |
|-------------|------------------|----------------|------|------|------|
| 1/4         | 1/16             | 1069x4x1       | .156 | .670 | .550 |
| 1/4         | 1/8              | 1069x4         | .250 | .720 | .630 |
| 1/4         | 1/4*             | 1069x4x4       | .312 | .780 | .650 |
| 3/8         | 1/8              | 1069x6x2       | .250 | .740 | .590 |
| 3/8         | 1/4*             | 1069x6         | .312 | .780 | .620 |
| 1/2         | 3/8*             | 1069x8         | .406 | .980 | .810 |

\*PTF Short Thread

### 90° Female Elbow

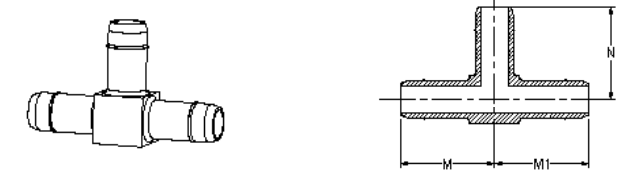


| Tubing O.D. | Fem. Pipe Thread | Catalog Number | M    | N    |
|-------------|------------------|----------------|------|------|
| 1/4         | 1/8              | 1070x4         | .750 | .580 |
| 3/8         | 1/8              | 1070x6x2       | .780 | .480 |
| 3/8         | 1/4              | 1070x6         | .840 | .800 |

# Brass Products

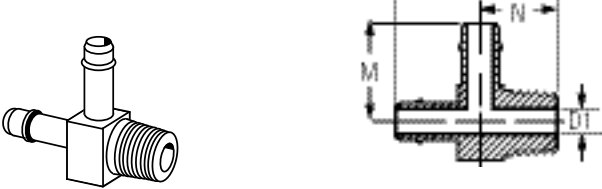
## Mini-Barb

### Union Tee



| Tubing O.D. | Catalog Number | M    | N    | M1   |
|-------------|----------------|------|------|------|
| 1/4         | 1064x4         | 0.70 | 0.70 | 0.70 |
| 3/8x3/8x1/4 | 1064x6x6x4     | 0.70 | 0.74 | 0.70 |
| 3/8         | 1064x6         | 0.68 | 0.67 | 0.68 |
| 3/8x1/2x3/8 | 1064x6x8x6     | 0.76 | 0.75 | 0.86 |
| 1/2x1/2x1/4 | 1064x8x8x4     | 0.86 | 0.80 | 0.86 |
| 1/2x1/2x3/8 | 1064x8x8x6     | 0.86 | 0.76 | 0.86 |
| 1/2         | 1064x8         | 0.86 | 0.86 | 0.86 |

### Male Run Tee



| Tubing O.D. | Male Pipe Thread | Catalog Number | D1   | L    | M    | N    |
|-------------|------------------|----------------|------|------|------|------|
| 1/4         | 1/8              | 1071x4         | .188 | 1.21 | 0.71 | 0.59 |

\*PTF Short Thread

### Male Branch Tee



| Tubing O.D. | Male Pipe Thread | Catalog Number | D1   | M    | N    |
|-------------|------------------|----------------|------|------|------|
| 1/4         | 1/8              | 1072x4         | .188 | .720 | .590 |
| 3/8         | 1/8              | 1072x6x2       | .188 | .720 | .590 |
| 3/8         | 1/4              | 1072x6         | .312 | .780 | .620 |

### Female Branch Tee



| Tubing O.D. | Female Pipe Thread | Catalog Number | M    | N    |
|-------------|--------------------|----------------|------|------|
| 1/4         | 1/8                | 1077x4         | 0.77 | 0.48 |

### Adapter Tee



| Tubing O.D. | M&F Pipe Thread | Catalog Number | L    | M    | N    |
|-------------|-----------------|----------------|------|------|------|
| 1/4         | 1/8 *           | 1075x4         | 2.00 | 0.75 | 0.39 |

\*PTF Special Short Thread

## Brass Products

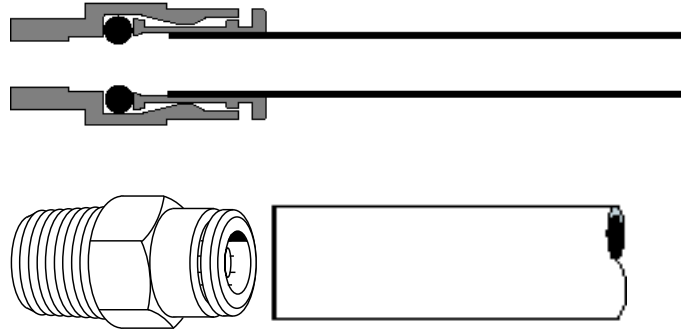
### Quick>Connect Air Brake - Brass & Composite

#### Note:

For additional technical questions, contact Technical Support at 1-888-258-0222.



Refer to safety information regarding proper selection of tubing and tube connectors on page 5.



#### Typical Application:

Air brake systems except where temperatures exceed +200°F or where battery acid can drip on tubing. Not for fuel, water or oil.

#### Pressure:

Vacuum to 150 psi.

#### Vibration

Moderate vibration resistance.

#### Material:

CA360 Brass  
(Body & Collet).

EP (Ethylene Propylene) - o-ring.

#### Used With:

SAE J844 Type A and B.

#### Temperature Range:

-40°F to +200°F  
(-40°C to +93°C)

#### Advantages:

Easy, fast assembly, one-piece fitting, reusable Field Serviceable (See collet repair kits, page 89).

#### Used With:

Eaton Air Brake Tubing.

#### Conformance:

Meets D.O.T. FMVSS 571.106 and SAE J1131 air brake system performance requirements.

#### How to Order:

Order individually by catalog number (parts are standard with thread sealant).

#### Label Set:

FS-3300 (adhesive)  
CL-503 (non-adhesive)

#### Note:

Refer to current price list for availability of cataloged items. Quotations and delivery of non-stock items supplied on request. Configurations and dimensions subject to change without notice. Additional information can be found in SAE J2494.

#### Assembly Instructions:

See following page.

#### Cartridge Information

##### Encapsulated:

For insertion into single bore cavity in substitution for pipe thread ports. Meets proposed SAE specifications for encapsulated press in style Air Brake connectors.

#### Note:

Encapsulated Cartridges are specifically designed for installation into a thermoplastic (Nylon/Acetal) or a soft metal (Aluminum/Brass) cavity. For cavity dimensions contact Eaton Technical Support at 1-888-258-0222.

#### Four-Step Cartridge:

When you clean sheet a component design, the Four-Step Cartridge is an economical substitute for the encapsulated design. Special order only.

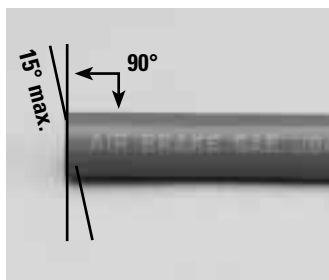
Select the design that is right for you. For applications where manifolds (manufactured from aluminum, plastic and brass) and air tanks (manufactured from steel and plastic composites) are used, contact Eaton Technical Support at 1-888-258-0222 for quotes based on your specific requirements and volumes.



# Brass Products

## Quick>Connect Air Brake - Brass & Composite

### Assembly



1. Using a tube cutter, make a square cut edge (maximum 15° cutting angle allowed).



2. Insert tubing straight into connector until a solid stop is felt. The tubing grip and seal (on o-ring) is now accomplished.



3. Gently tug on tubing to ensure tubing is secure.

### Disassembly



1. Check to be sure there isn't any air pressure.



2. Depress collet head using fingers or tube-release tool to release grip on tubing.



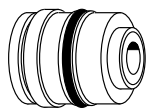
3. With the collet depressed, pull the tubing from the connector.

# Brass Products

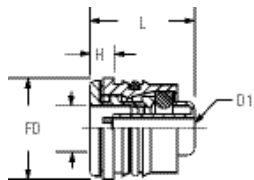
## Quick>Connect Air Brake - Brass

**Note:**  
Use with Air Brake Tubing  
see page 33.

### Encapsulated Cartridge



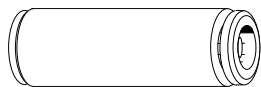
For design installation reference page 81  
under Encapsulated heading.



| Tube O.D. | Catalog Number | DIA F | L    | D1   | D    | H    |
|-----------|----------------|-------|------|------|------|------|
| 5/32      | 1861x2.5       | 0.38  | 0.62 | 0.12 | .165 | 0.17 |
| 3/16      | 1861x3         | 0.44  | 0.62 | 0.12 | .195 | 0.16 |
| 1/4       | 1861x4         | 0.56  | 0.65 | 0.13 | .263 | 0.17 |
| 3/8       | 1861x6         | 0.69  | 0.81 | 0.22 | .388 | 0.19 |
| 1/2       | 1861x8         | 0.81  | 0.83 | 0.34 | .513 | 0.19 |
| 5/8       | 1861x10        | 0.97  | 0.99 | 0.40 | .638 | 0.24 |
| 3/4       | 1861x12        | 1.12  | 0.99 | 0.52 | .763 | 0.24 |

### Union

(Ref. SAE No. AA0101)

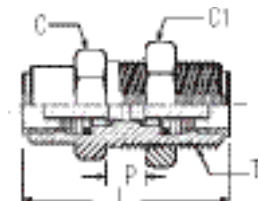
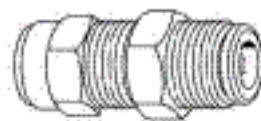


**Note:** Joins tubing

| Tube O.D. | Catalog Number | Dia C | L    |
|-----------|----------------|-------|------|
| 5/32      | 1862x2.5       | 0.44  | 1.41 |
| 3/16      | 1862x3         | 0.44  | 1.62 |
| 1/4       | 1862x4         | 0.53  | 1.62 |
| 3/8       | 1862x6         | 0.69  | 1.94 |
| 1/2       | 1862x8         | 0.83  | 1.96 |
| 5/8       | 1862x10        | 0.96  | 2.51 |

### Quick Connect Bulkhead Union

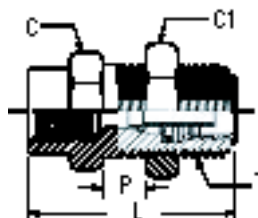
(Ref. SAE No. AA0601)



| Tube O.D. | Thread T | Catalog Number | Hex C | Hex C1 | L    | Max P |
|-----------|----------|----------------|-------|--------|------|-------|
| 1/4       | 9/16-24  | 1874x4x4       | 5/8   | 11/16  | 1.62 | 0.47  |
| 3/8       | 3/4-16   | 1874x6x6       | 7/8   | 15/16  | 1.96 | 0.66  |
| 1/2       | 7/8-14   | 1874x8x8       | 1     | 1      | 2.00 | 0.83  |
| 5/8       | 1-14     | 1874x10x10     | 1     | 1-1/4  | 2.42 | 1.00  |

### Female Bulkhead Union

(Ref. SAE No. AA0603)



| Tube O.D. | Thread T | Female Pipe Thread | Catalog Number | Hex C | Hex C1 | L    |
|-----------|----------|--------------------|----------------|-------|--------|------|
| 1/4       | 9/16-24  | 1/4                | 1873x4x4       | 5/8   | 11/16  | 1.45 |
| 3/8       | 3/4-16   | 3/8                | 1873x6x6       | 7/8   | 15/16  | 1.59 |
| 1/2       | 1-14     | 1/2                | 1873x8x8       | 1     | 1-1/4  | 1.97 |

# Brass Products

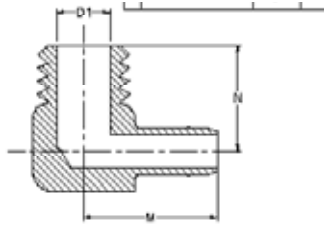
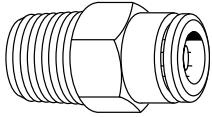
Quick>Connect Air Brake - Brass

## Note:

Use with Air Brake Tubing  
see page 33.

### Male Connector

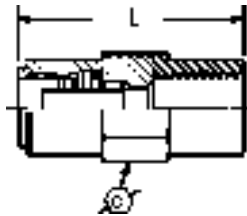
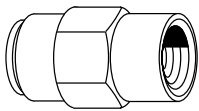
(Ref. SAE No. AA0102)



| Tube O.D. | Male Pipe Thread | Catalog Number |        | D1   | L    |
|-----------|------------------|----------------|--------|------|------|
| 5/32      | 1/16             | 1868x2.5x1     | 3/8    | 0.09 | 0.92 |
| 5/32      | 1/8              | 1868x2.5       | 7/16   | 0.25 | 0.92 |
| 3/16      | 1/8              | 1868x3         | 1/2    | 0.25 | 0.92 |
| 1/4       | 1/8              | 1868x4         | 9/16   | 0.19 | 0.95 |
| 1/4       | 1/4              | 1868x4x4       | 9/16   | 0.34 | 1.18 |
| 1/4       | 3/8              | 1868x4x6       | 11/16  | 0.41 | 1.17 |
| 3/8       | 1/8              | 1868x6x2       | 11/16  | 0.19 | 1.33 |
| 3/8       | 1/4              | 1868x6         | 11/16  | 0.31 | 1.29 |
| 3/8       | 3/8              | 1868x6x6       | 11/16  | 0.41 | 1.27 |
| 3/8       | 1/2              | 1868x6x8       | 7/8    | 0.53 | 1.47 |
| 1/2       | 1/4              | 1868x8x4       | 13/16  | 0.31 | 1.46 |
| 1/2       | 3/8              | 1868x8         | 13/16  | 0.41 | 1.35 |
| 1/2       | 1/2              | 1868x8x8       | 7/8    | 0.53 | 1.50 |
| 5/8       | 3/8              | 1868x10x6      | 1      | 0.41 | 1.72 |
| 5/8       | 1/2              | 1868x10        | 1      | 0.53 | 1.71 |
| 3/4       | 1/2              | 1868x12        | 1-1/16 | 0.53 | 1.72 |

### Female Connector

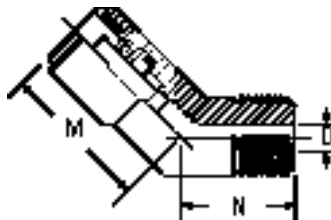
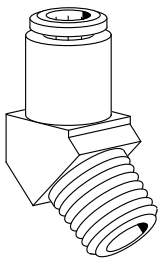
(Ref. SAE No. AA0103)



| Tube O.D. | Female Pipe Thread | Catalog Number |       | L    |
|-----------|--------------------|----------------|-------|------|
| 1/4       | 1/8                | 1866x4         | 9/16  | 1.33 |
| 1/4       | 1/4                | 1866x4x4       | 11/16 | 1.58 |
| 3/8       | 1/8                | 1866x6x2       | 11/16 | 1.45 |
| 3/8       | 1/4                | 1866x6         | 11/16 | 1.69 |
| 3/8       | 3/8                | 1866x6x6       | 13/16 | 1.75 |
| 1/2       | 1/4                | 1866x8x4       | 13/16 | 1.66 |
| 1/2       | 3/8                | 1866x8         | 13/16 | 1.73 |
| 1/2       | 1/2                | 1866x8x8       | 1     | 1.97 |

### 45° Male Elbow

(Ref. SAE No. AA0302)



| Tube O.D. | Male Pipe Thread | Catalog Number | D1   | M    | N    |
|-----------|------------------|----------------|------|------|------|
| 1/4       | 1/8              | 1880x4         | 0.19 | 0.95 | 0.59 |
| 1/4       | 1/4              | 1880x4x4       | 0.31 | 0.95 | 0.59 |
| 3/8       | 1/8              | 1880x6x2       | 0.25 | 1.05 | 0.48 |
| 3/8       | 1/4              | 1880x6         | 0.31 | 1.05 | 0.69 |
| 3/8       | 3/8              | 1880x6x6       | 0.41 | 1.10 | 0.63 |
| 3/8       | 1/2              | 1880x6x8       | 0.53 | 1.20 | 0.70 |
| 1/2       | 1/4              | 1880x8x4       | 0.31 | 1.07 | 0.88 |
| 1/2       | 3/8              | 1880x8         | 0.41 | 0.99 | 0.72 |
| 1/2       | 1/2              | 1880x8x8       | 0.53 | 0.99 | 0.82 |
| 5/8       | 3/8              | 1880x10x6      | 0.41 | 1.13 | 0.88 |
| 5/8       | 1/2              | 1880x10        | 0.53 | 1.26 | 0.92 |
| 3/4       | 1/2              | 1880x12        | 0.53 | 1.16 | 0.98 |

# Brass Products

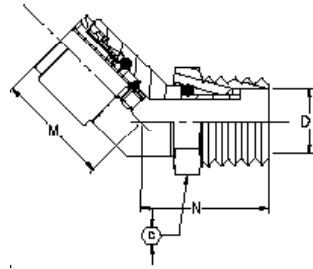
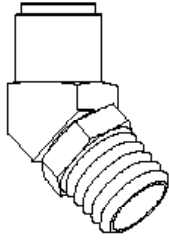
Quick>Connect Air Brake - Brass

## Note:

Use with Air Brake Tubing  
see page 33.

### 45° Elbow - Swivel Male

(Ref. SAE No. AA03DD)

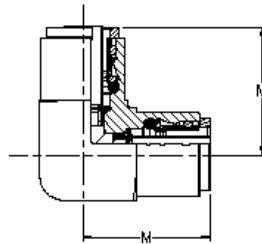
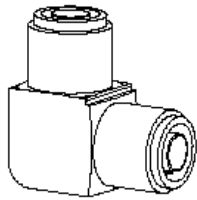


Swivel for installation purposes only.

| Tube O.D. | Male Pipe Thread | Catalog Number | D1   | M    | N    | C     |
|-----------|------------------|----------------|------|------|------|-------|
| 1/4       | 1/8              | 1880x4S        | 0.13 | 0.82 | 0.60 | 7/16  |
| 1/4       | 1/4              | 1880x4x4S      | 0.22 | 0.98 | 0.60 | 9/16  |
| 3/8       | 1/8              | 1880x6x2S      | 0.13 | 1.20 | 0.68 | 7/16  |
| 3/8       | 1/4              | 1880x6S        | 0.22 | 1.20 | 0.89 | 9/16  |
| 3/8       | 3/8              | 1880x6x6S      | 0.30 | 1.20 | 0.97 | 11/16 |
| 1/2       | 1/4              | 1880x8x4S      | 0.23 | 1.20 | 0.97 | 9/16  |
| 1/2       | 3/8              | 1880x8S        | 0.30 | 1.04 | 1.07 | 11/16 |
| 1/2       | 1/2              | 1880x8x8S      | 0.42 | 1.08 | 1.22 | 7/8   |

### 90° Union Elbow

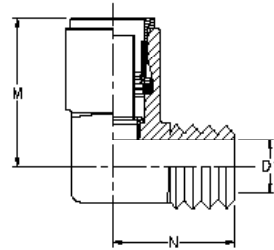
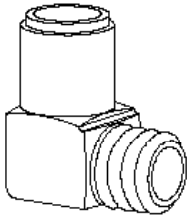
(Ref. SAE No. AA0201)



| Catalog Number | M    |
|----------------|------|
| 1865x4         | 0.93 |
| 1865x6         | 1.15 |
| 1865x8         | 1.24 |

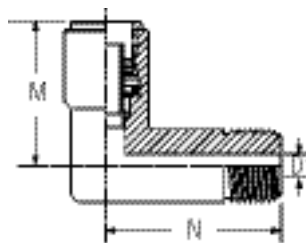
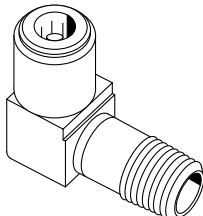
### 90° Male Elbow

(Ref. SAE No. AA0302)



| Tube O.D. | Male Pipe Thread | Catalog Number | D1   | M    | N    |
|-----------|------------------|----------------|------|------|------|
| 5/32      | 1/16             | 1869x2.5x1     | 0.13 | 0.75 | 0.59 |
| 5/32      | 1/8              | 1869x2.5       | 0.19 | 0.75 | 0.59 |
| 3/16      | 1/8              | 1869x3         | 0.19 | 0.84 | 0.69 |
| 3/16      | 1/4              | 1869x3x4       | 0.19 | 0.87 | 0.81 |
| 1/4       | 1/8              | 1869x4         | 0.19 | 0.92 | 0.68 |
| 1/4       | 1/4              | 1869x4x4       | 0.31 | 0.92 | 0.81 |
| 1/4       | 3/8              | 1869x4x6       | 0.41 | 1.03 | 0.83 |
| 3/8       | 1/8              | 1869x6x2       | 0.19 | 1.08 | 0.78 |
| 3/8       | 1/4              | 1869x6         | 0.31 | 1.13 | 0.96 |
| 3/8       | 3/8              | 1869x6x6       | 0.41 | 1.18 | 0.98 |
| 3/8       | 1/2              | 1869x6x8       | 0.53 | 1.27 | 1.07 |
| 1/2       | 1/4              | 1869x8x4       | 0.31 | 1.23 | 1.00 |
| 1/2       | 3/8              | 1869x8         | 0.41 | 1.25 | 0.98 |
| 1/2       | 1/2              | 1869x8x8       | 0.53 | 1.28 | 1.11 |
| 5/8       | 3/8              | 1869x10x6      | 0.41 | 1.44 | 1.09 |
| 5/8       | 1/2              | 1869x10        | 0.53 | 1.48 | 1.22 |

### 90° Male Elbow Long



| Tube O.D. | Male Pipe Thread | Catalog Number | D1   | M    | N    |
|-----------|------------------|----------------|------|------|------|
| 3/8       | 1/4              | 1869x6L        | 0.31 | 1.21 | 1.55 |

# Brass Products

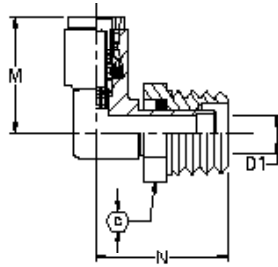
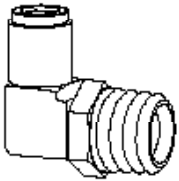
Quick>Connect Air Brake - Brass

## Note:

Use with Air Brake Tubing  
see page 33.

### 90° Swivel Male Elbow

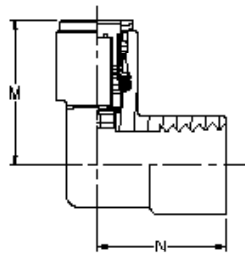
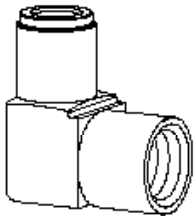
(Ref. SAE No. AA02DD)



| Tube<br>O.D. | Male<br>Pipe<br>Thread | Catalog<br>Number | D1   | M    | N    |       |
|--------------|------------------------|-------------------|------|------|------|-------|
| 1/4          | 1/8                    | 1869x4S           | 0.14 | 0.89 | 0.88 | 7/16  |
| 1/4          | 1/4                    | 1869x4x4S         | 0.23 | 0.99 | 1.06 | 9/16  |
| 1/4          | 3/8                    | 1869x4x6S         | 0.30 | 0.99 | 1.06 | 11/16 |
| 3/8          | 1/8                    | 1869x6x2S         | 0.74 | 1.03 | 0.97 | 7/16  |
| 3/8          | 1/4                    | 1869x6S           | 0.23 | 1.12 | 1.14 | 9/16  |
| 3/8          | 3/8                    | 1869x6x6S         | 0.30 | 1.12 | 1.15 | 11/16 |
| 3/8          | 1/2                    | 1869x6x8S         | 0.42 | 1.18 | 1.40 | 7/8   |
| 1/2          | 1/4                    | 1869x8x4S         | 0.22 | 1.08 | 1.20 | 9/16  |
| 1/2          | 3/8                    | 1869x8S           | 0.30 | 1.13 | 1.27 | 11/16 |
| 1/2          | 1/2                    | 1869x8x8S         | 0.42 | 1.25 | 1.47 | 7/8   |
| 5/8          | 3/8                    | 1869x10x6S        | 0.42 | 1.35 | 1.34 | 11/16 |
| 5/8          | 1/2                    | 1869x10S          | 0.42 | 1.38 | 1.54 | 7/8   |

### 90° Female Elbow

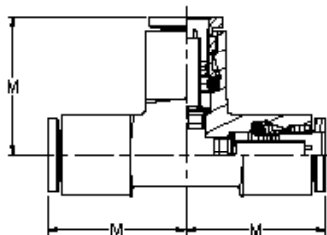
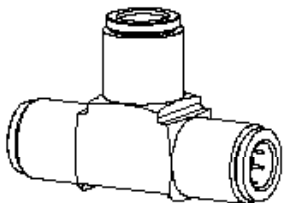
(Ref. SAE No. AA0203)



| Tube<br>O.D. | Female<br>Pipe<br>Thread | Catalog<br>Number | M    | N    |
|--------------|--------------------------|-------------------|------|------|
|              | 1/8                      | 1870x4            | 1.03 | 0.82 |
|              | 1/4                      | 1870x4x4          | 1.04 | 0.76 |
|              | 1/8                      | 1870x6x2          | 1.26 | 0.96 |
|              | 1/4                      | 1870x6            | 1.28 | 1.09 |
|              | 3/8                      | 1870x6x6          | 1.21 | 1.07 |
|              | 1/4                      | 1870x8x4          | 1.25 | 1.11 |
|              | 3/8                      | 1870x8            | 1.28 | 1.11 |
| 1/2          | 1/2                      | 1870x8x8          | 1.36 | 1.07 |

### Union Tee

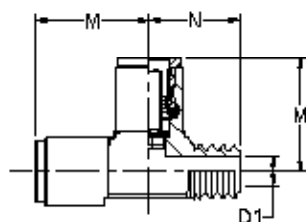
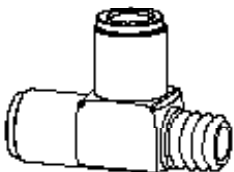
(Ref. SAE No. AA0401)



| Tube<br>O.D. | Catalog<br>Number | M    |
|--------------|-------------------|------|
| 1/4          | 1864x4            | 0.93 |
| 3/8          | 1864x6            | 1.15 |
| 1/2          | 1864x8            | 1.22 |

### Male Run Tee

(Ref. SAE No. AA0424)



| Tube<br>O.D. | Male<br>Pipe<br>Thread | Catalog<br>Number | D1   | M    | M1   | N    |
|--------------|------------------------|-------------------|------|------|------|------|
| 1/4          | 1/8                    | 1871x4            | 0.23 | 0.93 | 0.93 | 0.68 |
| 1/4          | 1/4                    | 1871x4x4          | 0.32 | 0.93 | 0.93 | 0.83 |
| 3/8          | 1/4                    | 1871x6            | 0.31 | 1.15 | 1.15 | 0.90 |
| 3/8          | 3/8                    | 1871x6x6          | 0.41 | 1.15 | 1.14 | 0.90 |
| 3/8x1/4      | 1/4                    | 1871x6x4x4        | 0.31 | 1.14 | 1.07 | 0.96 |
| 3/8          | 1/2                    | 1871x6x8          | 0.53 | 1.09 | 1.08 | 1.11 |
| 1/2          | 3/8                    | 1871x8            | 0.41 | 1.09 | 1.10 | 1.22 |

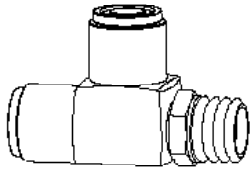
# Brass Products

## Quick>Connect Air Brake - Brass

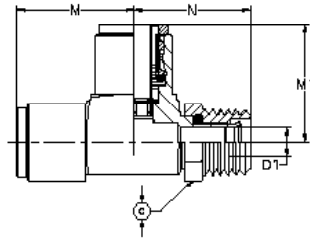
**Note:**  
Use with Air Brake Tubing  
see page 33.

### Swivel Male Run Tee

(Ref. SAE No. AA04EE)



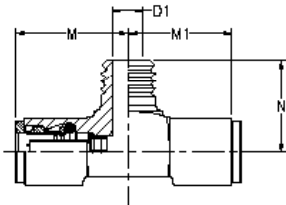
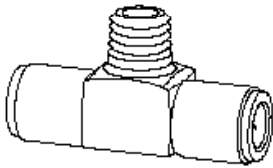
Swivel for installation purposes only.



| Tube O.D. | Male Pipe Thread | Catalog Number | D1   | M    | M1   | N    |       |
|-----------|------------------|----------------|------|------|------|------|-------|
| 1/4       | 1/8              | 1871x4S        | 0.14 | 0.93 | 0.93 | 0.82 | 7/16  |
| 1/4       | 1/4              | 1871x4x4S      | 0.23 | 0.93 | 0.93 | 1.07 | 9/16  |
| 3/8       | 1/4              | 1871x6S        | 0.23 | 1.15 | 1.15 | 1.20 | 9/16  |
| 3/8       | 3/8              | 1871x6x6S      | 0.30 | 1.15 | 1.15 | 1.20 | 11/16 |
| 1/2       | 1/4              | 1871x8x4S      | 0.22 | 1.21 | 1.18 | 1.22 | 9/16  |
| 1/2       | 3/8              | 1871x8S        | 0.30 | 1.21 | 1.23 | 1.34 | 11/16 |
| 1/2       | 1/2              | 1871x8x8S      | 0.42 | 1.21 | 1.19 | 1.42 | 7/8   |

### Male Branch Tee

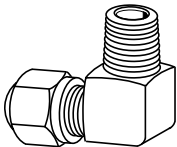
(Ref. SAE No. AA0425)



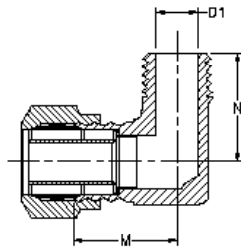
| Tube O.D. | Male Pipe Thread | Catalog Number | D1   | M    | M1   | N    |
|-----------|------------------|----------------|------|------|------|------|
| 3/16      | 1/8              | 1872x3         | 0.19 | 0.75 | 0.74 | 0.64 |
| 1/4       | 1/8              | 1872x4         | 0.19 | 0.93 | 0.93 | 0.64 |
| 1/4       | 1/4              | 1872x4x4       | 0.31 | 0.93 | 0.93 | 0.83 |
| 3/8       | 1/4              | 1872x6         | 0.31 | 1.15 | 1.15 | 0.91 |
| 3/8       | 3/8              | 1872x6x6       | 0.31 | 1.15 | 1.15 | 0.91 |
| 1/2       | 1/4              | 1872x8x4       | 0.31 | 1.22 | 1.22 | 0.98 |
| 1/2       | 3/8              | 1872x8         | 0.41 | 1.24 | 1.24 | 0.99 |
| 1/2       | 1/2              | 1872x8x8       | 0.53 | 1.22 | 1.22 | 1.12 |

### Swivel Male Branch Tee

(Ref. SAE No. AA04FF)

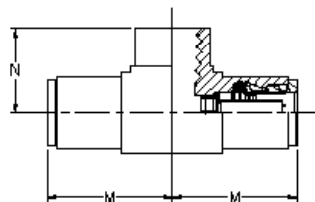
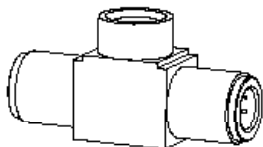


Swivel for installation purposes only.



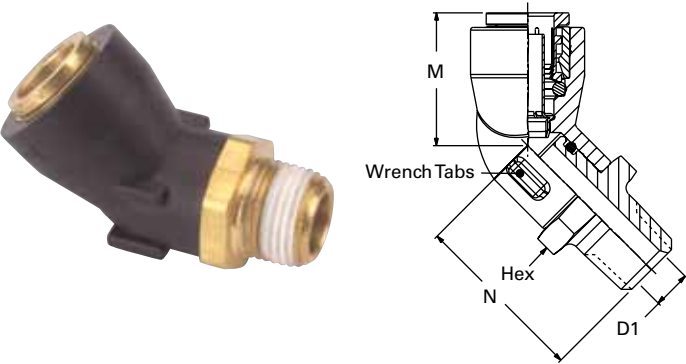
| Tube O.D. | Male Pipe Thread | Catalog Number | D1   | M    | M1   | N    |       |
|-----------|------------------|----------------|------|------|------|------|-------|
| 1/4       | 1/8              | 1872x4S        | 0.14 | 0.93 | 0.93 | 0.80 | 7/16  |
| 1/4       | 1/4              | 1872x4x4S      | 0.23 | 0.93 | 0.93 | 1.04 | 9/16  |
| 3/8       | 1/8              | 1872x6x2S      | 0.13 | 1.15 | 1.15 | 0.94 | 7/16  |
| 3/8       | 1/4              | 1872x6S        | 0.23 | 1.15 | 1.15 | 1.14 | 9/16  |
| 3/8       | 3/8              | 1872x6x6S      | 0.30 | 1.15 | 1.15 | 1.17 | 11/16 |
| 1/2       | 1/4              | 1872x8x4S      | 0.22 | 1.23 | 1.23 | 1.21 | 9/16  |
| 1/2       | 3/8              | 1872x8S        | 0.30 | 1.24 | 1.24 | 1.24 | 11/16 |
| 1/2       | 1/2              | 1872x8x8S      | 0.42 | 1.21 | 1.19 | 1.42 | 7/8   |

### Female Branch Tee



| Tube O.D. | Female Pipe Thread | Catalog Number | M    | N    |
|-----------|--------------------|----------------|------|------|
| 1/8       | 1/4                | 1877x6         | 1.19 | 0.78 |

45° Q-CAB Connection to Male Pipe

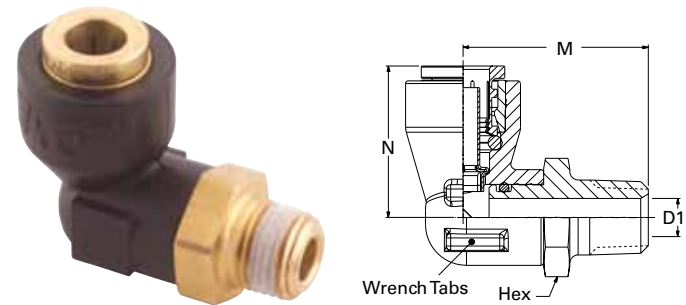


| Tube O.D. | Thread Size | 45° Male Pipe Part# | D1   | M    | N    | Hex   |
|-----------|-------------|---------------------|------|------|------|-------|
| 1/4       | 1/8-27      | 217-35004-03        | 0.19 | 0.78 | 1.12 | 9/16  |
| 1/4       | 1/4-18      | 217-38404-03        | 0.28 | 0.78 | 1.30 | 9/16  |
| 1/4       | 3/8-18      | 217-38604-03        | 0.41 | 0.78 | 1.30 | 11/16 |
| 3/8       | 1/8-27      | 217-38206-03        | 0.19 | 1.00 | 1.11 | 3/4   |
| 3/8       | 1/4-18      | 217-35006-03        | 0.28 | 1.00 | 1.29 | 3/4   |
| 3/8       | 3/8-18      | 217-38606-03        | 0.41 | 1.00 | 1.29 | 3/4   |
| 1/2       | 1/4-18      | 217-38408-03        | 0.28 | 1.10 | 1.32 | 7/8   |
| 1/2       | 3/8-18      | 217-35008-03        | 0.41 | 1.10 | 1.26 | 7/8   |
| 1/2       | 1/2-14      | 217-38808-03        | 0.53 | 1.10 | 1.45 | 7/8   |
| 5/8       | 3/8-18      | 217-38610-03        | 0.41 | 1.34 | 1.30 | 1.0   |
| 5/8       | 1/2-14      | 217-35010-03        | 0.53 | 1.34 | 1.52 | 1.0   |

Special Fittings

Fitting sizes and configurations other than shown above, can be provided. Please contact your Eaton Area Sales Manager for assistance.

90° Q-CAB Connection to Male Pipe



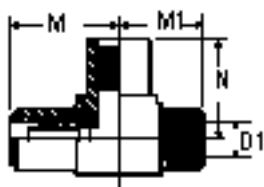
| Tube O.D. | Thread Size | 90° Male Pipe Part# | D1   | M    | N    | Hex   |
|-----------|-------------|---------------------|------|------|------|-------|
| 1/4       | 1/8-27      | 217-40004-03        | 0.19 | 1.11 | 0.86 | 9/16  |
| 1/4       | 1/4-18      | 217-43404-03        | 0.28 | 1.29 | 0.86 | 9/16  |
| 1/4       | 3/8-18      | 217-43604-03        | 0.41 | 1.29 | 0.86 | 11/16 |
| 3/8       | 1/8-27      | 217-43206-03        | 0.19 | 1.17 | 1.12 | 3/4   |
| 3/8       | 1/4-18      | 217-40006-03        | 0.28 | 1.36 | 1.12 | 3/4   |
| 3/8       | 3/8-18      | 217-43606-03        | 0.41 | 1.36 | 1.12 | 3/4   |
| 3/8       | 1/2-14      | 217-43806-03        | 0.53 | 1.61 | 1.12 | 7/8   |
| 1/2       | 1/4-18      | 217-43408-03        | 0.28 | 1.59 | 1.19 | 7/8   |
| 1/2       | 3/8-18      | 217-40008-03        | 0.41 | 1.40 | 1.19 | 7/8   |
| 1/2       | 1/2-14      | 217-43808-03        | 0.53 | 1.60 | 1.19 | 7/8   |
| 5/8       | 3/8-18      | 217-43610-03        | 0.41 | 1.46 | 1.46 | 1.0   |
| 5/8       | 1/2-14      | 217-40010-03        | 0.53 | 1.68 | 1.46 | 1.0   |

# Brass Products

## Quick>Connect Air Brake

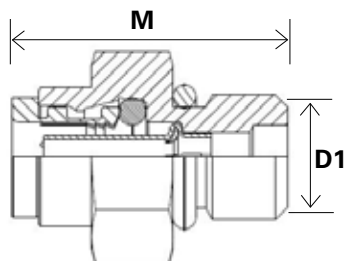
**Note:**  
Use with Air Brake Tubing  
see page 33.

