idealPower



# PRODUCT CATALOG

A Professional Manufacturer Specializing in the Design
and Production of High-Quality Valves, Fittings,
Fluid Power Products, and Systems



Ideal Power Ptd. Ltd.
WEBSITE:www.ideal-power.com

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# About Ideal Power

Ideal Power Ptd. Ltd. based in Singapore, focuses on the production and design of high-quality valves and fittings, establishing itself as a professional manufacturer of fluid transmission products and systems.

Ideal Power’s fluid technology has been committed to the continuous improvement in the introduction, transformation, development, design, precision manufacturing, and comprehensive testing of high-quality products. It constantly explores and breaks through higher industry standards, striving to become a new driving force in the industry's development.

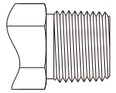
Ideal Power's products include general-purpose instrument valves and fitting connectors, high-pressure pipe valves, as well as the assembly and system integration of fluid control equipment. Ideal Power continuously improves its product quality, meeting customer requirements through certifications of international professional standards. Ideal Power’s products are widely used in instrumentation systems and fluid power control systems across industries such as petroleum, chemical, natural gas, semiconductor, hydrogen energy, power generation, shipbuilding, nuclear power, and water treatment.

Ideal Power Ptd. Ltd. continuously learns, absorbs, and improves upon advanced global technologies, striving to enhance the quality of pipe and valve components manufactured in the world.



## Characteristic

- Dimensions ranging from 1/16" to 1 1/2" (imperial) and2 mm to 38 mm (metric)
- The fitting offers multiple material options, including stainless steel, high-nickel stainless steel, brass, Hastelloy, Inconel, titanium alloy, and Monel. High-precision machined components ensure controlled deformation of ferrules and tubing. The double ferrule compression fitting provides a full metal-to-metal seal without elastic sealing elements, delivering enhanced sealing reliability.
- The high precision in component machining ensures accurate deformation of the ferrule and tube.
- The double ferrule fitting provides an all-metal seal without elastic sealing elements, ensuring more reliable sealing.
- The specially treated rear ferrule of Ideal Power ensures safe and reliable sealing.



- The nut threads are silver-plated, effectively reducing the friction coefficient with the main body threads and preventing thread galling.
- The joint is easy to disassemble and re-tighten.

## Technical Data



- Threaded End

### NPT Thread（NPT）

Comply with the standards ASME B1.20.1, SAE AS71051.
Installation torque complies with the standard UL 842.

- ☐ Sealing Type: Thread Sealant

| Thread Size | Threads Per Inch | Diameter at the Reference Plane (mm) | | | Hand Tight Engagement Length（mm） | Torque Nm(lbf in) |
|---|---|---|---|---|---|---|
| | | Large Diameter | Median Diameter | Small Diameter | | |
| 1/16 | 27 | 7.894 | 7.142 | 6.389 | 4.064 | — |
| 1/8 | | 10.242 | 9.489 | 8.737 | 4.102 | 17 (150.5) |
| 1/4 | 18 | 13.616 | 12.487 | 11.358 | 5.785 | 28 (247.8) |
| 3/8 | | 17.055 | 15.926 | 14.797 | 6.096 | 51 (451.4) |
| 1/2 | 14 | 21.224 | 19.772 | 18.321 | 8.128 | 90 (796.5) |
| 3/4 | | 26.569 | 25.117 | 23.666 | 8.618 | 113 (1000) |
| 1 | 11.5 | 33.228 | 31.461 | 29.694 | 10.160 | 137 (1212.5) |
| 1 1/4 | | 41.985 | 40.218 | 38.451 | 10.668 | 164 (1451.4) |
| 1 1/2 | | 48.054 | 46.287 | 44.520 | 10.668 | 175 (1548.8) |
| 2 | | 60.092 | 58.325 | 56.558 | 11.065 | 186 (1646.1) |

