ADAPTERS AND TUBE FITTINGS

NOTE: Due to the infinite number of adapter combinations, materials and finishes available, Eaton Aeroquip does not catalog all items it stocks or has the capability to manufacture. Eaton Aeroquip catalogs only its most popular standard adapters. Please contact Eaton Aeroquip directly for special adapter requirements, including stainless steel and brass components. These parts are provided to customers with the same quality and prompt delivery as stock items.

This page is part of a complete catalog which contains technical and safety data that must be reviewed when selecting a product.
## ADAPTERS AND TUBE FITTINGS

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### SAFETY PRECAUTIONS

Read the instruction manual carefully and thoroughly before using the product, and then use it correctly.
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</table>

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The Aeroquip ORS® Connection is the Universal Answer to Troublesome Fluid Leakage Problems

**Hose Assemblies**
The ORS® connection can be used with flexible hydraulic hose, combining the reusability of the hose fitting and the ORS connection. The result is the ultimate reusable fitting.

**Tube Assemblies**
The ORS connection can be attached to hydraulic tubing to make a tube assembly. Two methods of attachment are available.

1. ORS-TF: The ORS female can be jointed directly to steel tubing with the patented ORS-TF (wedge type) tube fitting, another Aeroquip innovation. The fitting becomes an integral part of your system at a fraction of the time and expense brazing requires.

   The versatility these options provides make ORS the only connection you need for high-pressure situations. It attaches to most types of fluid conveying lines, controlling most types of fluid, facing the toughest conditions.

2. ORS-Braze Type: The ORS component can be brazed to hydraulic tubing.
Versil-Flare™ Flareless and Versil-Flare™ SAE 37° Flared type
both styles use the same SAE 37° flared body

Before Connection

After Connection
One inventory of bodies (any standard SAE 37° flare fitting) allows both flareless and flared type connection of standard steel hydraulic tubing. It is no longer necessary to inventory flared tube fittings plus the special bodies, nuts and sleeves for flareless tube fittings. The Aeroquip total tube fitting concept reduces inventory expense.

Aeroquip Versil-Flate™ Flareless Tube Fitting

The Aeroquip Versil-Flate™ Flareless Tube Fitting can use any standard SAE 37° male flare adapter or hose fitting as a body. This eliminates the need to inventory special flareless tube fitting bodies and results in reduced inventory expense. Aeroquip Versil-Flare™ Flareless Tube Fittings are available in size from ⅛” tube O.D. to 2” tube O.D. Presetting tools and extra assembly time are eliminated because there’s no need for flaring, special preparation or presetting with the Aeroquip Versil-Flare™ Flareless Tube Fitting. The chance of assembly error is reduced because the ferrule can be installed only one way and assembly is the same for all sizes and tube wall thicknesses. This assures a tight joint every time. These features improve production rates.

Aeroquip Versil-Flate™ Flared Tube Fitting

The Aeroquip industrial standard three piece flare type tube fitting can be used on the full range of standard steel hydraulic tubing in various wall thicknesses from ⅛” tube O.D. to 2” tube O.D. All three components are constructed from high quality zinc plated steel for long service life. The standard SAE 37° flare angle is used to produce a highly efficient seal under hydraulic pressures. The sleeve is used to help support the tube and absorb vibration. Assembly is easy. A properly sized wrench and flaring tool are all that is necessary. Aeroquip standard SAE 37° flare type fittings can also be disassembled and re-assembled repeatedly. Aeroquip quality is built into every component to assure leakproof connections. The Aeroquip standard SAE 37° flare type tube fitting conforms to the following hydraulic tube fitting standards. Military specification, MIL-F-18866 and Society of Automotive Engineers, SAE J514.

Tubing selection and sizing

Aeroquip Versil-Flare™ Flareless and Standard SAE 37° flare type, tube fittings can be used with SAE J-525 electric resistance welded, cold worked annealed, SAE J-524 seamless annealed tubing and SAE J527 brazed double wall low carbon steel tubing. SAE J556 welded flash controlled normalized steel tubing can only be used with Aeroquip Versil-Flare™ Flared Tube Fitting. The maximum hardness of the above tubing should not exceed Rockwell B65. Selection of proper tubing material, size and wall thickness depends on corrosion conditions, pressure and flow requirements and other operating requirements of the system.
Aeroquip Part Numbers
Aeroquip adapter part numbers consist of a base number followed by a size designation. If the part number contains a “T” character between the base number and size designator, the first size designator signifies the tube size.

Example: FF1852 T 06 04 S

- Base part number
- “T” character
- Tube size
- Pipe or port size
- Material designation suffix (steel)

If the part number does not contain a “T” character between the base number and the size description, the first size designation signifies the port size.

Example: FF2030 2 – 08 08 S

- Base part number
- Pipe or port size
- Tube or hose end
- Material designation suffix (steel)

How to Order Adapters
Adapters are ordered using the complete part number as shown on the adapter pages.

Example: FF90146 08 S

- Dash size
- Material designation suffix (steel)

By ordering a single part number in kit form, you will receive the components ready to be assembled to an ORS tube fitting body:

Example: FF90146–08S includes:

- FC1851–08S (ORS-TF Nut)
- FF90102–08S (ORS-TF Ferrule)
- FF90103–08S (ORS-TF Sleeve)

ORS Adapter Conversion*
ORS adapters have been replaced with the half dovetail groove design. The half dovetail groove is manufactured with an angle on the OD wall. This angle captures the O-ring for maximum retention. For ease of installation, a half dovetail groove installation tool may be used.