### Adapter Tee



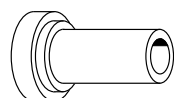
| Tube O.D. | Male Pipe Thread | Female Pipe Thread | Catalog Number | D1   | M    | N    | M1   |
|-----------|------------------|--------------------|----------------|------|------|------|------|
| 3/8       | 3/8              | 1/4                | 1883x6x6x4     | 0.41 | 1.28 | 1.00 | 0.95 |
| 1/4       | 1/4              | 1/4                | 117-550644-03  | 0.31 | 1.62 | .94  | 0.75 |

### Male Metric



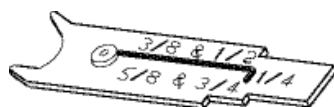
| Tube O.D. | Male Pipe Thread | Female Pipe Thread | Catalog Number | D1  | M   |
|-----------|------------------|--------------------|----------------|-----|-----|
| 1/4       | M12x1.5          | 217-2120403        | 11/16          | .34 | .94 |

### Plugs, Pressure (Nylon)



| Tube O.D. | Catalog Number |
|-----------|----------------|
| 1/4       | 1829x4         |
| 3/8       | 1829x6         |
| 1/2       | 1829x8         |

### 1800T Collet Service Tool



The Collet Service Tool, made from sturdy plated steel, is designed to assist in field servicing O-Rings of Q-CAB fittings. Use the half moon radius section to pry up and remove the collet

and use the movable piano wire to remove the O-Ring. Notches are used to mark the tubing with insertion depth in five tubing sizes.

### 1800TRK Tube Release Kit



The 1800TRK tube release kit is designed to ease the removal of tubing from Q-CAB connectors. The individual tools are manufactured of a sturdy engineering

plastic. All seven tube sizes currently offered in Q-CAB can be serviced with the five tools that make up the 1800TRK kit.

### Collet Repair Kits

| Tube O.D. | Repair Kit Part # |
|-----------|-------------------|
| 5/32      | 1800Kx2.5         |
| 3/16      | 1800Kx3           |
| 1/4       | 1800Kx4           |
| 3/8       | 1800Kx6           |
| 1/2       | 1800Kx8           |
| 5/8       | 1800Kx10          |
| 3/4       | 1800Kx12          |

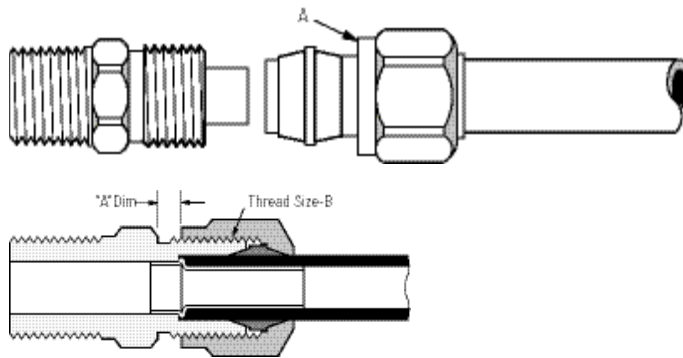
Consisting of a replacement collet and a replacement o-ring, the collet repair kits

provide an opportunity to repair damaged Q-CAB connectors.



**Note:**  
For additional technical questions, contact Technical Support at 1-888-258-0222.

**⚠** Refer to safety information regarding proper selection of tubing and tube connectors on page 5.



|                      |         |          |          |          |      |
|----------------------|---------|----------|----------|----------|------|
| <b>Tube O.D.</b>     | 1/4     | 3/8      | 1/2      | 5/8      | 3/4  |
| <b>Thread Size-B</b> | 7/16-24 | 17/32-24 | 11/16-20 | 13/16-18 | 1-18 |

### Typical Application:

Air brake systems except where temperatures exceed +200°F or where battery acid can drip on tubing.

### Pressure:

Maximum operating pressure of 150 psi.

### Vibration:

Fair resistance.

### Temperature Range:

-40°F to +200°F  
(-40°C to +93°C)

### Material:

CA360 Brass.

### Used With:

Air Brake Tubing. See Page 33

### Advantages:

Easy to assemble (no tube preparation or flaring required.) Built in tube support. May be used with copper tubing by replacing nut, sleeve and insert with long nut and spherical sleeve. Insert should be removed for copper tubing use. See page 96 for details.

### Conformance:

Meets specifications and standards of SAE and DOT FMVSS 571.106.

### How to Order:

For complete assemblies (body, nuts and sleeves), order by catalog number. Example: 1468x4x4. To order body only (less nut and sleeve), add prefix "B" to catalog number and change "14" to "13." Example: B1368x4x4. Nuts, sleeve and insert can be ordered separately by catalog number.

To order complete assembly with pipe sealant (Seal-A-Thread), add suffix "Z" to catalog number. Example: 1468x4x4Z (special order only).

To order complete assembly with gauge ring, add suffix "K" to catalog number. Example: 1468x4x4K (special order only).

### Note:

Refer to current price list for availability of cataloged items. Quotations and delivery of non-stock items supplied on request. Configurations and dimensions subject to change without notice. Additional information can be found in SAE J246.

### Assembly Instructions:

1. Cut tubing to desired length.
2. Slide nut and then sleeve on tubing. Threaded end of nut "A" must face toward connector body.
3. Insert tubing into the pre assembled fitting. Be sure tubing is bottomed in connector.
4. Tighten nut to required torque as indicated on chart. Another check on proper assembly is dimension A also noted on chart. A gauge ring also assures installation to specification. See page 95.

| Tube Size | Torque             | A Dimension |
|-----------|--------------------|-------------|
| 1/4       | 85 to 115 in. lbs. | .085/.105   |
| 3/8       | 12 to 17 ft. lbs.  | .125/.145   |
| 1/2       | 25 to 33 ft. lbs.  | .100/.120   |
| 5/8       | 26 to 35 ft. lbs.  | .115/.135   |
| 3/4       | 38 to 50 ft. lbs.  | .180/.200   |

### Disassembly:

Remove nut and pull tubing out of connector body. Insert will remain in tubing.

### Reassembly:

Push tubing and insert into connector body until it bottoms. Thread nut onto connector body and torque as in Step 4.

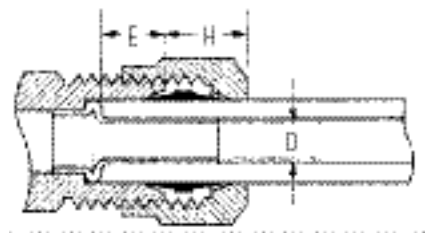
### Label Set:

FS-900 (adhesive)  
CL-497 (non-adhesive)

# Brass Products

## Air Brake - Nylon Tubing

**Note:**  
Use with Air Brake Tubing  
see page 33.

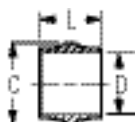


| Tube O.D. | E<br>Tube Stop | H*   | D    |
|-----------|----------------|------|------|
| 1/4       | 0.20           | 0.32 | .133 |
| 3/8       | 0.26           | 0.42 | .215 |
| 1/2       | 0.39           | 0.45 | .340 |
| 5/8       | 0.39           | 0.48 | .398 |
| 3/4       | 0.51           | 0.50 | .523 |

\*H is hand tight dimensions.

### Sleeve

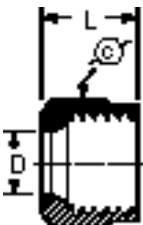
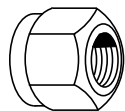
(Ref. SAE No. 100115)



| Tube O.D. | Catalog Number | DIA. C | D    | L    |
|-----------|----------------|--------|------|------|
| 1/4       | 1460x4         | .359   | .256 | .300 |
| 3/8       | 1460x6         | .479   | .384 | .390 |
| 1/2       | 1460x8         | .625   | .509 | .430 |
| 5/8       | 1460x10        | .745   | .635 | .480 |
| 3/4       | 1460x12        | .922   | .760 | .530 |

### Nut

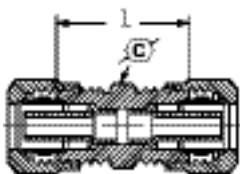
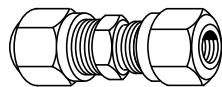
(Ref. SAE No. 100110)



| Tube O.D. | Catalog Number | C     | D    | L    |
|-----------|----------------|-------|------|------|
| 1/4       | 1461x4         | 9/16  | .256 | .450 |
| 3/8       | 1461x6         | 5/8   | .384 | .630 |
| 1/2       | 1461x8         | 13/16 | .509 | .720 |
| 5/8       | 1461x10        | 15/16 | .634 | .770 |
| 3/4       | 1461x12        | 1-1/8 | .760 | .810 |

### Union

(Ref. SAE No. 100101BA)



| Tube O.D. | Catalog Number | C     | L    |
|-----------|----------------|-------|------|
| 1/4       | 1462x4         | 7/16  | 0.85 |
| 3/8       | 1462x6         | 9/16  | 1.10 |
| 1/2       | 1462x8         | 11/16 | 1.31 |
| 5/8       | 1462x10        | 13/16 | 1.43 |
| 3/4       | 1462x12        | 1     | 1.60 |

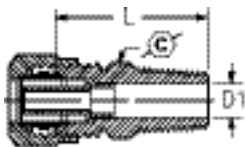
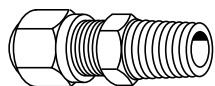
# Brass Products

## Air Brake - Nylon Tubing

**Note:**  
Use with Air Brake Tubing  
see page 33.

### Male Connector

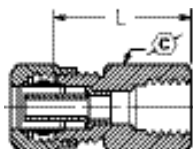
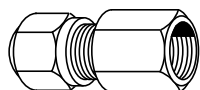
(Ref. SAE No. 100102BA)



| Tube O.D. | Male Pipe Thread | Catalog Number |        | D1   | L    |
|-----------|------------------|----------------|--------|------|------|
| 1/4       | 1/16             | 1468x4x1       | 7/16   | .125 | .90  |
| 1/4       | 1/8              | 1468x4         | 7/16   | .188 | .88  |
| 1/4       | 1/4              | 1468x4x4       | 9/16   | .188 | 1.09 |
| 1/4       | 3/8              | 1468x4x6       | 11/16  | .188 | 1.12 |
| 3/8       | 1/8              | 1468x6x2       | 9/16   | .188 | 1.02 |
| 3/8       | 1/4              | 1468x6         | 9/16   | .312 | 1.20 |
| 3/8       | 3/8              | 1468x6x6       | 11/16  | .312 | 1.23 |
| 3/8       | 1/2              | 1468x6x8       | 7/8    | .312 | 1.42 |
| 1/2       | 1/4              | 1468x8x4       | 11/16  | .312 | 1.32 |
| 1/2       | 3/8              | 1468x8         | 11/16  | .406 | 1.32 |
| 1/2       | 1/2              | 1468x8x8       | 7/8    | .406 | 1.51 |
| 1/2       | 3/4              | 1468x8x12      | 1-1/16 | .406 | 1.57 |
| 5/8       | 3/8              | 1468x10x6      | 13/16  | .406 | 1.38 |
| 5/8       | 1/2              | 1468x10        | 7/8    | .531 | 1.57 |
| 5/8       | 3/4              | 1468x10x12     | 1-1/16 | .750 | 1.63 |
| 3/4       | 1/2              | 1468x12        | 1      | .531 | 1.67 |
| 3/4       | 3/4              | 1468x12x12     | 1-1/16 | .660 | 1.70 |

### Female Connector

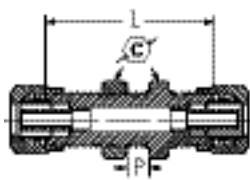
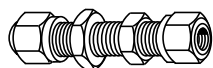
(Ref. SAE No. 100103BA)



| Tube O.D. | Fem. Pipe Thread | Catalog Number |       | L    |
|-----------|------------------|----------------|-------|------|
| 1/4       | 1/8              | 1466x4         | 9/16  | 0.85 |
| 3/8       | 1/8              | 1466x6x2♦      | 9/16  | 1.01 |
| 3/8       | 1/4              | 1466x6         | 11/16 | 1.19 |
| 3/8       | 3/8              | 1466x6x6       | 7/8   | 1.19 |
| 1/2       | 3/8              | 1466x8         | 7/8   | 1.28 |

♦MTO - Made To Order

### Bulkhead Union

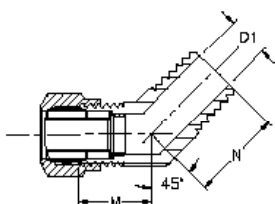
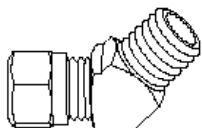


| Tube O.D. | Catalog Number |       | L    | Max. P |
|-----------|----------------|-------|------|--------|
| 1/4       | 1474x4         | 9/16  | 1.38 | 0.25   |
| 3/8       | 1474x6         | 11/16 | 1.62 | 0.25   |
| 1/2       | 1474x8 ♦       | 13/16 | 1.88 | 0.25   |

♦MTO - Made To Order

### 45° Male Elbow

(Ref. SAE No. 100302BA)



| Tube O.D. | Male Pipe Thread | Catalog Number | D1   | M    | N    |
|-----------|------------------|----------------|------|------|------|
| 1/4       | 1/8              | 1480x4         | .188 | 0.50 | 0.64 |
| 1/4       | 1/4              | 1480x4x4       | .312 | 0.61 | 0.86 |
| 3/8       | 1/4              | 1480x6         | .312 | 0.72 | 0.86 |
| 3/8       | 3/8              | 1480x6x6       | .406 | 0.76 | 0.95 |
| 1/2       | 1/4              | 1480x8x4       | .312 | 0.85 | 0.95 |
| 1/2       | 3/8              | 1480x8         | .406 | 0.85 | 0.95 |
| 1/2       | 1/2              | 1480x8x8       | .531 | 0.88 | 1.17 |
| 5/8       | 1/2              | 1480x10        | .531 | 0.95 | 1.17 |

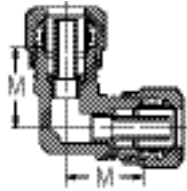
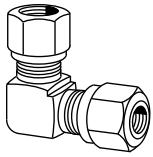
# Brass Products

## Air Brake - Nylon Tubing

**Note:**  
Use with Air Brake Tubing  
see page 33.

### Union Elbow

(Ref. SAE No. 100201BA)

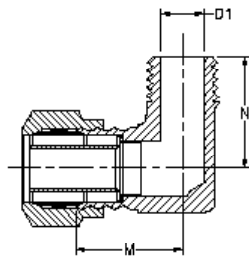
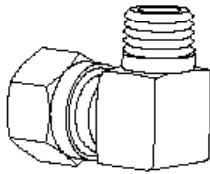


| Tube O.D. | Catalog Number | M    |
|-----------|----------------|------|
| 1/4       | 1465x4♦        | 0.63 |
| 3/8       | 1465x6♦        | 0.80 |
| 1/2       | 1465x8♦        | 0.94 |
| 5/8       | 1465x10♦       | 1.10 |

♦MTO - Made To Order

### 90° Male Elbow

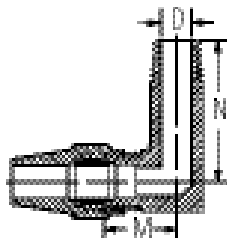
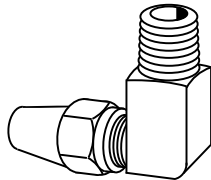
(Ref. SAE No. 100202BA)



| Tube O.D. | Male Pipe Thread | Catalog Number | D1   | M    | N    |
|-----------|------------------|----------------|------|------|------|
| 1/4       | 1/8              | 1469x4         | .188 | 0.63 | 0.67 |
| 1/4       | 1/4              | 1469x4x4       | .312 | 0.69 | 0.88 |
| 1/4       | 3/8              | 1469x4x6       | .406 | 0.74 | 0.87 |
| 3/8       | 1/8              | 1469x6x2       | .188 | 0.73 | 0.75 |
| 3/8       | 1/4              | 1469x6         | .312 | 0.80 | 0.93 |
| 3/8       | 3/8              | 1469x6x6       | .406 | 0.85 | 0.92 |
| 3/8       | 1/2              | 1469x6x8       | .562 | 0.95 | 1.11 |
| 1/2       | 1/4              | 1469x8x4       | .313 | 0.87 | 1.00 |
| 1/2       | 3/8              | 1469x8         | .407 | 0.94 | 1.00 |
| 1/2       | 1/2              | 1469x8x8       | .531 | 1.04 | 1.19 |
| 5/8       | 3/8              | 1469x10x6      | .406 | 1.01 | 1.06 |
| 5/8       | 1/2              | 1469x10        | .531 | 1.10 | 1.25 |
| 5/8       | 3/4              | 1469x10x12     | .750 | 1.21 | 1.30 |
| 3/4       | 1/2              | 1469x12        | .531 | 1.20 | 1.34 |

### 90° Male Elbow - Long

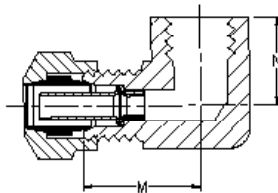
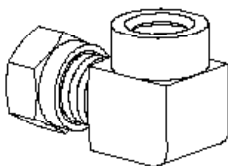
(Ref. SAE No. 100202BA)



| Tube O.D. | Male Pipe Thread | Catalog Number | D1   | M    | N    |
|-----------|------------------|----------------|------|------|------|
| 3/8       | 1/4              | 1469x6L        | .312 | 0.80 | 1.44 |
| 1/2       | 3/8              | 1469x8L        | .406 | 0.94 | 1.38 |

### 90° Female Elbow

(Ref. SAE No. 100203BA)



| Tube O.D. | Fem. Pipe Thread | Catalog Number | M    | N    |
|-----------|------------------|----------------|------|------|
| 1/4       | 1/8              | 1470x4         | 0.72 | 0.54 |
| 3/8       | 1/4              | 1470x6♦        | 0.90 | 0.78 |
| 1/2       | 3/8              | 1470x8♦        | 1.04 | 0.83 |

♦MTO - Made To Order

# Brass Products

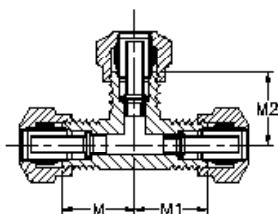
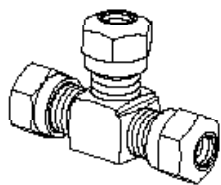
## Air Brake - Nylon Tubing

### Note:

Use with Air Brake Tubing  
see page 33.

### Union Tee

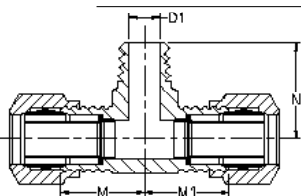
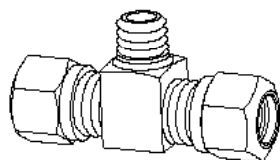
(Ref. SAE No. 100425BA)



Dimensions read left, right, center.

### Male Branch Tee

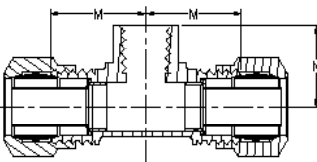
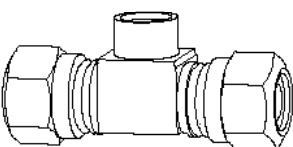
(Ref. SAE No. 100425BA)



| Tube O.D.   | Catalog Number | M    | M1   | M2   |
|-------------|----------------|------|------|------|
| 1/4         | 1464x4         | 0.64 | 0.64 | 0.64 |
| 3/8x1/4     | 1464x6x6x4     | 0.72 | 0.72 | 0.69 |
| 1/8         | 1464x6         | 0.80 | 0.80 | 0.80 |
| 1/2x1/2x3/8 | 1464x8x8x6     | 0.86 | 0.86 | 0.85 |
| 1/2         | 1464x8         | 0.94 | 0.94 | 0.94 |

| Tube O.D. | Male Pipe Thread | Catalog Number | D1   | M    | M1   | N    |
|-----------|------------------|----------------|------|------|------|------|
| 1/4       | 1/8              | 1472x4         | .188 | 0.63 | 0.63 | 0.67 |
| 3/8x1/4   | 1/4              | 1472x6x4x4     | .312 | 0.82 | 0.69 | 0.93 |
| 3/8       | 1/8              | 1472x6x6x2♦    | .188 | 0.73 | 0.73 | 0.75 |
| 3/8       | 1/4              | 1472x6         | .312 | 0.82 | 0.82 | 0.93 |
| 3/8       | 3/8              | 1472x6x6x6     | .406 | 0.85 | 0.85 | 0.92 |
| 1/2x3/8   | 3/8              | 1472x8x6x6     | .406 | 0.94 | 0.85 | 1.00 |
| 1/2       | 1/4              | 1472x8x8x4     | .312 | 0.94 | 0.94 | 1.00 |
| 1/2       | 3/8              | 1472x8         | .406 | 0.94 | 0.94 | 1.00 |

♦MT0 - Made To Order

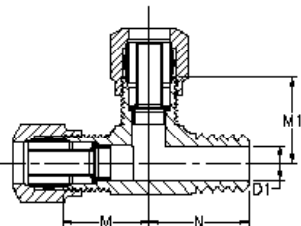
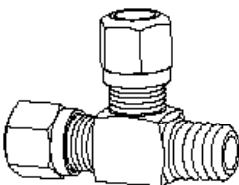


| Tube O.D. | Fem. Pipe Thread | Catalog Number | M    | N    |
|-----------|------------------|----------------|------|------|
| 3/8       | 1/4              | 1477x6         | 0.90 | 0.78 |
| 1/2       | 1/4              | 1477x8x8x4♦    | 0.97 | 0.83 |
| 5/8       | 1/4              | 1477x10x10x4   | 1.04 | 0.89 |

♦MT0 - Made To Order

### Male Run Tee

(Ref. SAE No. 100424BA)



| Tube O.D. | Male Pipe Thread | Catalog Number | D1   | M    | M1   | N    |
|-----------|------------------|----------------|------|------|------|------|
| 1/4       | 1/8              | 1471x4         | .188 | 0.64 | 0.64 | 0.67 |
| 3/8x1/4   | 1/4              | 1471x6x4x4     | .312 | 0.80 | 0.69 | 0.93 |
| 3/8       | 1/4              | 1471x6         | .312 | 0.80 | 0.80 | 0.93 |
| 3/8       | 3/8              | 1471x6x6x6     | .406 | 0.85 | 0.85 | 0.92 |
| 1/2       | 3/8              | 1471x8♦        | .406 | 0.94 | 0.94 | 1.10 |

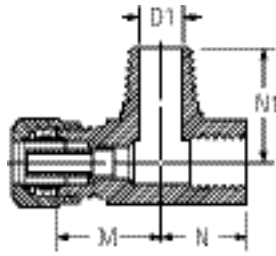
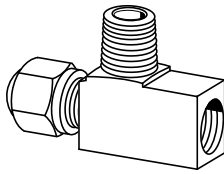
♦MT0 - Made To Order

# Brass Products

## Air Brake - Nylon Tubing

**Note:**  
Use with Air Brake Tubing  
see page 33.

### Adapter Tee

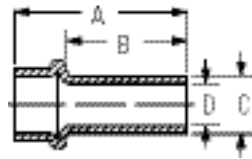
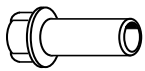


| Tube O.D. | Fem. Pipe Thread | Male Pipe Thread | Catalog Number | D1   | M    | N    | N1   |
|-----------|------------------|------------------|----------------|------|------|------|------|
| 3/8       | 1/4              | 1/4              | 1482x6x4x4♦    | .312 | 0.88 | 0.75 | 0.94 |

♦MTO - Made To Order

### Insert

(Brass)



| Tube O.D. | Catalog Number | A    | B    | C    | D    |
|-----------|----------------|------|------|------|------|
| 1/4       | 1484x4         | 0.64 | 0.46 | .163 | .133 |
| 3/8       | 1484x6         | 0.76 | 0.58 | .245 | .215 |
| 1/2       | 1484x8         | 0.94 | 0.76 | .370 | .340 |
| 5/8       | 1484x10        | 1.06 | 0.84 | .434 | .398 |
| 3/4       | 1484x12        | 1.21 | 1.00 | .559 | .523 |

### Gauge Ring



Nut screwed to Gauge Ring assures installation to specifications.

| Tube O.D. | Catalog Number | L         |
|-----------|----------------|-----------|
| 1/4       | 1485x4         | .085/.105 |
| 3/8       | 1485x6         | .125/.145 |
| 1/2       | 1485x8         | .100/.120 |
| 5/8       | 1485x10        | .115/.135 |
| 3/4       | 1485x12        | .180/.200 |

# Brass Products

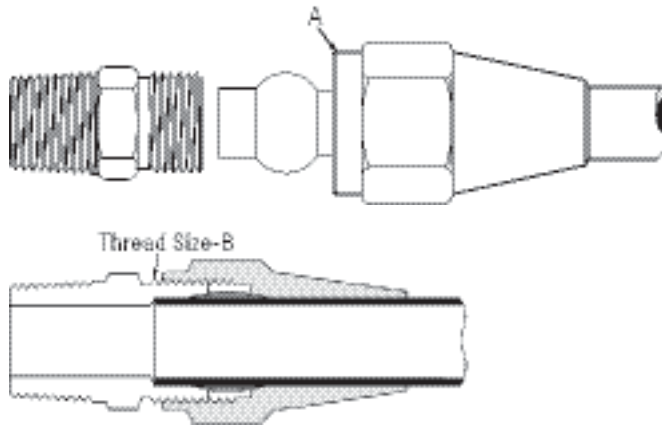
## Air Brake - Copper Tubing

### Note:

For additional technical questions, contact Technical Support at 1-888-258-0222.



Refer to safety information regarding proper selection of tubing and tube connectors on page 5.



| Tube O.D.     | 1/4     | 3/8      | 1/2      | 5/8      | 3/4  | 1        |
|---------------|---------|----------|----------|----------|------|----------|
| Thread Size-B | 7/16-24 | 17/32-24 | 11/16-20 | 13/16-18 | 1-18 | 1-1/4-16 |

### Typical Application:

Air brake systems.

### Pressure:

Maximum operating pressure of 150 psi.

### Vibration:

Fair resistance.

### Temperature Range:

-65°F to +250°F (-53°C to +121°C) with copper tubing.

### Material:

CA360 Brass.

### Used With:

Copper tubing in air brake systems.

### Advantages:

Easy to assemble (no flaring). May be used with nylon tubing by replacing long nut and spherical sleeve with insert, rigid sleeve and nut.

### Conformance:

Meets specifications and standards of SAE and DOT.

### How to Order:

For complete assemblies For complete assemblies (body, nuts and sleeves), order by catalog number. Example: 1368x4. To order body only (less nut and sleeve), add prefix "B" to catalog number. Example: B1368x4. Nuts and sleeve can be ordered separately by catalog number.

To order complete assembly with pipe sealant (Seal-A-Thread), add suffix "Z" to catalog number. Example: 1368x4Z (special order only).

### Note:

Refer to current price list for availability of cataloged items. Quotations and delivery of non-stock items supplied on request. Configurations and dimensions subject to change without notice. Additional information can be found in SAE J246.

### Assembly Instructions:

1. Cut tubing to desired length. Make sure all burrs are removed and the ends are cut square.
2. Slide nut and then sleeve on tubing. Threaded end of nut "A" must face toward connector body.
3. Insert tubing into connector. Be sure tubing is bottomed on fitting shoulder.
4. Thread nut onto connector body until it is hand tight.
5. From that point, tighten with a wrench the number of turns indicated in the chart below.

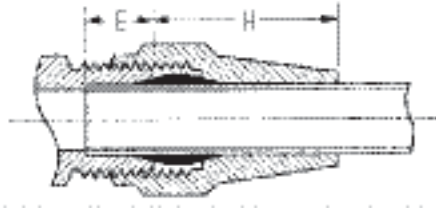
| Tube Size     | Additional Number Of Turns From Hand Tight |
|---------------|--------------------------------------------|
| 1/4, 3/8      | 1-3/4                                      |
| 1/2, 5/8, 3/4 | 3-1/4                                      |

### Label Set:

FS-800 (adhesive)  
CL-491 (non-adhesive)

# Brass Products

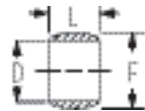
## Air Brake - Copper Tubing



H is hand tight dimensions.

### Sleeve

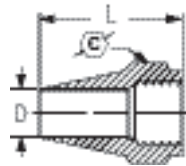
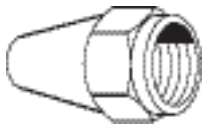
(Ref. SAE No. 120115)



| Tube O.D. | E<br>Tube Depth | H    |
|-----------|-----------------|------|
| 1/4       | 0.25            | 0.58 |
| 3/8       | 0.31            | 0.87 |
| 1/2       | 0.44            | 0.95 |
| 5/8       | 0.44            | 1.05 |
| 3/4       | 0.56            | 1.25 |

### Nut

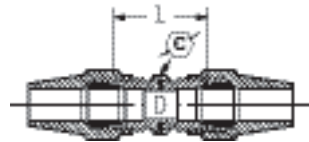
(Ref. SAE No. 120111)



| Tube O.D. | Catalog Number | D    | F    | L    |
|-----------|----------------|------|------|------|
| 1/4       | 1360x4         | .255 | .322 | .250 |
| 3/8       | 1360x6         | .382 | .461 | .313 |
| 1/2       | 1360x8         | .507 | .594 | .375 |
| 5/8       | 1360x10        | .632 | .734 | .438 |
| 3/4       | 1360x12        | .758 | .874 | .500 |

### Union

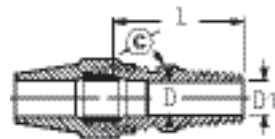
(Ref. SAE No. 120101BA)



| Tube O.D. | Catalog Number |  | D    | L    |
|-----------|----------------|-------------------------------------------------------------------------------------|------|------|
| 1/4       | 1361x4         | 9/16                                                                                | .256 | 0.75 |
| 3/8       | 1361x6         | 5/8                                                                                 | .384 | 1.13 |
| 1/2       | 1361x8         | 13/16                                                                               | .509 | 1.25 |
| 5/8       | 1361x10        | 15/16                                                                               | .634 | 1.38 |
| 3/4       | 1361x12        | 1-1/8                                                                               | .760 | 1.56 |

### Male Connector

(Ref. SAE No. 120102BA)



| Tube O.D. | Catalog Number |  | D    | L    |
|-----------|----------------|---------------------------------------------------------------------------------------|------|------|
| 1/4       | 1362x4         | 7/16                                                                                  | .188 | 0.85 |
| 3/8       | 1362x6         | 9/16                                                                                  | .312 | 1.10 |
| 1/2       | 1362x8         | 11/16                                                                                 | .406 | 1.31 |
| 5/8       | 1362x10        | 13/16                                                                                 | .531 | 1.43 |
| 3/4       | 1362x12        | 1                                                                                     | .656 | 1.60 |
| 1         | 1362x16        | 1-1/4                                                                                 | .875 | 1.78 |

| Tube O.D. | Male Pipe Thread | Catalog Number |  | D    | D1        | L    |
|-----------|------------------|----------------|---------------------------------------------------------------------------------------|------|-----------|------|
| 1/4       | 1/8              | 1368x4         | 7/16                                                                                  | .188 | .188      | 0.88 |
| 1/4       | 1/4              | 1368x4x4       | 9/16                                                                                  | .188 | .188      | 1.09 |
| 3/8       | 1/8              | 1368x6x2       | 9/16                                                                                  | .312 | .188      | 1.02 |
| 3/8       | 1/4              | 1368x6         | 9/16                                                                                  | .312 | .312      | 1.20 |
| 3/8       | 3/8              | 1368x6x6       | 11/16                                                                                 | .312 | .406 opt. | 1.23 |
| 3/8       | 1/2              | 1368x6x8       | 7/8                                                                                   | .312 | .531 opt. | 1.42 |
| 1/2       | 1/4              | 1368x8x4       | 11/16                                                                                 | .406 | .312      | 1.32 |
| 1/2       | 3/8              | 1368x8         | 11/16                                                                                 | .406 | .406      | 1.32 |
| 1/2       | 1/2              | 1368x8x8       | 7/8                                                                                   | .406 | .531 opt. | 1.51 |
| 5/8       | 3/8              | 1368x10x6      | 13/16                                                                                 | .531 | .406      | 1.38 |
| 5/8       | 1/2              | 1368x10        | 7/8                                                                                   | .531 | .531      | 1.57 |
| 3/4       | 1/2              | 1368x12        | 1                                                                                     | .656 | .531      | 1.67 |
| 3/4       | 3/4              | 1368x12x12     | 1-1/16                                                                                | .656 | .719 opt. | 1.70 |

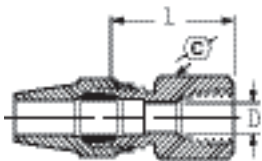


# Brass Products

## Air Brake - Copper Tubing

### Female Connector

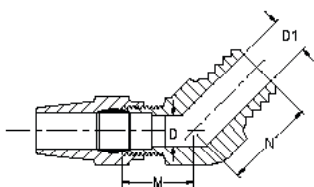
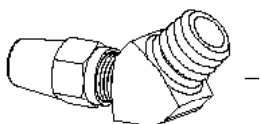
(Ref. SAE No. 120103BA)



| Tube O.D. | Fem. Pipe Thread | Catalog Number |  | D    | L    |
|-----------|------------------|----------------|-------------------------------------------------------------------------------------|------|------|
| 3/8       | 1/4              | 1366x6         | 11/16                                                                               | .312 | 1.19 |
| 3/8       | 3/8              | 1366x6x6       | 7/8                                                                                 | .312 | 1.19 |
| 1/2       | 3/8              | 1366x8         | 7/8                                                                                 | .406 | 1.28 |

### 45° Male Elbow

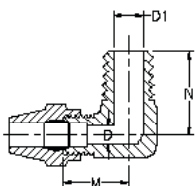
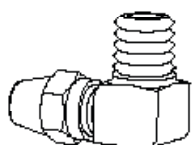
(Ref. SAE No. 120302BA)



| Tube O.D. | Male Pipe Thread | Catalog Number | D    | D1   | M    | N    |
|-----------|------------------|----------------|------|------|------|------|
| 3/8       | 1/4              | 1380x6         | .312 | .312 | 0.72 | 0.86 |
| 3/8       | 3/8              | 1380x6x6       | .312 | .406 | 0.76 | 0.95 |
| 1/2       | 3/8              | 1380x8         | .409 | .406 | 0.85 | 0.95 |
| 5/8       | 1/2              | 1380x10        | .534 | .531 | 0.95 | 1.17 |

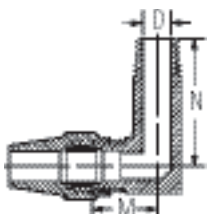
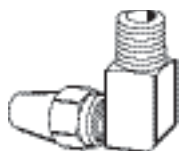
### 90° Male Elbow

(Ref. SAE No. 120202BA)



| Tube O.D. | Male Pipe Thread | Catalog Number | D    | D1   | M    | N    |
|-----------|------------------|----------------|------|------|------|------|
| 1/4       | 1/8              | 1369x4         | .188 | .188 | 0.63 | 0.67 |
| 1/4       | 1/4              | 1369x4x4       | .190 | .312 | 0.69 | 0.88 |
| 3/8       | 1/8              | 1369x6x2       | .312 | .188 | 0.73 | 0.75 |
| 3/8       | 1/4              | 1369x6         | .317 | .312 | 0.80 | 0.93 |
| 3/8       | 3/8              | 1369x6x6       | .317 | .406 | 0.85 | 0.92 |
| 3/8       | 1/2              | 1369x6x8       | .317 | .562 | 0.95 | 1.11 |
| 1/2       | 1/4              | 1369x8x4       | .409 | .313 | 0.87 | 1.00 |
| 1/2       | 3/8              | 1369x8         | .409 | .409 | 0.94 | 1.00 |
| 1/2       | 1/2              | 1369x8x8       | .409 | .531 | 1.04 | 1.19 |
| 5/8       | 3/8              | 1369x10x6      | .534 | .406 | 1.01 | 1.06 |
| 5/8       | 1/2              | 1369x10        | .534 | .531 | 1.10 | 1.25 |

### 90° Male Elbow - Long



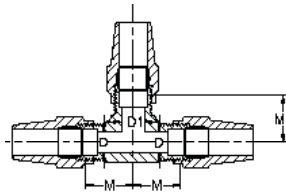
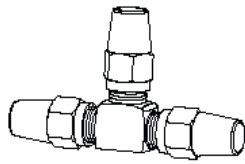
| Tube O.D. | Male Pipe Thread | Catalog Number | D    | M    | N    |
|-----------|------------------|----------------|------|------|------|
| 3/8       | 1/4              | 1369x6L        | .312 | 0.81 | 1.44 |
| 1/2       | 3/8              | 1369x8L        | .406 | 1.25 | 1.38 |

# Brass Products

## Air Brake - Copper Tubing

### Union Tee

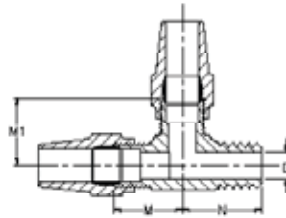
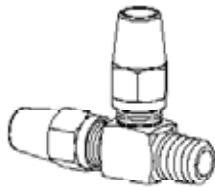
(Ref. SAE No. 120401BA)



| Tube O.D. | Catalog Number | M    | M1   | D    | D1   |
|-----------|----------------|------|------|------|------|
| 3/8       | 1364x6         | 0.80 | 0.80 | .314 | .314 |
| 1/2       | 1364x8         | 0.94 | 0.94 | .406 | .406 |

### Male Run Tee

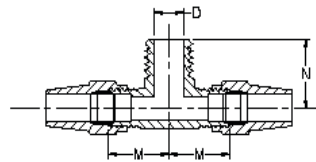
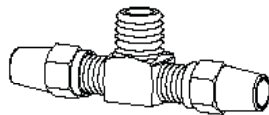
(Ref. SAE No. 120424BA)



| Tube O.D. | Male Pipe Thread | Catalog Number | D    | M    | M1   | N    |
|-----------|------------------|----------------|------|------|------|------|
| 3/8       | 1/4              | 1371x6         | .312 | 0.80 | 0.80 | 0.93 |
| 3/8       | 3/8              | 1371x6x6x6     | .406 | 0.85 | 0.85 | 0.92 |

### Male Branch Tee

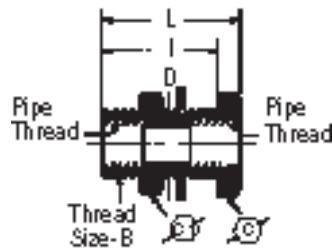
(Ref. SAE No. 120425BA)



| Tube O.D. A | Tube O.D. B | Male Pipe Thread | Catalog Number | D    | M    | N    |
|-------------|-------------|------------------|----------------|------|------|------|
| 3/8         | 3/8         | 1/4              | 1372x6         | .312 | 0.82 | 0.93 |
| 3/8         | 3/8         | 3/8              | 1372x6x6x6     | .406 | 0.85 | 0.92 |
| 1/2         | 1/2         | 3/8              | 1372x8         | .406 | 0.94 | 1.00 |

### Bulkhead Coupling

(Brass)

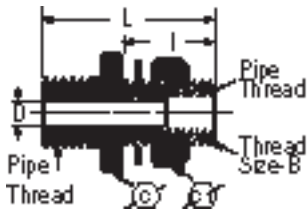


| Fem. Pipe Thread | Catalog Thread | Thread Size B |       |       | D    | I    | L    |
|------------------|----------------|---------------|-------|-------|------|------|------|
| 1/4              | 1344           | 3/4-16        | 1     | 15/16 | .422 | 1.25 | 1.50 |
| 1/4              | 1345           | 3/4-16        | 1     | 15/16 | .422 | 0.69 | 0.94 |
| 3/8              | 1346           | 1-14          | 1-1/8 | 1-3/8 | .563 | 1.06 | 1.31 |
| 1/2              | 1351           | 1-1/8-14      | 1-1/4 | 1-3/8 | .703 | 1.19 | 1.50 |

# Brass Products

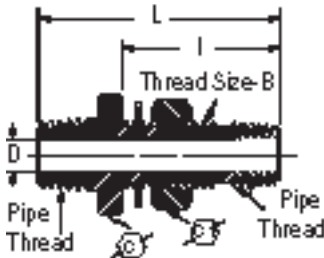
## Air Brake - Copper Tubing

### Bulkhead Coupling (Brass)



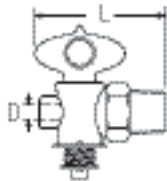
| Male Pipe Thread | Fem. Pipe Thread | Catalog Number | Thread Size B |  |  | D    | I    | L    |
|------------------|------------------|----------------|---------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|------|------|------|
| 1/2              | 1/4              | 1340           | 3/4-16        | 1-1/4                                                                               | 15/16                                                                               | .312 | 1.13 | 2.16 |
| 1/2              | 1/4              | 1341           | 3/4-16        | 1-1/4                                                                               | 15/16                                                                               | .312 | 1.53 | 2.53 |

### Bulkhead Coupling (Brass)



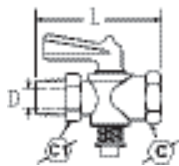
| Male Pipe Thread | Fem. Pipe Thread | Catalog Number | Thread Size B |  |  | D    | I    | L    |
|------------------|------------------|----------------|---------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|------|------|------|
| 1/2              | 1/4              | 1342           | 1-14          | 1-1/4                                                                               | 1-3/8                                                                               | .375 | 1.88 | 2.94 |
| 1/2              | 1/4              | 1343           | 1-14          | 1-1/4                                                                               | 1-3/8                                                                               | .375 | 2.88 | 3.94 |

### Draincock



| Male Pipe Thread | Catalog Number | D    | L    |
|------------------|----------------|------|------|
| 1/4              | W15310         | .188 | 1.56 |

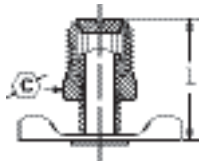
### Shut Off Valve



| Male Pipe Thread | Fem. Pipe Thread | Catalog Number |  |  | D    | L    |
|------------------|------------------|----------------|---------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------|------|------|
| 1/4              | 1/4              | W20332         | 5/8                                                                                   | 3/4                                                                                   | .218 | 1.81 |

Rating: 125 psi with one 1/4" bubble in 5 seconds permissible key leakage.