### Working pressure of NPT threaded end

| Thread Size | 316 Stainless Steel and Carbon Steel | | | | Brass | | | |
|---|---|---|---|---|---|---|---|---|
| | Male Thread | | Female Thread | | Male Thread | | Female Thread | |
| | psig | bar | psig | bar | psig | bar | psig | bar |
| 1/16 | 11000 | 757 | 6700 | 460 | 5500 | 378 | 3300 | 227 |
| 1/8 | 10000 | 689 | 6500 | 447 | 5000 | 344 | 3200 | 220 |
| 1/4 | 8000 | 551 | 6600 | 454 | 4000 | 275 | 3300 | 227 |
| 3/8 | 7800 | 537 | 5300 | 365 | 3900 | 268 | 2600 | 179 |
| 1/2 | 7700 | 530 | 4900 | 337 | 3800 | 261 | 2400 | 165 |
| 3/4 | 7300 | 502 | 4600 | 316 | 3600 | 248 | 2300 | 158 |
| 1 | 5300 | 365 | 4400 | 303 | 2600 | 179 | 2200 | 151 |
| 1 1/4 | 6000 | 410 | 5000 | 344 | 3000 | 200 | 2500 | 172 |
| 1 1/2 | 5000 | 344 | 4600 | 317 | 2500 | 172 | 2300 | 158 |
| 2 | 3900 | 268 | 3900 | 268 | 1900 | 130 | 1900 | 130 |

## Performance and Testing

The Ideal Power double ferrule fitting complies with the requirements of the ASTM F1387-1999 (2012) standard.

- Gas Static Pressure Test (with nitrogen at 1.5 times the working pressure): No bubbles observed.
- Hydrostatic Pressure Test (1.5 times working pressure): No leakage.
- Vibration and Pulse Testing (Pulse Frequency 0.5Hz to 1.7Hz, Vibration Frequency 23Hz to 47Hz): No leakage.
- Bending Fatigue Test: No leakage.
- Tensile Test: No connection separation occurred.
- Hydraulic Burst Test: No leakage.
- Repeated Assembly Test (10 times): No leakage in all instances.
- Rotary Bending Test: No leakage.
- Thermal Cycle Test: No leakage.
- Stress Corrosion Test: No surface cracks, no corrosion spots, no leakage, and no tendency for intergranular corrosion.
- Torque Test: No leakage.
- Fire Resistance Test: No leakage.
- Vacuum Test: Leak rate less than 1×10-13 mbar/s.

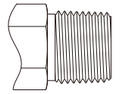
- ☐ Thread Angle 60°
- ☐ Measure the pitch in inches
- ☐ The cross-section of the root and crest of the thread is flat
- ☐ Taper 1:16







### ISO Taper Thread (R, R1, R2, Rc, RT, PT, BSPT, ZG)



Comply with standards
ISO 7-1, EN 10226-1, BS 21, DIN 2999, JIS B0203.
Installation torque is equivalent to NPT threaded ends

- ☐ Thread angle 55°
- ☐ Measure the pitch in inches
- ☐ The root and crest of the thread have a rounded profile
- ☐ Taper ratio 1:16
- ☐ Sealing type: Thread sealant

### Thread Data

| Thread Size | Threads Per Inch | Diameter on the Reference Plane (mm) | | | Reference Range |
|---|---|---|---|---|---|
| | | Large Diameter | Median Diameter | Small Diameter | |
| 1/16 | 28 | 7.723 | 7.142 | 6.561 | 4.0 |
| 1/8 | | 9.728 | 9.147 | 8.566 | 4.0 |
| 1/4 | 19 | 13.157 | 12.301 | 11.445 | 6.0 |
| 3/8 | | 16.662 | 15.806 | 14.950 | 6.4 |
| 1/2 | 14 | 20.955 | 19.793 | 18.631 | 8.2 |
| 3/4 | | 26.441 | 25.279 | 24.117 | 9.5 |
| 1 | 11 | 33.249 | 31.770 | 30.291 | 10.4 |
| 1 1/4 | | 41.910 | 40.431 | 38.952 | 12.7 |
| 1 1/2 | | 47.803 | 46.324 | 44.845 | 12.7 |
| 2 | | 59.614 | 58.135 | 56.656 | 15.9 |

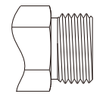
### Working Pressure of ISO Taper Thread Ends

The working pressure of the ISO taper thread end is equivalent to that of the NPT thread end.

### ISO parallel threads (G, RP, PF, BSPP)

In accordance with the standards
ISO 228-1, DIN ISO 228-1, JIS B0202, BS 2779

- ☐ Thread angle 55°
- ☐ Measure the pitch in inches
- ☐ The cross-sections of the root and crest are circular arcs