Half Dovetail Groove Installation Tool
The half dovetail groove installation tool compresses the O-Ring, allowing it to easily slide into the groove in the adapter. Use of the tool maximizes efficiency and minimizes any fatigue that may be associated with repeated insertions over an extended period of time. One tool is required per dash size (or by adapter size). Each tool comes with an illustrated instruction sheet. Tools are available by using the following part numbers: FT1405-04, FT1405-06, FT1405-08, FT1405-10, FT1405-12, FT1405-16, FT1405-20, FT1405-24.

*Eaton Aeroquip reserves the right to use straight groove on some ORS.
How to order ORS® Adapters and Tube Fittings (cont.)

Nuts and Shoulders (Braze Type)

Nuts and shoulders can be ordered separately. Simply use the base number, dash size, and material designation.

Example: FC2326– 04 S

<table>
<thead>
<tr>
<th>Base part number</th>
<th>Dash size</th>
<th>Material designation suffix (steel)</th>
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</thead>
</table>

O-Rings

Buna-N O-Rings are standard. Other materials may also be specified by adding a material designator prefix if the part number begins with a numeric and a material designator suffix if the part number begins with an alpha character. In all cases, the suffix “$” shall be omitted.

How to Order Conversion Adapters BSPP/BSPT

Example: GG110– NP 08– 08

<table>
<thead>
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<th>Base part number including material</th>
<th>37° end dash size</th>
<th>Port thread dash size</th>
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</table>

<table>
<thead>
<tr>
<th>Metric</th>
<th>Example: GG108– NP 08– 16</th>
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</thead>
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<tr>
<td>Base part number including material</td>
<td>37° end dash size</td>
</tr>
</tbody>
</table>

Body Material

Steel is standard. Other materials may also be specified by adding a material designator prefix if the part number begins with a numeric and a material designator suffix if the part number begins with an alpha character. In all cases, the suffix “$” shall be omitted.

<table>
<thead>
<tr>
<th>Material Designator Prefix/Suffix</th>
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<tr>
<td>B (suffix only)</td>
<td>Brass</td>
</tr>
<tr>
<td>S 259</td>
<td>316-Stainless</td>
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<tr>
<td>4</td>
<td>Monel</td>
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<tr>
<td>5</td>
<td>Steel</td>
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O-Rings can be ordered separately.

Example: FF9446– 11

<table>
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<th>O-Ring</th>
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<th>Dash size</th>
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Material Designation Prefix/Suffix  | Material  | Operating Temperature Range |
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<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>90 Dunlop</td>
<td>Buna-N</td>
<td>−40°F to +200°F (−40°C to +93°C)</td>
</tr>
<tr>
<td>212 EPDM</td>
<td>Ethylene Propylene Rubber</td>
<td>−45°F to +300°F (−40°C to +150°C)</td>
</tr>
<tr>
<td>213 Viton*</td>
<td>Fluorocelastomer</td>
<td>−15°F to +40°F (−26°C to +4°C)</td>
</tr>
<tr>
<td>214 Buna-N, Low</td>
<td>Temperature Nitrile Rubber</td>
<td>−45°F to +225°F (−40°C to +113°C)</td>
</tr>
<tr>
<td>352 Neoprene</td>
<td></td>
<td>−45°F to +300°F (−40°C to +150°C)</td>
</tr>
</tbody>
</table>

Example: FF2001T0804– 213

ORS/Male NPTF Adapter

Base part number and size

Suffix for Viton*
ADAPTERS AND TUBE FITTINGS

HOW TO ORDER

Dimensions
Aeroquip tube fittings are ordinarily designed and produced to the functional requirements set forth in SAE Standards J512, J513, J514, J1926 and J1453. However, in some cases the envelope dimensions of certain components vary slightly from cataloged or SAE referenced dimensions. The SAE reference numbers and fitting descriptions given are in accordance with SAE Standard J846.

Availability
All items listed in the current price schedule are normally carried in stock. Price and delivery of non-stocked and special parts may be obtained from your Eaton Aeroquip Sales Representative or Distributor.

Loctite® Vibra-Seal 516 for External Pipe Threads
Loctite Vibra-Seal has the following characteristics:
- Non-hardening thread sealant
- Resists shredding and peeling during assembly
- Can be reused up to 5 times without recoating
- Provides resistance to vibrational loosening
- Excellent resistance to solvents and oils
- Operating temperatures range -65°F to +250°F

Machine applied so that it leaves first 1/2 to 2 threads uncovered for ease of assembly. Because of the excellent characteristics of this product, we are offering Loctite Vibra-Seal on all of our parts that have male pipe threads. Factory applied Loctite for external pipe threads may be ordered for steel parts by adding the prefix "307-" to the completed part number, and dropping suffix "S" if the part number begins with a numeral. Example: 307-2021-8-8. If the part number begins with an alpha character, add the suffix "–307" to the completed part number and drop the suffix "S". Example: FF2031T0606-307.

*Loctite is a trademark of Loctite Corp.
The Patented ORS-TF tube fitting utilizing the ORS-TF nut, ferrule and sleeve can be joined directly to steel tubing to solve your fluid leakage problems. It does not require the time and expense of brazing and provides the advantage of repetitive reuse. It is a compression type fitting that works on a variety of tubing (See page 430 for tubing specifications). See page 352 for assembly instructions.