### External Seat Draincock



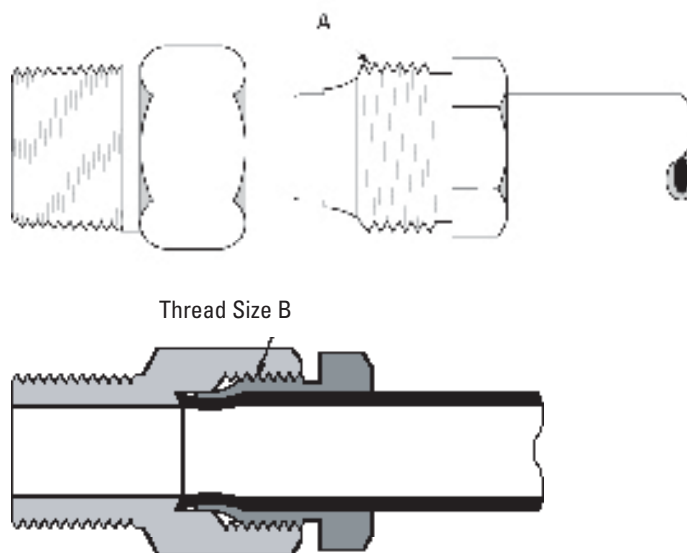
| Male Pipe Thread | Catalog Number |  | L    |
|------------------|----------------|---------------------------------------------------------------------------------------|------|
| 1/4              | 145            | 9/16                                                                                  | 1.00 |

# Brass Products

## Threaded Sleeve

### Note:

For additional technical questions, contact Technical Support at 1-888-258-0222.



| Tube O.D.     | 1/8     | 3/16   | 1/4     | 5/16   | 3/8     |
|---------------|---------|--------|---------|--------|---------|
| Thread Size-B | 5/16-24 | 3/8-24 | 7/16-24 | 1/2-20 | 9/16-20 |

### Typical Application:

Oil, air, water and lubrication systems.

### Pressure:

Operating pressure of 500 psi for 1/8" to 1/4" sizes, 250 psi for 5/16" and 3/8" sizes.

### Vibration:

Fair resistance.

### Temperature Range:

-65°F to +250°F (-53°C to +121°C) range at maximum operating pressures.

### Material:

CA360 Brass.

### Used With:

Aluminum and copper tubing. Not recommended for steel tubing.

### Advantages:

Easy to assemble, no flaring. Two (2) piece construction.

### Conformance:

Meets ASA and ASME specifications.

### How to Order:

Order individually by catalog number.

### Note:

Refer to current price list for availability of cataloged items. Quotations and delivery of non-stock items supplied on request. Configurations and dimensions subject to change without notice.

### Assembly Instructions:

1. Cut tubing to desired length.
2. Slide nut on end of tube. Threaded end "A" of nut must face toward connector.

### Note:

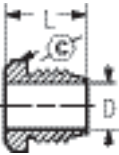
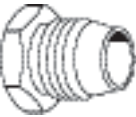
The lead end of nut incorporates the sleeve as a single piece.

3. Insert tube into connector body. Be sure tube is bottomed on connector shoulder.
4. Lubricate threads and assemble nut to connector body.
5. From that point, tighten. Tighten nut, hand tight. From hand tight, tighten with a wrench 1-1/2 additional turns to form proper seal.

# Brass Products

## Threaded Sleeve

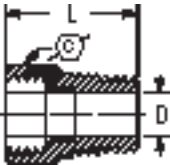
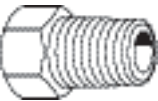
### Nut



| Tube O.D. | Catalog Number |  | D    | L    |
|-----------|----------------|-------------------------------------------------------------------------------------|------|------|
| 1/8       | 6100x2         | 3/8                                                                                 | .130 | 0.50 |
| 3/16      | 6100x3         | 7/16                                                                                | .193 | 0.53 |
| 1/4       | 6100x4         | 1/2                                                                                 | .255 | 0.56 |
| 5/16      | 6100x5♦        | 9/16                                                                                | .318 | 0.61 |
| 3/8       | 6100x6♦        | 5/8                                                                                 | .380 | 0.61 |

♦MT0 - Made To Order

### Male Connector

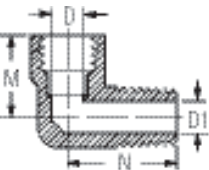
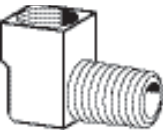


| Tube O.D. | Male Pipe Thread | Catalog Number |  | D    | L    |
|-----------|------------------|----------------|-------------------------------------------------------------------------------------|------|------|
| 1/8       | 1/8              | 6200x2         | 7/16                                                                                | .078 | 0.62 |
| 1/8       | *                | 6200x2x21      | 7/16                                                                                | .080 | 0.62 |
| 3/16      | 1/8              | 6200x3         | 7/16                                                                                | .141 | 0.69 |
| 1/4       | 1/8              | 6200x4         | 1/2                                                                                 | .188 | 0.75 |
| 5/16      | 1/8              | 6200x5♦        | 9/16                                                                                | .219 | 0.89 |
| 3/8       | 1/4              | 6200x6♦        | 5/8                                                                                 | .312 | 0.97 |

\*Thread Size 1/4-28 Tapered Male Thread.

♦MT0 - Made To Order

### Male Elbow



| Tube O.D. | Male Pipe Thread | Catalog Number | D    | D1   | M    | N    |
|-----------|------------------|----------------|------|------|------|------|
| 1/8       | 1/8              | 6400x2         | .073 | .125 | 0.50 | 0.66 |
| 1/8       | *                | 6400x2x21      | .078 | .080 | 0.50 | 0.52 |
| 3/16      | 1/8              | 6400x3         | .141 | .156 | 0.56 | 0.62 |
| 1/4       | 1/8              | 6400x4         | .188 | .188 | 0.52 | 0.62 |

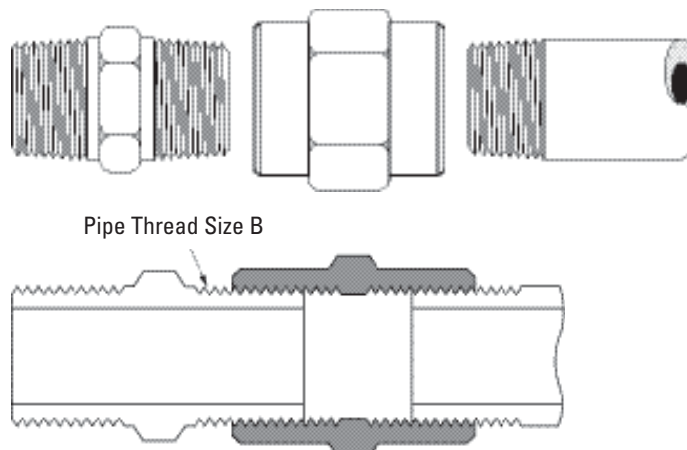
\*Thread Size 1/4-28 Tapered Male Thread.

# Brass Products

## Pipe

### Note:

For additional technical questions, contact Technical Support at 1-888-258-0222.



| Pipe Size     | 1/16    | 1/8    | 1/4    | 3/8    | 1/2    | 3/4    |
|---------------|---------|--------|--------|--------|--------|--------|
| Thread Size-B | 1/16-27 | 1/8-27 | 1/4-18 | 3/8-18 | 1/2-14 | 3/4-14 |

### Typical Application:

Grease, refrigeration, instrumentation and hydraulic systems. Fuel, LP and natural gas available on special order.

### Pressure:

Operating pressure up to 1200 psi.

### Vibration:

Fair resistance.

### Temperature Range:

-65°F to +250°F  
(-53°C to +121°C).

### Material:

CA360 Brass.

### Used With:

Brass, bronze and iron pipe.

### Advantages:

Dryseal pipe threads (NPTF). Large range of sizes and configurations.

### Conformance:

Listed by Underwriters Laboratories (available on special order) for fuel equipment, refrigeration and gas. Meets specifications and standards of ASA, ASME and SAE.

### How to Order:

Order individually by catalog number. Example: 3325x4. To order with pipe sealant (Seal-A-Thread), add a "Z" suffix to the catalog number. (Special order only). Example: 3325x4Z.

### Note:

Refer to current price list for availability of cataloged items. Quotations and delivery of non-stock items supplied on request. Configurations and dimensions subject to change without notice. Additional information can be found in SAE J530 Automotive Pipe Fittings and SAE J531 Drain Plugs.

### Assembly Instructions:

1. Tighten approximately 2-1/2 turns past hand tight.
2. Connectors with Seal-A-Thread tighten two turns past hand tight. Brittle materials require special cautions.

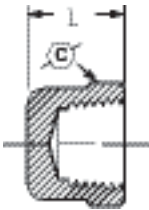
### Label Set:

W-8022 (adhesive)  
CL-490 (non-adhesive)

# Brass Products

## Pipe

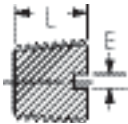
### Cap



| Fem. Pipe Thread | Catalog Number |  | L   |
|------------------|----------------|-------------------------------------------------------------------------------------|-----|
| 1/8 *            | 3129x2         | 9/16                                                                                | .50 |
| 1/4 *            | 3129x4         | 11/16                                                                               | .59 |
| 3/8 *            | 3129x6         | 13/16                                                                               | .68 |

\*PTF Short Thread

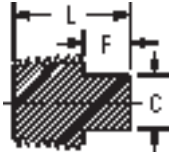
### Slotted Plug



| Male Pipe Thread | Catalog Number | E   | L   |
|------------------|----------------|-----|-----|
| 1/8 *            | 3150x2         | .05 | .28 |
| 1/4 *            | 3150x4         | .08 | .42 |
| 3/8 *            | 3150x6         | .09 | .43 |

\*PTF Short Thread

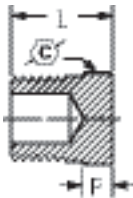
### Square Head Plug



| Male Pipe Thread | Catalog Number | Square C | F   | L    |
|------------------|----------------|----------|-----|------|
| 1/8 *            | 3151x2         | .28      | .24 | .58  |
| 1/4 *            | 3151x4         | .37      | .29 | .74  |
| 3/8 *            | 3151x6         | .43      | .32 | .82  |
| 1/2 *            | 3151x8         | .56      | .39 | .99  |
| 3/4 *            | 3151x12        | .62      | .43 | 1.12 |

\*PTF Short Thread

### Hex Head Plug

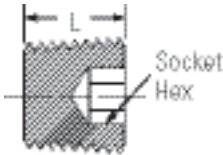


| Male Pipe Thread | Catalog Number |  | F   | L   |
|------------------|----------------|---------------------------------------------------------------------------------------|-----|-----|
| 1/8 *            | 3152x2         | 7/16                                                                                  | .19 | .57 |
| 1/4 *            | 3152x4         | 9/16                                                                                  | .18 | .62 |
| 3/8 *            | 3152x6         | 11/16                                                                                 | .22 | .72 |
| 1/2 *            | 3152x8         | 7/8                                                                                   | .22 | .78 |
| 3/4 **           | 3152x12        | 1-1/16                                                                                | .25 | .88 |

\*PTF Short Thread

\*\*PTF Special Short Thread

### Hex Socket Plug

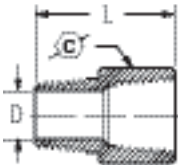
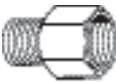


| Male Pipe Thread | Catalog Number | Socket Hex | L    |
|------------------|----------------|------------|------|
| 1/8              | 3153x2         | 3/16       | .270 |
| 1/4              | 3153x4♦        | 1/4        | .410 |
| 3/8              | 3153x6♦        | 5/16       | .410 |
| 1/2              | 3153x8♦        | 3/8        | .540 |

♦MTO - Made To Order

### Adapter

(Ref. SAE No. 130139)



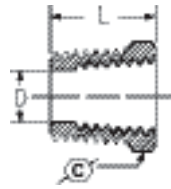
| Fem. Pipe Thread | Male Pipe Thread | Catalog Number |  | D    | L    |
|------------------|------------------|----------------|---------------------------------------------------------------------------------------|------|------|
| 1/8              | 1/8              | 3200x2         | 9/16                                                                                  | .219 | .88  |
| 1/4              | 1/8              | 3200x4x2       | 3/4                                                                                   | .219 | 1.06 |
| 1/4              | 1/4              | 3200x4         | 3/4                                                                                   | .312 | 1.25 |
| 3/8              | 1/4              | 3200x6x4       | 7/8                                                                                   | .312 | 1.25 |
| 3/8              | 3/8              | 3200x6         | 7/8                                                                                   | .438 | 1.25 |
| 1/2              | 3/8              | 3200x8x6       | 1-1/16                                                                                | .438 | 1.47 |
| 3/4              | 3/8              | 3200x12x6      | 1-1/4                                                                                 | .438 | 1.59 |
| 3/4              | 1/2              | 3200x12x8      | 1-1/4                                                                                 | .562 | 1.69 |

# Brass Products

## Pipe

### Bushing

(Ref. SAE No. 130140)

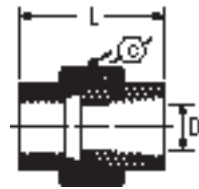
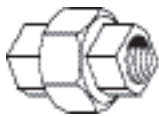


| Male<br>Pipe<br>Thread | Fem.<br>Pipe<br>Thread | Catalog<br>Number |       | D      | L    |
|------------------------|------------------------|-------------------|-------|--------|------|
| 1/4*                   | 1/8                    | 3220x4x2          | 5/8   | .339   | 0.59 |
| 3/8                    | 1/8                    | 3220x6x2          | 11/16 | .328   | 0.75 |
| 3/8*                   | 1/4                    | 3220x6x4          | 11/16 | .438   | 0.69 |
| 1/2*                   | 1/8                    | 3220x8x2          | 7/8   | .530** | 0.75 |
| 1/2*                   | 1/4                    | 3220x8x4          | 7/8   | .438** | 0.75 |
| 1/2*                   | 3/8                    | 3220x8x6          | 7/8   | .562   | 0.75 |
| 3/4*                   | 3/8                    | 3220x12x6         | 1-1/8 | .562   | 0.88 |
| 3/4*                   | 1/2                    | 3220x12x8         | 1-1/8 | .703   | 0.88 |

\*PTF Short Thread

\*\*Optional Counterbore

### Union

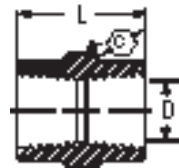


| Fem.<br>Pipe<br>Thread | Catalog<br>Number |        | D    | L    |
|------------------------|-------------------|--------|------|------|
| 1/4*                   | 3250x4            | 1-1/16 | .438 | 1.31 |
| 1/2                    | 3250x8            | 1-9/16 | .703 | 1.81 |

\*PTF Short Thread

### Coupling

(Ref. SAE No. 130138)



| Fem.<br>Pipe<br>Thread | Catalog<br>Number |        | D    | L    |
|------------------------|-------------------|--------|------|------|
| 1/16                   | 3300x1            | 7/16   | .339 | 0.75 |
| 1/8                    | 3300x2            | 9/16   | .339 | 0.75 |
| 1/4                    | 3300x4            | 3/4    | .438 | 1.12 |
| 3/8                    | 3300x6            | 7/8    | .578 | 1.12 |
| 1/2                    | 3300x8            | 1-1/16 | .703 | 1.50 |
| 3/4                    | 3300x12           | 1-1/4  | .906 | 1.53 |

### Reducer Coupling

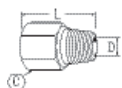
(Ref. SAE No. 130138)



| Fem.<br>Pipe<br>Thread<br>A | Fem.<br>Pipe<br>Thread<br>A1 | Catalog<br>Number |        | D    | L    |
|-----------------------------|------------------------------|-------------------|--------|------|------|
| 1/4                         | 1/8                          | 3300x4x2          | 3/4    | .339 | 0.96 |
| 3/8                         | 1/8                          | 3300x6x2          | 7/8    | .339 | 0.94 |
| 3/8                         | 1/4                          | 3300x6x4          | 7/8    | .438 | 1.16 |
| 1/2                         | 3/8                          | 3300x8x6          | 1-1/16 | .562 | 1.38 |

### Restriction Pipe Adapter

(With .0625 Orifice)



| Male<br>Pipe<br>Thread | Female<br>Pipe<br>Thread | Catalog<br>Number |     | D     | L    |
|------------------------|--------------------------|-------------------|-----|-------|------|
| 1/8                    | 1/8*                     | 1512              | 1/2 | .0625 | 0.75 |

\*PTF Short Thread

### Note:

Other orifice sizes available  
(special order only).

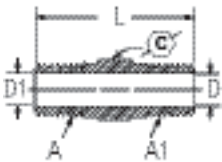


# Brass Products

## Pipe

### Hex Nipple

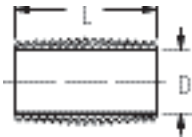
(Ref. SAE No. 130137)



| Male Pipe Thread A | Male Pipe Thread A1 | Catalog Number |  | D    | D1    | L    |
|--------------------|---------------------|----------------|-------------------------------------------------------------------------------------|------|-------|------|
| 1/16               | 1/16                | 3325x1         | 3/8                                                                                 | .125 | .125  | .978 |
| 1/8                | 1/16                | 3325x2x1       | 7/16                                                                                | .230 | .156  | .955 |
| 1/8                | 1/8                 | 3325x2         | 7/16                                                                                | .219 | .219  | 0.97 |
| 1/4                | 1/8                 | 3325x4x2       | 9/16                                                                                | .219 | .219* | 1.19 |
| 1/4                | 1/4                 | 3325x4         | 9/16                                                                                | .312 | .312  | 1.38 |
| 3/8                | 1/8                 | 3325x6x2       | 11/16                                                                               | .219 | .438  | 1.22 |
| 3/8                | 1/4                 | 3325x6x4       | 11/16                                                                               | .312 | .438  | 1.41 |
| 3/8                | 3/8                 | 3325x6         | 11/16                                                                               | .438 | .438  | 1.41 |
| 1/2                | 1/2                 | 3325x8         | 7/8                                                                                 | .562 | .562  | 1.81 |
| 3/4                | 3/4                 | 3325x12        | 1-1/16                                                                              | .750 | .750  | 1.94 |

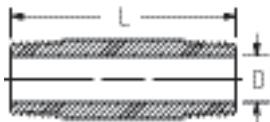
\*Optional .312 Counterbore on 1/4" side.

### Close Nipple



| Male Pipe Thread | Catalog Number | D    | L    |
|------------------|----------------|------|------|
| 1/8              | 3326x2         | .281 | 0.75 |
| 1/4              | 3326x4         | .375 | 0.88 |
| 3/8              | 3326x6         | .500 | 1.00 |
| 1/2              | 3326x8         | .625 | 1.12 |
| 3/4              | 3326x12        | .750 | 1.38 |

### Long Nipple



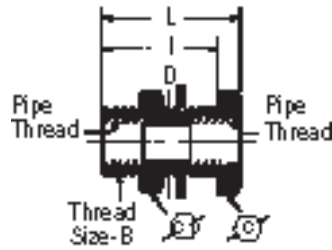
| Male Pipe Thread | Catalog Number | D    | L    |
|------------------|----------------|------|------|
| 1/8              | 3327x2         | .281 | 1.50 |
| 1/8              | 3328x2         | .281 | 2.00 |
| 1/8              | 3329x2         | .281 | 2.50 |
| 1/8              | 3330x2         | .281 | 3.00 |
| 1/8              | 3331x2♦        | .281 | 3.50 |
| 1/4              | 3327x4         | .375 | 1.50 |
| 1/4              | 3328x4         | .375 | 2.00 |
| 1/4              | 3329x4         | .375 | 2.50 |
| 1/4              | 3330x4         | .375 | 3.00 |
| 1/4              | 3331x4         | .375 | 3.50 |
| 3/8              | 3327x6         | .480 | 1.50 |
| 3/8              | 3328x6         | .490 | 2.00 |
| 3/8              | 3329x6         | .480 | 2.50 |
| 3/8              | 3330x6         | .480 | 3.00 |
| 3/8              | 3331x6♦        | .480 | 3.50 |
| 1/2              | 3328x8         | .625 | 2.00 |
| 1/2              | 3329x8         | .625 | 2.50 |
| 1/2              | 3330x8         | .625 | 3.00 |
| 3/4              | 3328x12♦       | .750 | 2.00 |
| 3/4              | 3329x12        | .750 | 2.50 |

♦MT0 - Made To Order

# Brass Products

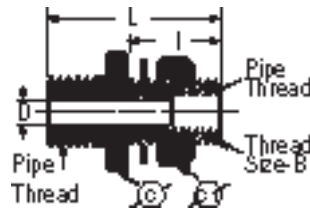
## Pipe

### Bulkhead Coupling (Brass)



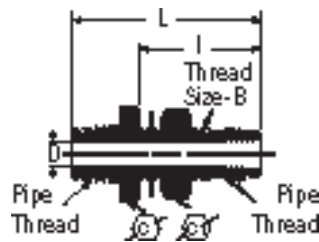
| Fem. Pipe Thread | Catalog Number | Thread Size B |       |       | D    | I    | L    |
|------------------|----------------|---------------|-------|-------|------|------|------|
| 1/4              | 1344           | 3/4-16        | 1     | 15/16 | .422 | 1.25 | 1.50 |
| 1/4              | 1345           | 3/4-16        | 1     | 15/16 | .422 | 0.69 | 0.94 |
| 3/8              | 1346           | 1-14          | 1-1/8 | 1-3/8 | .563 | 1.06 | 1.31 |
| 1/2              | 1351           | 1-1/8-14      | 1-1/4 | 1-3/8 | .703 | 1.19 | 1.50 |

### Bulkhead Coupling (Brass)



| Male Pipe Thd. | Fem. Pipe Thd. | Catalog Number | Thread Size B |       |       | D    | I    | L    |
|----------------|----------------|----------------|---------------|-------|-------|------|------|------|
| 1/2            | 1/4            | 1340           | 3/4-16        | 1-1/4 | 15/16 | .312 | 1.13 | 2.16 |
| 1/2            | 1/4            | 1341           | 3/4-16        | 1-1/4 | 15/16 | .312 | 1.53 | 2.53 |

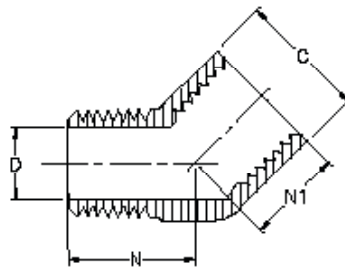
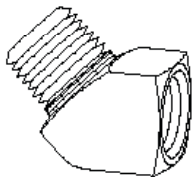
### Bulkhead Coupling (Brass)



| Male Pipe Thd. | Fem. Pipe Thd. | Catalog Number | Thread Size B |       |       | D    | I    | L    |
|----------------|----------------|----------------|---------------|-------|-------|------|------|------|
| 1/2            | 1/4            | 1342           | 1-14          | 1-1/4 | 1-3/8 | .375 | 1.88 | 2.94 |
| 1/2            | 1/4            | 1343           | 1-14          | 1-1/4 | 1-3/8 | .375 | 2.88 | 3.94 |

### 45° Street Elbow

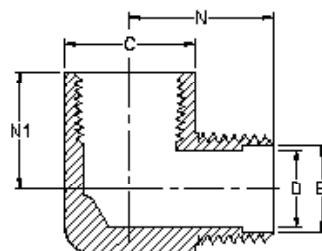
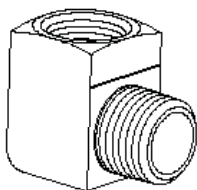
(Ref. SAE No. 130339)



| Male Pipe Thread | Fem. Pipe Thread | Catalog Number | C     | D    | N    | N1   |
|------------------|------------------|----------------|-------|------|------|------|
| 1/8              | 1/8              | 3350x2         | 9/16  | .219 | 0.50 | 0.38 |
| 1/4              | 1/4              | 3350x4         | 11/16 | .312 | 0.74 | 0.56 |
| 3/8              | 3/8              | 3350x6         | 13/16 | .438 | 0.78 | 0.56 |
| 1/2              | 1/2              | 3350x8         | 1     | .562 | 1.00 | 0.75 |
| 3/4              | 3/4              | 3350x12        | 1-1/4 | .750 | 1.06 | 0.75 |

### 90° Street Elbow

(Ref. SAE No. 130239)



| Fem. Pipe Thread | Male Pipe Thread | Catalog Number | C     | D    | E    | N    | N1   |
|------------------|------------------|----------------|-------|------|------|------|------|
| 1/8              | 1/8              | 3400x2         | 9/16  | .219 | 0.25 | 0.66 | 0.47 |
| 1/8*             | 1/8**            | 3400x2W        | 1/2   | .188 | 0.25 | 0.57 | 0.34 |
| 1/4              | 1/8              | 3400x4x2       | 11/16 | .219 | —    | 0.72 | 0.53 |
| 1/4*             | 1/4**            | 3400x4W        | 11/16 | .266 | 0.36 | 0.78 | 0.45 |
| 1/4              | 1/4              | 3400x4         | 11/16 | .312 | —    | 0.91 | 0.72 |
| 3/8              | 3/8              | 3400x6         | 13/16 | .438 | —    | 0.98 | 0.72 |
| 1/2              | 1/2              | 3400x8         | 1     | .562 | —    | 1.25 | 1.04 |
| 3/4              | 3/4              | 3400x12        | 1-1/4 | .750 | —    | 1.38 | 1.12 |

\*PTF short thread.

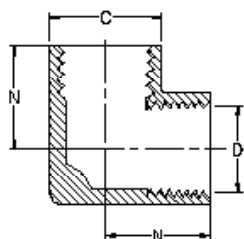
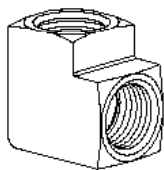
\*\*PTF special short thread.

# Brass Products

## Pipe

### 90° Elbow

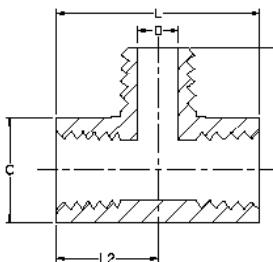
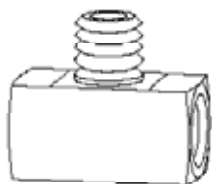
(Ref. SAE No. 130238)



| Fem. Pipe Thread | Catalog Number | C     | D    | N    |
|------------------|----------------|-------|------|------|
| 1/8              | 3500x2         | 9/16  | .339 | 0.55 |
| 1/4              | 3500x4         | 11/16 | .438 | 0.78 |
| 3/8              | 3500x6         | 3/4   | .562 | 0.84 |
| 1/2              | 3500x8         | 1     | .703 | 1.09 |
| 3/4              | 3500x12        | 1-1/4 | .891 | 1.16 |

### Male Branch Tee

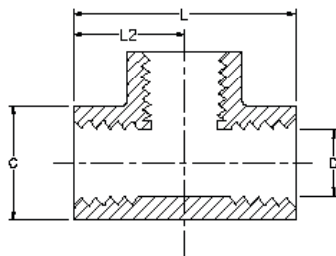
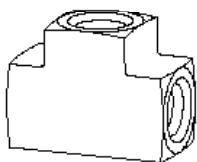
(Ref. SAE No. 130425)



| Fem. Pipe Thread | Male Pipe Thread | Catalog Number | C     | D    | L    | L2   | N    |
|------------------|------------------|----------------|-------|------|------|------|------|
| 1/8              | 1/8              | 3600x2         | 9/16  | .219 | 1.10 | 0.55 | 0.67 |
| 1/4              | 1/4              | 3600x4         | 11/16 | .312 | 1.56 | 0.78 | 0.91 |
| 3/8              | 3/8              | 3600x6         | 13/16 | .438 | 1.68 | 0.84 | 0.97 |
| 1/2              | 1/2              | 3600x8         | 1     | .562 | 2.18 | 1.09 | 1.25 |
| 3/4              | 3/4              | 3600x12        | 1-1/4 | .750 | 2.32 | 1.16 | 1.38 |

### Tee

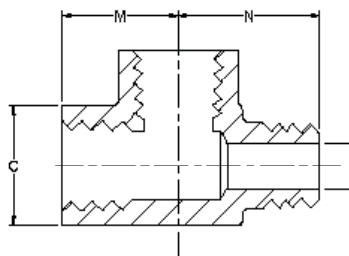
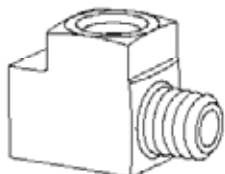
(Ref. SAE No. 130438)



| Fem. Pipe Thread | Catalog Number | C     | D    | L    | L2   |
|------------------|----------------|-------|------|------|------|
| 1/8              | 3700x2         | 9/16  | .339 | 1.10 | 0.55 |
| 1/4              | 3700x4         | 11/16 | .438 | 1.56 | 0.78 |
| 3/8              | 3700x6         | 13/16 | .562 | 1.68 | 0.84 |
| 1/2              | 3700x8         | 1     | .703 | 2.18 | 1.09 |
| 3/4              | 3700x12        | 1-1/4 | .906 | 2.32 | 1.16 |

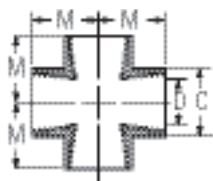
### Male Run Tee

(Ref. SAE No. 130424)



| Fem. Pipe Thread | Male Pipe Thread | Catalog Number | C     | D    | M    | N    |
|------------------|------------------|----------------|-------|------|------|------|
| 1/8              | 1/8              | 3750x2         | 9/16  | .219 | 0.55 | 0.67 |
| 1/4              | 1/4              | 3750x4         | 11/16 | .312 | 0.78 | 0.92 |
| 3/8              | 3/8              | 3750x6         | 13/16 | .438 | 0.84 | 0.97 |
| 1/2              | 1/2              | 3750x8         | 1     | .562 | 1.09 | 1.27 |
| 3/4              | 3/4              | 3750x12        | 1-1/4 | .750 | 1.16 | 1.38 |

### Cross



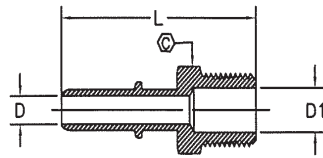
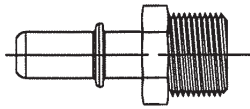
| Fem. Pipe Thread | Catalog Number | C     | D    | M    |
|------------------|----------------|-------|------|------|
| 1/8              | 3950x2         | 1/2   | .339 | 0.50 |
| 1/4              | 3950x4         | 11/16 | .438 | 0.75 |
| 3/8              | 3950x6         | 7/8   | .562 | 0.81 |
| 1/2              | 3950x8         | 1     | .703 | 1.09 |

# Brass Products

## Pipe

### Straight

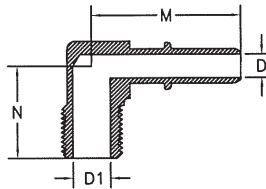
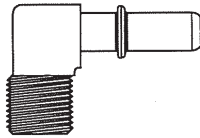
SAE J2044



| Male Pipe Thread | Catalog Number | D   | D1  |  | L    |
|------------------|----------------|-----|-----|-------------------------------------------------------------------------------------|------|
| 1/8-27           | FF3959-0204B   | .15 | .19 | 7/16                                                                                | 1.78 |
| 1/8-27           | FF3959-0205B   | .19 | .19 | 7/16                                                                                | 1.79 |
| 1/4-18           | FF3959-0406B   | .26 | .26 | 9/16                                                                                | 2.00 |
| 3/8-18           | FF3959-0606B   | .26 | .41 | 11/16                                                                               | 2.03 |
| 3/8-18           | FF3959-0608B   | .33 | .41 | 11/16                                                                               | 2.25 |
| 1/2-14           | FF3959-0806B   | .26 | .53 | 7/8                                                                                 | 2.28 |
| 1/2-14           | FF3959-0808B   | .33 | .53 | 7/8                                                                                 | 2.50 |
| 1/2-14           | FF3959-0810B   | .45 | .53 | 7/8                                                                                 | 2.50 |

### 90° Elbow

SAE J2044



| Male Pipe Thread | Catalog Number  | D   | D1  | M    | N    |
|------------------|-----------------|-----|-----|------|------|
| 1/8-27           | FF3960-01-0204B | .15 | .19 | 1.50 | .73  |
| 3/8-18           | FF3960-01-0606B | .26 | .41 | 1.62 | 1.00 |
| 3/8-18           | FF3960-01-0608B | .33 | .41 | 1.80 | 1.00 |
| 1/2-14           | FF3960-01-0808B | .33 | .53 | 1.89 | 1.20 |
| 1/2-14           | FF3960-01-0810B | .45 | .53 | 1.94 | 1.22 |
| 1/8-27           | FF3960-0205B    | .20 | .19 | 1.65 | .73  |

# Brass Products

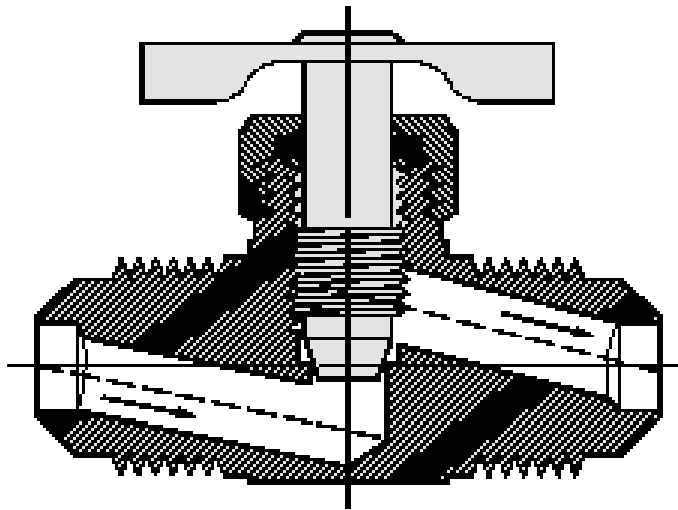
## Needle Valves

### Note:

For additional technical questions, contact Technical Support at 1-888-258-0222.



Refer to safety information regarding proper selection of tubing and tube connectors on page 5.



### Typical Application:

Instrumentation, hydraulic and pneumatic systems.

### Pressure:

150 psi maximum. (Does not include plastic tubing.)

### Temperature Range:

-65°F to +250°F (-53°C to +121°C) with metal tubing. For valves using compatible tubing, refer to the tubing temperature range.

### Material:

Brass bodies, steel handles except where noted. Polyline valves have brass bodies and brass handles.

### Used With:

Copper, aluminum, steel and plastic tubing where applicable.

### Advantages:

Metal-to-metal seat, with fine thread screw down, enables valves to seat positively, adjust easily and hold to any amount of flow up to capacity of the valve.

### Conformance:

Designed for automotive and industrial use. Not intended for natural gas, LPG, nuclear or aircraft applications.

### How to Order:

Order valve body, nuts and sleeves by catalog number. Order valve with Selfalign nuts and sleeves by adding suffix "S". Example: A6763 becomes A6763S. Order valves less nuts and sleeves by adding prefix "B". Example: A6763 becomes B6763.

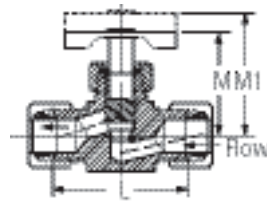
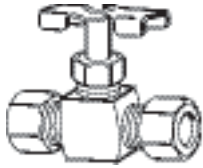
### Assembly Instructions:

Install with the pressure against the seat. Inspection of a straight valve discloses one opening to be higher than the other. Pressure should always be directed against the seat in angle valves, not the stem threads.

# Brass Products

## Needle Valves

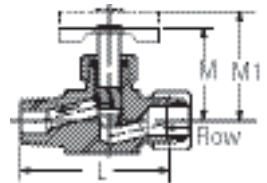
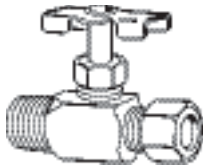
### Compression Double



| Tube O.D. | Catalog Number | L    | M    | M1   |
|-----------|----------------|------|------|------|
| 3/16      | A6763          | 1.06 | 0.88 | 1.03 |
| 1/4       | A6765          | 1.13 | 0.88 | 1.03 |
| 1/4       | A6765S         | 1.13 | 0.88 | 1.03 |
| 5/16      | A6770          | 1.13 | 0.88 | 1.03 |
| 3/8       | A6775          | 1.50 | 1.13 | 1.31 |

"S" suffix designates Selfalign with nuts and sleeves.

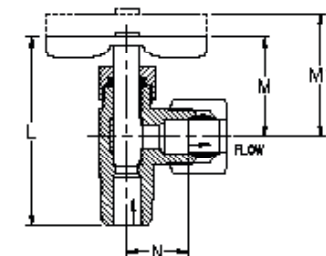
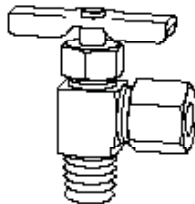
### Compression Straightway



| Tube O.D. | Male Pipe Thread | Catalog Number | L    | M    | M1   |
|-----------|------------------|----------------|------|------|------|
| 3/16      | 1/8              | A6690          | 1.16 | 0.88 | 1.03 |
| 3/16      | 1/8              | A6690S         | 1.16 | 0.88 | 1.03 |
| 1/4       | 1/8              | A690           | 1.19 | 0.88 | 1.03 |
| 1/4       | 1/8              | A690S          | 1.19 | 0.88 | 1.03 |
| 5/16      | 1/8              | A660           | 1.18 | 0.90 | 1.05 |
| 5/16      | 1/4              | A6755          | 1.28 | 0.91 | 1.09 |
| 5/16      | 1/4              | A6755S         | 1.28 | 0.91 | 1.09 |
| 3/8       | 1/4              | A6760          | 1.82 | 1.31 | 1.46 |
| 3/8       | 1/4              | A6760S         | 1.82 | 1.31 | 1.46 |

"S" suffix designates Selfalign with nuts and sleeves.

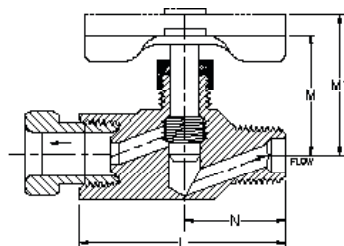
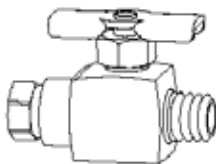
### Compression Angle



| Tube O.D. | Male Pipe Thread | Catalog Number | L    | M    | M1   | N    |
|-----------|------------------|----------------|------|------|------|------|
| 3/16      | 1/8              | A6845          | 1.50 | 0.82 | 1.07 | 0.50 |
| 1/4       | 1/8              | A555           | 1.53 | 0.83 | 1.05 | 0.61 |
| 1/4       | 1/8              | A555S          | 1.53 | 0.83 | 1.05 | 0.53 |
| 5/16      | 1/8              | A655           | 1.56 | 0.84 | 1.09 | 0.52 |
| 5/16      | 1/4              | A6855          | 1.73 | 0.92 | 1.28 | 0.69 |
| 5/16      | 1/4              | A6855S         | 1.73 | 0.92 | 1.28 | 0.69 |
| 3/8       | 1/4              | A6860          | 1.64 | 0.83 | 1.28 | 0.78 |
| 3/8       | 1/4              | A6860S         | 1.64 | 0.83 | 1.28 | 0.78 |

"S" suffix designates Selfalign with nuts and sleeves.

### Inverted Straightway



| Tube O.D. | Male Pipe Thread | Catalog Number | L    | M    | M1   | N    |
|-----------|------------------|----------------|------|------|------|------|
| 1/4       | 1/8              | A735           | 1.41 | 0.84 | 1.01 | 0.72 |
| 1/4       | 1/8              | B735           | 1.41 | 0.84 | 1.01 | 0.72 |

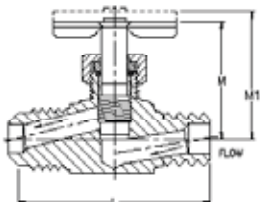
"B" prefix designates less inverted nut.

For replacement nut use 105x4. See page 37.

# Brass Products

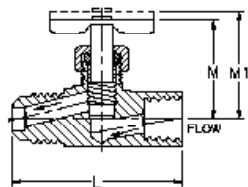
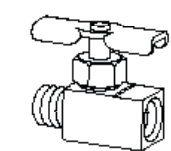
## Needle Valves

### Male Pipe Double



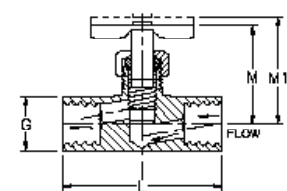
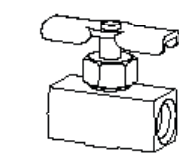
| Male Pipe Thread | Catalog Number | L    | M    | M1   |
|------------------|----------------|------|------|------|
| 1/8              | 6810           | 1.38 | 0.66 | 0.80 |
| 1/4              | 6815           | 1.71 | 1.08 | 1.23 |

### Male to Female Pipe



| Fem. Pipe Thread | Male Pipe Thread | Catalog Number | L    | M    | M1   |
|------------------|------------------|----------------|------|------|------|
| 1/8              | 1/8              | 6820           | 1.87 | 0.88 | 1.03 |
| 1/4              | 1/4              | 6825           | 1.87 | 1.09 | 1.24 |

### Female Pipe

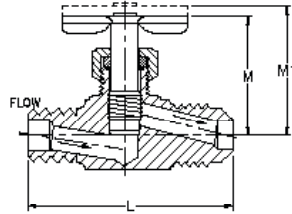
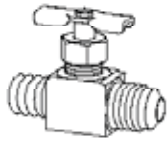


| Fem. Pipe Thread | Catalog Number | L    | M    | M1   | G    |
|------------------|----------------|------|------|------|------|
| 1/8              | 6800           | 1.14 | 0.88 | 1.03 | 0.50 |
| 1/4              | 6805           | 1.62 | 1.11 | 1.26 | 0.68 |

# Brass Products

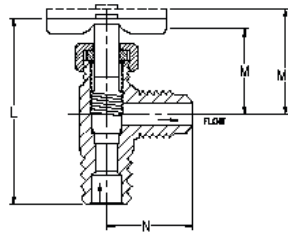
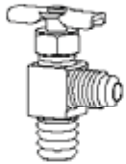
## Needle Valves

### SAE 45° Flare Straightway



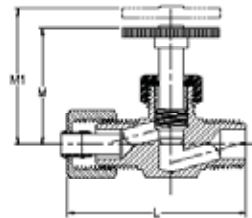
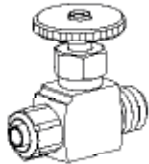
| Tube O.D. | Male Pipe Thread | Catalog Number | L    | M    | M1   |
|-----------|------------------|----------------|------|------|------|
| 1/4       | 1/8              | 530            | 1.31 | 0.88 | 1.03 |
| 1/4       | 1/4              | 6700           | 1.38 | 0.88 | 1.09 |
| 5/16      | 1/8              | 630            | 1.38 | 0.95 | 1.13 |
| 5/16      | 1/4              | 695            | 1.44 | 0.87 | 1.02 |
| 3/8       | 1/4              | 700            | 2.04 | 1.00 | 1.15 |

### SAE 45° Flare Angle



| Tube O.D. | Male Pipe Thread | Catalog Number | L    | M    | M1   | N    |
|-----------|------------------|----------------|------|------|------|------|
| 1/4       | 1/8              | 320            | 1.54 | 0.86 | 1.07 | 0.74 |
| 5/16      | 1/8              | 325            | 1.59 | 0.94 | 1.22 | 0.88 |
| 5/16      | 1/4              | 6703           | 1.94 | 1.00 | 1.31 | 0.90 |
| 3/8       | 1/4              | 330            | 1.84 | 0.90 | 1.21 | 0.96 |

### Polyline Straightway



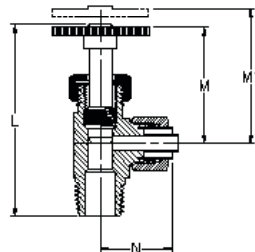
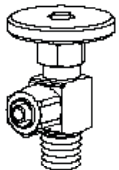
| Tube O.D. | Male Pipe Thread | Catalog Number | L    | M    | M1   |
|-----------|------------------|----------------|------|------|------|
| 1/4       | 1/8              | A690P          | 1.19 | 0.86 | 1.01 |
| 3/8       | 1/4              | A6760P         | 1.50 | 1.18 | 1.33 |

### Temperature Range:

-40°F to +150°F with plastic sleeve.

For replacement Polyline nuts and sleeves, see page 59.

### Polyline Angle



| Tube O.D. | Male Pipe Thread | Catalog Number | L    | M    | M1   | N    |
|-----------|------------------|----------------|------|------|------|------|
| 1/4       | 1/8              | A555P          | 1.50 | 0.82 | 1.04 | 0.69 |
| 1/4       | 1/4              | A556P          | 1.70 | 0.84 | 1.06 | 0.56 |
| 3/8       | 1/4              | A6860P         | 1.85 | 0.99 | 1.44 | 0.88 |

### Temperature Range:

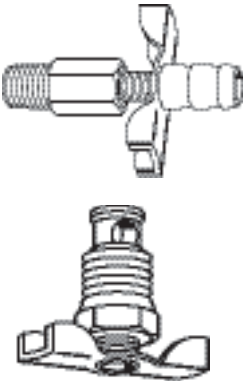
-40°F to +150°F with plastic sleeve.

For replacement Polyline nuts and sleeves, see page 59.



# Brass Products

## Drain Cocks



Drain Cocks and Drain Valves have been a specialty since 1919. Millions are in use. The original design has proved so efficient that it is still the leader with most original equipment manufacturers. The metal-to-metal seat requires only hand tightening to assure positive leak-proof performance.

**Note:**  
For additional technical questions, contact Technical Support at 1-888-258-0222.

 Refer to safety information regarding proper selection of tubing and tube connectors on page 5.

**Typical Application:**  
Brass bodies/steel handles, except where noted.

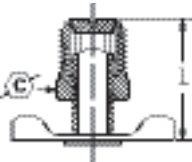
**Pressure:**  
150 psi maximum (does not include hose or plastic tubing.)

**Used With:**  
Copper, aluminum, steel, hose and plastic tubing where applicable.

**Temperature:**  
-65°F to +250°F (-53°C to +121°C). (Refer to tubing temperature range.)

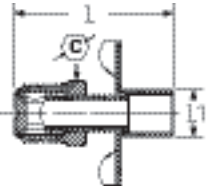
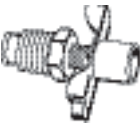
**Conformance:**  
Designed for automotive or industrial use. Not intended for natural gas, LPG, nuclear or aircraft applications, except as noted.

### External Seat



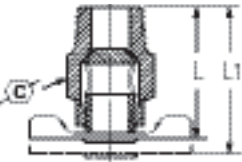
| Male Pipe Thread | Catalog Number |  | L     |      |
|------------------|----------------|-------------------------------------------------------------------------------------|-------|------|
| 1/8              | 135            |                                                                                     | 7/16  | 0.90 |
| 1/4              | 145            |                                                                                     | 9/16  | 1.00 |
| 3/8              | 270            |                                                                                     | 11/16 | 1.25 |
| 1/2              | 108            |                                                                                     | 7/8   | 1.52 |

### External Seat



| Male Pipe Thread | Catalog Number |  | L    | L1        |
|------------------|----------------|---------------------------------------------------------------------------------------|------|-----------|
| 1/4              | 6788           |                                                                                       | 9/16 | 1.56 0.44 |

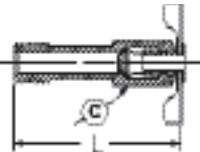
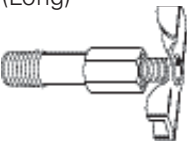
### Internal Seat



| Male Pipe Thread | Catalog Number |  | L     | L1        |
|------------------|----------------|---------------------------------------------------------------------------------------|-------|-----------|
| 1/8              | 130            |                                                                                       | 17/32 | 1.15 1.30 |
| 1/4              | 140            |                                                                                       | 5/8   | 1.32 1.50 |
| 1/4              | 190            |                                                                                       | 9/16  | 1.25 1.41 |
| 3/8              | 230            |                                                                                       | 11/16 | 1.34 1.50 |

### Internal Seat

(Long)

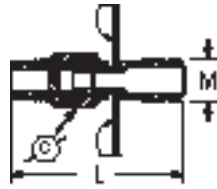
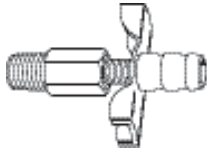


| Male Pipe Thread | Catalog Number |  | L    |      |
|------------------|----------------|---------------------------------------------------------------------------------------|------|------|
| 1/8              | 185            |                                                                                       | 7/16 | 1.72 |

# Brass Products

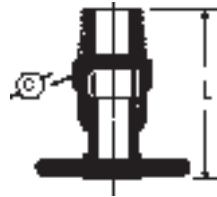
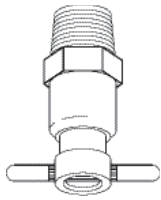
## Drain Cocks

### Internal Seat



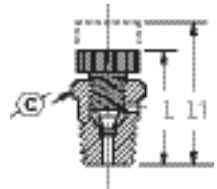
| Male Pipe Thread | Catalog Number |  | L    | M    |
|------------------|----------------|-------------------------------------------------------------------------------------|------|------|
| 1/8              | 6783           | 13/32                                                                               | 1.63 | .344 |

### Internal Seat Drain Valve



| Male Pipe Thread | Catalog Number |  | L     |
|------------------|----------------|-------------------------------------------------------------------------------------|-------|
| 1/8              | 1424A          | 1/2                                                                                 | 1.219 |
| 1/4              | 1425A          | 9/16                                                                                | 1.313 |
| 3/8              | 1426A          | 11/16                                                                               | 1.688 |

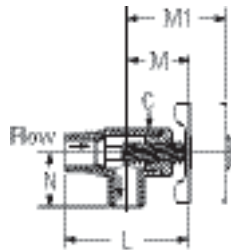
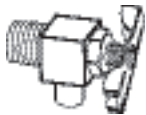
### Air Vent



| Male Pipe Thread | Catalog Number |  | L    | L1   |
|------------------|----------------|-------------------------------------------------------------------------------------|------|------|
| 1/8              | 705            | 13/32                                                                               | 0.78 | 0.88 |

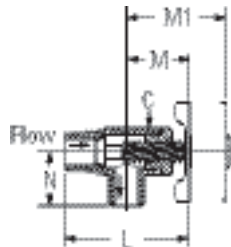
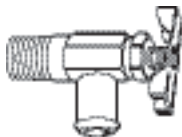
Set screw has 10-32 national fine thread.

### Angle Bib Drain



| Male Pipe Thread | Catalog Number | Square C | L    | M    | M1   | N    |
|------------------|----------------|----------|------|------|------|------|
| 1/8              | 150            | 7/16     | 1.12 | 0.57 | 0.95 | 0.38 |
| 1/4              | 120            | 5/8      | 1.76 | 0.94 | 1.50 | 0.66 |

### Angle Bib Drain

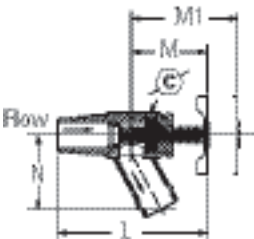


| Hose I.D. | Male Pipe Thread | Catalog Number | Square C | L    | M    | M1   | N    |
|-----------|------------------|----------------|----------|------|------|------|------|
| 3/8       | 1/4              | 6660           | 9/16     | 1.33 | 0.62 | 1.01 | 0.66 |

# Brass Products

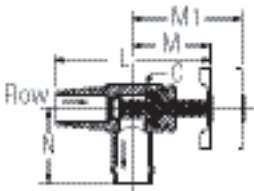
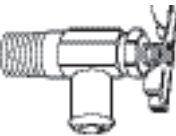
## Drain Cocks

**Hose to Pipe**  
(Steel Body)



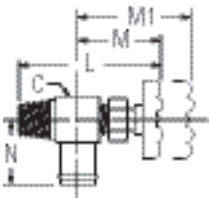
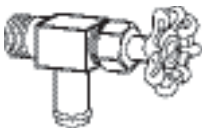
| Hose Size | Male Pipe Thread | Catalog Number |  | L    | M    | M1   | N    |
|-----------|------------------|----------------|-------------------------------------------------------------------------------------|------|------|------|------|
| 5/8       | 3/8              | 211273A        | 11/16                                                                               | 2.85 | 1.41 | 1.91 | 1.30 |

**Hose to Pipe**  
(Steel Body)



| Hose I.D. | Male Pipe Thread | Catalog Number | Square C | L    | M    | M1   | N    |
|-----------|------------------|----------------|----------|------|------|------|------|
| 5/8       | 3/8              | 211280A        | 11/16    | 2.85 | 1.10 | 1.47 | 1.19 |

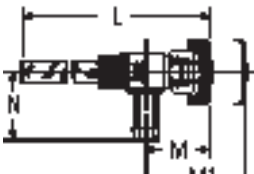
**Pipe to Hose Shut-Off**  
(Brass Body)



| Hose Size | Male Pipe Thread | Catalog Number | Square C | L    | M    | M1   | N    |
|-----------|------------------|----------------|----------|------|------|------|------|
| 3/8       | 3/8              | 1422           | 3/4      | 2.93 | 1.78 | 2.25 | 1.12 |
| 5/8       | 3/8              | 1423           | 13/16    | 2.93 | 1.81 | 2.25 | 1.35 |
| 3/4       | 3/8              | 1433           | 15/16    | 3.00 | 1.81 | 2.25 | 1.35 |
| 3/4       | 1/2              | 1451           | 15/16    | 3.12 | 1.93 | 2.25 | 1.35 |

Red color coded aluminum handle.  
Handle Catalog Number 1427.

**Gasoline Shut-Off with Screen Filter**



| Hose Size | Male Pipe Thread | Catalog Number | L    | M    | M1   | N    |
|-----------|------------------|----------------|------|------|------|------|
| 1/4       | 1/8              | 6600           | 3.36 | 0.80 | 0.97 | 0.84 |

**Air Tank Drain Valve**



Pull cable sideways.

| Male Pipe Thread | Cable Length | Catalog Number |
|------------------|--------------|----------------|
| 1/4              | 7"           | 1421-7         |
| 1/4              | 18"          | 1421-18        |
| 1/4              | 24"          | 1421-24        |
| 1/4              | 32"          | 1421-32        |
| 1/4              | 60"          | 1421-60        |
| 1/4              | 60"          | 1421-60A*      |

\*No loop on cable end.

# Brass Products

## Trucks Valves

**Typical Application:**  
Used extensively in the trucking industry for cooling and fuel line applications.

**Material:**  
Forged brass bodies, steel handles.

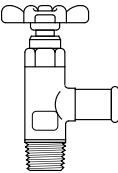
**Pressure Range:**  
200 psi maximum.

**Temperature:**  
-40°F to +250°F  
(-40°C to +121°C)

**Conformance:**  
Designed for trucking use. Not intended for natural gas, LPG, nuclear or aircraft applications.

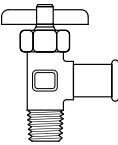
**Note:**  
Buna-N o-ring sealed;

Truck Valve



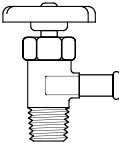
| Hose I.D. | Pipe Thread | Catalog Number |
|-----------|-------------|----------------|
| 5/8       | 1/2         | 7502           |

Truck Valve



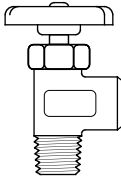
| Hose I.D. | Pipe Thread | Catalog Number |
|-----------|-------------|----------------|
| 5/8       | 3/8         | 7504           |

Truck Valve



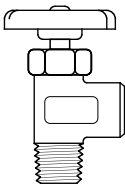
| Hose I.D. | Pipe Thread | Catalog Number |
|-----------|-------------|----------------|
| 3/8       | 3/8         | 7506           |

Truck Valve



| Female Pipe Thread | Male Pipe Thread | Catalog Number |
|--------------------|------------------|----------------|
| 1/2                | 1/2              | 7508           |

Truck Valve



| Female Pipe Thread | Male Pipe Thread | Catalog Number |
|--------------------|------------------|----------------|
| 3/8                | 3/8              | 7509           |

# Brass Products

## Plastic Drain Cocks

### Material:

Nylon 6 Fiber Reinforced.

### Pressure Range:

Up to 25 psi.

### Used With

Automotive Radiators:

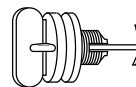
### Temperature:

-50°F to +180°F  
(-46°C to +82°C)

### Conformance:

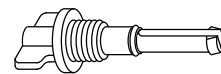
Designed for automotive use. Not intended for natural gas, LPG, nuclear or aircraft applications.

### M10x1.25



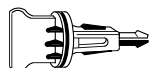
| Thread   | Catalog Number |
|----------|----------------|
| M10x1.25 | 118            |

### Ford



| Thread  | Catalog Number |
|---------|----------------|
| M14x2.0 | 124            |

### Chrysler



| Thread  | Catalog Number |
|---------|----------------|
| Captive | 110            |

### M12x1.25



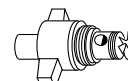
| Thread   | Catalog Number |
|----------|----------------|
| M12x1.25 | 114            |

### M12x1.5



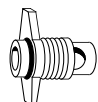
| Thread  | Catalog Number |
|---------|----------------|
| M12x1.5 | 119            |

### Chrysler



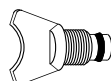
| Thread | Catalog Number |
|--------|----------------|
| 5/8-18 | 125            |

### GM



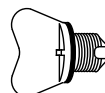
| Thread    | Catalog Number |
|-----------|----------------|
| Oversized | 111            |

### M14x1.25



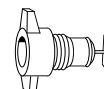
| Thread   | Catalog Number |
|----------|----------------|
| M14x1.25 | 115            |

### Ford and Mazda



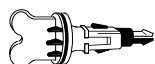
| Thread   | Catalog Number |
|----------|----------------|
| M10x1.25 | 121            |

### Chrysler



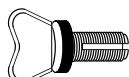
| Thread | Catalog Number |
|--------|----------------|
| 5/8-18 | 126            |

### Ford (Long)



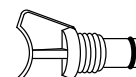
| Thread  | Catalog Number |
|---------|----------------|
| Captive | 112            |

### M10x1.25



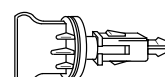
| Thread   | Catalog Number |
|----------|----------------|
| M10x1.25 | 116            |

### M14x2.0



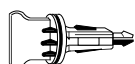
| Thread  | Catalog Number |
|---------|----------------|
| M14x2.0 | 122            |

### GM



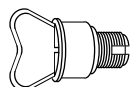
| Thread  | Catalog Number |
|---------|----------------|
| Captive | 127            |

### Ford (Short)



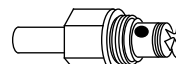
| Thread  | Catalog Number |
|---------|----------------|
| Captive | 113            |

### M14x1.25



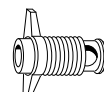
| Thread   | Catalog Number |
|----------|----------------|
| M14x1.25 | 117            |

### Chrysler



| Thread | Catalog Number |
|--------|----------------|
| 5/8-18 | 123            |

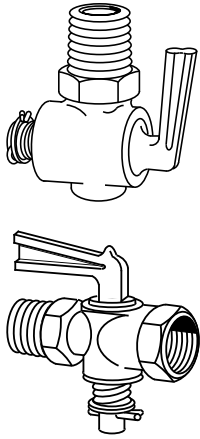
### GM



| Thread | Catalog Number |
|--------|----------------|
| 1/2-18 | 128            |

# Brass Products

## Ground Plug & Multiple Shut-Offs



### Pressure Range:

30 psi working pressure, except where noted.

### Used With:

Copper, aluminum, steel and plastic tubing where applicable.

### Material:

Brass bodies and handles.

### Temperature:

-65°F to +250°F (-53°C to +121°C) with metal tubing. For use with plastic tubing, refer to the tubing temperature range.

### Note:

For additional technical questions, contact Technical Support at 1-888-258-0222.



Refer to safety information regarding proper selection of tubing and tube connectors on page 5.

### Note:

Ground Plug Drains and Shut-Offs use a universal lubricant satisfactory for use with most common fluids. However the lubricant may wash out at higher pressures or with some exotic fluids.

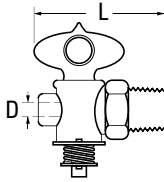
### Conformance:

Designed for automotive or industrial use. Not intended for natural gas, LPG, nuclear or aircraft applications, except as noted.

### Ordering Information:

Order valve body, nut and sleeves by catalog number. Order valves with Selfalign nuts and sleeves by adding suffix "S". Example: A694S. Order valves less nut and sleeve by adding prefix "B". Example: B694.

## Draincock



### Ratings:

Valves are designed to hold air pressure of 125 psi with one 1/4" bubble in 5 seconds permissible key leakage.

### Male Pipe Thread

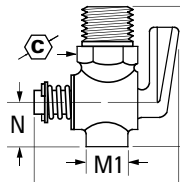
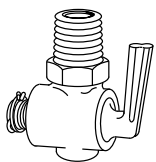
### Catalog Number

### D

### L

|     |        |      |      |
|-----|--------|------|------|
| 1/4 | W15310 | .188 | 1.56 |
|-----|--------|------|------|

## Ground Plug Drain



### Male Pipe Thd.

### Catalog Number



### L

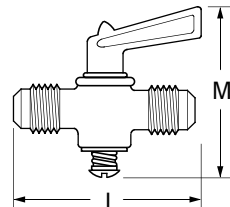
### N

### M

### M1

|     |      |       |      |      |      |      |
|-----|------|-------|------|------|------|------|
| 1/8 | 6891 | 9/16  | 1.93 | 0.75 | 1.63 | 0.87 |
| 1/4 | 6892 | 5/8   | 1.62 | 0.75 | 1.75 | 1.03 |
| 3/8 | 6893 | 11/16 | 1.72 | 1.00 | 2.31 | 1.22 |

## SAE 45° Flare Double



### Tube O.D.

### Catalog Number

### L

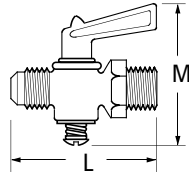
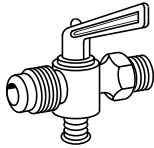
### M

|      |      |      |      |
|------|------|------|------|
| 1/4  | 6719 | 1.88 | 1.88 |
| 5/16 | 6724 | 1.88 | 1.88 |
| 3/8  | 6729 | 2.00 | 1.88 |

# Brass Products

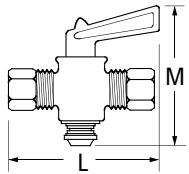
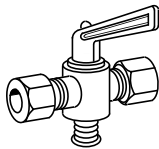
## Ground Plug & Multiple Shut-Offs

### SAE 45° Flare Straightway



| Tube O.D. | Male Pipe Thread | Catalog Number | L    | M    |
|-----------|------------------|----------------|------|------|
| 1/4       | 1/8              | 537            | 2.00 | 1.88 |
| 5/16      | 1/8              | 632            | 2.03 | 1.88 |
| 3/8       | 1/4              | 703            | 2.06 | 1.88 |

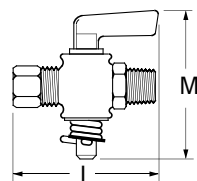
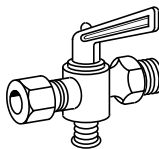
### Compression Double



| Tube O.D. | Catalog Number | L    | M    |
|-----------|----------------|------|------|
| 1/4       | A6769          | 2.12 | 1.88 |
| 1/4       | A6769S         | 2.12 | 1.88 |
| 5/16      | A6774          | 2.19 | 1.88 |
| 3/8       | A6779          | 2.25 | 1.88 |
| 3/8       | A6779S         | 2.25 | 1.88 |

"S" suffix designates Selfalign with Nuts and Sleeves.

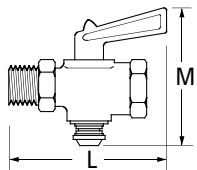
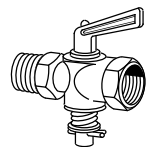
### Compression Straightway



| Tube O.D. | Male Pipe Thread | Catalog Number | L    | M    |
|-----------|------------------|----------------|------|------|
| 1/4       | 1/8              | A694           | 2.19 | 1.88 |
| 1/4       | 1/8              | A694S          | 2.19 | 1.88 |
| 1/4       | 1/4              | A6754          | 2.19 | 1.88 |
| 1/4       | 1/4              | A6754S         | 2.19 | 1.88 |
| 5/16      | 1/8              | A664           | 2.19 | 1.88 |
| 5/16      | 1/4              | A6759          | 2.25 | 1.88 |
| 3/8       | 1/4              | A6764          | 2.38 | 1.88 |
| 3/8       | 1/4              | A6764S         | 2.38 | 1.88 |

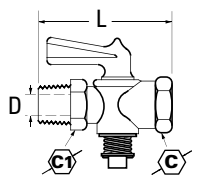
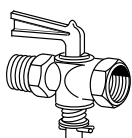
"S" suffix designates Selfalign with Nuts and Sleeves.

### Male to Female Pipe



| Male Pipe Thread | Female Pipe Thread | Catalog Number | L    | M    |
|------------------|--------------------|----------------|------|------|
| 1/8              | 1/8                | 6824           | 2.00 | 1.88 |
| 1/4              | 1/4                | 6829           | 2.12 | 1.88 |

### Truck Shut Off Male to Female Pipe



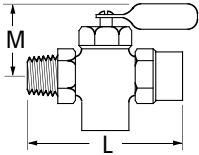
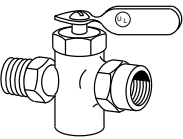
| Male Pipe Thread | Female Pipe Thread | Catalog Number |     |     | L    | D    |
|------------------|--------------------|----------------|-----|-----|------|------|
| 1/4              | 1/4                | W20332         | 5/8 | 3/4 | 1.81 | .218 |

**Ratings:**  
Valves are designed to hold air pressure of 125 psi with one 1/4" bubble in 5 seconds permissible key leakage.

# Brass Products

## Ground Plug & Multiple Shut-Offs

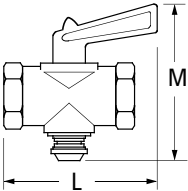
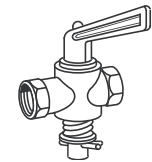
### Marine Shut Off Male to Female Pipe



UL Listed for Marine Fuel.

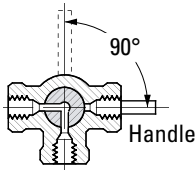
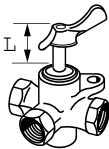
| Male Pipe Thd. | Female Pipe Thd. | Catalog Number | L    | M    |
|----------------|------------------|----------------|------|------|
| 1/4            | 1/4              | 6828           | 2.22 | 1.97 |

### Female Pipe Double



| Female Pipe Thread | Catalog Number | L    | M    |
|--------------------|----------------|------|------|
| 1/8                | 6804           | 1.46 | 1.88 |
| 1/4                | 6809           | 1.70 | 1.88 |

### 3 Way Multiple Shut-Off

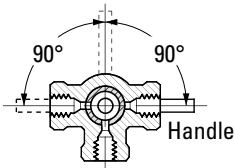
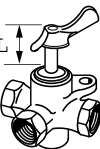


| Female Pipe Thread | L Stem | Catalog Number |
|--------------------|--------|----------------|
| 1/4                | 1.37   | 6749           |
| 3/8                | 1.37   | 6709           |

#### Replacement Handle:

Catalog Number 6746. Includes Screw.  
Click-washer assembly positively holds valve in desired position and gives a pronounced click.

### 4 Way Multiple Shut-Off



| Female Pipe Thread | L Stem | Catalog Number |
|--------------------|--------|----------------|
| 1/4                | 1.37   | 6747           |
| 1/4                | 2.37   | 6748           |
| 3/8                | 1.37   | 6707           |
| 3/8                | 2.37   | 6708           |

#### Replacement Handle:

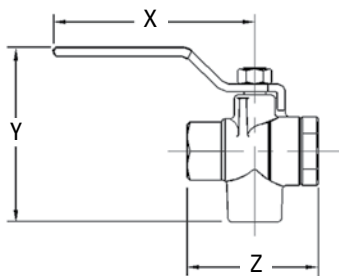
Catalog Number 6746. Includes Screw.  
Click-washer assembly positively holds valve in desired position and gives a pronounced click.



# Brass Products

## Brass Ball Valves

### Forged Body Brass 3-Way Ball Valve



#### Features/Benefits

- Forged brass body
- Blowout proof stem
- Chrome plated ball
- Double o-ring stem seal - never needs tightening
- Floating ball design
- Standard steel handle

#### Applications

- Vacuum service
- Industrial service
- Machine/engine coolant
- Center off position
- Diverter valve

#### Service

- Working pressure: 500 psig bottom inlet @ 70°F; 100 psig side inlets
- Temperature range: -40°F + 300°F
- Orifice diameters:  
1/4" = .440";  
3/8" = .500";  
1/2" = .500"
- Vacuum rating: Full
- For: Water, oils and gases

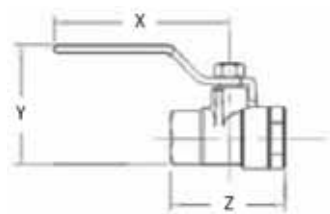
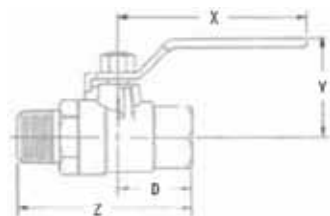
#### Note:

Not steam rated.

| Part No.   | Connections | Size   | X    | Y    | Z    | D    |
|------------|-------------|--------|------|------|------|------|
| FF90588-04 | M x F NPT   | 1/4"   | 3.70 | 2.38 | 2.75 | 1.13 |
| FF90588-06 | M x F NPT   | 3/8"   | 3.70 | 2.38 | 2.75 | 1.13 |
| FF90588-08 | M x F NPT   | 1/2"   | 3.70 | 2.38 | 2.75 | 1.13 |
| FF90588-12 | M x F NPT   | 3/4"   | 3.80 | 2.72 | 3.40 | 1.43 |
| FF90588-16 | M x F NPT   | 1"     | 4.50 | 3.00 | 4.00 | 1.71 |
| FF90588-20 | M x F NPT   | 1-1/4" | 6.22 | 3.01 | 4.05 | 1.83 |
| FF90588-24 | M x F NPT   | 1-1/2" | 6.22 | 3.24 | 4.35 | 2.01 |
| FF90588-32 | M x F NPT   | 2"     | 6.22 | 3.52 | 5.13 | 2.38 |

| Part No.   | Connections   | Size   | X    | Y    | Z    |
|------------|---------------|--------|------|------|------|
| FF90589-04 | F x F x F NPT | 1/4"   | 3.70 | 2.38 | 2.25 |
| FF90589-06 | F x F x F NPT | 3/8"   | 3.70 | 2.38 | 2.25 |
| FF90589-08 | F x F x F NPT | 1/2"   | 3.70 | 2.38 | 2.25 |
| FF90589-12 | F x F x F NPT | 3/4"   | 3.80 | 2.72 | 2.98 |
| FF90589-16 | F x F x F NPT | 1"     | 4.50 | 3.00 | 3.34 |
| FF90589-20 | F x F x F NPT | 1-1/4" | 6.20 | 3.78 | 3.65 |
| FF90589-24 | F x F x F NPT | 1-1/2" | 6.20 | 4.15 | 4.00 |
| FF90589-32 | F x F x F NPT | 2"     | 6.20 | 4.75 | 4.76 |

### Forged Body Brass Ball Valve



#### Features/Benefits

- Forged brass body
- Blowout proof stem
- Chrome plated brass ball
- Double o-ring stem seal
- Tamper proof design
- Floating ball design
- Standard steel handle
- 1/4 turn - full on/off

#### Applications

- Vacuum service
- Industrial service
- Machine/engine coolant
- Water service
- Fuel tank - gasoline/diesel

#### Service

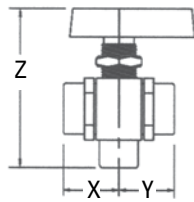
- Working pressure: 600 psig WOG @ 70°F
- Temperature range: -40°F + 300°F
- Orifice diameters:  
1/4" = .44"; 3/8" = .50";  
1/2" = .50"; 3/4" = .69,  
1" = .88, 1-1/4" = 1.18,  
1-1/2" = 1.57, 2" = 1.89
- Vacuum rating: Full
- For: Water, oils and gases

**Note:** Not steam rated.

# Brass Products

## Brass Ball Valves

### Brass Instrumentation 3-Way Ball Valve



| Part No.   | Connections | Size | X    | Y    | Z    |
|------------|-------------|------|------|------|------|
| FF90597-02 | F x F NPT   | 1/8" | 0.92 | 0.92 | 2.12 |
| FF90597-04 | F x F NPT   | 1/4" | 0.92 | 0.92 | 2.12 |
| FF90597-06 | F x F NPT   | 3/8" | 1.10 | 1.10 | 2.59 |
| FF90597-08 | F x F NPT   | 1/2" | 1.19 | 1.19 | 2.59 |
| FF90598-02 | Compression | 1/8" | 0.92 | 0.92 | 2.12 |
| FF90598-04 | Compression | 1/4" | 0.92 | 0.92 | 2.12 |
| FF90598-06 | Compression | 3/8" | 1.10 | 1.10 | 2.59 |
| FF90598-08 | Compression | 1/2" | 1.19 | 1.19 | 2.59 |

#### Features/Benefits

- Brass bar stock body
- Blowout proof stem
- Nickel plated ball
- Viton stem seal
- Double o-ring stem seal - never needs tightening
- Metal retainer seal
- Center off position
- Seals: Ball seats = teflon, stem seals = 2 o-rings (Viton & Buna-n)

#### Applications

- Vacuum service
- Industrial service
- Center off position
- Water service
- Panel mounting

#### Services

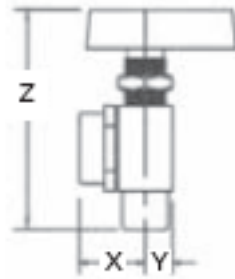
- Working pressure: 1/8" & 1/4" = 1500 psig @ 70°F 3/8" & 1/2" = 1,000 psig @ 70°F (side port inlet) 1000 psig (bottom port inlet)
- Temperature range: -40°F + 300°F
- Orifice diameters: 1/8" & 1/4" = .250" 3/8" & 1/2" = .340"
- Vacuum rating: Full
- For: Water, oils and gases
- Panel mount hole size: 9/16" ID

**Note:** Not steam rated.

# Brass Products

## Brass Ball Valves

### Brass Instrumentation 2-Way 90 Degree Ball Valve



| Part No.   | Connections | Size | X    | Y    | Z    |
|------------|-------------|------|------|------|------|
| FF90595-02 | F x F NPT   | 1/8" | 0.92 | 0.38 | 2.12 |
| FF90595-04 | F x F NPT   | 1/4" | 0.92 | 0.38 | 2.12 |
| FF90595-06 | F x F NPT   | 3/8" | 1.10 | 0.75 | 2.59 |
| FF90595-08 | F x F NPT   | 1/2" | 1.19 | 0.75 | 2.59 |
| FF90596-02 | Compression | 1/8" | 0.92 | 0.38 | 2.12 |
| FF90596-04 | Compression | 1/4" | 0.92 | 0.38 | 2.12 |
| FF90596-06 | Compression | 3/8" | 1.10 | 0.75 | 2.59 |
| FF90596-08 | Compression | 1/2" | 1.19 | 0.75 | 2.59 |

#### Features/Benefits

- Brass bar stock body
- Blowout proof stem
- Nickel plated brass ball
- Double o-ring stem seal
- Metal retainer seal
- 90° configuration eliminates fittings
- Seals: Ball seats = teflon, stem seals = 2 o-rings (Viton & Buna-n)

#### Applications

- Vacuum service
- Industrial service
- Water service
- Panel mount

#### Service

- Working pressure: 1/8" & 1/4" = 1500 psig @ 70°F 3/8" & 1/2" = 1,000 psig @ 70°F (side port inlet) 1000 psig (bottom port inlet)
- Temperature range: -40°F + 300°F
- Orifice diameters: 1/8" & 1/4" = .250" 3/8" & 1/2" = .340"
- Vacuum rating: Full
- For: Water, oils and gases
- Panel mount hole size: 9/16" ID

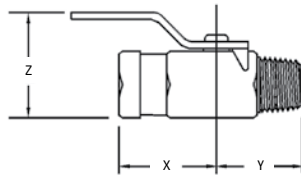
#### Note:

Not steam rated.