**ORS-TF Kit**

Part No. FF90146-(Size)

Includes:

- FC1851 ORS-TF Nut
- FF90102 ORS-TF Ferrule
- FF90103 ORS-TF Sleeve

**Keep It Simple and Clean with ORS**

*Patent #5,217,261*
<table>
<thead>
<tr>
<th>Dash Tube</th>
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<th>A</th>
<th>B</th>
<th>C</th>
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<td>.50</td>
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<td>.50</td>
</tr>
<tr>
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<td>1 11/16 -12</td>
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<td>.50</td>
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<tr>
<td>1616S</td>
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<td>.50</td>
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CAUTION:

In applications exceeding +480°F (such as during brazing) order the oil-coated/non-plated nut by using part number FC2325-(Dash size).*
This page is part of a complete catalog which contains technical and safety data that must be reviewed when selecting a product.
### ADAPTERS AND TUBE FITTINGS

#### ADAPTERS

**ORS/O-RING BOSS Cont.**

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<th>T2</th>
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<td>Size</td>
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<td>1616S</td>
<td>1.00</td>
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**ORS/O-RING BOSS (Ad) Adapter**

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**ORS/SAE O-Ring Boss (Ad) Adapter**

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**ORS/NPTF**

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**ORS/Male NPTF Adapter**

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**ORS/Male NPTF Adapter**

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**ORS/Male NPTF Adapter**

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</table>
This page is part of a complete catalog which contains technical and safety data that must be reviewed when selecting a product.

### ORS Female Swivel/SAE 37° Flare

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<th>Dash Tube Thread</th>
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### ORS Female Swivel/SAE 37° Male Flare

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<th>Thread AB</th>
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### ORS/ORS Adapter

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<td>1 7/16</td>
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**ADAPTERS AND TUBE FITTINGS**

**ORS/ORS Male Adapter**  
Part No. FF1857T (Size)  
(Ref. SAE 520433)

**ORS/ORS Female/ORS Adapter**  
Part No. FF1147T (Size)  
(Ref. SAE 520401)

**ORS/ORS Bulkhead Adapter**  
Part No. FF2114T (Size)  
(Ref. SAE 520432)

**ORS/ORS Bulkhead Run Tee**  
Part No. FF2033T (Size)  
(Ref. SAE 520401)

**ORS/ORS Female Adapter**  
Part No. FF1898T (Size)  
(Ref. SAE 520433)

**Dash Tube**  
Size O.D. T1 T2 Thread A B C

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**ORS ACCESSORIES**

**ORS Plug**  
Part No. FF7076 - (Dash size)  
(Ref. SAE 520109)

**ORS Cap Assembly**  
Part No. FF8603 - (Dash size)

**ORS Cap (use with FC236) Nut**  
Part No. FF8007 - (Dash size)

**ORS Silver Brazing Ring**  
Part No. FF9775 - (Dash size)

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**ADAPTERS AND TUBE FITTINGS**

**ADAPTERS**

**PIE TO PIPE Cont.**

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</tr>
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<td>4-4S</td>
<td>1/4 -18</td>
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<td>4-6S</td>
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<td>1-11 1/2</td>
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</tr>
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<td>1-11 1/2</td>
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<td>20S</td>
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<td>1 1/4 -11 1/2</td>
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**ADAPTERS AND TUBE FITTINGS**

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## ADAPTERS

### PIPE TO PIPE Cont.

#### External pipe/External pipe

Part No. 2085-(Dash size)
(Ref. SAE 140237)

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#### External pipe/Hose connector

Part No. FF1162–(Dash size)
(Ref. SAE 430260)

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Clamp required.

#### External pipe swivel/External pipe

Part No. 2252-(Dash size)

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**NOTE:** The above adapter is not a rotating swivel joint. Care must be exercised to avoid misuse. To be used with petroleum or water glycol fluids.

### Internal pipe swivel (NPSM)/External pipe

Part No. 2047-(Dash size)
(Ref. SAE 140230)

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#### Internal pipe swivel (NPSM)/Internal pipe

Part No. 2048-(Dash size)
(Ref. SAE 140231)

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#### Internal pipe swivel (NPSM)/External pipe

Part No. 2047-(Dash size)
(Ref. SAE 140230)

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<td>14 3/4</td>
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</table>

#### Internal pipe swivel (NPSM)/Internal pipe

Part No. 2048-(Dash size)
(Ref. SAE 140231)

<table>
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<tr>
<th>Size</th>
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<th>P 2</th>
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<th>B</th>
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</tr>
</tbody>
</table>

**NOTE:** The above adapter is not a rotating union or swivel joint. Care must be exercised to avoid misuse. To be used with petroleum or water glycol fluids.

### Internal pipe swivel (NPSM)/Internal pipe

Part No. 2048-(Dash size)
(Ref. SAE 140231)

<table>
<thead>
<tr>
<th>Size</th>
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<th>B</th>
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**NOTE:** The above adapter is not a rotating union or swivel joint. Care must be exercised to avoid misuse. To be used with petroleum or water glycol fluids.
## ADAPTERS

### PIPE TO PIPE Cont.

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### ADAPTERS AND TUBE FITTINGS

### External pipe/External pipe
Part No. 2257-(Dash size)

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### Internal pipe/External pipe
Part No. 2255-(Dash size)

### Dash Size | Thread P₁ | Thread P₂ | A | B |
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Part No. 2093-(Dash size)

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<tr>
<td>2-25</td>
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### External pipe/Internal pipe
Part No. 2092-(Dash size)

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### Internal pipe/Internal pipe
Part No. 2256-(Dash size)

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<th>B</th>
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</thead>
<tbody>
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<td>1.23</td>
<td>1.23</td>
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All dimensions in inches.

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(Ref. SAE 140426)
### ADAPTERS AND TUBE FITTINGS

#### PIPE TO 37° FLARE Cont.

<table>
<thead>
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<td>&gt; 20</td>
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<td>&gt; 20</td>
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<td>31</td>
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<td>&gt; 20</td>
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<td>6-58</td>
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#### Internal pipe/37° flare bulkhead

<table>
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<th>Thread Pitch</th>
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<th>A</th>
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<tbody>
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<td>&gt; 16</td>
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#### Internal pipe/37° flare bulkhead

<table>
<thead>
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<th>T</th>
<th>A</th>
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<td>&gt; 20</td>
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<td>&gt; 27</td>
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</table>

#### External pipe/37° flare

<table>
<thead>
<tr>
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<th>Tube O.D.</th>
<th>Thread Pitch</th>
<th>T</th>
<th>A</th>
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<tr>
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<td>10-165</td>
<td>100</td>
<td>1 1/16</td>
<td>&gt; 12</td>
<td>3.11</td>
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</table>

All dimensions in inches.
ADAPTERS AND TUBE FITTINGS

PIPE TO 37° FLARE Cont.