# Brass Products

## Brass Ball Valves

### Brass Mini-Instrumentation 2-Way 90 Ball Valve



| Part No.   | Connections | Size | X    | Y    | Z    |
|------------|-------------|------|------|------|------|
| FF90590-02 | M x F NPT   | 1/8" | 1.13 | 0.75 | 1.25 |
| FF90590-04 | M x F NPT   | 1/4" | 1.13 | 0.81 | 1.25 |
| FF90591-02 | M x M NPT   | 1/8" | 1.13 | 0.75 | 1.25 |
| FF90591-04 | M x M NPT   | 1/4" | 1.13 | 0.81 | 1.25 |
| FF90592-02 | F x F NPT   | 1/8" | 1.13 | 0.75 | 1.25 |
| FF90592-04 | F x F NPT   | 1/4" | 1.13 | 0.85 | 1.25 |

#### Features/Benefits

- Brass bar stock body
- Blowout proof stem
- Nickel plated ball
- Viton stem seal
- Standard metal handle
- Floating ball design
- 1/4 turn - full on/off

#### Applications

- Vacuum service
- Industrial service
- Coolant service
- Water service
- Compact shut off installations
- Low cost instrumentation
- Hose shut off

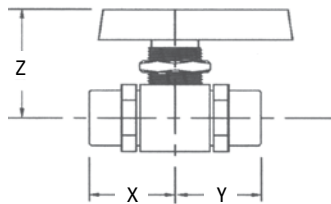
#### Service

- Working pressure: 1,000 psig WOG @ 70°F
- Temperature range: -40°F + 300°F
- Orifice diameters: 1/8" & 1/4"=.250"
- Vacuum rating: Full
- For: Water, oils and gases

#### Note:

Not steam rated.

### Brass Instrumentation 2-Way Ball Valve



| Part No.   | Connections | Size | X    | Y    | Z    |
|------------|-------------|------|------|------|------|
| FF90593-02 | F x F NPT   | 1/8" | 0.92 | 0.92 | 1.25 |
| FF90593-04 | F x F NPT   | 1/4" | 0.92 | 0.92 | 1.25 |
| FF90593-06 | F x F NPT   | 3/8" | 1.10 | 1.10 | 1.42 |
| FF90593-08 | F x F NPT   | 1/2" | 1.19 | 1.90 | 1.42 |
| FF90594-02 | Compression | 1/8" | 0.92 | 0.92 | 1.25 |
| FF90594-04 | Compression | 1/4" | 0.92 | 0.92 | 1.25 |
| FF90594-06 | Compression | 3/8" | 1.10 | 1.10 | 1.42 |
| FF90594-08 | Compression | 1/2" | 1.46 | 1.46 | 1.42 |

#### Features/Benefits

- Brass bar stock body
- Blowout proof stem
- Nickel plated ball
- Viton stem seal
- Metal retainer seal
- Seals: Ball seats = teflon, stem seals = 2 o-rings (Viton & Buna-n)

#### Applications

- Vacuum service
- Industrial service
- Water service
- Panel mounting

#### Service

- Working pressure: 1/8" & 1/4"=1500 psig @ 70°F 3/8" & 1/2"=1000 psig @ 70°F

#### Service (cont)

- Temperature range: -40°F + 300°F
- Orifice diameters: 1/8" & 1/4"=.250" 3/8" & 1/2"=.375"
- Vacuum rating: Full
- For: Water, oils and gases
- Panel mount hole size: 9/16" ID

#### Note:

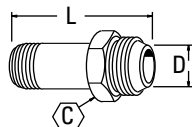
Not steam rated.

## Brass Products

### Special Adapters

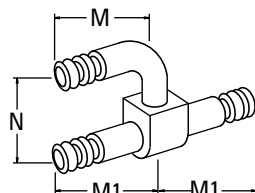
 Refer to safety information regarding proper selection of tubing and tube connectors on page 5.

#### Turbocharger Discharge Connector



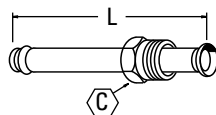
| Male Straight Thread | Male Pipe Thread | Catalog Number |  | D    | L    |
|----------------------|------------------|----------------|-------------------------------------------------------------------------------------|------|------|
| 1 AC-811             | 3/4              | 1408           | 1-3/8                                                                               | .719 | 3.25 |
| 30° Flare Tube       |                  |                |                                                                                     |      |      |

#### Wiper Tee



| Hose I.D. | Catalog Number | M    | M1   | N    |
|-----------|----------------|------|------|------|
| 1/4       | 1410           | 0.88 | 1.00 | 1.02 |

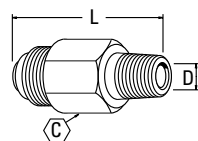
#### Transmission Oil Coolant Line Adapter



| Tube O.D. | Inverted Nut | Catalog Number |  | L    |
|-----------|--------------|----------------|-------------------------------------------------------------------------------------|------|
| 5/16      | 5/16         | 1428           | 1/2                                                                                 | 4.50 |
| 3/8       | 3/8          | 1429           | 5/8                                                                                 | 4.50 |

#### Truck Oil Line Extended SAE 45° Flare Fitting

(Replaces Roto Master No. 10-35)



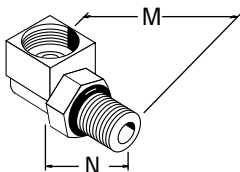
| SAE 45° Tube Size | Pipe Thread | Male Catalog Number |  | D    | L    |
|-------------------|-------------|---------------------|---------------------------------------------------------------------------------------|------|------|
| 3/8               | 1/4         | 1432                | 5/8                                                                                   | .282 | 1.90 |

# Brass Products

## Special Adapters

### Ford Transmission Elbow

Includes O-Rings.

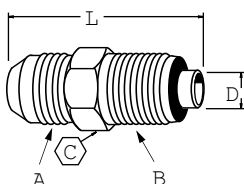


**⚠** Refer to safety information regarding proper selection of tubing and tube connectors on page 5.

| Tube O.D. | Straight Male Pipe Thread | Catalog Number | M   | N   |
|-----------|---------------------------|----------------|-----|-----|
| 5/16-28   | 1/8-27                    | 1437           | .94 | .47 |

### Power Steering Male 37° JIC Adapter

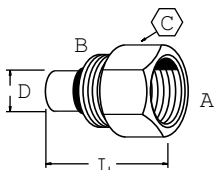
(Brass)Includes O-Rings.



| Tube O.D. | Thread A | Thread B | Catalog Number |  | D    | L    |
|-----------|----------|----------|----------------|-------------------------------------------------------------------------------------|------|------|
| 1/4       | 7/16-20  | 9/16-18  | 1440           | 9/16                                                                                | .172 | 1.42 |
| 3/8       | 9/16-18  | 5/8-18   | 1439           | 5/8                                                                                 | .266 | 1.49 |

### Metric Power Steering Adapter

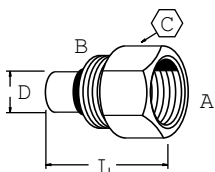
Includes O-Rings.



| O.D. | Inverted Tube Thread A | Thread B | Thread Number | Catalog C |  | L    |
|------|------------------------|----------|---------------|-----------|-------------------------------------------------------------------------------------|------|
| 3/8  | 5/8-18                 | M14x1.5  | 1445          | 3/4       | .266                                                                                | 1.18 |
| 3/8  | 5/8-18                 | M16x1.5  | 1446          | 3/4       | .266                                                                                | 1.18 |
| 3/8  | 5/8-18                 | M18x1.5  | 1447          | 3/4       | .266                                                                                | 1.18 |

### Ford Power Steering Fitting

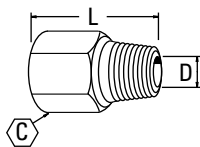
Includes O-Rings.



| Inverted Thread A | Male O-Ring B | Catalog Number |  | D    | L    |
|-------------------|---------------|----------------|---------------------------------------------------------------------------------------|------|------|
| 5/8-18            | 11/16-18      | 1444           | 3/4                                                                                   | .266 | 1.38 |

### Restriction Pipe Adapter

(With .0625 Orifice)



#### Note:

Other orifice sizes available (special order only).

| Male Pipe Thread | Female Pipe Thread | Catalog Number |  | D     | L    |
|------------------|--------------------|----------------|---------------------------------------------------------------------------------------|-------|------|
| 1/8              | 1/8*               | 1512           | 1/2                                                                                   | .0625 | 0.75 |

\* PTF short thread.

# Brass Products

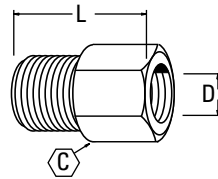
## Special Adapters

 Refer to safety information regarding proper selection of tubing and tube connectors on page 5.

### Carburetor to Fuel Line Adapter

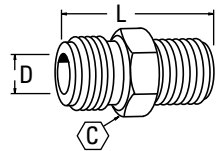
(Ford)

For use with 59x4



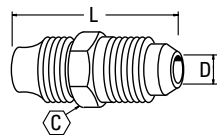
| Tube O.D. | Thread Size | Male Pipe Thread | Catalog Number |  | D    | L    |
|-----------|-------------|------------------|----------------|-------------------------------------------------------------------------------------|------|------|
| 1/4       | 1/2-20      | 1/8              | 1513           | 9/16                                                                                | .219 | 1.06 |

### Fuel Line Adapter



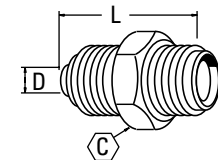
| Inverted Male | Male Pipe Thread | Catalog Number |  | D    | L    |
|---------------|------------------|----------------|-------------------------------------------------------------------------------------|------|------|
| 1/2-20        | 1/8              | 1514           | 1/2                                                                                 | .219 | 0.90 |

### AC Type Adapter



| Tube O.D. | S.A.E. 45° Tube Size | Catalog Number |  | D    | L    |
|-----------|----------------------|----------------|-------------------------------------------------------------------------------------|------|------|
| 1/4       | 1/4                  | 1521           | 7/16                                                                                | .188 | 1.09 |

### Adapter SAE 45° Flare to Inv. Flare



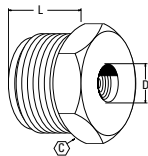
| SAE 45° Tube Size | Inverted Male | Catalog Number |  | D    | L    |
|-------------------|---------------|----------------|---------------------------------------------------------------------------------------|------|------|
| 1/4               | 3/16          | 1518           | 7/16                                                                                  | .189 | 1.03 |
| 1/4               | 1/4           | 1522           | 7/16                                                                                  | .189 | 1.03 |
| 3/8               | 5/16          | 1553           | 5/8                                                                                   | .234 | 1.34 |
| 3/8               | 3/8           | 1563           | 5/8                                                                                   | .282 | 1.38 |
| 3/8               | 7/16          | 1554           | 11/16                                                                                 | .282 | 1.40 |

# Brass Products

## Special Adapters

**⚠** Refer to safety information regarding proper selection of tubing and tube connectors on page 5.

### Special Steel Bushing



| Male Thread    | Female Pipe Thread | Catalog Number |  | D    | L   |
|----------------|--------------------|----------------|-------------------------------------------------------------------------------------|------|-----|
| 1-1/16-16UN-2A | 1/8                | 7977           | 1-1/8                                                                               | .328 | .94 |
| 1-1/16-16UN-2A | 3/8                | 7978           | 1-1/8                                                                               | .562 | .94 |

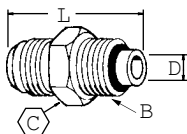
### Male JIC 37° Flare to Metric O-Ring Port Adapter

Steel (with o-ring)

#### Application:

GM power steering with Saginaw steering and rack and pinion steering systems.

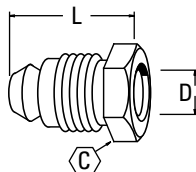
Includes O-Ring.



| Tube O.D. | Thread B | Catalog Number |  | D    | L    |
|-----------|----------|----------------|-------------------------------------------------------------------------------------|------|------|
| 3/8       | M14x1.5  | M41157x6x14    | 3/4                                                                                 | .266 | 1.62 |
| 3/8       | M16x1.5  | M41157x6x16    | 3/4                                                                                 | .266 | 1.62 |
| 3/8       | M18x1.5  | M41157x6x18    | 3/4                                                                                 | .266 | 1.62 |

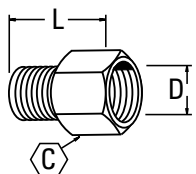
### Ford Nut

For use with 1513 (Nut similar to 59x4 for 3/16" tube, use 6100x3)



| Tube Size | Thread Size | Catalog Number |  | D    | L    |
|-----------|-------------|----------------|-------------------------------------------------------------------------------------|------|------|
| 1/4       | 1/2-20      | 59x4           | 1/2                                                                                 | .258 | 0.64 |

### Transmission Coolant Line Adapters (GMC)

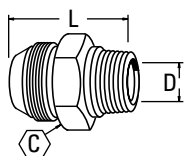


| Inv. Female   | Inv. Male     | Catalog Number |  | D    | L    |
|---------------|---------------|----------------|---------------------------------------------------------------------------------------|------|------|
| 3/8 (5/8-18)  | 5/16 (1/2-20) | 7915           | 3/4                                                                                   | .250 | 1.00 |
| 5/16 (1/2-20) | 3/8 (5/8-18)  | 7916           | 5/8                                                                                   | .220 | 0.94 |

### AC8111 (Steel) Connector

#### Application:

PTT Thread 30° tube to male pipe adapter for diesel engines.



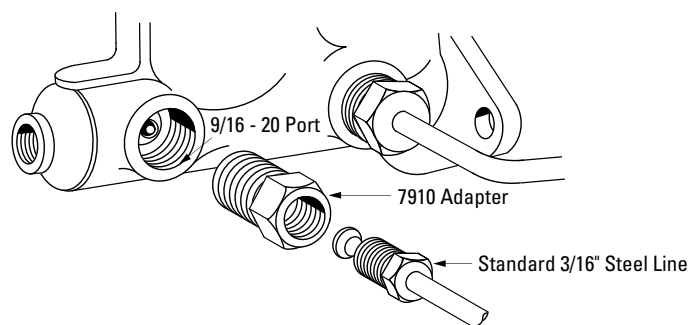
| Tube Size     | Male Pipe | Catalog Number |  | D    | L    |
|---------------|-----------|----------------|---------------------------------------------------------------------------------------|------|------|
| 1 (1-5/16-14) | 1         | C9200          | 1-3/8                                                                                 | .844 | 2.04 |
| 1 (1-5/16-14) | 3/4       | C9240          | 1-3/8                                                                                 | .800 | 1.84 |



# Brass Products

## Hydraulic Brake Products

 Refer to safety information regarding proper selection of tubing and tube connectors on page 5.



Adapters can be used to adapt standard steel brake lines to the different size ports used in dual master cylinders. The tube O.D. is the outside diameter of

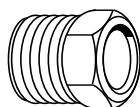
the steel brake line. Thread size can be determined by measuring with a U.S. or Metric screw pitch gauge. See pages 14 to 18.

### Standard Invented Flare Tube And Thread Size

| Tube Size   | 1/8     | 3/16   | 1/4     | 5/16   | 3/8    | 7/16     | 1/2    | 5/8    | 3/4       | 7/8       | 1         |
|-------------|---------|--------|---------|--------|--------|----------|--------|--------|-----------|-----------|-----------|
| Thread Size | 5/16-28 | 3/8-24 | 7/16-24 | 1/2-20 | 5/8-18 | 11/16-18 | 3/4-18 | 7/8-18 | 1-1/16-16 | 1-3/16-16 | 1-5/16-16 |

### Standard Tube Nut

(Steel)

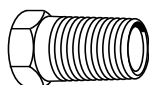


| Tube Size | Catalog Number |
|-----------|----------------|
| 1/8       | 105x2          |
| 3/16      | 105x3          |
| 1/4       | 105x4          |
| 5/16      | 105x5          |
| 3/8       | 105x6          |
| 3/8       | 105x6x7*       |
| 7/16      | 105x7          |
| 1/2       | 105x8          |
| 5/8       | 105x10         |
| 3/4       | 105x12         |
| 7/8       | 105x14         |
| 1         | 105x16         |

\*11/16-18 Thread

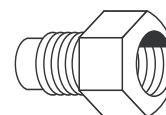
### Long Tube Nut

(Steel)



| Tube O.D. | Thread Size | Catalog Number |
|-----------|-------------|----------------|
| 3/16      | 3/8-24      | 7896x3         |
| 1/4       | 7/16-24     | 7896x4         |

### Dual Master Cylinder Adapter

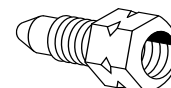


| Inverted Male Thread | Inverted Female Thread | Catalog number |
|----------------------|------------------------|----------------|
| (Exceptions Noted)   | (Exceptions Noted)     |                |
| 3/16 (9/16-18)       | 3/16                   | 7911           |
| 3/16 (9/16-18)       | 3/16 (1/2-20)          | 7913           |
| 3/16 (9/16-20)       | 3/16                   | 7910           |
| 3/16                 | 1/4                    | 7828           |
| 1/4                  | 3/16                   | 7818           |
| 7/16-20              | 1/4                    | 7732*          |
| 1/4 (9/16-18)        | 1/4                    | 7908           |
| 1/4                  | 5/16†                  | 7917           |
| 5/16                 | 3/16                   | 7817*          |
| 5/16                 | 3/16                   | 7909           |
| 5/16                 | 3/16 (9/16-18)         | 7912           |
| 5/16                 | 1/4                    | 7727*          |
| 5/16                 | 1/4                    | 7829           |
| 5/16                 | 5/16                   | 1074*          |
| 5/16                 | 3/8                    | 7915           |
| 3/8 NPTF             | 5/16                   | 7771           |
| 3/8                  | 5/16                   | 7916           |

† Seat may be used for 3/16", 1/4", 5/16" Tube Connection with 1/2-20 Thread.

\*Seals On Hex Face (E)

### Dual Master Cylinder Adapter

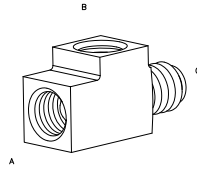


| Bubble Flare Male Thread | Inverted Female Thread | Catalog number |
|--------------------------|------------------------|----------------|
| 3/16                     | 3/16                   | 1441           |
| 5/16                     | 3/16                   | 7897           |

# Brass Products

## Hydraulic Brake Products

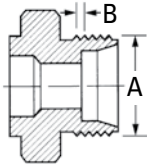
### Towed Trailer Brake Tee



| Inverted Seat<br>A | B             | Male Thread<br>C    | Catalog<br>Number |
|--------------------|---------------|---------------------|-------------------|
| 3/16 (3/8-24)      | 3/16 (3/8-24) | 3/16 inv. (3/8-24)  | 7900              |
| 3/16 (1/2-20)      | 3/16 (3/8-24) | 1/2-20 inv.         | 7906              |
| 3/16 (9/16-18)     | 3/16 (3/8-24) | 3/16 inv. (9/16-18) | 7933              |
| 3/16 (9/16-20)     | 3/16 (3/8-24) | 3/16 inv. (9/16-20) | 7905              |
| 3/16 (7/16-24)     | 3/16 (3/8-24) | 1/4 inv. (7/16-24)  | 7914              |
| 1/4 (7/16-24)      | 3/16 (3/8-24) | 1/4 inv. (7/16-24)  | 7901              |
| 1/4 (9/16-18)      | 3/16 (3/8-24) | 1/4 inv. (9/16-18)  | 7904              |
| 1/4 (7/16-24)      | 1/4 (7/16-24) | 1/4 inv. (7/16-24)  | 7898              |

### Metric Hydraulic Brake Products

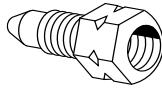
#### How to Measure Metric Threads



Metric threads are measured and specified by the thread diameter in millimeters and the pitch in millimeters per thread. If dimension "A" is

22mm and dimension "B" (crest to crest distance) is 1.5mm, then the metric thread size is M22 x 1.5.

### Metric Adapter

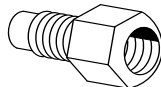


| Bubble Male Thread | Tube O.D./ Female Thread | Catalog Number |
|--------------------|--------------------------|----------------|
| M10 x 1.0          | 3/16 (3/8-24)            | 1442*          |
| M11 x 1.5          | 3/16 (M10 x 1.0)         | 7935**         |
| M12 x 1.0          | 3/16 (M10 x 1.0)         | 7936**         |
| M13 x 1.5          | 3/16 (M10 x 1.0)         | 7937**         |

\*Use S Series Brake Lines. (standard flare)

\*\*Use SJ Series Steel Brake Lines. (standard flare)

### Metric Adapter

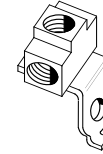


| Inverted Male Thread | Tube O.D./ Female Thread | Catalog Number |
|----------------------|--------------------------|----------------|
| M10 x 1.0            | 3/16 (3/8-24)            | 1443*          |

\*Use S Series Brake Lines. (standard flare)

\*\*Use SJ Series Steel Brake Lines. (standard flare)

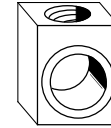
### Strap Tee Assembly



| Inv. Seat | Bolt Hole | Catalog Number |
|-----------|-----------|----------------|
| 3/16 (3)  | 11/32     | 7812           |
| 1/4 (3)   | 11/32     | 7765*          |

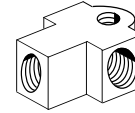
\*Has flat strap

### Brake Adapter



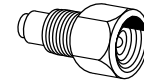
| Inv. Seat | Bolt Hole | Catalog Number |
|-----------|-----------|----------------|
| 1/4       | 19/32     | 7709           |

### Rear Axle Tee



| Inv. Seat | Bolt Hole | Hose End Port | Catalog Number |
|-----------|-----------|---------------|----------------|
| 3/16 (2)  | 9/32      | 3/8-24        | 7805           |

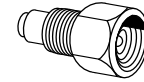
### Adapter Standard to Metric Bubble



| Female Std. Fl. Seat  | Male Bubble Fl. Tube   | Catalog Number |
|-----------------------|------------------------|----------------|
| 3/16" (3/8-24 thread) | 3/16" (10x1.25 thread) | 7970           |

Used on Fiat applications when converting 3/16" (3/8-24) inverted flare brake lines to 3/16" (10x1.25) metric thread bubble flare.

### Adapter Standard to Metric Bubble



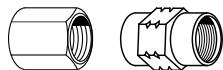
| Female inv. Fl. Seat  | Male metric Bubble Fl. Thread | Catalog Number |
|-----------------------|-------------------------------|----------------|
| 3/16" (3/8-24 thread) | 13x1.5                        | 7972           |
| 3/16" (3/8-24 thread) | 12x1.0                        | 7974           |

Used on Fiat applications when converting 3/16" (3/8-24) inverted flare brake lines to 3/16" (10x1.25) metric thread bubble flare.

# Brass Products

## Hydraulic Brake Products

### Brake Line Unions for Domestic and Imported Vehicles



| Description                                                                                                | Catalog No. |
|------------------------------------------------------------------------------------------------------------|-------------|
| 3/16" line to 3/16" line (3/8–24 thread), (Standard Flare) 'S' Series                                      | 302x3       |
| 1/4" line to 1/4" (7/16–24 thread), (Standard Flare) 'S' Series                                            | 302x4       |
| 5/16" line to 5/16" line (1/2–20 thread), (Standard Flare) 'S' Series                                      | 302x5       |
| 3/8" line to 3/8" line (5/8–18 thread), (Standard Flare) 'S' Series                                        | 302x6       |
| British line to British line (3/8–24 thread), (ISO flare) 'SB' Series (Steel)                              | 7940        |
| European line to European line (10–1.0mm thread), (Bubble Flare) 'SC' Series (Steel)                       | 7941        |
| Japanese line to Japanese line (10–1.0mm thread), (Standard Flare) 'SJ' Series (Brass)                     | 7934A       |
| For joining Edelmann 6300 series metric thread<br>bubble flare 3/16" brake lines (10-1.0mm thread) (brass) | 7975        |

# Plastic Products

## Molded Compression Tube Products

**⚠** Refer to safety information regarding proper selection of tubing and tube connectors on page 5.



### Molded Compression Tube Products

#### Sizes:

Available in sizes 1/8" through 3/4" tube OD (7/8" tube OD and metric tube sizes available on request from Technical Support at 1-888-258-0222.

#### Materials:

Molded as standard in two materials: nylon and polypropylene

Nylon characteristics:

- good resistance to organic solvents, oils, and gasoline
- excellent impact resistance
- tolerant to repeated steam for wash down and long-time weathering
- F.D.A. and N.S.F. listed
- operating temperatures -40°F to 200°F (-40°C to 93°C) – not to exceed temperature specification of tubing

Polypropylene characteristics:

- good chemical and corrosion resistance

- opaque
- 20% glass filled
- N.S.F. listed
- operating temperatures -30°F to 200°F (-34°C to 93°C) – not to exceed temperature specification of tubing

Available on request in two materials: Celcon®\* (acetal copolymer) or KYNAR®\*\* (polyvinylidene fluoride)

#### Styles:

Available in two standard styles:

- Ferrule Nut (integral nut and sleeve for soft tubing to 50 PSI\*)
- features ferrule and nut molded as a single part, eliminating the need for a two-piece assembly
- Gripper Nut with separate plastic sleeve (for sure-grip with plastic tubing up to 220 PSI\*)
- for higher pressure applications

#### Features and Benefits:

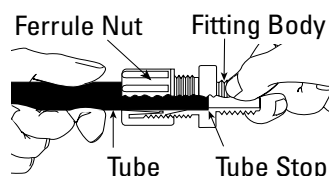
- leak-free performance
- high integrity in both mechanical and acoustical vibrations
- ten styles and over 400 part number configurations to meet your needs
- easy assembly – no special tools or tube preparation necessary
- reliability in side-loaded applications allows for compact plumbing
- For use with PT200, PT240, and TP160 plastic tubing
- connectors come fully assembled – for your convenience
- very low resistance to media flow resulting from material and internal surfaces
- no metal parts to corrode or present a safety hazard with aggressive chemicals
- ISO 9001 Certified

\* Celcon is a registered trademark of Ticona.

\*\* KYNAR is a registered trademark of Elf Atochem North America, Inc.

♦ Operating temperatures of Eaton connectors are regulated by ambient and fluid temperatures, type of fluid being carried, tubing type and conditions of mechanical abuse. Pressures in excess of above specifications in all connector sizes should be tested by the customer in the particular application.

### Assembly Instructions

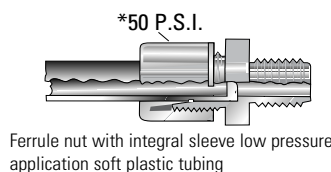


#### Maximum Operating Pressure:

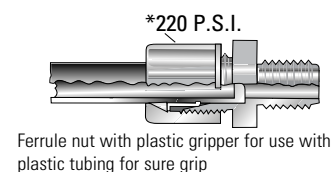
Ferrule Nut series = 50 psi max

Gripper Nut series = 220 PSI max

Operating pressures of Eaton molded compression products are regulated by ambient and fluid tempera-



Ferrule nut with integral sleeve low pressure application soft plastic tubing



Ferrule nut with plastic gripper for use with plastic tubing for sure grip

tures, type of fluid being carried, tubing type and conditions of mechanical abuse. Pressures in excess of above specifications in all fitting sizes should be tested by the customer for their particular application.

#### Used with:

Plastic tubing: TP160, PT200,

and PT240.

Tube inserts are recommended for optimal performance with PT200 tubing.

#### Temperature Range:

Nylon = -40°F to +200°F (-40°C to +93°C)

Polypropylene = -30°F to +200°F (-34°C to +93°C)

# Plastic Products

## Molded Compression Tube Products

### Assembly Instructions Continued

Ranges are at maximum operating pressures (refer to tubing temperature range). The overlap of temperature ranges of the individual components will decide the actual temperature range of the assembly.

#### Assembly Instructions:

- Cut tubing to desired length; be sure the tube end is cut properly (maxi-

mum 10° cutting angle allowed).

- Insert the tubing through the back of the nut all the way through the nut assembly to the tube stop in the connector body (see illustration). If the tubing does not enter the nut easily, loosen the nut one turn and then insert the tubing all the way to the tube stop in the fitting body.

- Turn the nut to hand-tight.
- Tighten the nut an additional 2 to 2-1/2 turns past hand-tight or until the nut bottoms against the connector body, whichever comes first.
- All nuts must be retightened when the system reaches projected operating temperature.

### Ordering Information

Molded compression connector are available in nylon and in polypropylene. They are also available by special order in KYNAR\*\* (polyvinylidene fluoride) or Celcon\* (acetal copolymer). To order fittings in KYNAR or Celcon, call Technical Support at 1-888-258-0222. Refer to Chemical Resistance Chart, pages 22-26. For detailed information on chemical compatibility, call Technical Support at 1-888-258-0222. General material characteristics are as follows:

**Nylon**, F.D.A. and N.S.F. listed, has good resistance to organic solvents, oils and gasoline. Good strength at high temperatures. Cold and hot-water applications. Longtime weathering resistance. Good impact resistance, both single and repeated. Not recommended for use with bleach, acids, or chlorine.

**Polypropylene**, N.S.F. listed, has good chemical resistance. Withstands continuous temperatures up to 215°F (not to exceed

temperature specification of tubing). Unaffected by most weak acids, alkalies, alcohols and ketones. Do not use with oxidants or strong acids or in continuous sunlight. 20% glass filled for improved stiffness.

**KYNAR**, an F.D.A. and N.S.F. listed polyvinylidene fluoride, has outstanding chemical resistance for handling highly corrosive fluids.

**Celcon**, an acetal copolymer, N.S.F. listed and U.S.D.A. and F.D.A. listed for coffee, milk and antibiotics, has high tensile strength and good impact resistance over a broad temperature range. Translucent white color. Not affected by continuous hot-water service and works smoothly with metal tubing. Celcon cannot be recommended for continuous exposure to solutions with a chlorine concentration greater than 1 ppm. Suggested maximum continuous-use temperature is 220°F in air and 180°F in water (not to exceed temperature specification of

tubing). Unaffected by most inorganics, except sulfuric, nitric and hydrochloric acids. Should not be continuously exposed to sunlight.

Most connectors can be ordered with a GRIPPER style nut. Fittings with a GRIPPER style nut are capable of handling greater pressure than those with standard style nut.

For ordering connectors with 'GRIPPER' nut, add 'G' to the end of the part number (example: 1568x4x4G or 1568Px4x4G). Some connectors are NOT available with the GRIPPER style nut, while others are ONLY available with the GRIPPER style nut. For more information, call Technical Support at 1-888-258-0222.

#### Note:

It is not necessary to disassemble the connector for assembly. Merely insert tubing to stop and tighten compression nut.

\* Celcon is a registered trademark of Ticona.

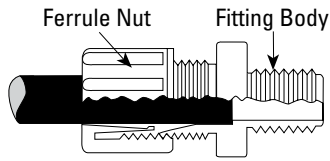
\*\* KYNAR is a registered trademark of Elf Atochem North America, Inc.

# Plastic Products

## Molded Compression Tube Products

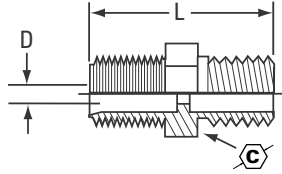
- Not available with GRIPPER style nut
- Sold ONLY with GRIPPER style nut

To order with 'GRIPPER' nut, add 'G' to the end of the part # (Except where noted!)  
Example: 1568x4x4G or 1568Px4x4G



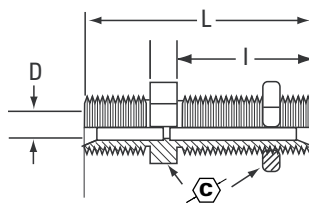
| Tube O.D.        | 1/8<br>(.125) | 1/4<br>(.250) | 5/16<br>(.312) | 3/8<br>(.375) | 1/2<br>(.500) | 5/8<br>(.625) | 3/4<br>(.750) |
|------------------|---------------|---------------|----------------|---------------|---------------|---------------|---------------|
| Tube Thread Size | 5/16-24       | 7/16-20       | 1/2-20         | 5/8-20        | 3/4-20        | 7/8-20        | 1-1/16-20     |

### Male Connector



| Tube O.D. | Male Pipe Thread | Catalog Number Nylon | Catalog Number Polypropylene | L    | D    | Ⓢ      |
|-----------|------------------|----------------------|------------------------------|------|------|--------|
| 1/8       | 1/8              | 1568x2•              |                              | 0.88 | 0.13 | 7/16   |
| 1/4       | 1/8              | 1568x4               | 1568Px4                      | 0.99 | 0.26 | 5/8    |
| 1/4       | 1/8              | 1568x4G              | 1568Px4G                     | 0.99 | 0.26 | 5/8    |
| 1/4       | 1/4              | 1568x4x4             | 1568Px4x4                    | 1.17 | 0.26 | 5/8    |
| 1/4       | 1/4              | 1568x4x4G            | 1568Px4x4G                   | 1.17 | 0.26 | 5/8    |
| 1/4       | 3/8              | 1568x4x6G▪           | 1568Px4x6                    | 1.20 | 0.26 | 13/16  |
| 5/16      | 1/8              |                      | 1568Px5                      | 1.00 | 0.32 | 11/16  |
| 5/16      | 1/4              | 1568x5x4             | 1568Px5x4                    | 1.19 | 0.32 | 11/16  |
| 3/8       | 1/8              | 1568x6x2             | 1568Px6x2                    | 1.14 | 0.38 | 13/16  |
| 3/8       | 1/8              |                      | 1568Px6x2G                   | 1.14 | 0.38 | 13/16  |
| 3/8       | 1/4              | 1568x6               | 1568Px6                      | 1.30 | 0.38 | 13/16  |
| 3/8       | 1/4              | 1568x6G              | 1568Px6G                     | 1.30 | 0.38 | 13/16  |
| 3/8       | 3/8              | 1568x6x6             | 1568Px6x6                    | 1.34 | 0.38 | 13/16  |
| 3/8       | 3/8              | 1568x6x6G            |                              | 1.34 | 0.38 | 13/16  |
| 3/8       | 1/2              | 1568x6x8             | 1568Px6x8                    | 1.59 | 0.38 | 59/64  |
| 3/8       | 1/2              | 1568x6x8G            | 1568Px6x8G                   | 1.59 | 0.38 | 59/64  |
| 1/2       | 1/8              | 1568x8x2G▪           |                              | 1.23 | 0.51 | 15/16  |
| 1/2       | 1/4              | 1568x8x4             | 1568Px8x4                    | 1.42 | 0.51 | 15/16  |
| 1/2       | 1/4              |                      | 1568Px8x4G                   | 1.42 | 0.51 | 15/16  |
| 1/2       | 3/8              | 1568x8               | 1568Px8                      | 1.47 | 0.51 | 15/16  |
| 1/2       | 3/8              | 1568x8G              | 1568Px8G                     | 1.47 | 0.51 | 15/16  |
| 1/2       | 1/2              | 1568x8x8             | 1568Px8x8                    | 1.61 | 0.51 | 15/16  |
| 5/8       | 3/8              | 1568x10x6G▪          |                              | 1.50 | 0.63 | 1-1/16 |
| 5/8       | 1/2              | 1568x10G▪            | 1568Px10G▪                   | 1.66 | 0.63 | 1-1/16 |
| 3/4       | 3/4              | 1568x12x12G▪         | 1568Px12x12G▪                | 1.92 | 0.76 | 1-5/16 |

### Bulkhead Union



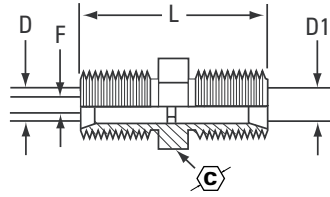
| Tube O.D. | Catalog Number Nylon | Catalog Number Polypropylene | L    | I    | D    | Ⓢ      |
|-----------|----------------------|------------------------------|------|------|------|--------|
| 1/4       | 1574x4               |                              | 1.45 | 0.88 | 0.26 | 5/8    |
| 3/8       | 1574x6               | 1574Px6                      | 1.78 | 1.03 | 0.38 | 13/16  |
| 1/2       | 1574x8               |                              | 1.89 | 1.04 | 0.51 | 15/16  |
| 3/4       | 1574x12G▪            | 1574Px12G▪                   | 2.41 | 1.35 | 0.76 | 1-5/16 |

# Plastic Products

## Molded Compression Tube Products

- Not available with GRIPPER style nut
- Sold ONLY with GRIPPER style nut

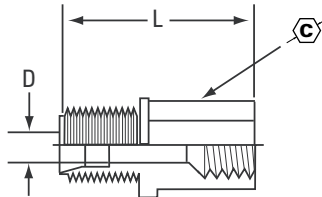
### Union Connector



| Tube O.D. | Catalog Number Nylon | Catalog Number Polypropylene | L    | F    |        |
|-----------|----------------------|------------------------------|------|------|--------|
| 1/4       | 1562x4               | 1562Px4                      | 0.98 | 0.23 | 5/8    |
| 1/4       | 1562x4G              | 1562Px4G                     | 0.98 | 0.23 | 5/8    |
| 5/16      | 1562x5               |                              | 1.03 | 0.28 | 11/16  |
| 5/16      | 1562x5G              | 1562Px5G                     | 1.03 | 0.28 | 11/16  |
| 3/8       | 1562x6               | 1562Px6                      | 1.23 | 0.30 | 13/16  |
| 3/8       | 1562x6G              | 1562Px6G                     | 1.23 | 0.30 | 13/16  |
| 1/2       | 1562x8               | 1562Px8                      | 1.44 | 0.48 | 15/16  |
| 1/2       |                      | 1562Px8G                     | 1.44 | 0.48 | 15/16  |
| 5/8       | 1562x10G ▪           | 1562Px10G ▪                  | 1.50 | 0.50 | 1-1/16 |
| 3/4       | 1562x12G ▪           | 1562Px12G ▪                  | 1.75 | 0.64 | 1-5/16 |

| Tube O.D. | Tube O.D. | Catalog Number Nylon | Catalog Number Polypropylene | L    | D    |        | D1   |
|-----------|-----------|----------------------|------------------------------|------|------|--------|------|
| 1/4       | 1/8       |                      | 1562Px4x2 •                  | 0.92 | 0.26 | 5/8    | 0.13 |
| 5/16      | 1/4       | 1562x5x4 •           |                              | 1.00 | 0.32 | 11/16  | 0.26 |
| 3/8       | 1/4       | 1562x6x4G            |                              | 1.19 | 0.38 | 13/16  | 0.26 |
| 1/2       | 3/8       |                      | 1562Px8x6                    | 1.33 | 0.51 | 15/16  | 0.38 |
| 5/8       | 1/2       |                      | 1562Px10x8G ▪                | 1.47 | 0.63 | 1-1/16 | 0.51 |

### Female Connector



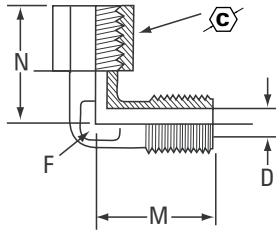
| Tube O.D. | Female Pipe Thread | Catalog Number Nylon | Catalog Number Polypropylene | L    | D    |        |
|-----------|--------------------|----------------------|------------------------------|------|------|--------|
| 1/4       | 1/8                | 1566x4               |                              | 0.92 | 0.23 | 9/16   |
| 1/4       | 1/8                | 1566x4G              |                              | 0.92 | 0.23 | 9/16   |
| 1/4       | 1/4                | 1566x4x4             | 1566Px4x4                    | 1.09 | 0.22 | 11/16  |
| 1/4       | 1/4                | 1566x4x4G            |                              | 1.09 | 0.22 | 11/16  |
| 5/16      | 1/4                | 1566x5x4             |                              | 1.22 | 0.28 | 11/16  |
| 5/16      | 1/4                | 1566x5x4G            |                              | 1.22 | 0.28 | 11/16  |
| 3/8       | 1/4                | 1566x6               |                              | 1.20 | 0.36 | 11/16  |
| 3/8       | 3/8                | 1566x6x6             | 1566Px6x6                    | 1.20 | 0.36 | 13/16  |
| 3/8       | 3/8                | 1566x6x6G            |                              | 1.20 | 0.36 | 13/16  |
| 3/8       | 1/2                | 1566x6x8             | 1566Px6x8                    | 1.27 | 0.34 | 1-3/64 |
| 3/8       | 1/2                | 1566x6x8G            | 1566Px6x8G                   | 1.27 | 0.34 | 1-3/64 |
| 1/2       | 3/8                | 1566x8               |                              | 1.23 | 0.47 | 13/16  |
| 1/2       | 3/8                | 1566x8G              |                              | 1.23 | 0.47 | 13/16  |
| 1/2       | 1/2                | 1566x8x8             | 1566Px8x8                    | 1.30 | 0.48 | 15/16  |

# Plastic Products

## Molded Compression Tube Products

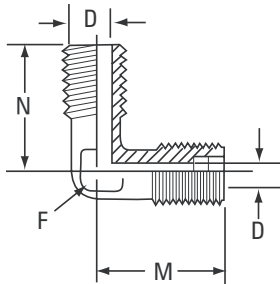
- Not available with GRIPPER style nut  
Sold ONLY with GRIPPER style nut

### Female Elbow



| Tube O.D. | Female Pipe Thread | Catalog Number Nylon | Catalog Number Polypropylene | M    | N    | D    |  | Across Flats F |
|-----------|--------------------|----------------------|------------------------------|------|------|------|-------------------------------------------------------------------------------------|----------------|
| 1/4       | 1/8                | N/A                  |                              | 0.81 | .75  | 0.26 | 35/64                                                                               | 25/64          |
| 1/4       | 1/4                | 1570x4x4             |                              | 0.81 | .97  | 0.26 | 11/16                                                                               | 13/32          |
| 5/16      | 1/4                | 1570x5x4G■           | 1570Px5x4G■                  | 0.94 | 1.00 | 0.32 | 11/16                                                                               | 7/16           |
| 3/8       | 3/8                | 1570x6x6             | 1570Px6x6                    | 0.91 | 1.03 | 0.38 | 13/16                                                                               | 9/16           |

### Male Elbow



| Tube O.D. | Male Pipe Thd. | Catalog Number Nylon | Catalog number Polypropylene | M    | N    | D    | D1   | Across Flats F |
|-----------|----------------|----------------------|------------------------------|------|------|------|------|----------------|
| 1/8       | 1/8            |                      | 1569Px2●                     | 0.56 | 0.63 | 0.11 | 0.20 | 1/4            |
| 1/4       | 1/8            | 1569x4               |                              | 0.81 | 0.81 | 0.22 | 0.25 | 3/8            |
| 1/4       | 1/8            | 1569x4G              |                              | 0.81 | 0.81 | 0.22 | 0.25 | 3/8            |
| 1/4       | 1/4            | 1569x4x4             | 1569Px4x4                    | 0.81 | 1.02 | 0.22 | 0.28 | 3/8            |
| 1/4       | 1/4            | 1569x4x4G            | 1569Px4x4G                   | 0.81 | 1.02 | 0.22 | 0.28 | 3/8            |
| 1/4       | 3/8            | 1569x4x6             |                              | 0.84 | 1.09 | 0.23 | 0.38 | 9/16           |
| 3/8       | 1/4            | 1569x6               | 1569Px6                      | 0.94 | 1.03 | 0.30 | 0.31 | 37/64          |
| 3/8       | 1/4            | 1569x6G              | 1569Px6G                     | 0.94 | 1.03 | 0.30 | 0.31 | 37/64          |
| 3/8       | 3/8            | 1569x6x6             | 1569Px6x6                    | 0.94 | 1.09 | 0.34 | 0.38 | 9/16           |
| 3/8       | 3/8            | 1569x6x6G            |                              | 0.94 | 1.09 | 0.34 | 0.38 | 9/16           |
| 1/2       | 1/4            | 1569x8x4G■           |                              | 1.06 | 1.09 | 0.39 | 0.31 | 11/16          |
| 1/2       | 3/8            | 1569x8               | 1569Px8                      | 1.09 | 1.13 | 0.39 | 0.31 | 11/16          |
| 1/2       | 3/8            | 1569x8G              |                              | 1.09 | 1.13 | 0.39 | 0.31 | 11/16          |
| 1/2       | 1/2            | 1569x8x8             | 1569Px8x8                    | 1.09 | 1.28 | 0.47 | 0.36 | 11/16          |
| 1/2       | 1/2            | 1569x8x8G            | 1569Px8x8G                   | 1.09 | 1.28 | 0.47 | 0.36 | 11/16          |
| 5/8       | 1/2            | 1569x10G■            | 1569Px10G■                   | 1.25 | 1.44 | 0.52 | 0.50 | 13/16          |

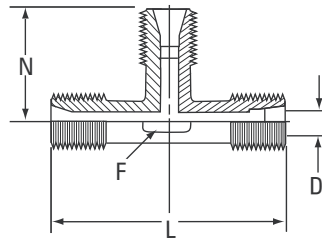


# Plastic Products

## Molded Compression Tube Products

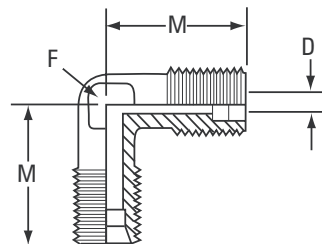
- Not available with GRIPPER style nut
- Sold ONLY with GRIPPER style nut

### Union Tee



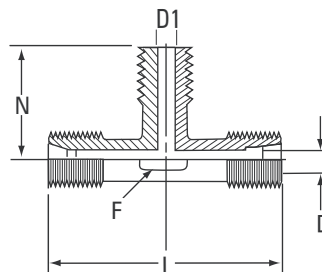
| Tube O.D. | Catalog Number Nylon | Catalog Number Polypropylene | L    | D    | N    | Across Flats F |
|-----------|----------------------|------------------------------|------|------|------|----------------|
| 1/8       | 1564x2•              |                              | 1.11 | 0.11 | 0.52 | 1/4            |
| 1/4       | 1564x4               | 1564Px4                      | 1.44 | 0.22 | 0.72 | 23/64          |
| 1/4       | 1564x4G              |                              | 1.44 | 0.22 | 0.72 | 23/64          |
| 5/16      | 1564x5G              | 1564Px5G                     | 1.61 | 0.28 | 0.83 | 7/16           |
| 3/8       | 1564x6               | 1564Px6                      | 1.91 | 0.30 | 0.97 | 17/32          |
| 3/8       |                      | 1564Px6G                     | 1.91 | 0.30 | 0.97 | 17/32          |
| 1/2       | 1564x8               | 1564Px8                      | 2.13 | 0.48 | 1.03 | 11/16          |
| 1/2       | 1564x8G              |                              | 2.13 | 0.48 | 1.03 | 11/16          |
| 5/8       | 1564x10G▪            |                              | 2.56 | 0.50 | 1.25 | 13/16          |
| 3/4       | 1564x12G▪            |                              | 3.11 | 0.62 | 1.56 | 1-1/16         |

### Union Elbow



| Tube O.D. | Catalog Number Nylon | Catalog Number Polypropylene | M    | D    | Across Flats F |
|-----------|----------------------|------------------------------|------|------|----------------|
| 1/4       | 1565x4               | —                            | 0.81 | 0.22 | 3/8            |
| 1/4       | 1565x4G              | —                            | 0.81 | 0.22 | 3/8            |
| 3/8       | 1565x6               | 1565Px6                      | 0.94 | 0.34 | 9/16           |
| 3/8       | 1565x6G              | 1565Px6G                     | 0.94 | 0.34 | 9/16           |
| 1/2       | 1565x8               | 1565Px8                      | 1.06 | 0.39 | 43/64          |
| 1/2       | 1565x8G              | —                            | 1.06 | 0.39 | 43/64          |
| 5/8       | 1565x10G▪            | —                            | 1.25 | 0.52 | 13/16          |

### Male Branch Tee



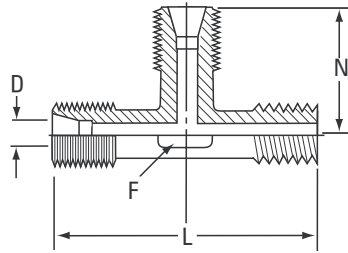
| Tube O.D. | Male Pipe Thd. | Catalog Number Nylon | L    | D    | N    | D1   | Across Flats F |
|-----------|----------------|----------------------|------|------|------|------|----------------|
| 1/4       | 1/8            | 1572x4               | 1.45 | 0.22 | 0.75 | 0.25 | 3/8            |
| 1/4       | 1/8            | 1572x4G              | 1.45 | 0.22 | 0.75 | 0.25 | 3/8            |
| 1/4       | 1/4            | 1572x4x4x4           | 1.45 | 0.22 | 0.92 | 0.31 | 3/8            |
| 1/4       | 1/4            | 1572x4x4x4G          | 1.45 | 0.22 | 0.92 | 0.31 | 3/8            |
| 5/16      | 1/4            | 1572Px5x5x4          | 1.61 | 0.30 | 0.98 | 0.31 | 27/64          |
| 3/8       | 3/8            | 1572x6x6x6           | 1.91 | 0.36 | 1.11 | 0.38 | 1/2            |
| 1/2       | 1/2            | 1572x8x8x8           | 2.19 | 0.48 | 1.31 | 0.48 | 5/8            |

# Plastic Products

## Molded Compression Tube Products

- Not available with GRIPPER style nut  
Sold ONLY with GRIPPER style nut

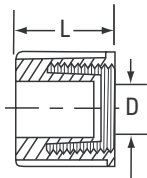
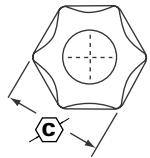
### Male Run Tee



| Tube O.D. | Male Pipe Thd. | Catalog Number Nylon | Catalog Number Polypropylene | L    | D   | N    | Across Flats F |
|-----------|----------------|----------------------|------------------------------|------|-----|------|----------------|
| 1/4       | 1/8            | 1571x4               |                              | 1.47 | .22 | .73  | 3/8            |
| 1/4       | 1/4            | 1571x4x4x4           |                              | 1.67 | .22 | .72  | 23/64          |
| 1/4       | 1/4            | 1571x4x4x4G          |                              | 1.67 | .22 | .72  | 23/64          |
| 5/16      | 1/4            | 1571x5x4x5G■         | 1571Px5x4x5                  | 1.81 | .28 | .81  | 7/16           |
| 3/8       | 3/8            | 1571x6x6x6           | 1571Px6x6x6                  | 2.03 | .34 | .97  | 1/2            |
| 1/2       | 3/8            | 1571x8               |                              | 2.27 | .47 | 1.11 | 5/8            |
| 1/2       | 3/8            |                      | 1571Px8G                     | 2.27 | .47 | 1.11 | 5/8            |
| 1/2       | 1/2            | 1571x8x8x8G■         |                              | 2.41 | .47 | 1.11 | 39/64          |
| 3/4       | 1/2            | N/A                  | 1571Px12G■                   | 3.17 | .64 | 1.55 | 1-1/16         |

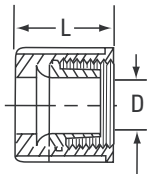
### Compression Nut

Ferrule Nuts with Integral Sleeve



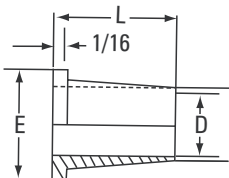
| Tube O.D. | Catalog Number Nylon | C     | L    | D    |
|-----------|----------------------|-------|------|------|
| 1/4       | 1561x4               | 5/8   | 0.63 | 0.26 |
| 5/16      | 1561x5               | 11/16 | 0.69 | 0.32 |
| 3/8       | 1561x6               | 13/16 | 0.75 | 0.38 |
| 1/2       | 1561x8               | 15/16 | 0.88 | 0.51 |

With Plastic Gripper



| Tube O.D. | Catalog Number Nylon | Catalog Number Polypropylene | C     | L    | D    |
|-----------|----------------------|------------------------------|-------|------|------|
| 1/4       | 1561x4G              |                              | 5/8   | 0.69 | 0.26 |
| 3/8       | 1561x6G              |                              | 13/16 | 0.73 | 0.38 |
| 1/2       | 1561x8G              | 1561Px8G                     | 15/16 | 0.88 | 0.51 |

### Insert

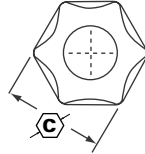
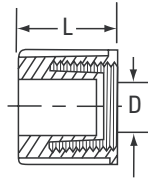


| Tube O.D. | Catalog Number Nylon | E    | L    | D    |
|-----------|----------------------|------|------|------|
| 1/4       | 1584x4               | 0.25 | 0.38 | 0.12 |
| 5/16      | 1584x5               | 0.31 | 0.40 | 0.14 |
| 3/8       | 1584x6               | 0.37 | 0.50 | 0.20 |
| 1/2       | 1584x8               | 0.49 | 0.56 | 0.30 |

# Plastic Products

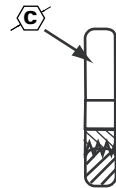
## Molded Compression Tube Products

### Cap Nut



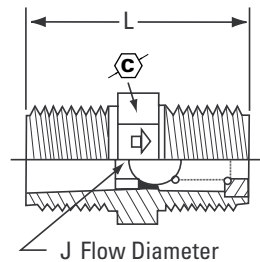
| Tube O.D. | Catalog Number Nylon | Catalog Number Polypropylene | L    |       |
|-----------|----------------------|------------------------------|------|-------|
| 1/8       | 1529x2               |                              | 0.52 | 7/16  |
| 1/4       | 1529x4               | 1529Px4                      | 0.63 | 5/8   |
| 3/8       | 1529x6               |                              | 0.73 | 13/16 |
| 1/2       | 1529x8               | 1529Px8                      | 0.88 | 15/16 |

### Bulkhead Nut



| Tube O.D. | Catalog Number Nylon | Catalog Number Polypropylene |       |
|-----------|----------------------|------------------------------|-------|
| 1/4       | 1502x4               |                              | 5/8   |
| 5/16      |                      | 1502Px5                      | 11/16 |
| 3/8       | 1502x6               |                              | 13/16 |

### KYNAR Check Valve



| Male Pipe Size N.P.T.F. | Catalog Number KYNAR Only | L    | J    |       |
|-------------------------|---------------------------|------|------|-------|
| 1/8                     | 1531x2                    | 1.00 | 0.09 | 7/16  |
| 1/4                     | 1531x4                    | 1.41 | 0.19 | 5/8   |
| 3/8                     | 1531x6                    | 1.50 | 0.25 | 13/16 |
| 1/2                     | 1531x8                    | 1.81 | 0.34 | 15/16 |

### KYNAR\*\* Check Valve Features and Benefits:

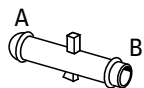
- Viton® "O" Ring
- Stainless Ball & Spring
- Zero Leakage
- Maximum Operating Temp. 180°F @ 220 PSI
- Cracking Pressure 1 to 2.5 PSI

Viton is a registered trademark of DuPont Dow Elastomers

\*\* KYNAR is a registered trademark of Elf Atochem North America, Inc.

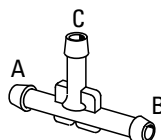
# Plastic Products

## Straight Connector



| Tube I.D. a | Tube I.D. b | Catalog Number |
|-------------|-------------|----------------|
| 1/8         | 1/8         | 1911           |
| 1/8         | 3/16        | 1923           |
| 1/8         | 1/4         | 1924           |
| 3/16        | 3/16        | 1912           |
| 1/4         | 3/16        | 1914           |
| 1/4         | 1/4         | 1913           |
| 1/4         | 3/8         | 1915           |
| 5/16        | 5/16        | 1925           |
| 3/8         | 3/8         | 1927           |

## 3 Way Tee



 Refer to safety information regarding proper selection of tubing and tube connectors on page 5.

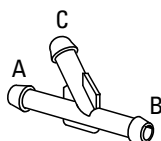
| Tube i.d. A | Tube i.d. B | Tube i.d. C | Catalog Number |
|-------------|-------------|-------------|----------------|
| 1/8         | 1/8         | 1/8         | 1916           |
| 1/8         | 1/8         | 3/16        | 1917           |
| 1/8         | 1/8         | 1/4         | 1918           |
| 1/8         | 3/16        | 1/8         | 1939           |
| 3/16        | 1/8         | 3/16        | 1940           |
| 3/16        | 3/16        | 3/16        | 1902           |
| 3/16        | 3/16        | 1/8         | 1920           |
| 3/16        | 3/16        | 1/4         | 1921           |
| 1/4         | 3/16        | 3/16        | 1942           |
| 1/4         | 1/4         | 1/4         | 1903           |
| 1/4         | 1/4         | 3/16        | 1943           |
| 5/16        | 5/16        | 5/16        | 1906           |
| 3/8         | 3/16        | 3/8         | 1944           |
| 3/8         | 1/4         | 3/8         | 1945           |
| 3/8         | 3/8         | 3/16        | 1907           |
| 3/8         | 3/8         | 1/4         | 1908           |
| 3/8         | 3/8         | 3/8         | 1922           |

## Universal Connector



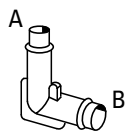
| Tube I.D. Size | Catalog Number |
|----------------|----------------|
| 5/32-1/4-3/8   | 1901           |

## Y Connector



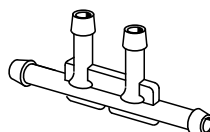
| Tube I.D. A | Tube I.D. B | Tube I.D. C | Catalog Number |
|-------------|-------------|-------------|----------------|
| 3/16        | 3/16        | 3/16        | 1932           |
| 1/4         | 1/4         | 1/4         | 1935           |
| 1/4         | 3/8         | 3/8         | 1936           |
| 5/16        | 5/16        | 5/16        | 1937           |
| 3/8         | 3/8         | 3/8         | 1938           |

## Elbow Connector



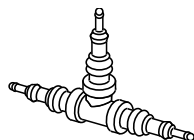
| Tube i.d. A | Tube i.d. B | Catalog Number |
|-------------|-------------|----------------|
| 1/8         | 3/16        | 1928           |
| 3/16        | 3/16        | 1929           |
| 3/16        | 1/4         | 1930           |
| 1/4         | 1/4         | 1931           |

## 4 Way Tee



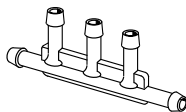
| Tube I.D. All Ends | Catalog Number |
|--------------------|----------------|
| 3/16               | 1948           |

## Universal Tee



| Tube I.D. Size | Catalog Number |
|----------------|----------------|
| 5/32-1/4-3/8   | 1900           |

## 5 Way Tee



| Tube I.D. All Ends | Catalog Number |
|--------------------|----------------|
| 3/16               | 1949           |

**Temperature Range:**  
-40°F to +350°F.

**Material:** Nylon 6/6

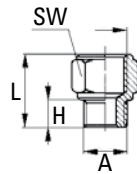
Not recommended for fuel line applications.

# Brass-Nickel Plated

## BSPP Products

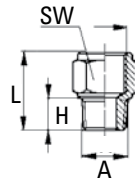
 Refer to safety information on page 5.

### BSPP Male To NPTF Female Adapter



| Male BSPP | Female NPTF Thread | Catalog Number | H    | L    | SW (mm) |
|-----------|--------------------|----------------|------|------|---------|
| 1/8       | 1/8                | 1150x2x2PP     | 0.27 | 0.67 | 14      |
| 1/4       | 1/4                | 1150x4x4PP     | 0.32 | 0.91 | 17      |
| 3/8       | 3/8                | 1150x6x6PP     | 0.35 | 0.96 | 22      |
| 1/2       | 1/2                | 1150x8x8PP     | 0.39 | 1.16 | 27      |

### BSPP Female To NPTF Male Adapter



| Male BSPP | Female NPTF Thread | Catalog Number | H    | L    | SW (mm) |
|-----------|--------------------|----------------|------|------|---------|
| M5*       | 10-32†             | 1100x5MMxA     | 0.18 | 0.47 | 8       |
| 1/8       | 1/8                | 1100x2PPx2     | 0.37 | 0.77 | 14      |
| 1/4       | 1/4                | 1100x4PPx4     | 0.51 | 1.06 | 17      |
| 3/8       | 3/8                | 1100x6PPx6     | 0.51 | 1.08 | 19      |

\*M5 has 0.8mm Thread Pitch. M5 seals with nylon washer, included.

†UNF thread

## Related Products

### Assembly & Tool Cutting Equipment

**⚠ Caution:** Sharp blade!  
Keep hands and fingers  
away from cutting sur-  
face!

#### T-150 Utility Tube Cutter



Need to cut stainless steel tubing? This cutting tool is for you. It features an enclosed feed screw to eliminate clogging and jamming. Grooved rolls for close to flare cuts and a fold away reamer.

##### Capacity:

1/8" to 1-1/8" O.D. Cuts hard and soft copper, aluminum, brass, carbon steel and stainless steel tubing.

##### Spare Parts:

T-1422R Replacement Cutting Wheel

#### T-1430 Inner-Outer Reamer



Reams both inside and outside edges of tube with three hollow ground tool steel cutters. Fluted body is shaped to fit comfortably in palm of hand.

##### Capacity:

3/16" to 1-1/2" O.D. Reams copper, brass, aluminum and other tubing.

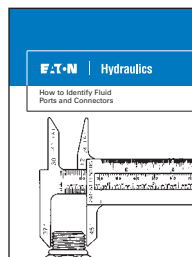
## Air Brake Products & Measuring Kits

**⚠** Refer to safety informa-  
tion on page 5.

#### Thread Measuring Kit

Weatherhead Part # TA-1002

Aeroquip Part # FT1341



Measuring tube and pipe fitting threads can be a most difficult task if not completely understood. Tools needed include a thread pitch gauge, calipers and seat angle gauges. To aid you, Eaton has a kit to fit your needs.

##### This handy kit includes:

- Thread Pitch Gauge (American and metric)
- Inside/Outside Caliper (inches and millimeters)
- 2 Seat Angle Gauges (37°/45° and a 12°/30°)
- International Measuring and Identification Guide and Instruction Booklet
- Carrying Case for Easy and Convenient Storage

## Related Products

### Tube Cutting Equipment

 Refer to safety information on page 5.

#### Plastic Tube Cutter

Weatherhead Part # T-135  
Aeroquip Part # FT1356



An economical alternative to quality tube and hose cutting. This versatile tool is lightweight and durable for long service life.

**Replacement Blade:**  
Weatherhead=T-135B  
Aeroquip=FT1356-2-1

**Capacity:**  
Up to 1" I.D.

**Note:**  
Not for use with wire-reinforced hose.

#### T-138 Hose and Tube Cutter



One hand operation for quick, clean cuts through plastic or nylon compound tubing and solid or fiber-reinforced hose up to 1" O.D.

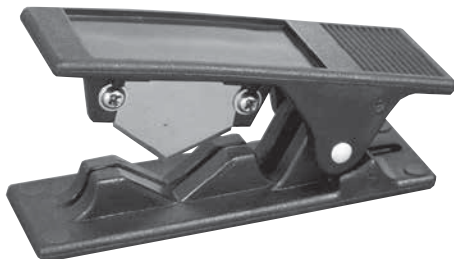
- Any wireless hose or tubing.
- Power steering hose
- Air Conditioning hose
- Air brake hose
- Air system nylon tubing

- Thermoplastic hose
- Low pressure plastic tubing (PT200, PT230, PT240)

**Replacement Blade:** T-138B

**Note:**  
Not for use with wire-reinforced hose.

#### T-191 Plastic Tube and Hose Cutter



A tool designed to be small, only 2-7/8" long. The versatile T-191 offers quick and clean square cuts on 1/16" to 1/2" O.D. plastic tubing and non-wire reinforced hose. The T-191 can be either bench or wall mounted and offers the safety of closing automatically when not in use.

**Spare Parts:**  
T-191B Replacement Blade  
(one per package)

# Related Products

## Tube Bending Tools

 Refer to safety information on page 5.

### Spring Tube Benders



Low cost, tube bending spring operates perfectly in hand bending copper, aluminum and other thin-walled tubing. Bends are true with minimum tubewall collapsing. Belled at one end to facilitate removal. Bright-plated spring wire finish.

| Catalog Number | Tubing (O.D.) (Inches) | Length (Inches) | Weight  |
|----------------|------------------------|-----------------|---------|
| T-104          | 1/4                    | 10              | 4 ozs.  |
| T-105          | 5/16                   | 10              | 4 ozs.  |
| T-106          | 3/8                    | 10              | 5 ozs.  |
| T-107          | 7/16                   | 12              | 7 ozs.  |
| T-108          | 1/2                    | 12              | 8 ozs.  |
| T-1010         | 5/8                    | 12              | 10 ozs. |

| Catalogs Number | Sets                | Length (Inches) | Weight     |
|-----------------|---------------------|-----------------|------------|
| T-100           | 1/4, 3/8, 1/2, 5/8  | 10 & 12         | 1-1/2 lbs. |
| T-200           | 1/4, 5/16, 3/8, 1/2 | 10 & 12         | 1-1/4 lbs. |



# Equipment

## Tube Flaring & Brazing Tools

 Refer to safety information on page 5.

### T-345K Tube Cutting and Flaring Kit



Tube flaring and cutting has just become a little easier with the convenient T-345K Tube Flaring and Cutting Kit.

This kit features a quality-made Double Flaring Tool offering accurate single flares between 3/16" and 5/8" O.D. tubing. Double flares between 3/16" and 1/2" O.D. tubing.

#### Check these features:

- Hardened, smooth cone for fast, accurate 45° flares.
- Single and double flare capability.
- Clamp screw for easy clamping and removal of tubes.
- Flaring Bar installed from either side of yoke.
- Flares soft copper, brass, aluminum and mild steel (JIC and Bundy) tubing.

### T-345K

Components can be ordered separately:

T-345 45° Flaring Tool, Double Flare Adapters and Plastic Box

#### T-150

1/8" to 1-1/8" Tube Cutter

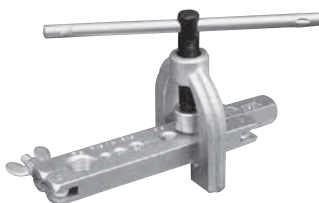
#### T-1422R

T-150 Spare Cutting Wheel

#### Double Flare Adapters

| Catalog Number | Tube O.D. |
|----------------|-----------|
| T-346x3        | 3/16"     |
| T-346x4        | 1/4"      |
| T-346x5        | 5/16"     |
| T-346x6        | 3/8"      |
| T-346x8        | 1/2"      |

### T-1022 Flaring Tool (45°)



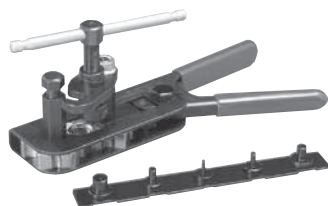
Economical, fast operating tool. Quick slip-on aluminum alloy yoke. Easy operating, swivel-type, hard chrome finished cone assures smooth flares.

Yoke slips down over top of bar and locks into position with a single turn.

#### Flaring Capacity:

3/16", 1/4", 5/16", 3/8", 7/16", 1/2", and 5/8" O.D. Forms 45° flares in soft copper, aluminum and brass.

### T-220 Double Flaring Tool (45°)



This new style tool makes single or double flaring easier and quicker than ever. Cam action provides positive, non-slip grip on the tubing with just a squeeze of the handle. Double flaring bar also serves as gauge for correct tubing height to insure perfect flares.

#### Flaring Capacity:

3/16", 1/4", 5/16", 3/8", 1/2" and 5/8" O.D. for single flares, and up to 1/2" O.D. for double flares. Can be

used with copper, aluminum, brass, bundyweld and steel tubing.

#### Weight:

2 lbs.

**T-220** Components can be ordered separately

**T-210** Tool for single flaring only

**T-221** Double Flaring Bar only.

#### Flaring Capacity:

3/16", 1/4", 5/16", 3/8" and 1/2"

# Related Products

## Label Sets & Bags

 Refer to safety information on page 5.

### Label Sets

Full assortment available. Each label contains catalog number, illustration, size data and color coding for quick, positive identification of parts. Labels slide easily into slots on drawers and dividers.



| Catalog Number | Description                                               |
|----------------|-----------------------------------------------------------|
| CL-490         | Standard brass products, drain and shut-off cocks.        |
| CL-491         | Air brake products for copper tubing.                     |
| CL-492         | Hydraulic brake products.                                 |
| CL-494         | Master Set - contains one each of CL-490, CL-491, CL-492. |
| CL-496         | Mini-Barb products.                                       |
| CL-497         | Air brake products for nylon tubing.                      |
| CL-498         | Polyline products.                                        |
| CL-499         | Push>Connect                                              |
| CL-500         | Selfalign                                                 |
| CL-501         | Plastic products                                          |
| CL-503         | QCAB products                                             |

### Self-Adhesive Label Sets

Labels are printed on self-adhesive stock for quick application. Each label contains an illustration of the part along with the catalog number and size information.



| Catalog Number | Description                                      |
|----------------|--------------------------------------------------|
| FS-800         | Air brake products for copper tubing             |
| FS-900         | Air brake products for nylon tubing              |
| FS-1000        | Mini-Barb products                               |
| FS-2100        | Polyline products                                |
| FS-3300        | QCAB products                                    |
| W-8022         | Standard brass products and drain-shut-off valve |

### Plastic Bags

Eaton heavy-duty plastic bags for brass products come in sizes 5"x6", 6"x10", and 8"x12". The bags include convenient spaces for labeling.



| Catalog Number | Description | Qty. |
|----------------|-------------|------|
| 5x6 PB         | Plastic Bag | 100  |
| 6x10 PB        | Plastic Bag | 100  |
| 8x12 PB        | Plastic Bag | 100  |

## Related Products

### Cabinets & Assortments

#### Stock Cabinet

Weatherhead Part # FC-16X  
Aeroquip Part # FT1600



Contains 16 clear plastic drawers that can be divided into two or three sections. Illustrated color labels are available to provide instant identification of drawer contents.

**Size:**  
16-1/8" wide x 11-3/4" high x 9" deep

**Weight:**  
13 lbs.

#### Stock Cabinet

Weatherhead Part # C-15X  
Aeroquip Part # FT1601



Contains 15 extra large white drawers for those large, difficult to store items. The 15 drawers may be divided into two or three sections to suit your particular needs.

**Size:**  
30-1/4" Wide x 14-3/8" Deep x 13-5/8" High

**Weight:**  
45 lbs.

| Weatherhead Part # | Aeroquip Part # | Description        |
|--------------------|-----------------|--------------------|
| CD-15              | FT1605          | Individual Drawers |
| CD-15D             | FT1606          | Dividers           |

#### Stock Cabinet

Weatherhead Part # C-63X  
Aeroquip Part # FT1602



A cabinet containing 63 drawers that can be divided into two or three sections. The bright color and attractive design make the stock cabinet a nice addition to any store front.

**Size:**  
30-1/4" wide x 25" high x 9-1/4" deep

**Weight:**  
61 lbs.

#### Cabinet

Weatherhead Part #  
2: C-63X,  
1: C-15X,  
1: CB-63X  
Aeroquip Part #  
2: FT1602,  
1: FT1601,  
1: CB-63X



This Brass Products Cabinet is a space saving, efficient, easy to use addition to the modern store with lobby type sales area. The cabinet requires a minimum of space but does a maximum job merchandising the wide variety of products in the 126 clear, wide, plastic drawers. An additional 15 large, high impact plastic drawers located in the bottom section provide ample space for those large or heavy special items you may be stocking.

Restocking is easy when you start at the bottom and pull drawers for an order check. Leave drawers extended that are low in stock. Now start at top, note quantity needed and return drawers to original position after order is written using

standard box quantities listed on labels. Plastic dividers are provided to section drawers for future expansion when new or additional part numbers are needed.

Display this attractive cabinet with a recommended stock in your lobby and watch your brass product sales increase as the cabinet silently and quickly services your customers. Create those impulse sales that make your business and profits grow!