Extra long external pipe/37° flare
Part No. 202414-(Dash size)

External pipe swivel/37° flare
Part No. 2250-(Dash size)

External pipe swivel/37° flare
Part No. 2249-(Dash size)

Dash Tube
Thread
Thread
A
B

206
226
226
246
206
226
206
226
246

Part No. 203007-(Dash size)

External pipe/37° flare
Part No. 2035-(Dash size)

Internal pipe/37° flare
Part No. 2244-(Dash size)

Dash Tube
Thread
Thread
A
B

Dash Tube
Thread
Thread
A
B

Dash Tube
Thread
Thread
A
B

Dash Tube
Thread
Thread
A
B

Dash Tube
Thread
Thread
A
B

All dimensions in inches.

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Part No. 2028-(Dash size)

External pipe/37° flare

Part No. 203103-(Dash size)

Dash Tube Thread

Part No. 2030-(Dash size)

Internal pipe/37° flare/37° flare

Part No. 203006-(Dash size)

°
### ADAPTERS AND TUBE FITTINGS

#### PIPE TO 37° FLARE Cont.

<table>
<thead>
<tr>
<th>Size</th>
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<th>Thread T</th>
<th>A</th>
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<th>C</th>
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<td>8-108</td>
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<td>1/16</td>
<td>.129</td>
<td>1.81</td>
<td>2.08</td>
<td></td>
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<td>8-108</td>
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<td>1/16</td>
<td>1/16</td>
<td>.129</td>
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#### PIPE TO 45° FLARE

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**ADAPTERS**

**PIPE TO SAE O-RING**

<table>
<thead>
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<td>4-65S</td>
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<td>6-85S</td>
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<td>8-105S</td>
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<td>8-125S</td>
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<td>8-165S</td>
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NOTE: Available without O-Ring. Order by Part No. 206804-(Dash size).

<table>
<thead>
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<th>Internal pipe/swivel (NPSM)/SAE O-Ring boss (adj.)</th>
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<td>5-65S</td>
<td>1/16</td>
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NOTE: Available without O-Ring. Order by Part No. 206701-(Dash size).

<table>
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<tr>
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</tr>
<tr>
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</tr>
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<tr>
<td>12-205S</td>
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NOTE: Available without O-Ring. Order by Part No. 205804-(Dash size).

<table>
<thead>
<tr>
<th>Internal pipe/swivel (NPSM)/SAE O-Ring boss (adj.)</th>
<th>Part No. 206801-(Dash size)</th>
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</tr>
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</tr>
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<td>12-105S</td>
<td>1/16</td>
</tr>
<tr>
<td>12-125S</td>
<td>1/16</td>
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<td>1/16</td>
</tr>
<tr>
<td>12-205S</td>
<td>1/16</td>
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</tbody>
</table>

NOTE: Available without O-Ring. Order by Part No. 206801-(Dash size).

**ADAPTERS AND TUBE FITTINGS**

This page is part of a complete catalog which contains technical and safety data that must be reviewed when selecting a product.
### ADAPTERS AND TUBE FITTINGS

This page is part of a complete catalog which contains technical and safety data that must be reviewed when selecting a product.

#### ADAPTERS

**PIPE TO BRAZE & WELD**

<table>
<thead>
<tr>
<th>Dash Size</th>
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<th>P</th>
<th>A</th>
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<th>C</th>
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**Braze port/Internal pipe (NPSM)**

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**Braze port/Internal pipe swivel (NPSM)**

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**Braze port/External pipe**

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#### SAE 37° (JIC) FLARE UNION

**Union 37° flare/37° flare**

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<th>C</th>
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<td>56</td>
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<tr>
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<td>0.38</td>
<td>0.62</td>
<td>1.51</td>
<td>62</td>
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<td>0.50</td>
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<td>1.62</td>
<td>81</td>
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All dimensions in inches.
### ADAPTERS AND TUBE FITTINGS

**SAE 37° (JIC) FLARE UNION**

Cont.

#### 37° Flare/37° Flare Union

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<th>T 2</th>
<th>A</th>
<th>B</th>
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<td>7-20</td>
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<td>.20</td>
<td>.20</td>
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<td>.79</td>
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<td>8-20</td>
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<td>.20</td>
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<td>.20</td>
<td>.20</td>
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<td>12-20</td>
<td>.31</td>
<td>.25</td>
<td>.20</td>
<td>.20</td>
<td>1.37</td>
<td>.79</td>
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</table>

#### 37° Flare Union (large hex)

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<th>B</th>
</tr>
</thead>
<tbody>
<tr>
<td>5-5S</td>
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<td>.25</td>
<td>.20</td>
<td>.20</td>
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<td>.18</td>
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<td>1.27</td>
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<td>.12</td>
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#### 37° Flare Plug

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<td>.7/16</td>
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<td>.80</td>
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<td></td>
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<tr>
<td>5S</td>
<td>.31</td>
<td>1/2</td>
<td>.20</td>
<td>.80</td>
<td>.56</td>
<td></td>
</tr>
<tr>
<td>6S</td>
<td>.38</td>
<td>9/16</td>
<td>.18</td>
<td>.84</td>
<td>.62</td>
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</tr>
<tr>
<td>8S</td>
<td>.50</td>
<td>3/4</td>
<td>.16</td>
<td>.94</td>
<td>.81</td>
<td></td>
</tr>
<tr>
<td>10S</td>
<td>.63</td>
<td>7/8</td>
<td>.14</td>
<td>1.10</td>
<td>1.00</td>
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<tr>
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#### Cap Nut

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<th>T 2</th>
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<th>B</th>
</tr>
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<tbody>
<tr>
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<td>.3/8</td>
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<td>.56</td>
<td>.44</td>
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<td>.7/16</td>
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<td>.62</td>
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<tr>
<td>8S</td>
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<td>3/4</td>
<td>.16</td>
<td>.75</td>
<td>.88</td>
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<td>.84</td>
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All dimensions in inches.