**Size:**  
68-1/2" high, 30" wide, 15" deep.

**Weight:**  
167 lbs.

| Weatherhead Part # | Aeroquip Part # | Description                     |
|--------------------|-----------------|---------------------------------|
| C-15X              | FT1601          | 15 Drawer Cabinet               |
| C-63X              | FT1602          | 63 Drawer Cabinet               |
| CB-63X             | CB-63X          | Cabinet Base                    |
| CD-15              | FT1605          | Plastic Drawer for C-15X/FT1601 |

## Related Products

### Assortments

#### CA-632 Brass Products Assortment and Cabinet

The CA-632 assortment combines a lobby display unit and an assortment of fast moving brass products with coverage for most any application. This space saving assortment includes color coded, illustrated, labels for quick identification by customers of stan-

dard products, as well as fuel line, carburetion, metric and domestic hydraulic brake and thermoplastic brass fittings in 240 configurations and sizes. Be a supplier to auto dealers, brake specialists, RV shops, plant maintenance shops, truck and bus fleets, contractors,

marinas, loggers, shipyards, fishing fleets, farmers and self installers for their brass requirements. Contents of this assortment may vary as new products are introduced and stock changes in popularity.

#### Contents only: CA-632CO & C-632X Brass Cabinet Only (2 C-63x, 1C-15x, 1CB-63x)

| Catalog Number | Qty. | Catalog Number | Qty. | Catalog Number | Qty. | Catalog Number | Qty. | Catalog Number | Qty. | Catalog Number | Qty. |
|----------------|------|----------------|------|----------------|------|----------------|------|----------------|------|----------------|------|
| 05703B-102     | 5    | 1540           | 10   | 3220x6x4       | 10   | 3700x4         | 5    | 61x2           | 10   | 6829           | 5    |
| 05704B-102     | 10   | 202x3          | 10   | 3220x8x2       | 5    | 3700x6         | 5    | 61x3           | 20   | 6892           | 5    |
| 05704B-104     | 5    | 202x4          | 10   | 3220x8x4       | 10   | 3750x2         | 5    | 61x4           | 20   | 69x2           | 10   |
| 05704B-C02     | 5    | 202x4x4        | 10   | 3220x8x6       | 5    | 3750x4         | 5    | 61x5           | 20   | 69x3           | 10   |
| 05705B-102     | 10   | 202x5          | 10   | 3220x12x6      | 2    | 402x3          | 10   | 61x6           | 10   | 69x4           | 10   |
| 05705B-104     | 5    | 202x5x4        | 10   | 3220x12x8      | 2    | 402x4          | 10   | 61x8           | 10   | 69x4x4         | 10   |
| 05705B-C02     | 10   | 202x6          | 10   | 3300x2         | 10   | 402x4x4        | 5    | 6100x2         | 10   | 69x5           | 10   |
| 05705B-C04     | 10   | 202x6x2        | 5    | 3300x4         | 10   | 402x5          | 10   | 6100x3         | 10   | 69x5x4         | 10   |
| 05705B-1560    | 10   | 2030x4         | 10   | 3300x4x2       | 10   | 402x5x4        | 10   | 6100x4         | 10   | 69x6           | 10   |
| 05705B-1561    | 10   | 2030x44        | 10   | 3300x6         | 5    | 402x6          | 10   | 62x2           | 10   | 69x6x2         | 5    |
| 05706B-102     | 10   | 2030x5         | 10   | 3300x6x4       | 5    | 41x3           | 10   | 62x3           | 10   | 69x6x6         | 5    |
| 05706B-104     | 10   | 2030x6         | 10   | 3300x8         | 5    | 41x4           | 10   | 62x4           | 10   | 69x8           | 5    |
| 05706B-106     | 5    | 2030x8         | 5    | 3300x8x6       | 5    | 41x5           | 10   | 62x5           | 10   | 7818           | 5    |
| 05706B-C02     | 5    | 252x3          | 10   | 3325x2         | 10   | 41x6           | 10   | 62x6           | 10   | 7828           | 5    |
| 05706B-C04     | 5    | 252x4          | 10   | 3325x4         | 10   | 41x8           | 5    | 62x8           | 5    | 7829           | 5    |
| 05706B-1568    | 5    | 270            | 5    | 3325x4x2       | 5    | 42x4           | 5    | 62x10          | 1    | 7896x3         | 5    |
| 05706B-1570    | 5    | 302x3          | 10   | 3325x6         | 5    | 42x6           | 5    | 6200x2         | 10   | 7896x4         | 5    |
| 100x3          | 10   | 302x4          | 10   | 3325x6x4       | 5    | 48x3           | 10   | 6200x3         | 10   | 7904           | 5    |
| 100x4          | 10   | 302x5          | 10   | 3326x2         | 10   | 48x4           | 10   | 6200x4         | 10   | 7906           | 5    |
| 100x5          | 10   | 302x6          | 5    | 3326x4         | 10   | 48x4x4         | 10   | 6205-004       | 10   | 7908           | 2    |
| 100x6          | 10   | 3129x2         | 5    | 3326x6         | 10   | 48x5           | 10   | 64x4           | 5    | 7914           | 2    |
| 105x2          | 10   | 3150x2         | 10   | 3326x8         | 5    | 48x5x4         | 10   | 64x6           | 5    | 7934A          | 5    |
| 105x3          | 20   | 3150x4         | 10   | 3327x2         | 10   | 48x6           | 10   | 66x2           | 10   | 7935           | 5    |
| 105x4          | 20   | 3151x2         | 10   | 3327x4         | 5    | 48x6x2         | 5    | 66x3           | 10   | 7936           | 5    |
| 105x5          | 20   | 3151x4         | 10   | 3328x2         | 10   | 48x6x6         | 5    | 66x4           | 10   | 7937           | 5    |
| 105x6          | 10   | 3151x6         | 10   | 3328x4         | 5    | 48x8           | 5    | 66x6           | 5    | 7940           | 5    |
| 131x3          | 10   | 3151x8         | 5    | 3328x6         | 5    | 49x4           | 10   | 6660           | 5    | 7941           | 5    |
| 131x4          | 10   | 3152x2         | 10   | 3350x2         | 5    | 49x4x4         | 5    | 6749           | 1    | C - 632x       | 1    |
| 131x5          | 10   | 3152x4         | 10   | 3350x4         | 5    | 49x5           | 10   | 68x2           | 10   | C6 - 490       | 1    |
| 131x6          | 10   | 3152x6         | 10   | 3350x6         | 5    | 49x5x4         | 5    | 68x3           | 10   |                |      |
| 135            | 10   | 3152x8         | 5    | 3400x2         | 10   | 49x6           | 10   | 68x4           | 10   |                |      |
| 140            | 5    | 3152x12        | 2    | 3400x4         | 10   | 49x8           | 5    | 68x4x4         | 10   |                |      |
| 1442           | 5    | 3200x2         | 10   | 3400x6         | 5    | 60x2           | 50   | 68x5           | 10   |                |      |
| 1443           | 5    | 3200x4         | 5    | 3400x8         | 5    | 60x3           | 50   | 68x5x4         | 10   |                |      |
| 145            | 10   | 3200x4x2       | 10   | 3500x2         | 10   | 60x4           | 50   | 68x6           | 10   |                |      |
| 1514           | 5    | 3200x6x4       | 5    | 3500x4         | 10   | 60x5           | 50   | 68x6x2         | 10   |                |      |
| 1538           | 10   | 3200x8x6       | 5    | 3600x2         | 5    | 60x6           | 50   | 68x6x6         | 5    |                |      |
| 1548           | 10   | 3220x4x2       | 20   | 3600x4         | 5    | 60x8           | 20   | 68x8           | 5    |                |      |
| 1539           | 10   | 3220x6x2       | 10   | 3700x2         | 10   | 60x10          | 10   | 6809           | 5    |                |      |

## Related Products

### Assortments

#### AB-45 • Air Brake Fittings Assortment



This assortment of draincocks, shutoffs, and air brake fittings for use with 1/4", 3/8", and 1/2" copper tubing is a must for jobbers and fleet service shops. Provides excellent coverage for air brake tube and hose service requirements. The large plastic drawers and the illustrated labels for the 15 drawer cabinet included in the assortment make positive part selection simple and quick.

| Part Number | Qty. |
|-------------|------|
| 1360x6      | 20   |
| 1360x8      | 20   |
| 1360x10     | 10   |
| 1360x12     | 10   |
| 1361x6      | 20   |
| 1361x8      | 5    |
| 1361x10     | 5    |
| 1362x4      | 5    |
| 1362x6      | 10   |
| 1362x8      | 5    |
| 1362x10     | 5    |
| 1368x6      | 10   |
| 1368x6x2    | 5    |
| 1368x6x6    | 5    |
| 1368x8      | 5    |
| 1368x10     | 5    |
| 1369x4x4    | 5    |
| 1369x6      | 10   |
| 1369x8      | 5    |
| 1380x6      | 5    |
| 1390x6      | 5    |
| 1391x6      | 5    |
| 145         | 10   |

| Part Number | Qty. |
|-------------|------|
| 33806-A     | 20   |
| 33806-B     | 5    |
| 33806B-Y06  | 2    |
| 33806B-Y24  | 5    |
| 33806B-Y28  | 5    |
| 33806B-Y34  | 5    |
| 33806B-Y38  | 5    |
| 6707        | 1    |
| 6708        | 1    |
| 6709        | 1    |
| 6747        | 1    |
| 6748        | 1    |
| 6749        | 1    |
| FH-15X      | 1    |
| FS-800      | 1    |
| W05465      | 5    |
| W14630      | 10   |
| W15310      | 5    |
| W76150      | 5    |
| W79850      | 3    |
| W79851      | 3    |

## Related Products

### Assortments

#### AB-1400 • Air Brake Fittings Assortment



The AB-1400 contains DOT approved brass air brake fittings for servicing nylon brake and secondary air lines. Selecting the proper fittings from the 63-drawer cabinet included with the assortment is easy. Clear, wide plastic drawers with color-coded labels make identification of shapes and sizes quick and simple. Order Eaton air brake tubing to complete your nylon air brake line service center.

| Part Number | Qty. |
|-------------|------|
| 1460x4      | 10   |
| 1460x6      | 20   |
| 1460x8      | 10   |
| 1460x10     | 10   |
| 1460x12     | 10   |
| 1461x4      | 5    |
| 1461x6      | 10   |
| 1461x8      | 5    |
| 1461x10     | 5    |
| 1461x12     | 5    |
| 1462x4      | 5    |
| 1462x6      | 10   |
| 1462x8      | 5    |
| 1462x10     | 4    |
| 1462x12     | 2    |
| 1464x6      | 5    |
| 1464x8      | 5    |
| 1466x6      | 5    |
| 1466x6x6    | 5    |
| 1466x8      | 5    |
| 1468x4      | 5    |
| 1468x4x4    | 5    |
| 1468x6      | 10   |
| 1468x6x2    | 5    |
| 1468x8      | 5    |
| 1468x10     | 5    |
| 1468x12     | 4    |
| 1469x4      | 5    |

| Part Number | Qty. |
|-------------|------|
| 1469x4x4    | 5    |
| 1469x6      | 10   |
| 1469x6L     | 5    |
| 1469x6x2    | 5    |
| 1469x6x6    | 5    |
| 1469x8      | 5    |
| 1469x8x4    | 5    |
| 1469x10     | 5    |
| 1469x10x6   | 4    |
| 1469x12     | 4    |
| 1471x4      | 5    |
| 1471x6      | 5    |
| 1472x6      | 5    |
| 1472x8      | 5    |
| 1480x6      | 5    |
| 1480x6x6    | 5    |
| 1480x8      | 5    |
| 1480x10     | 4    |
| 1484x4      | 20   |
| 1484x6      | 20   |
| 1484x8      | 20   |
| 1484x10     | 10   |
| 1484x12     | 10   |
| C-63X       | 1    |
| CL-497      | 1    |

#### AB-140 • 1400 Series Air Brake Fittings Assortment



This assortment of 1/4", 3/8", and 1/2" air brake fittings designed for use with Eaton air brake tubing provides the coverage needed for service work by fleets, repair shops, and farm implement dealers. The DOT-approved air brake fittings are easily selected from the cabinet with 16 plastic drawers and color-coded labels included in the assortment.

| Part Number | Qty. |
|-------------|------|
| 1460x4      | 20   |
| 1460x6      | 20   |
| 1460x8      | 20   |
| 1461x4      | 10   |
| 1461x6      | 10   |
| 1461x8      | 5    |
| 1462x4      | 5    |
| 1462x6      | 10   |
| 1462x8      | 4    |
| 1468x4      | 10   |
| 1468x6      | 10   |
| 1468x8      | 5    |
| 1469x4      | 5    |
| 1469x6      | 5    |

| Part Number | Qty. |
|-------------|------|
| 1469x8      | 5    |
| 1484x4      | 20   |
| 1484x6      | 20   |
| 1484x8      | 20   |
| 145         | 10   |
| CL-16-3     | 1    |
| FC-16X      | 1    |
| W15310      | 5    |



## Related Products

### Assortments

#### SA-1 • Secondary Air Systems Kit



Ideal for fleet repair shops, truck dealers, garages and truck stops. SA-1 contains an assortment of popular 1/8" and 1/4" brass fittings plus 200' of Eaton air brake tubing. The 1/8" fittings are Eaton SELFALIGN® and 1/4" fittings are Eaton 1400 series air brake. The sturdy box keeps the tubing and fittings together for quick and easy servicing of the tubing used on shifters, PTO's, wipers, horns, remote air, instrumentation, etc. All of the parts are organized at your finger tips. The SA-1 is a must for all vehicle air system maintenance facilities.

#### Size

15" wide, 3-1/2" high, 14-1/2" deep.

| Part Number | Qty. |
|-------------|------|
| 1460x4      | 10   |
| 1461x4      | 5    |
| 1462x4      | 2    |
| 1464x4      | 1    |
| 1468x4      | 2    |
| 1468x4x1    | 2    |
| 1468x4x4    | 2    |
| 1469x4      | 2    |
| 1469x4x4    | 2    |
| 1484x4      | 5    |
| 601x2       | 10   |

| Part Number    | Qty. |
|----------------|------|
| 611x2          | 5    |
| 621x2          | 2    |
| 661x2          | 2    |
| 681x2          | 2    |
| 681x2x1        | 2    |
| 691x2          | 2    |
| 691x2x1        | 2    |
| BF-40X         | 1    |
| 4245-0220-0100 | 100' |
| 4249-0410-0100 | 100' |

#### SA-2 • Secondary Air Systems Kit



The SA-2 assortment enables you to supply fleets and dealers with fittings and tubing for 1/4" and 3/8" O.D. air brake applications. 1/8" O.D. tubing and fittings are also supplied for applications such as transmission shifter, air horn, gauge and flat adjustment. A cabinet is also supplied for easy storage on shelves and bench tops.

| Part Number | Qty. |
|-------------|------|
| 1460x4      | 10   |
| 1460x6      | 20   |
| 1461x4      | 5    |
| 1461x6      | 10   |
| 1462x4      | 5    |
| 1462x6      | 10   |
| 1464x4      | 2    |
| 1464x6      | 2    |
| 1466x6      | 5    |
| 1468x4      | 5    |
| 1468x4x4    | 5    |
| 1468x4x6    | 2    |
| 1468x6      | 10   |
| 1472x4      | 5    |
| 1472x6      | 5    |
| 1472x6x6x6  | 5    |
| 1484x4      | 10   |
| 1484x6      | 10   |
| 1485x4      | 10   |
| 1485x6      | 10   |

| Part Number    | Qty. |
|----------------|------|
| 1468x6x2       | 5    |
| 1468x6x6       | 5    |
| 1468x6x8       | 5    |
| 1469x4         | 5    |
| 1469x4x4       | 5    |
| 1469x6         | 10   |
| 1469x6x6       | 5    |
| 601x2          | 10   |
| 611x2          | 10   |
| 621x2          | 5    |
| 661x2          | 5    |
| 681x2          | 5    |
| 681x2x1        | 2    |
| 691x2          | 5    |
| 691x2x1        | 2    |
| BL-456-X       | 1    |
| FS-SA-2        | 1    |
| 3270-0110-0100 | 100' |
| 4245-0220-0100 | 100' |
| 4247-0410-0100 | 100' |

## Related Products

### Assortments

#### QC-18



Designed as a glove box sized emergency repair kit, the QC-18 assortment contains QCAB tube unions in 5/32", 1/4", 3/8", and 1/2" sizes, also included is a T-191 tubing cutter. The contents are contained in a convenient carrying case measuring 1-1/4" x 3-3/4" x 7".

#### Component

| Part No. | Qty. |
|----------|------|
| 1862x2.5 | 2    |
| 1862x6   | 2    |
| 1862x8   | 2    |
| T-191    | 1    |
| QC-18X   | 1    |
| QC18L    | 1    |

#### QC-180



The QC-180 contains tube unions, male connectors, swivel male 45° elbow, male 90° elbows, and repair kits in popular 1/4", 3/8", and 1/2" tube sizes designed for DOT Truck and Trailer Air Brake System needs (see complete listing at right in table). The QCAB fittings are field proven with over millions of miles of leak free performance. Their design can save up to 75 percent of the assembly time over conventional compression fittings. These fittings are contained in a case measuring 1-3/4" x 6-3/4" x 1-3/4".

#### Component

| Part No. | Qty. |
|----------|------|
| 1862x4   | 2    |
| 1869x8x8 | 1    |
| 1862x6   | 2    |
| 1880x4x4 | 2    |
| 1862x8   | 2    |
| 1880x6x6 | 2    |
| 1868x2.5 | 2    |
| 1880x8x8 | 1    |
| 1868x3   | 2    |
| 1800Kx4  | 2    |
| 1868x4x4 | 2    |
| 1800Kx6  | 2    |

#### Component

| Part No. | Qty. |
|----------|------|
| 1868x6x6 | 2    |
| 1800Kx8  | 2    |
| 1868x8x8 | 2    |
| 1800TRK  | 1    |
| 1869x4x4 | 2    |
| BF-40X   | 1    |

#### QC-1800



This assortment contains a solid inventory of popular Eaton QCAB fittings designed for DOT Truck and Trailer Air Brake System needs (see complete listing at right in table). The QCAB fittings are field proven with over millions of of leak free performance. Their design can save up to 75 percent of the assembly time over conventional compression fittings.

#### Component

| Part No.   | Qty. |
|------------|------|
| 1800Kx2.5  | 4    |
| 1862x10    | 2    |
| 1868x12    | 2    |
| 1874x6x6   | 1    |
| 1800Kx3    | 4    |
| 1868x2.5x1 | 5    |
| 1869x4     | 5    |
| 1874x8x8   | 1    |
| 1800Kx4    | 4    |
| 1868x2.5   | 5    |
| 1869x4x4   | 5    |
| 1880x4x4   | 5    |
| 1800Kx6    | 4    |
| 1868x3     | 5    |
| 1869x6     | 5    |
| 1880x6x6   | 5    |
| 1800Kx8    | 4    |
| 1868x4     | 5    |
| 1869x8     | 5    |
| 1880x8x8   | 5    |
| 1800Kx10   | 2    |
| 1868x4x4   | 5    |
| 1869x8x8   | 5    |
| 1880x10    | 2    |

#### Component

| Part No.  | Qty. |
|-----------|------|
| 1800Kx12  | 2    |
| 1868x6    | 5    |
| 1869x10   | 2    |
| 1880x12   | 2    |
| 1862x2.5  | 2    |
| 1868x6x6  | 5    |
| 1869x4S   | 5    |
| 1800T     | 1    |
| 1868x8    | 5    |
| 1869x4x4S | 5    |
| CL-503    | 1    |
| 1862x4    | 5    |
| 1868x8x8  | 5    |
| 1869x6S   | 5    |
| FC-16X    | 1    |
| 1862x6    | 5    |
| 1868x10x6 | 2    |
| 1869x8S   | 5    |
| T-191     | 1    |
| 1862x8    | 5    |
| 1868x10   | 2    |
| 1874x4x4  | 1    |



## Related Products

### Assortments

#### Brass Products Assortment

Weatherhead Part # CA-631

Aeroquip Part # FT1607



This merchandiser will help you organize your brass products in an attractive 63 drawer cabinet. It includes a stock of the 100 fastest moving brass products to better service your customers. To expand, divide the clear, easy to inventory, super sized plastic drawers in half or thirds with plastic dividers provided.

Illustrated, color-coded labels in a wide range of connector types provide instant identification of drawer contents. Your lobby and sales will be improved with this modern display set up on a gondola or shelf. Contents may vary as new numbers become available and popularity changes.

#### CA-631 Contents

| Catalog Number | Qty. | Catalog Number | Qty. | Catalog Number | Qty. | Catalog Number | Qty. | Catalog Number | Qty. | Catalog Number  | Qty. |
|----------------|------|----------------|------|----------------|------|----------------|------|----------------|------|-----------------|------|
| 105x3          | 20   | 302x4          | 10   | 3200x4x2       | 10   | 3326x6         | 10   | 48x4x4         | 10   | 62x2            | 10   |
| 105x4          | 20   | 302x5          | 10   | 3200x6x4       | 5    | 3327x2         | 5    | 48x5           | 10   | 62x3            | 10   |
| 105x5          | 20   | 302x6          | 5    | 3220x4x2       | 20   | 3327x4         | 5    | 48x5x4         | 10   | 62x4            | 10   |
| 105x6          | 10   | 402x4          | 10   | 3220x6x2       | 10   | 3328x2         | 5    | 48x6           | 10   | 62x5            | 10   |
| 131x3          | 10   | 402x5          | 10   | 3220x6x4       | 10   | 3328x4         | 5    | 48x6x6         | 5    | 62x6            | 10   |
| 131x4          | 10   | 402x6          | 10   | 3220x8x2       | 5    | 3350x2         | 5    | 49x4           | 5    | 68x2            | 10   |
| 131x5          | 10   | 3150x2         | 5    | 3220x8x4       | 10   | 3350x4         | 5    | 49x6           | 10   | 68x3            | 10   |
| 131x6          | 10   | 3150x4         | 5    | 3220x8x6       | 5    | 3400x2         | 10   | 60x2           | 50   | 68x4            | 10   |
| 135            | 10   | 3151x2         | 10   | 3300x2         | 10   | 3400x4         | 10   | 60x3           | 50   | 68x4x4          | 10   |
| 145            | 10   | 3151x4         | 10   | 3300x4         | 10   | 3400x6         | 5    | 60x4           | 50   | 68x5            | 10   |
| 202x3          | 10   | 3151x6         | 10   | 3300x4x2       | 10   | 3700x2         | 10   | 60x5           | 50   | 68x5x4          | 10   |
| 202x4          | 10   | 3151x8         | 10   | 3300x6         | 5    | 3700x4         | 5    | 60x6           | 50   | 68x6            | 10   |
| 202x4x4        | 10   | 3152x2         | 10   | 3300x6x4       | 5    | 3750x4         | 5    | 61x2           | 10   | 68x6x2          | 10   |
| 202x5          | 10   | 3152x4         | 10   | 3325x2         | 10   | 3750x6         | 2    | 61x3           | 10   | 69x4            | 10   |
| 202x5x4        | 10   | 3152x6         | 10   | 3325x4         | 10   | 41x4           | 10   | 61x4           | 10   | 69x6            | 10   |
| 202x6          | 5    | 3152x8         | 5    | 3326x2         | 10   | 41x6           | 10   | 61x5           | 10   | C-63X or FT1602 | 1    |
| 302x3          | 10   | 3200x2         | 5    | 3326x4         | 10   | 48x4           | 10   | 61x6           | 10   | CL-490          | 1    |

#### Brass Products Assortment

Weatherhead Part # FC-161

Aeroquip Part # FT1608



The brass products assortment contains the fastest moving SAE 45° Flare, Inverted Flare, Compression and Pipe catalog numbers to give your customers maximum coverage at a low cost. Nuts, sleeves and unions make an ideal stock for any

small repair, auto, boat, lawn mower, or fixit shop. Cabinet includes 16 clear plastic drawers and color-coded labels for easy identification. The cabinet fits on any shelf and goes to work immediately.

#### FC-161 Contents

| Catalog Number | Qty. | Catalog Number | Qty. | Catalog Number | Qty. | Catalog Number | Qty. | Catalog Number | Qty. | Catalog Number   | Qty. |
|----------------|------|----------------|------|----------------|------|----------------|------|----------------|------|------------------|------|
| 105x3          | 10   | 302x5          | 2    | 402x3          | 2    | 49x4           | 2    | 61x5           | 10   | 69x4             | 2    |
| 105x4          | 10   | 3151x2         | 2    | 402x4          | 2    | 49x5           | 2    | 61x6           | 5    | 69x5             | 2    |
| 105x5          | 10   | 3151x4         | 2    | 402x5          | 2    | 49x6           | 2    | 62x3           | 5    | 69x6             | 2    |
| 105x6          | 5    | 3220x4x2       | 5    | 41x4           | 2    | 60x3           | 20   | 62x4           | 5    | CL-16-1          | 1    |
| 145            | 5    | 3220x6x4       | 5    | 41x5           | 2    | 60x4           | 20   | 62x5           | 5    | FC-16X or FT1600 | 1    |
| 202x4          | 2    | 3300x2         | 5    | 41x6           | 2    | 60x5           | 20   | 62x6           | 5    |                  |      |
| 202x5          | 2    | 3300x4         | 2    | 48x4           | 2    | 60x6           | 20   | 68x4           | 2    |                  |      |
| 302x3          | 5    | 3400x2         | 5    | 48x5           | 2    | 61x3           | 10   | 68x5           | 2    |                  |      |
| 302x4          | 5    | 3400x4         | 5    | 48x6           | 2    | 61x4           | 10   | 68x6           | 2    |                  |      |

# Related Products

Assortments

Push>Connect Products Assortment  
Weatherhead Part # PC-48  
Aeroquip Part # FT1613



Eaton PUSH > CONNECT products are designed for quick assembly without the need for a wrench. Ideal for pneumatic applications where space is tight. Then product is also easily disconnected; simply depress the collet ring with two fingers and withdraw the tube. The PC-48 and FT1613 provides the 48 most popular PUSH > CONNECT products in a compact, handy plastic box to make your assortment organized and accessible.

PC-48 Contents

| Catalog Number | Qty. | Catalog Number | Qty. | Catalog Number | Qty. | Catalog Number | Qty. | Catalog Number | Qty. | Catalog Number   | Qty. |
|----------------|------|----------------|------|----------------|------|----------------|------|----------------|------|------------------|------|
| 1162x2         | 5    | 1165x6         | 5    | 1168x2.5x4     | 5    | 1168x6x6       | 5    | 1169x4x6S      | 5    | 1172x4x4S        | 5    |
| 1162x4         | 5    | 1165x8         | 2    | 1168x2x4       | 5    | 1168x6x8       | 2    | 1169x6S        | 5    | 1174x2           | 5    |
| 1162x6         | 5    | 1166x4         | 5    | 1168x4         | 5    | 1168x8         | 5    | 1169x6x6S      | 5    | 1174x4           | 5    |
| 1164x2.5       | 5    | 1166x4x4       | 5    | 1168x4A        | 5    | 1168x8x8       | 2    | 1169x8S        | 2    | CL-499           | 1    |
| 1164x4         | 5    | 1166x6         | 5    | 1168x4x4       | 5    | 1169x2.5S      | 5    | 1169x8x4S      | 2    | FC-16X or FT1600 | 1    |
| 1164x6         | 5    | 1166x6x6       | 2    | 1168x4x6       | 5    | 1169x2S        | 5    | 1171x4S        | 5    |                  |      |
| 1164x8         | 2    | 1168x2         | 2    | 1168x5         | 5    | 1169x2x4S      | 5    | 1171x4x4S      | 5    |                  |      |
| 1165x2.5       | 5    | 1168x2.5       | 5    | 1168x5x4       | 5    | 1169x4S        | 5    | 1171x6S        | 5    |                  |      |
| 1165x4         | 5    | 1168x2.5A      | 5    | 1168x6         | 5    | 1169x4x4S      | 5    | 1172x4S        | 5    |                  |      |

# Certification

ISO & QS Certifications

## Eaton Hydraulics - Brass Products

| Facility      | Registration | Registrar<br>Number | Product<br>Responsibility     |
|---------------|--------------|---------------------|-------------------------------|
| Cleveland, TN | ISO9002      | SGSUS98/1495        | Distribution of Eaton Product |

# Conversion

## Conversion Chart

| Inches<br>Fractions | Decimals | MM     |
|---------------------|----------|--------|
| —                   | .0004    | 0.0100 |
| —                   | .0040    | 0.1000 |
| —                   | .0100    | 0.2500 |
| 1/64                | .0156    | 0.3970 |
| —                   | .0197    | 0.5000 |
| —                   | .0295    | 0.7500 |
| 1/32                | .0313    | 0.7940 |
| —                   | .0394    | 1.0000 |
| 3/64                | .0469    | 1.1910 |
| —                   | .0590    | 1.5000 |
| 1/16                | .0620    | 1.5880 |
| 5/64                | .0781    | 1.9840 |
| —                   | .0787    | 2.0000 |
| 3/32                | .0940    | 2.3810 |
| —                   | .0984    | 2.5000 |
| 7/64                | .1090    | 2.7780 |
| —                   | .1181    | 3.0000 |
| 1/8                 | .1250    | 3.1750 |
| —                   | .1378    | 3.5000 |
| 9/64                | .1410    | 3.5720 |
| 5/32                | .1560    | 3.9690 |
| —                   | .1575    | 4.0000 |
| 11/64               | .1720    | 4.3660 |
| —                   | .1770    | 4.5000 |
| 3/16                | .1875    | 4.7630 |
| —                   | .1969    | 5.0000 |
| 13/64               | .2030    | 5.1590 |
| —                   | .2165    | 5.5000 |
| 7/32                | .2190    | 5.5560 |
| 15/64               | .2340    | 5.9530 |
| —                   | .2362    | 6.0000 |
| 1/4                 | .2500    | 6.3500 |
| —                   | .2559    | 6.5000 |
| 17/64               | .2656    | 6.7470 |
| —                   | .2756    | 7.0000 |
| 9/32                | .2810    | 7.1440 |
| —                   | .2953    | 7.5000 |
| 19/64               | .2970    | 7.5410 |
| 5/16                | .3120    | 7.9380 |

| Inches<br>Fractions | Decimals | MM      |
|---------------------|----------|---------|
| —                   | .3150    | 8.0000  |
| 21/64               | .3280    | 8.3340  |
| —                   | .3350    | 8.5000  |
| 11/32               | .3440    | 8.7310  |
| —                   | .3543    | 9.0000  |
| 23/64               | .3590    | 9.1280  |
| —                   | .3740    | 9.5000  |
| 3/8                 | .3750    | 9.5250  |
| 25/64               | .3910    | 9.9220  |
| —                   | .3937    | 10.0000 |
| 13/32               | .4060    | 10.3190 |
| —                   | .4130    | 10.5000 |
| 27/64               | .4220    | 10.7160 |
| —                   | .4331    | 11.0000 |
| 7/16                | .4380    | 11.1130 |
| 29/64               | .4530    | 11.5090 |
| 15/32               | .4690    | 11.9060 |
| —                   | .4724    | 12.0000 |
| 31/64               | .4840    | 12.3030 |
| —                   | .4920    | 12.5000 |
| 1/2                 | .5000    | 12.7000 |
| —                   | .5118    | 13.0000 |
| 33/64               | .5156    | 13.0970 |
| 17/32               | .5310    | 13.4940 |
| 35/64               | .5470    | 13.8910 |
| —                   | .5512    | 14.0000 |
| 9/16                | .5630    | 14.2880 |
| —                   | .5710    | 14.5000 |
| 37/64               | .5790    | 14.6840 |
| —                   | .5906    | 15.0000 |
| 19/32               | .5940    | 15.0810 |
| 39/64               | .6090    | 15.4780 |
| 5/8                 | .6250    | 15.8750 |
| —                   | .6299    | 16.0000 |
| 41/64               | .6406    | 16.2720 |
| —                   | .6496    | 16.5000 |
| 21/32               | .6560    | 16.6690 |
| —                   | .6693    | 17.0000 |
| 43/64               | .6720    | 17.0660 |

| Inches<br>Fractions | Decimals | MM      |
|---------------------|----------|---------|
| 11/16               | 0.6875   | 17.4630 |
| 45/64               | 0.7030   | 17.8590 |
| —                   | 0.7087   | 18.0000 |
| 23/32               | 0.7190   | 18.2560 |
| —                   | 0.7283   | 18.5000 |
| 47/64               | 0.7340   | 18.6530 |
| —                   | 0.7480   | 19.0000 |
| 3/4                 | 0.7500   | 19.0500 |
| 49/64               | 0.7656   | 19.4470 |
| 25/32               | 0.7810   | 19.8440 |
| —                   | 0.7874   | 20.0000 |
| 51/64               | 0.7970   | 20.2410 |
| 13/16               | 0.8125   | 20.6380 |
| —                   | 0.8268   | 21.0000 |
| 53/64               | 0.8280   | 21.0340 |
| 27/32               | 0.8440   | 21.4310 |
| 55/64               | 0.8590   | 21.8280 |
| —                   | 0.8662   | 22.0000 |
| 7/8                 | 0.8750   | 22.2250 |
| 57/64               | 0.8906   | 22.6220 |
| —                   | 0.9055   | 23.0000 |
| 29/32               | 0.9062   | 23.0190 |
| 59/64               | 0.9220   | 23.4160 |
| 15/16               | 0.9375   | 23.8130 |
| —                   | 0.9449   | 24.0000 |
| 61/64               | 0.9530   | 24.2090 |
| 31/32               | 0.9690   | 24.6060 |
| —                   | 0.9843   | 25.0000 |
| 63/64               | 0.9844   | 25.0030 |
| 1                   | 1.0000   | 25.4000 |
| —                   | 1.0236   | 26.0000 |
| 1-1/32              | 1.0312   | 26.1940 |
| 1-1/16              | 1.0620   | 26.9880 |
| —                   | 1.0630   | 27.0000 |
| 1-3/32              | 1.0940   | 27.7810 |
| —                   | 1.1024   | 28.0000 |
| 1-1/8               | 1.1250   | 28.5750 |
| —                   | 1.1417   | 29.0000 |
| 1-5/32              | 1.1560   | 29.3690 |

| Inches<br>Fractions | Decimals | MM      |
|---------------------|----------|---------|
| —                   | 1.1811   | 30.0000 |
| 1-3/16              | 1.1875   | 30.1630 |
| 1-7/32              | 1.2190   | 30.9560 |
| —                   | 1.2205   | 31.0000 |
| 1-1/4               | 1.2500   | 31.7500 |
| —                   | 1.2598   | 32.0000 |
| 1-9/32              | 1.2810   | 32.5440 |
| —                   | 1.2992   | 33.0000 |
| 1-5/16              | 1.3120   | 33.3380 |
| —                   | 1.3386   | 34.0000 |
| 1-11/32             | 1.3440   | 34.1310 |
| 1-3/8               | 1.3750   | 34.9250 |
| —                   | 1.3779   | 35.0000 |
| 1-13/32             | 1.4060   | 35.7190 |
| —                   | 1.4173   | 36.0000 |
| 1-7/16              | 1.4380   | 36.5130 |
| —                   | 1.4567   | 37.0000 |
| 1-15/32             | 1.4690   | 37.3060 |
| —                   | 1.4961   | 38.0000 |
| 1-1/2               | 1.5000   | 38.1000 |
| 1-17/32             | 1.5310   | 38.8940 |
| —                   | 1.5354   | 39.0000 |
| 1-9/16              | 1.5620   | 39.6880 |
| —                   | 1.5748   | 40.0000 |
| 1-19/32             | 1.5940   | 40.4810 |
| —                   | 1.6142   | 41.0000 |
| 1-5/8               | 1.6250   | 41.2750 |
| —                   | 1.6535   | 42.0000 |
| 1-31/32             | 1.6562   | 42.0690 |
| 1-11/16             | 1.6875   | 42.8630 |
| —                   | 1.6929   | 43.0000 |
| 1-23/32             | 1.7190   | 43.6560 |
| —                   | 1.7323   | 44.0000 |
| 1-3/4               | 1.7500   | 44.4500 |
| —                   | 1.7717   | 45.0000 |
| 1-25/32             | 1.7810   | 45.2440 |
| —                   | 1.8110   | 46.0000 |
| 1-13/16             | 1.8125   | 46.0380 |
| 1-27/32             | 1.8440   | 46.8310 |

# Conversion

## Conversion Chart

| Inches<br>Fractions | Decimals | MM      | Inches<br>Fractions | Decimals | MM      | Inches<br>Fractions | Decimals | MM      | Inches<br>Fractions | Decimals | MM       |
|---------------------|----------|---------|---------------------|----------|---------|---------------------|----------|---------|---------------------|----------|----------|
| –                   | 1.8504   | 47.0000 | 2-1/2               | 2.5000   | 63.5000 | –                   | 3.1496   | 80.0000 | 3-25/32             | 3.7810   | 96.0440  |
| 1-7/8               | 1.8750   | 47.6250 | –                   | 2.5197   | 64.0000 | 3-5/32              | 3.1560   | 80.1690 | 3-13/16             | 3.8125   | 96.8380  |
| –                   | 1.8898   | 48.0000 | 2-17/32             | 2.5310   | 64.2940 | 3-3/16              | 3.1875   | 80.9630 | –                   | 3.8189   | 97.0000  |
| 1-29/32             | 1.9062   | 48.4190 | –                   | 2.5590   | 65.0000 | –                   | 3.1890   | 81.0000 | 3-26/32             | 3.8440   | 97.6310  |
| –                   | 1.9291   | 49.0000 | 2-9/16              | 2.5620   | 65.0880 | 3-7/32              | 3.2190   | 81.7560 | –                   | 3.8583   | 98.0000  |
| 1-15/16             | 1.9375   | 49.2130 | 2-19/32             | 2.5940   | 65.8810 | –                   | 3.2283   | 82.0000 | 3-7/8               | 3.8750   | 98.4250  |
| –                   | 1.9685   | 50.0000 | –                   | 2.5984   | 66.0000 | 3-1/4               | 3.2500   | 82.5500 | –                   | 3.8976   | 99.0000  |
| 1-31/32             | 1.9690   | 50.0060 | 2-5/8               | 2.6250   | 66.6750 | –                   | 3.2677   | 83.0000 | 3-29/32             | 3.9062   | 99.2190  |
| 2                   | 2.0000   | 50.8000 | –                   | 2.6380   | 67.0000 | 3-9/32              | 3.2810   | 83.3440 | –                   | 3.9370   | 100.0000 |
| –                   | 2.0079   | 51.0000 | 2-21/32             | 2.6560   | 67.4690 | –                   | 3.3071   | 84.0000 | 3-15/16             | 3.9375   | 100.0130 |
| 2-1/32              | 2.0313   | 51.5940 | –                   | 2.6772   | 68.0000 | 3-5/16              | 3.3120   | 84.1377 | 3-31/32             | 3.9690   | 100.8060 |
| –                   | 2.0472   | 52.0000 | 2-11/16             | 2.6875   | 68.2630 | 3-11/32             | 3.3440   | 84.9314 | –                   | 3.9764   | 101.0000 |
| 2-1/16              | 2.0620   | 52.3880 | –                   | 2.7165   | 69.0000 | –                   | 3.3464   | 85.0000 | 4                   | 4.0000   | 101.6000 |
| –                   | 2.0866   | 53.0000 | 2-23/32             | 2.7190   | 69.0560 | 3-3/8               | 3.3750   | 85.7250 | 4-1/16              | 4.0620   | 103.1880 |
| 2-3/32              | 20.9400  | 53.1810 | 2-3/4               | 2.7500   | 69.8500 | –                   | 3.3858   | 86.0000 | 4-1/8               | 4.1250   | 104.7750 |
| 2-1/8               | 2.1250   | 53.9750 | –                   | 2.7559   | 70.0000 | 3-13/32             | 3.4060   | 86.5190 | –                   | 4.1338   | 105.0000 |
| –                   | 2.1260   | 54.0000 | 2-25/32             | 2.7810   | 70.6439 | –                   | 3.4252   | 87.0000 | 4-3/16              | 4.1875   | 106.3630 |
| 2-5/32              | 2.1560   | 54.7690 | –                   | 2.7953   | 71.0000 | 3-7/16              | 3.4380   | 87.3130 | 4-1/4               | 4.2500   | 107.9500 |
| –                   | 2.1650   | 55.0000 | 2-13/16             | 2.8125   | 71.4376 | –                   | 3.4646   | 88.0000 | 4-5/16              | 4.3120   | 109.5380 |
| 2-3/16              | 2.1875   | 55.5630 | –                   | 2.8346   | 72.0000 | 3-15/32             | 3.4690   | 88.1060 | –                   | 4.3307   | 110.0000 |
| –                   | 2.2047   | 56.0000 | 2-27/32             | 2.8440   | 72.2314 | 3-1/2               | 3.5000   | 88.9000 | 4-3/8               | 4.3750   | 111.1250 |
| 2-7/32              | 2.2190   | 56.3560 | –                   | 2.8740   | 73.0000 | –                   | 3.5039   | 89.0000 | 4-7/16              | 4.4380   | 112.7130 |
| –                   | 2.2440   | 57.0000 | 2-7/8               | 2.8750   | 73.0250 | 3-17/32             | 3.5310   | 89.6940 | 4-1/2               | 4.5000   | 114.3000 |
| 2-1/4               | 2.2500   | 57.1500 | 2-29/32             | 2.9062   | 73.8190 | –                   | 3.5433   | 90.0000 | –                   | 4.5275   | 115.0000 |
| 2-9/32              | 2.2810   | 57.9440 | –                   | 2.9134   | 74.0000 | 3-9/16              | 3.5620   | 90.4877 | 4-9/16              | 4.5620   | 115.8880 |
| –                   | 2.2835   | 58.0000 | 2-15/16             | 2.9375   | 74.6130 | –                   | 3.5827   | 91.0000 | 4-5/8               | 4.6250   | 117.4750 |
| 2-5/16              | 2.3120   | 58.7380 | –                   | 2.9527   | 75.0000 | 3-19/32             | 3.5940   | 91.2810 | 4-11/16             | 4.6875   | 119.0630 |
| –                   | 2.3228   | 59.0000 | 2-31/32             | 2.9690   | 75.4060 | –                   | 3.6220   | 92.0000 | –                   | 4.7244   | 120.0000 |
| 2-11/32             | 2.3440   | 59.5310 | –                   | 2.9921   | 76.0000 | 3-5/8               | 3.6250   | 92.0750 | 4-3/4               | 4.7500   | 120.6500 |
| –                   | 2.3622   | 60.0000 | 3                   | 3.0000   | 76.2000 | 3-21/32             | 3.6560   | 92.8960 | 4-13/16             | 4.8125   | 122.2380 |
| 2-3/8               | 2.3750   | 60.3250 | 3-1/32              | 3.0312   | 76.9940 | –                   | 3.6614   | 93.0000 | 4-7/8               | 4.8750   | 123.8250 |
| –                   | 2.4016   | 61.0000 | –                   | 3.0315   | 77.0000 | 3-11/16             | 3.6875   | 93.6630 | –                   | 4.9212   | 125.0000 |
| 2-13/32             | 2.4060   | 61.1190 | 3-1/16              | 3.0620   | 77.7880 | –                   | 3.7008   | 94.0000 | 4-15/16             | 4.9375   | 125.4130 |
| 2-7/16              | 2.4380   | 61.9130 | –                   | 3.0709   | 78.0000 | 3-23/32             | 3.7190   | 94.4560 | 5                   | 5.0000   | 127.0000 |
| –                   | 2.4409   | 62.0000 | 3-3/32              | 3.0940   | 78.5810 | –                   | 3.7401   | 95.0000 |                     |          |          |
| 2-15/32             | 2.4690   | 62.7060 | –                   | 3.1102   | 79.0000 | 3-3/4               | 3.7500   | 92.2500 |                     |          |          |
| –                   | 2.4803   | 63.0000 | 3-1/8               | 3.1250   | 79.3750 | –                   | 3.7795   | 96.0000 |                     |          |          |

# Glossary

## Alpha/Numeric

### A:

**abrasion:** external damage to a hose assembly caused by its being rubbed on a foreign object; a wearing away by friction.

**ABS:** Air-Brake Swivel

**absorption:** regarding hose, the process of taking in fluid. Hose materials are often compared with regard to relative rates and total amounts of absorption as they pertain to specific fluids.

**acid resistant:** having the ability to withstand the action of identified acids within specified limits of concentration and temperature.

**adapter, adaptor:**

1. connectors of various sizes and materials used to change an end connector from one type to another type or one size to another. (i.e., a male SAE to male pipe adapter is often attached to a female SAE to create a male end union connector);

2. the grooved portion of a cam & groove coupling.

**adhesion:** the strength of bond between cured rubber surfaces or between a cured rubber surface and a non-rubber surface.

**adhesive:** a material which, when applied, will cause two surfaces to adhere.

**ambient/atmospheric conditions:** The surrounding conditions, such as temperature, pressure, and corrosion, to which a hose assembly is exposed.

**anchor:** a restraint applied to eliminate motion and restrain forces.

**anodize, anodized:** an electrolytic process used to deposit protective or cosmetic coatings in a variety of colors on

metal, primarily used with aluminum.

**ANSI:** American National Standards Institute.

**Application working pressure:** unique to customer's application. See pressure, working.

**assembly:** a general term referring to any hose coupled with end connectors of any style attached to one or both ends.

**ASTM:** American Society for Testing and Materials.

**axial movement:** compression or elongation along the longitudinal axis.

### B:

**barb:** the portion of a connector (coupling) that is inserted into the hose, usually comprised of two or more radial serrations or ridges designed to form a redundant seal between the hose and connector.

**barbed and ferrule**

**connector:** a two-piece hose connector comprised of a barbed insert (nipple), normally with peripheral ridges or backward-slanted barbs, for inserting into a hose and a ferrule, usually crimped or swaged.

**bend radius:** the radius of a bent section of hose measured to the innermost surface of the curved portion.

**bend radius, minimum:** the smallest radius at which hose or tubing can be used. For Metal Hose: the radius of a bend measured to the hose centerline, as recommended by the manufacturer.

**bore:**

1. an internal cylindrical passageway, as of a tube, hose or pipe;
2. the internal diameter of a tube, hose, or pipe.

**braid:** the woven portion of a hose used as reinforcement

to increase pressure rating and add hoop strength. Various materials such as polyester, cotton or metal wire are used. A hose may have one or more braids, outside or between layers of hose material.

**braided ply:** a layer of braided reinforcement.

**brand:** a mark or symbol identifying or describing a product and/or manufacturer, that is embossed, inlaid or printed.

**brass:** a family of copper/zinc alloys.

**brazing:** a process of joining metals using a non-ferrous filler metal having a melting point that is lower than the "parent metals" to be joined, typically over +800°F.

**bronze:** an alloy of copper, tin and zinc.

**BSPP/BSPT:**

British Standard Pipe Parallel / British Standard Pipe Tapered. See Connector/Coupling - Pipe Thread Connectors.

### C:

**chalking:** the formation of a powdery surface condition due to disintegration of surface binder or elastomer by weathering or other destructive environments.

**chemical compatibility:** the relative degree to which a material may contact another without corrosion, degradation or adverse change of properties.

**chemical resistance:** the ability of a particular polymer, rubber compound, or metal to exhibit minimal physical and/or chemical property changes when in contact with one or more chemicals for a specified length of time, at specified concentrations, pressure, and temperature.

**cold flexibility:** relative ease of bending while being

exposed to specified low temperature.

**combustible liquid:** a combustible liquid is one having a flash point at or above +100°F (37.8°C).

**compound:** the mixture of rubber or plastic and other materials, which are combined to give the desired properties when, used in the manufacture of a product.

**compression connector:** see connector/coupling - Compression

**conductive:** the ability to transfer electrical potential.

**configuration:** the combination of connectors on a particular assembly.

**core:** the inner portion of a hose, usually referring to the material in contact with the medium.

**corrosion:** the process of material degradation by chemical or electrochemical means.

**corrosion resistance:** ability of metal components to resist oxidation.

**coupling:** a frequently used alternative term for hose end connector.

**cover:** the outer component usually intended to protect the carcass of a product.

**CPE:** chlorinated polyethylene, a rubber elastomer.

**cracking:** a sharp break or fissure in the surface, generally caused by strain and environmental conditions.

### D:

**date code:** any combination of numbers, letters, symbols or other methods used by a manufacturer to identify the time of manufacture of a product.

**deburr:** to remove ragged edges from the inside diameter of a hose end.

**design factor:** a ratio used to establish the working pres-

# Glossary

## Alpha/Numeric

sure of the hose, based on the burst strength of the hose.

**DOT:** Department of Transportation.**DIN:** Deutsche Industrie Norme.

**durometer:** an instrument for measuring the hardness of rubber and plastic compounds.

### E:

**eccentricity:** the condition resulting from the inside and outside diameters not having a common center.

**effusion:** the escape, usually of gases, through a material. See permeation.

**elastic limit:** the limiting extent to which a body may be deformed and yet return to its original shape after removal of the deforming force.

**elastomer:** any one of a group of polymeric materials, usually designated thermoset, such as natural rubber, or thermoplastic, which will soften with application of heat.

**elongation:** the increase in length expressed numerically as a percentage of the initial length.

**endurance test:** a service or laboratory test, conducted to product failure, usually under normal use conditions.

**extrude/extruded/**

**extrusion:** forced through the shaping die of an extruder; extrusion may have a solid or hollow cross section.

### F:

**fabricator:** the producer of hose and tubing assemblies.

**fatigue:** the weakening or deterioration of a material occurring when a repetitious or continuous application of stress causes strain, which could lead to failure.

**FDA:** United States Food and Drug Administration.

**connector/coupling:** a device attached to the end of the hose to facilitate connection. The following is only a partial

list of types of connectors available:

**Compression Connector-** a connector style that seals on a mating tube by compressing an internal ferrule against the tube O.D.

**Field Attachable Connector** a connector designed to be attached to hose without crimping or swaging. This connector is not always a reusable type connector.

**Inverted Flare Connector** a connector consisting of a male or female nut, trapped on a tube by flaring the end of the tube material to either 37° or 45°.

**JIC Connectors** - joint Industrial Council (no longer in existence). An engineering group that established an industry standard connector design incorporating a 37° mating surface, male and female styles. These standards are now governed by SAE.

**O-ring Connectors** - a connector that seals by means of an elastomeric ring of a specified material.

**Pipe Thread Connectors** -

**NPT** - National Pipe Taper. Pipe thread per ANSI B1.20.1

**NPTF** - National Pipe Tapered for Fuels. (Same as above except dry-seal per ANSI B1.20.3)

**NPSH** - National Pipe Straight Hose per ANSI B1.20.7

**NPSM** - National Pipe Straight Mechanical. Straight thread per ANSI B1.20.1

**NPSL** - National Pipe Straight Loose fit per ANSI B1.20.1

**BSPP, BSPT** - British Standard Pipe, Parallel, British Standard Pipe Taper. BS21

**Quick Connect Connector** - a connector designed to quickly connect and disconnect. These connectors come in many styles and types.

**Tube Connector** - a hose connector of which the mating end conforms to a tube diameter. The mate or male end of a compression connector.

**Flammable gases/liquid/media:** a flammable gas, including liquefied gas, is one having a closed cup flash point below +100°F (+37.8°C) and a vapor pressure greater than 25 psi. (174.2 KPa).

**flow rate:** a volume of media being conveyed in a given time period.

**fluid:** a gas or liquid medium.

### G:

**GPM:** gallons per minute.

### H:

**heat resistance:** the property or ability to resist the deteriorating effects of elevated temperatures.

**hose:** a flexible conduit consisting of a tube, reinforcement, and usually an outer cover.

**hydrostatic testing:** the use of liquid pressure to test a hose or hose assembly for leakage, twisting, and/or hose change-in-length.

**Hytrell:** a DuPont registered trademark.

### I:

**I.D.:** the abbreviation for inside diameter.

**identification yarn:** a yarn of single or multiple colors, usually embedded in the hose wall, used to identify the manufacturer.

**ISO:** International Organization for Standardization.

### J:

**JIC:** see connector/coupling-JIC.

### K:

**kinking:** a temporary or permanent distortion of the hose induced by bending beyond the minimum bend radius.

### L:

**layline:** the line of printed information that runs parallel on the side of a manufactured hose giving details such as part number, PSI rating, hose size and manufacturing data.

**layer:** a single thickness of rubber or fabric between adjacent parts.

**loop installation:** the assembly is installed in a loop or "U" shape, and is most often used when frequent and/or large amounts of motion are involved.

**LPG, LP Gas:** the abbreviation for liquefied petroleum gas.

### M:

**MAWP:** see pressure, maximum allowable working.

**manufacturer's identification:** a code symbol used on or in some hose to indicate the manufacturer.

**media, medium:** the substance(s) being conveyed through a system.

### N:

**NAHAD:** the abbreviation for the National Association of Hose & Accessories Distributors.

**Neoprene:** a registered trademark of DuPont.

**nipple:** the internal member or portion of a hose connector.

**nitrile rubber (NB/Buna-N):** a family of acrylonitrile elastomers used extensively for



# Glossary

## Alpha/Numeric

industrial hose.

**nominal:** a size indicator for reference only.

**nomograph:** a chart used to compare hose size to flow rate to recommended velocity.

**non-conductive:** the inability to transfer an electrical charge.

**NPT/NPTF:** abbreviation for national pipe threads. See connector/coupling - Pipe Thread Connectors.

**nylon:** a family of polyamide materials.

**O:**

**OAL:** see overall length

**O.D.:** the abbreviation for outside diameter.

**OE/OEM:** original equipment manufacturer.

**oil resistance:** the ability of the materials to withstand exposure to oil.

**oil swell:** the change in volume of a rubber article resulting from contact with oil.

**operating conditions:** the pressure, temperature, motion, and environment to which a hose assembly is subjected.

**overall length (OAL):** the total length of a hose assembly, which consists of the free hose length plus the length of the coupling(s).

**oxidation:** the reaction of oxygen on a material, usually evidenced by a change in the appearance or feel of the surface or by a change in physical properties.

**ozone cracking:** the surface cracks, checks or crazing caused by exposure to an atmosphere containing ozone.

**ozone resistance:** the ability to withstand the deteriorat-

ing effects of ozone (generally cracking).

**P:**

**permanent connector:** the type of connector which, once installed, may not be removed for re-use.

**permeation:** the process of migration of a substance into and through another, usually the movement of a gas into and through a hose material; the rate of permeation is specific to the substance, temperature, pressure and the material being permeated.

**plating:** a material, usually metal, applied to another metal by electroplating, for the purpose of reducing corrosion; typically a more noble metal such as zinc is applied to steel.

**ply:** an individual layer in hose construction.

**polymer:** a macromolecular material formed by the chemical combination of monomers, having either the same or different chemical compositions.

**pressure:** force ÷ unit area. For purposes of this document, refers to PSIG (pounds per square inch gauge).

**pressure drop:** the measure of pressure reduction or loss over a specific length of hose.

**pressure, burst:** the pressure at which rupture occurs.

**pressure, working:** the maximum pressure to which a hose will be subjected, including the momentary surges in pressure, which can occur during service. Abbreviated as WP.

**psi (PSI):** pounds per square inch.

**PTFE:** polytetrafluoroethylene, a high molecular weight fluoroplastic polymer with carbon atoms shielded by fluorine atoms having very strong inter atomic bonds,

giving it chemical inertness.

**Push>Connect:**

(Push>Connect Metric, Push>Connect Flow Controls, Push>Connect Plus) A Reusable, easy to assemble connector recommended on compressed air, lubrication, and pneumatic instrumentation applications. Use with approved tubing material.

**PVC:** polyvinyl chloride. A low cost thermoplastic material typically used in the manufacture of industrial hoses. The operating temperature range is -500°F to +1750°F (-295.5°C to +954.4°C).

**Q:**

**Quick>Connect:** A reusable easy to assemble air brake connector used on NT100 series tubing. This connector meets D.O.T. performance requirements.

**R:**

**reinforcement:** the strengthening members, consisting of either fabric, cord, and/or metal, of a hose. See ply.

**reusable connector/coupling:** see connector/coupling, Field Attachable Connectors.

**S:**

**SAE:** Society of Automotive Engineers.

**shank:** that portion of a connector, which is inserted into the bore of a hose.

**specification:** a document setting forth pertinent details of a product.

**spring guard:** a helically wound component applied internally or externally to a hose assembly, used for strain relief, abrasion resistance, collapse resistance.

**standard:** a document, or an object for physical comparison, for defining product characteristics, products, or processes, prepared by a consensus of a properly constituted group of those substantially affected and having

the qualifications to prepare the standard for use.

**stem:** see nipple.

**surge (spike):** a rapid and transient rise in pressure.

**swelling:** an increase in volume or linear dimension of a specimen immersed in liquid or exposed to a vapor.

**T:**

**Teflon®:** a registered trademark of DuPont used under license by Eaton. See PTFE, FEP and PFA.

**tube:** the innermost continuous all-rubber or plastic element of a hose.

**tube connector:** see connector/coupling-Tube.

**tubing:** a non-reinforced, homogeneous conduit, generally of circular cross-section.

**V:**

**vacuum resistance:** the measure of a hoses ability to resist negative gauge pressure.

**vibration:** amplitude motion occurring at a given frequency.

**viscosity:** the resistance of a material to flow.

**W:**

**weathering:** the surface deterioration of a hose cover during outdoor exposure, as shown by checking, cracking, crazing and chalking.

**working temperature:** the temperature range of the application, may include the temperature of the fluid conveyed or the environmental conditions the assembly is exposed to in use.

**WP:** the abbreviation for working pressure.

The preceding Glossary of Terms, as utilized in the hose industry, includes some definitions from The Hose Handbook, published by the Rubber Manufacturers Association.



# Index

## Numeric/Alpha

|          |     |         |     |            |     |         |           |
|----------|-----|---------|-----|------------|-----|---------|-----------|
| A55SCUx  | 74  | A6860   | 110 | FS-3300    | 146 | T-104   | 144       |
| A555     | 110 | A6860S  | 110 | FT1341     | 142 | T-105   | 144       |
| A555P    | 112 | B735    | 110 | FT1356     | 143 | T-106   | 144       |
| A555S    | 110 | C-15x   | 147 | FT1356-2-1 | 143 | T-107   | 144       |
| A556P    | 112 | C-15D   | 147 | FT1600     | 147 | T-108   | 144       |
| A557MCUx | 74  | C-63x   | 147 | FT1601     | 147 | T-135   | 143       |
| A557SCUx | 74  | C9200   | 128 | FT1602     | 147 | T-138   | 143       |
| A655     | 110 | C9240   | 128 | FT1605     | 147 | T-138B  | 143       |
| A660     | 110 | CA-631  | 153 | FT1607     | 153 | T-150   | 142       |
| A664     | 119 | CA-632  | 148 | FT1608     | 153 | T-191   | 143       |
| A690     | 110 | CB-63x  | 147 | FT1613     | 154 | T-191B  | 143       |
| A690P    | 112 | CD-15   | 147 | M41157     | 128 | T-200   | 144       |
| A690S    | 110 | CL-490  | 146 | MTP16004   | 32  | T-210   | 145       |
| A694     | 119 | CL-491  | 146 | MTP16005   | 32  | T-220   | 145       |
| A694S    | 119 | CL-492  | 146 | MTP16006   | 32  | T-221   | 145       |
| A735     | 110 | CL-494  | 146 | MTP16008   | 32  | T-345   | 145       |
| A6690    | 110 | CL-496  | 146 | MTP16010   | 32  | T-345K  | 145       |
| A6690S   | 110 | CL-497  | 146 | MTP16012   | 32  | T-346x  | 145       |
| A6754    | 119 | CL-498  | 146 | PC-48      | 154 | T-1010  | 144       |
| A6754S   | 119 | CL-499  | 146 | PT20004    | 30  | T-1022  | 145       |
| A6755    | 110 | CL-500  | 146 | PT20044    | 30  | T-1422R | 145       |
| A6755S   | 110 | CL-501  | 146 | PT20005    | 30  | T-1430  | 142       |
| A6759    | 119 | CL-503  | 146 | PT20006    | 30  | TA-1002 | 142       |
| A6760    | 110 | FC-16x  | 147 | PT20008    | 30  | TP16002 | 31        |
| A6760P   | 112 | FC-161  | 153 | PT20010    | 30  | TP16025 | 31        |
| A6760S   | 110 | FF90587 | 121 | PT20012    | 30  | TP16004 | 31        |
| A6763    | 110 | FF90588 | 121 | PT20016    | 30  | TP16005 | 31        |
| A6764    | 119 | FF90589 | 121 | PT23002    | 30  | TP16006 | 31        |
| A6764S   | 119 | FF90590 | 124 | PT23003    | 30  | TP16008 | 31        |
| A6765    | 110 | FF90591 | 124 | PT23004    | 30  | W8022   | 146       |
| A6765S   | 110 | FF90592 | 124 | PT23005    | 30  | W15310  | 100 & 118 |
| A6769    | 119 | FF90593 | 124 | PT23006    | 30  | W20332  | 100 & 119 |
| A6769S   | 119 | FF90594 | 124 | PT24004    | 31  | 5X6 PB  | 146       |
| A6770    | 110 | FF90595 | 123 | PT24044    | 31  | 6X10 PB | 146       |
| A6774    | 119 | FF90596 | 123 | PT24005    | 31  | 8X12 PB | 146       |
| A6775    | 110 | FF90597 | 122 | PT24006    | 31  | 39x     | 42        |
| A6779    | 119 | FF90598 | 122 | PT24008    | 31  | 40x     | 42        |
| A6779S   | 119 | FS-800  | 146 | PT24010    | 31  | 41x     | 42        |
| A6845    | 110 | FS-900  | 146 | PT24012    | 31  | 42x     | 42        |
| A6855    | 110 | FS-1000 | 146 | PT24016    | 31  | 43x     | 43        |
| A6855S   | 110 | FS-2100 | 146 | T-100      | 144 | 44x     | 45        |

# Index

## Numeric/Alpha

|      |          |      |           |          |         |            |     |
|------|----------|------|-----------|----------|---------|------------|-----|
| 45x  | 45       | 124  | 117       | 621x     | 55      | 1105x-M    | 69  |
| 46x  | 43       | 125  | 117       | 630      | 112     | 1107x      | 65  |
| 48x  | 43       | 126  | 117       | 631x     | 55      | 1107x-M    | 70  |
| 49x  | 44       | 127  | 117       | 632      | 119     | 1107x-P    | 75  |
| 50x  | 44       | 128  | 117       | 641x     | 57      | 1108xP     | 75  |
| 51x  | 45       | 130  | 113       | 651x     | 56      | 1108x-S    | 75  |
| 54x  | 43       | 131x | 37        | 652x     | 40      | 1108x      | 66  |
| 55x  | 44       | 135  | 113       | 661x     | 55      | 1108x-M    | 70  |
| 56x  | 45       | 140  | 113       | 681x     | 56      | 1109x      | 64  |
| 59x  | 128      | 145  | 100 & 113 | 691x     | 56      | 1109x-M    | 69  |
| 60x  | 47       | 150  | 114       | 695      | 112     | 1110x      | 42  |
| 61x  | 47       | 162x | 48        | 700      | 112     | 1129x      | 64  |
| 62x  | 48       | 163x | 49        | 701x     | 56      | 1129x-MRP  | 69  |
| 63x  | 49       | 164x | 51        | 702x     | 40      | 1150x-PP   | 141 |
| 64x  | 51       | 165x | 50        | 703      | 119     | 1161x      | 64  |
| 65x  | 50       | 166x | 49        | 705      | 114     | 1161x-M    | 69  |
| 66x  | 49       | 168x | 48        | 711x     | 57      | 1162x      | 65  |
| 68x  | 48       | 169x | 50        | 721x     | 57      | 1162x-M    | 69  |
| 69x  | 50       | 170x | 50        | 741x     | 56      | 1164x      | 67  |
| 70x  | 50       | 171x | 51        | 752x     | 40      | 1164x-M    | 72  |
| 71x  | 51       | 172x | 51        | 0102x    | 48 & 54 | 1165x      | 66  |
| 72x  | 51       | 174x | 49        | 1062x    | 78      | 1165x-M    | 71  |
| 74x  | 49       | 185  | 113       | 1064x    | 80      | 1166x      | 66  |
| 76x  | 51       | 190  | 113       | 1065x    | 79      | 1166x-M    | 70  |
| 100x | 37       | 202x | 38        | 1066x    | 78      | 1168Px     | 75  |
| 105x | 37 & 129 | 230  | 113       | 1067x    | 79      | 1168x      | 66  |
| 108  | 113      | 252x | 38        | 1068x    | 78      | 1168x-M    | 70  |
| 110  | 117      | 270  | 113       | 1069x    | 79      | 1168x-MM   | 70  |
| 111  | 117      | 302x | 37 & 131  | 1070x    | 79      | 1169x      | 67  |
| 112  | 117      | 320  | 112       | 1071x    | 80      | 1169Px     | 76  |
| 113  | 117      | 325  | 112       | 1072x    | 80      | 1169x-S    | 67  |
| 114  | 117      | 330  | 112       | 1073x    | 78      | 1169x      | 67  |
| 115  | 117      | 352x | 38        | 1074     | 129     | 1169x-M    | 71  |
| 116  | 117      | 402x | 39        | 1074x    | 79      | 1169x-MPTS | 71  |
| 117  | 117      | 452x | 39        | 1075x    | 80      | 1169x-5MMS | 71  |
| 118  | 117      | 502x | 39        | 1077x    | 80      | 1171x      | 67  |
| 119  | 117      | 530  | 112       | 1078x    | 78      | 1171Px     | 76  |
| 120  | 114      | 537  | 119       | 1079x    | 78      | 1171x-M    | 72  |
| 121  | 117      | 601x | 54        | 1100x-MM | 141     | 1171x-S    | 67  |
| 122  | 117      | 602x | 40        | 1100x-PP | 141     | 1172Px     | 76  |
| 123  | 117      | 611x | 54        | 1105x    | 64      | 1172x-M    | 72  |

# Index

## Numeric/Alpha

|           |           |          |     |        |               |         |         |
|-----------|-----------|----------|-----|--------|---------------|---------|---------|
| 1172x-S   | 68        | 1380x    | 98  | 1474x  | 92            | 1574x   | 134     |
| 1172x-MM5 | 72        | 1408     | 125 | 1477x  | 94            | 1574Px  | 134     |
| 1174x     | 65        | 1410     | 125 | 1480x  | 92            | 1584    | 138     |
| 1174x-M   | 70        | 1421-7   | 115 | 1482x  | 95            | 1596    | 121     |
| 1180x     | 65        | 1421-18  | 115 | 1484x  | 95            | 1611x   | 48 & 54 |
| 1180x-M   | 69        | 1421-24  | 115 | 1485x  | 95            | 1800Kx  | 89      |
| 1181x     | 68        | 1421-32  | 115 | 1502x  | 139           | 1800T   | 89      |
| 1183x     | 68        | 1421-60  | 115 | 1502Px | 139           | 1800TRK | 89      |
| 1184x     | 68        | 1421-60A | 115 | 1512   | 105 & 126     | 1829x   | 89      |
| 1185x     | 68        | 1422     | 115 | 1513   | 127           | 1861x   | 83      |
| 1202x     | 59        | 1423     | 115 | 1514   | 127           | 1862x   | 83      |
| 1260x     | 59        | 1424A    | 114 | 1518   | 38 & 44 & 127 | 1864x   | 86      |
| 1261x     | 59        | 1425A    | 114 | 1521   | 44 & 127      | 1865x   | 85      |
| 1261xA    | 59        | 1426A    | 114 | 1522   | 38 & 44 & 127 | 1866x   | 84      |
| 1262x     | 59        | 1428     | 125 | 1529x  | 139           | 1868x   | 84      |
| 1264x     | 61        | 1429     | 125 | 1529Px | 139           | 1869x   | 85      |
| 1266x     | 60        | 1432     | 125 | 1531x  | 139           | 1869x-L | 85      |
| 1268x     | 60        | 1433     | 115 | 1553   | 38 & 44 & 127 | 1869x-S | 86      |
| 1269x     | 61        | 1437     | 126 | 1554   | 38 & 44 & 127 | 1870x   | 86      |
| 1270x     | 61        | 1439     | 126 | 1561x  | 138           | 1871x   | 86      |
| 1271x     | 61        | 1440     | 126 | 1561xG | 138           | 1871x-S | 87      |
| 1272x     | 61        | 1441     | 129 | 1561Px | 138           | 1872x   | 87      |
| 1274x     | 60        | 1442     | 130 | 1562x  | 135           | 1872x-S | 87      |
| 1340      | 100 & 107 | 1443     | 130 | 1562Px | 135           | 1873x   | 83      |
| 1341      | 100 & 107 | 1444     | 126 | 1563   | 38 & 44 & 127 | 1874x   | 83      |
| 1342      | 100 & 107 | 1445     | 126 | 1564x  | 137           | 1877x   | 87      |
| 1343      | 100 & 107 | 1446     | 126 | 1564Px | 137           | 1880x   | 84      |
| 1344      | 99 & 107  | 1447     | 126 | 1565x  | 137           | 1880x-S | 85      |
| 1345      | 99 & 107  | 1451     | 115 | 1565Px | 137           | 1883x   | 89      |
| 1346      | 99 & 107  | 1460x    | 91  | 1566x  | 135           | 1900    | 140     |
| 1351      | 99 & 107  | 1461x    | 91  | 1566Px | 135           | 1901    | 140     |
| 1360x     | 97        | 1462x    | 91  | 1568x  | 134           | 1902    | 140     |
| 1361x     | 97        | 1464x    | 94  | 1568Px | 134           | 1903    | 140     |
| 1362x     | 97        | 1465x    | 93  | 1569x  | 136           | 1906    | 140     |
| 1364x     | 99        | 1466x    | 92  | 1569Px | 136           | 1907    | 140     |
| 1366x     | 98        | 1468x    | 92  | 1570x  | 136           | 1908    | 140     |
| 1368x     | 97        | 1469x    | 93  | 1570Px | 136           | 1911    | 140     |
| 1369x     | 98        | 1469x-L  | 93  | 1571x  | 138           | 1912    | 140     |
| 1369x-L   | 98        | 1470x    | 93  | 1571Px | 138           | 1913    | 140     |
| 1371x     | 99        | 1471x    | 94  | 1572x  | 137           | 1914    | 140     |
| 1372x     | 99        | 1472x    | 94  | 1572Px | 137           | 1915    | 140     |

# Index

## Numeric/Alpha

|         |         |                 |     |       |          |               |           |
|---------|---------|-----------------|-----|-------|----------|---------------|-----------|
| 1916    | 140     | 3326x           | 106 | 6709  | 120      | 7900          | 130       |
| 1917    | 140     | 3327x           | 106 | 6719  | 118      | 7901          | 130       |
| 1918    | 140     | 3328x           | 106 | 6724  | 118      | 7904          | 130       |
| 1920    | 140     | 3329x           | 106 | 6729  | 118      | 7905          | 130       |
| 1921    | 140     | 3330x           | 106 | 6747  | 120      | 7906          | 130       |
| 1922    | 140     | 3331x           | 106 | 6748  | 120      | 7908          | 129       |
| 1923    | 140     | 3350x           | 107 | 6749  | 120      | 7909          | 129       |
| 1924    | 140     | 3400x           | 107 | 6783  | 114      | 7910          | 129       |
| 1925    | 140     | 3500x           | 108 | 6788  | 113      | 7911          | 129       |
| 1927    | 140     | 3600x           | 108 | 6800  | 111      | 7912          | 129       |
| 1928    | 140     | 3700x           | 108 | 6804  | 120      | 7913          | 129       |
| 1929    | 140     | 3750x           | 108 | 6805  | 111      | 7914          | 130       |
| 1930    | 140     | 3950x           | 108 | 6809  | 120      | 7915          | 128 & 129 |
| 1931    | 140     | FF3959-0204B    | 109 | 6810  | 111      | 7916          | 128 & 129 |
| 1932    | 140     | FF3959-0205B    | 109 | 6815  | 111      | 7917          | 129       |
| 1935    | 140     | FF3959-0406B    | 109 | 6820  | 111      | 7933          | 130       |
| 1936    | 140     | FF3959-0606B    | 109 | 6824  | 119      | 7934A         | 131       |
| 1937    | 140     | FF3959-0608B    | 109 | 6825  | 111      | 7935          | 130       |
| 1938    | 140     | FF3959-0806B    | 109 | 6828  | 120      | 7936          | 130       |
| 1939    | 140     | FF3959-0808B    | 109 | 6829  | 119      | 7937          | 130       |
| 1940    | 140     | FF3959-0810B    | 109 | 6891  | 118      | 7940          | 131       |
| 1942    | 140     | FF3960-01-0204B | 109 | 6892  | 118      | 7941          | 131       |
| 1943    | 140     | FF3960-01-0606B | 109 | 6893  | 118      | 7970          | 130       |
| 1944    | 140     | FF3960-01-0608B | 109 | 7502  | 116      | 7972          | 130       |
| 1945    | 140     | FF3960-01-0808B | 109 | 7504  | 116      | 7974          | 130       |
| 1948    | 140     | FF3960-01-0810B | 109 | 7506  | 116      | 7975          | 130       |
| 1949    | 140     | FF3960-0205B    | 109 | 7508  | 116      | 7977          | 128       |
| 2030x   | 47 & 54 | 4245-022        | 33  | 7509  | 116      | 7978          | 128       |
| 3129x   | 104     | 4245-025        | 33  | 7709  | 130      | 117-550644-03 | 89        |
| 3150x   | 104     | 4245-03         | 33  | 7727  | 129      | 217-2120403   | 89        |
| 3151x   | 104     | 4245-04         | 33  | 7732  | 129      | 217-35004-03  | 88        |
| 3152x   | 104     | 4245-05         | 33  | 7765  | 130      | 217-38404-03  | 88        |
| 3153x   | 104     | 4247-041        | 33  | 7771  | 129      | 217-38406-03  | 88        |
| 3200x   | 104     | 6100x           | 102 | 7805  | 130      | 217-38206-03  | 88        |
| 3220x   | 105     | 6200x           | 102 | 7812  | 130      | 217-35006-03  | 88        |
| 3250x   | 105     | 6400x           | 102 | 7817  | 129      | 217-38606-03  | 88        |
| 3270-06 | 33      | 6600            | 115 | 7818  | 129      | 217-38408-03  | 88        |
| 3270-08 | 33      | 6660            | 114 | 7828  | 129      | 217-35008-03  | 88        |
| 3270-10 | 33      | 6700            | 112 | 7829  | 129      | 217-38808-03  | 88        |
| 3270-12 | 33      | 6703            | 112 | 7896x | 37 & 129 | 217-38610-03  | 88        |
| 3300x   | 105     | 6707            | 120 | 7897  | 129      | 217-35010-03  | 88        |
| 3325x   | 106     | 6708            | 120 | 7898  | 130      | 217-43404-03  | 88        |

# Index

Numeric/Alpha

|                     |           |                     |           |                     |            |
|---------------------|-----------|---------------------|-----------|---------------------|------------|
| <u>217-43604-03</u> | <u>88</u> | <u>217-43408-03</u> | <u>88</u> | <u>217-40010-03</u> | <u>88</u>  |
| <u>217-43206-03</u> | <u>88</u> | <u>217-40008-03</u> | <u>88</u> | <u>211273A</u>      | <u>115</u> |
| <u>217-40006-03</u> | <u>88</u> | <u>217-43808-03</u> | <u>88</u> | <u>211280A</u>      | <u>115</u> |
| <u>217-43606-03</u> | <u>88</u> | <u>217-43610-03</u> | <u>88</u> |                     |            |
| <u>217-43806-03</u> | <u>88</u> | <u>217-40004-03</u> | <u>88</u> |                     |            |

# Warranty

Eaton Hydraulics warranty policy is located at [www.hydraulics.eaton.com/warranty](http://www.hydraulics.eaton.com/warranty)



Eaton  
Hydraulics Group USA  
14615 Lone Oak Road  
Eden Prairie, MN 55344  
USA  
Tel: 952-937-9800  
Fax: 952-294-7722  
[www.eaton.com/hydraulics](http://www.eaton.com/hydraulics)

Eaton  
Hydraulics Group Europe  
Route de la Longeraie 7  
1110 Morges  
Switzerland  
Tel: +41 (0) 21 811 4600  
Fax: +41 (0) 21 811 4601

Eaton  
Hydraulic Group Asia Pacific  
11th Floor Hong Kong New  
World Tower  
300 Huaihai Zhong Road  
Shanghai 200021  
China  
Tel: 86-21-6387-9988  
Fax: 86-21-6335-3912



*Powering Business Worldwide*

© 2017 Eaton Corporation  
All Rights Reserved  
Printed in USA  
Document No. E-BRFI-MC001-E5  
August 2017