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This page is part of a complete catalog which contains technical and safety data that must be reviewed when selecting a product.
### SAE 37° (JIC) Flare Union

**Cont.**

<table>
<thead>
<tr>
<th>Dash Size</th>
<th>Tube O.D.</th>
<th>Thread</th>
<th>Thread</th>
<th>A</th>
<th>B</th>
</tr>
</thead>
<tbody>
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#### 37° Flare Swivel/37° Flare

**Part No. 2070-(Dash size)**

(Rel. SAE 070321)

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<td>1.95</td>
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<td>9 /16</td>
<td>9 /16</td>
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#### SAE 37° Flare Bulkhead/37° Flare

**Part No. 2039-(Dash size)**

(Rel. SAE 070201)

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<td>1 /2</td>
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#### 37° Flare Swivel/37° Flare

**Part No. 500454-(Dash size)**

(Suitable for pressures through 4 light spiral hose, SAE 100R9)

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</table>

### ADAPTERS AND TUBE FITTINGS

This page is part of a complete catalog which contains technical and safety data that must be reviewed when selecting a product.
ADAPTERS AND TUBE FITTINGS

SAE 37° (JIC) FLARE UNION
Cont.

37° flare swivel/37° flare (suitable for pressures through heavy spiral hose - SAE 100R10)
Part No. FF1065-(Dash size)
(Ref. SAE 070433)

Dash Size Tube O.D. T 1 T 2 T 3 AB
4S .25 7/16 -20 7/16 -20 7/16 -20 .66 .89
5S .31 1/2 -20 1/2 -20 1/2 -20 .95 1.90
6S .38 9/16 -18 9/16 -18 9/16 -18 1.06 2.10
8S .50 3/4 -16 3/4 -16 3/4 -18 1.25 2.28
10S .63 7/8 -14 7/8 -14 7/8 -14 1.45 2.95
12S 1 1/16 -12 1 1/16 -12 1 1/16 -12 1.66 3.32
16S 1 5/16 -12 1 5/16 -12 1 5/16 -12 1.84 3.65
20S 1 5/8 -12 1 5/8 -12 1 5/8 -12 2.06 4.06

NOTE: Available without nut. Order by Part No. FF1065-(Dash size).

37° flare swivel/37° flare (suitable for pressures through 4 light spiral hoses - SAE 100R9)
Part No. 504095-(Dash size)

Dash Size Tube O.D. T 1 T 2 AB
4S .25 7/16 -20 7/16 -20 1.80 1.12
5S .31 1/2 -20 1/2 -20 1.77 1.24
6S .38 9/16 -18 9/16 -18 2.18 1.31
8S .50 3/4 -16 3/4 -18 2.43 1.78
10S .63 7/8 -14 7/8 -14 2.57 2.07
12S .75 1 1/16 -12 1 1/16 -12 3.73 2.49
16S 1.00 1 5/16 -12 1 5/16 -12 4.58 2.79
20S 1.25 1 5/8 -12 1 5/8 -12 5.53 3.14

37° flare swivel/37° flare (suitable for pressures through 4 heavy spiral hose - SAE 100R10)
Part No. FF5164-(Dash size)

Dash Size Tube O.D. T 1 T 2 AB
0808S .50 3/4 -16 3/4 -16 3.34 2.19
1212S .75 1 1/16 -12 1 1/16 -12 4.47 3.38
1616S 1.00 1 5/16 -12 1 5/16 -12 5.69 4.59
2020S 1.25 1 5/8 -12 1 5/8 -12 7.00 5.79

37° flare bulkhead/37° flare
Part No. 203308-(Dash size)
(Ref. SAE 070956)

Dash Size Tube O.D. Thread T 1 T 2 T 3 A B C
4-6S 38 .0322 1.88 1.09 1.09
5-8S 38 .0518 2.32 1.52 1.52
6-8S 38 .0518 3.16 2.19 2.19
8-8S 38 .2570 4.41 2.80 2.80
10-10S 38 .2570 5.23 3.78 3.78
12-12S 38 .3208 6.49 4.62 4.62
16-16S 38 .4609 10.10 6.89 6.89
20-20S 38 .6809 13.71 9.46 9.46

NOTE: Available without nut. Order by Part No. FF1065-(Dash size).

37° flare bulkhead/37° flare
Part No. 203101-(Dash size)
(Ref. SAE 070401)

Dash Size Tube O.D. Thread T 1 T 2 A B
4S .25 7/16 -20 7/16 -20 .89 1.78
5S .31 1/2 -20 1/2 -20 .95 1.90
6S .38 9/16 -18 9/16 -18 1.06 2.10
8S .50 3/4 -16 3/4 -18 1.25 2.28
10S .63 7/8 -14 7/8 -14 1.45 2.95
12S .75 1 1/16 -12 1 1/16 -12 1.66 3.32
16S 1.00 1 5/16 -12 1 5/16 -12 1.84 3.65
20S 1.25 1 5/8 -12 1 5/8 -12 2.06 4.06

37° flare bulkhead/37° flare
Part No. 203002-(Dash size)
(Ref. SAE 070959)

Dash Size Tube O.D. Thread T 1 T 2 A B
4S .25 7/16 -20 7/16 -20 1.59 .92
5S .31 1/2 -20 1/2 -20 1.62 .95
6S .38 9/16 -18 9/16 -18 1.81 1.06
8S .50 3/4 -16 3/4 -18 2.11 1.24
10S .63 7/8 -14 7/8 -14 2.39 1.44
12S .75 1 1/16 -12 1 1/16 -12 2.67 1.72
16S 1.00 1 5/16 -12 1 5/16 -12 2.80 1.94
20S 1.25 1 5/8 -12 1 5/8 -12 3.04 2.16

NOTE: Available without nut. Order by Part No. 203002–1-(Dash size).

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SAE O-RING TO 37° FLARE

Part No. 20702-(Dash size) (Ref. SAE 070116)

Dash Tube Thread

<table>
<thead>
<tr>
<th>Dash Size</th>
<th>Tube OD</th>
<th>Thread T</th>
<th>A</th>
<th>B</th>
</tr>
</thead>
<tbody>
<tr>
<td>4-45</td>
<td>1</td>
<td>20</td>
<td>0.69</td>
<td>0.89</td>
</tr>
<tr>
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<td>5-65</td>
<td>3</td>
<td>16</td>
<td>1.25</td>
<td>1.35</td>
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<tr>
<td>6-85</td>
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<tr>
<td>10-125</td>
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</table>


SAE O-RING TO 45° FLARE

Part No. 20704-(Dash size) (Ref. SAE 070118)

Dash Tube Thread

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<th>B</th>
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<tbody>
<tr>
<td>4-45</td>
<td>1</td>
<td>20</td>
<td>0.69</td>
<td>0.89</td>
</tr>
<tr>
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<tr>
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<td>16</td>
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<td>1.66</td>
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**SAE O-RING TO 37° FLARE**

Cont.

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**SAE O-Ring boss/37° flare**
Part No. 202703–(Dash size).

**Order by Part No. FF2137–(Dash size).**

**NOTE:** Available without O-Ring.

O-Ring boss plug
Part No. 900599–(Dash size) (Ref. SAE 090191B)

**Order Part No. 900599–1–(Dash size).**

**NOTE:** Available without O-Ring.

**SAE male O-Ring boss (Hex Socket)**
Part No. 900598–1–(Dash size).

**Order Part No. 900598–(Dash size).**

**NOTE:** Available without O-Ring.

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**ADAPTERS AND TUBE FITTINGS**

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All dimensions in inches.
### ADAPTERS AND TUBE FITTINGS

#### SAE SPLIT FLANGE TO ORS Cont.

**90° ORS/Split Flange (Code 62)**
Part No. FF0720T/Size

<table>
<thead>
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<th>Thread T</th>
<th>A</th>
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</thead>
<tbody>
<tr>
<td>1/2</td>
<td>0.50</td>
<td>3/4-16</td>
<td>2.34</td>
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<tr>
<td>3/4</td>
<td>0.75</td>
<td>1-11/16</td>
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**120° ORS/Split Flange (Code 62)**
Part No. FF0721T/Size

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</thead>
<tbody>
<tr>
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<td>0.75</td>
<td>1-11/16</td>
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<tr>
<td>1</td>
<td>1.00</td>
<td>1-7/16</td>
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**100° ORS/Split Flange (Code 62)**
Part No. FF2522T/Size

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<tr>
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<td>3/4-16</td>
<td>2.34</td>
<td>1.10</td>
</tr>
<tr>
<td>3/4</td>
<td>0.75</td>
<td>1-11/16</td>
<td>2.77</td>
<td>1.13</td>
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<tr>
<td>1</td>
<td>1.00</td>
<td>1-7/16</td>
<td>3.10</td>
<td>1.64</td>
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#### SAE SPLIT FLANGE TO 37° FLARE

**8°-37° Flare**
SAE standard pressure series (Code 61)

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<th>Tube O.D.</th>
<th>Thread T</th>
<th>A</th>
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</thead>
<tbody>
<tr>
<td>1/2</td>
<td>1/8-32</td>
<td>0.50</td>
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<td>2.34</td>
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<tr>
<td>3/4</td>
<td>5/32-16</td>
<td>0.75</td>
<td>1-11/16</td>
<td>2.77</td>
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</table>

**10°-37° Flare**
SAE standard pressure series (Code 62)

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<th>Thread T</th>
<th>A</th>
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<tbody>
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<td>1/2</td>
<td>1/8-32</td>
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<td>3/4</td>
<td>5/32-16</td>
<td>0.75</td>
<td>1-11/16</td>
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**20°-37° Flare**
SAE standard pressure series (Code 63)

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<th>Thread T</th>
<th>A</th>
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<td>1/2</td>
<td>1/8-32</td>
<td>0.50</td>
<td>3/4-16</td>
<td>2.34</td>
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<tr>
<td>3/4</td>
<td>5/32-16</td>
<td>0.75</td>
<td>1-11/16</td>
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**30°-37° Flare**
SAE standard pressure series (Code 64)

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<th>A</th>
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<tbody>
<tr>
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<td>1/8-32</td>
<td>0.50</td>
<td>3/4-16</td>
<td>2.34</td>
</tr>
<tr>
<td>3/4</td>
<td>5/32-16</td>
<td>0.75</td>
<td>1-11/16</td>
<td>2.77</td>
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<th>Thread T</th>
<th>A</th>
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<tbody>
<tr>
<td>1/2</td>
<td>1/8-32</td>
<td>0.50</td>
<td>3/4-16</td>
<td>2.34</td>
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<tr>
<td>3/4</td>
<td>5/32-16</td>
<td>0.75</td>
<td>1-11/16</td>
<td>2.77</td>
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**40°-37° Flare**
SAE standard pressure series (Code 65)

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<th>A</th>
</tr>
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<tbody>
<tr>
<td>1/2</td>
<td>1/8-32</td>
<td>0.50</td>
<td>3/4-16</td>
<td>2.34</td>
</tr>
<tr>
<td>3/4</td>
<td>5/32-16</td>
<td>0.75</td>
<td>1-11/16</td>
<td>2.77</td>
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<th>Thread T</th>
<th>A</th>
</tr>
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<tbody>
<tr>
<td>1/2</td>
<td>1/8-32</td>
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<td>3/4</td>
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**50°-37° Flare**
SAE standard pressure series (Code 66)

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<tbody>
<tr>
<td>1/2</td>
<td>1/8-32</td>
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<td>3/4-16</td>
<td>2.34</td>
</tr>
<tr>
<td>3/4</td>
<td>5/32-16</td>
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<td>1-11/16</td>
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<th>A</th>
</tr>
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<td>3/4-16</td>
<td>2.34</td>
</tr>
<tr>
<td>3/4</td>
<td>5/32-16</td>
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**60°-37° Flare**
SAE standard pressure series (Code 67)

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<td>5/32-16</td>
<td>0.75</td>
<td>1-11/16</td>
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<th>Thread T</th>
<th>A</th>
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</thead>
<tbody>
<tr>
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<td>1/8-32</td>
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<td>3/4-16</td>
<td>2.34</td>
</tr>
<tr>
<td>3/4</td>
<td>5/32-16</td>
<td>0.75</td>
<td>1-11/16</td>
<td>2.77</td>
</tr>
</tbody>
</table>

### Notes

- All dimensions in inches.
- This page is part of a complete catalog which contains technical and safety data that must be reviewed when selecting a product.
ADAPTERS AND TUBE FITTINGS

SAE SPLIT FLANGE TO 37° FLARE Cont.

Split Flange/37° flare
SAE standard pressure series (Code 61)
(mates with 449-7446 flanges suitable for pressures thru 4 heavy spiral hose – SAE 100R10)
Part No. F95238-(Dash size)

<table>
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<th>Dash Size</th>
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<th>Tube O.D.</th>
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<th>T</th>
<th>B</th>
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<tbody>
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<td>1.25</td>
<td>0.75</td>
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<td>1/4-12S</td>
<td>100</td>
<td>1/16-12</td>
<td>1.25</td>
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<td>3/8-12S</td>
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<td>2.00</td>
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<td>5.00</td>
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<td>3.00</td>
<td>7.00</td>
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<td>1/16-12</td>
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<td>4.00</td>
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SAE high pressure series (Code 62)
(mates with FC3425-449 flanges suitable for pressures thru 6 spiral hose – SAE 100R11)
Part No. F95045-(Dash size)

<table>
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<th>Tube O.D.</th>
<th>Thread A</th>
<th>T</th>
<th>B</th>
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<td>2.00</td>
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<td>3.00</td>
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<td>2.00</td>
<td>5.00</td>
</tr>
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<td>1/16-12</td>
<td>2.50</td>
<td>2.00</td>
<td>5.00</td>
</tr>
<tr>
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<td>1/16-12</td>
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<td>5.00</td>
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<td>7.00</td>
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<td>1/16-12</td>
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<td>3.00</td>
<td>7.00</td>
</tr>
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<td>1/16-12</td>
<td>5.00</td>
<td>4.00</td>
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</table>

All dimensions in inches.
ADAPTERS AND TUBE FITTINGS

SAE SPLIT FLANGE TO SAE SPLIT FLANGE

SAE split flange/Split flange
SAE standard pressure series (Code 61)
(suitable for pressures thru 4 light spiral hose – SAE 100R9)
Part No. 504089-(Dash size)

<table>
<thead>
<tr>
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<th>Flange Head Size</th>
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<th>C</th>
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<td>2.31</td>
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<tr>
<td>24</td>
<td>1 1 /2</td>
<td>1 1 /2</td>
<td>2.62</td>
<td>2.75</td>
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</tr>
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SAE swivel flange/Split flange
SAE standard pressure series (Code 61)
(suitable for pressures thru 4 heavy spiral hose – SAE 100R10)
Part No. FF5321-(Dash size)

<table>
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<th>C</th>
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<td>24</td>
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<td>1 1 /2</td>
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<td>32</td>
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<td>2</td>
<td>4.50</td>
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4 Hole (Threaded)

SAE split flange/Split flange (welded)
SAE standard pressure series (Code 61)
(suitable for pressures thru 4 heavy spiral hose – SAE 100R19)
Part No. FP321-(Dash size)

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<th>C</th>
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<td>1.19</td>
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<td>1.88</td>
<td>.55</td>
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<td>.62</td>
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<tr>
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<td>2.38</td>
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<td>32</td>
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<td>3.12</td>
<td>3.49</td>
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BRAZE & WELD TO SPLIT FLANGE

Braze/Solid Flanged Head
SAE standard pressure series (Code 61). Used with FC2119 flange
Part No. 71418-(Dash size)

<table>
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<tr>
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<th>B</th>
<th>C</th>
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<tbody>
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<td>12</td>
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<td>0.83</td>
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<td>.47</td>
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<td>1.88</td>
<td>.55</td>
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<td>1 1 /4</td>
<td>1 1 /4</td>
<td>1.88</td>
<td>2.25</td>
<td>.62</td>
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<tr>
<td>24</td>
<td>1 1 /2</td>
<td>1 1 /2</td>
<td>2.38</td>
<td>2.75</td>
<td>.72</td>
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<tr>
<td>32</td>
<td>2</td>
<td>2</td>
<td>3.12</td>
<td>3.49</td>
<td>.88</td>
</tr>
</tbody>
</table>

All dimensions in inches.
# Adapters and Tube Fittings

This page is part of a complete catalog which contains technical and safety data that must be reviewed when selecting a product.

## Adapters

### Braze & Weld to Split Flange

**Braze/Flanged head**

SAE standard pressure series (Code 61)

Used with FC2119 flange

Part No. 4524-(Dash size)

<table>
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<tr>
<td>8S</td>
<td>1/2</td>
<td>.50</td>
<td>.25</td>
</tr>
<tr>
<td>12-8S</td>
<td>3/4</td>
<td>.50</td>
<td>.25</td>
</tr>
<tr>
<td>12-10S</td>
<td>3/4</td>
<td>.63</td>
<td>.31</td>
</tr>
<tr>
<td>16-12S</td>
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<td>.50</td>
<td>.25</td>
</tr>
<tr>
<td>16-16S</td>
<td>1</td>
<td>.75</td>
<td>.31</td>
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<td>20-16S</td>
<td>1</td>
<td>.75</td>
<td>.31</td>
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<tr>
<td>24-20S</td>
<td>1</td>
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<td>32-24S</td>
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<td>.50</td>
</tr>
<tr>
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<td>.50</td>
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**Weld (tank pilot) Solid flanged head**

SAE standard pressure series (Code 61)

Used with FC2119 flange

Part No. 71422-(Dash size)

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<td>1.50</td>
<td>.63</td>
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### Braze & Weld to 37° Flare

**Braze port/37° flare**

Part No. 73014-(Dash size)

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<td>12-8S</td>
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<td>.25</td>
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<td>.31</td>
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<td>.25</td>
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<td>16-16S</td>
<td>1</td>
<td>.75</td>
<td>.31</td>
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<td>1</td>
<td>.75</td>
<td>.31</td>
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<td>24-20S</td>
<td>1</td>
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<td>.31</td>
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</tr>
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**Saddle weld (pipe)/Solid flanged head**

SAE standard pressure series (Code 61)

Used with FC2119 flange

Part No. 202232-(Dash size)

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**Weld port/37° flare**

Part No. 73016-(Dash size)

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<td>.25</td>
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*Available without threaded holes Part No. FC2119-449*
ADAPTERS AND TUBE FITTINGS

BRAZE & WELD TO 37° FLARE Cont.

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*NOTE: All three components (adapter FF1316, tube nut 210294, and ferrule FF9173) required for assembly. Order by Part Number FF1316–(Dash size) for complete assembly.

Flareless tube nut
Part No. 210294–(Dash size)
Use with FF1315–(Dash size) Body Only
(Ref. SAE 080110)

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<td>.36</td>
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Male SAE flareless/37° flare
Part No. FF1315–(Dash size)
Use with FF1315–(Dash size) Body Only
(Ref. SAE 080115A)

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<table>
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<tbody>
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All dimensions in inches.
**ADAPTERS AND TUBE FITTINGS**

This page is part of a complete catalog which contains technical and safety data that must be reviewed when selecting a product.

**ADAPTERS AND TUBE FITTINGS**

**FLARE AND FLARELESS**

**Versi-Flare** Flareless Tube Ferrule

Part No. FF9605–(Dash size)

Use with FC2875–(Dash size)

Nut Only

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**SAE 37° Flared Style**

Part No. 1290–(Dash size)

(Ref. SAE 070110)

Use with 900605 tube sleeve only

**Dash Tube Thread**

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**SAE 37° Flared Sleeve**

Part No. 900605–(Dash size)

(Ref. SAE 070115)

Use with 1290 short nut only

**Dash Tube**

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**External pipe/30° flare**

Part No. 2004–(Dash size)

Dash Tube Thread

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<tr>
<td>12S</td>
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<td>16S</td>
<td>1 7/16-12</td>
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**42° inverted flare/45° flare**

Part No. 200001–(Dash size)

Dash Tube Thread

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**Restrictor**

Male pipe/female pipe

Part No. FF1980–(Dash size)

Dash Tube Thread

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*Length required to insert adapter at installation.

**Restrictor**

37° male flare/37° female

Part No. FF1981–(Dash size)

Dash Tube Thread

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*Ordering Information: Aeroquip Restrictor Adapters are available in orifice sizes from .06 to .25 inches. When ordering restrictor adapters, it is important to indicate the drill size required.

For example: For a .125 drill size in FF1980-0404 adapter, order as FF1980-125-0404. If you indicate the desired orifice size in inches, the appropriate 3 digit number will be assigned.
This page is part of a complete catalog which contains technical and safety data that must be reviewed when selecting a product.
This page is part of a complete catalog which contains technical and safety data that must be reviewed when selecting a product.

### ORS TO ISO 6149

<table>
<thead>
<tr>
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<th>Part No. FF2743T(Stai)</th>
<th>(Ref. SAE 52M0187)</th>
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<td>.75</td>
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### SAE 37° male/BSPP male

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This page is part of a complete catalog which contains technical and safety data that must be reviewed when selecting a product.
### BSPT TO 37° FLARE

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<th>T 2 (inches)</th>
<th>A (inches)</th>
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### 90° elbow, SAE 37° male/BSPT male

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<th>T 2 (inches)</th>
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<th>B (inches)</th>
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### JIS 30° TO 37° FLARE

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<th>T 2 (inches)</th>
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All dimensions in inches.
Designating Separate ORS and Flange O-Rings

To order Aeroquip O-Rings separately without fittings specify O-Rings 22012 FF9855 Buna-N, Low Base Temperature

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Flange O-Ring

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O-Ring Seal Kit

Part No. FF10280–01*

Includes metal box, O-Rings for ORS –04 through –94, O-Ring boss –04 through –32, Split flange –08 through –32, 24 packages with twelve 50 durometer nitride O-Rings per package. Packages can be ordered individually by part number listed.

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*For ORS O-Ring Kit order part number: FF10280–01, only includes ORS O-Rings.