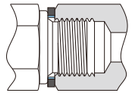
### Thread Data

| Thread Size | Threads Per Inch | Basic Diameter (mm) | | |
|---|---|---|---|---|
| | | Large Diameter | Median Diameter | Small Diameter |
| 1/16 | 28 | 7.723 | 7.142 | 6.561 |
| 1/8 | | 9.728 | 9.147 | 8.566 |
| 1/4 | 19 | 13.157 | 12.301 | 11.445 |
| 3/8 | | 16.662 | 15.806 | 14.950 |
| 1/2 | 14 | 20.955 | 19.793 | 18.631 |
| 5/8 | | 22.911 | 21.749 | 20.587 |
| 3/4 | | 26.441 | 25.279 | 24.117 |
| 7/8 | | 30.201 | 29.039 | 27.877 |
| 1 | 11 | 33.249 | 31.770 | 30.291 |
| 1 1/8 | | 37.897 | 36.418 | 34.939 |
| 1 1/4 | | 41.910 | 40.431 | 38.952 |
| 1 1/2 | | 47.803 | 46.324 | 44.845 |
| 1 3/4 | | 53.746 | 52.267 | 50.788 |
| 2 | | 59.614 | 58.135 | 56.656 |

## ISO Parallel Thread Sealing Type

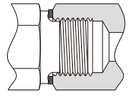
1. RS Male Thread End, RS Gasket, and RP Port

☐ RS Male Thread End Complies with Standard DIN 3852-2 Type A
☐ RS Gasket
☐ RP Port Complies with Standard DIN 3852-2 Type X



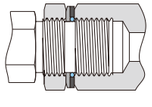
2. RP Male Thread End, RP Gasket, and RP Port

☐ Male Thread End Complies with-Standard DIN 3852-2 Type B
☐ RP Gasket
☐ RP Port Complies with Standard DIN 3852-2 Type X



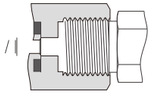
3. PP Male Thread End and RP Port

☐ RP Port Complies with Standard DIN 3852-2 Type X



4. RG Port, RG Gasket, and BP Male Thread End

☐ RG Port Complies with Standard EN 837-1/3
☐ RG Gasket



### Position Adjustable ISO Parallel Thread End (PP) Working Pressure

| Thread Size | 316 Stainless Steel and Carbon Steel | |
|---|---|---|
| | psig | bar |
| 1/8 1/4 3/8 | 4568 | 315 |
| 1/2 3/4 1 | 2320 | 160 |

### SAE/MS Straight Thread (UN, UNJ)

In accordance with standards ASME B1.1, SAE J475, ISO R725

☐ 60° Thread Angle
☐ Measuring the Pitch in Inches
☐ The cross-section of the root and crest is flat



Thread Data

| Thread Size | Threads Per Inch | Basic Diameter (mm) | | |
|---|---|---|---|---|
| | | Large Diameter | Median Diameter | Small Diameter |
| 5/16-24 | 24 | 7.938 | 7.249 | 6.792 |
| 3/8-24 | 24 | 9.525 | 8.837 | 8.380 |
| 7/16-20 | 20 | 11.113 | 10.287 | 9.738 |
| 1/2-20 | 20 | 12.700 | 11.875 | 11.326 |
| 9/16-18 | 18 | 14.288 | 13.325 | 12.761 |
| 3/4-16 | 16 | 19.050 | 18.019 | 17.330 |
| 7/8-14 | 14 | 22.225 | 21.046 | 20.262 |
| 1 1/16-12 | 12 | 26.988 | 25.613 | 24.719 |
| 1 3/16-12 | 12 | 30.163 | 28.788 | 27.871 |
| 1 5/16-12 | 12 | 33.338 | 31.963 | 31.046 |
| 1 5/8-12 | 12 | 41.275 | 39.901 | 38.984 |
| 1 7/8-12 | 12 | 47.625 | 46.251 | 45.324 |
| 2 1/2-12 | 12 | 63.500 | 62.126 | 61.209 |



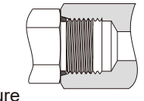




## SAE/MS Thread Sealing Types

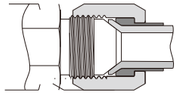
1. ST Male Thread End and ISO 11926-1 Port

☐ ST Male Thread End Complies with Standards ISO 11926-3
☐ O-Ring



2. 37° Male Thread End (AN) and Flared Tube

☐ Sealing Type Complies with Standard SAE J514



SAE/MS Thread End Working Pressure

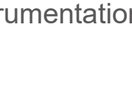
| Thread Size | 316 Stainless Steel and Carbon Steel | | | |
|---|---|---|---|---|
| | Position Non-Adjustable | | Position Adjustable | |
| | psig | bar | psig | bar |
| 5/16-24 | 4568 | 315 | 4568 | 315 |
| 3/8-24 | | | | |
| 7/16-20 | | | | |
| 1/2-20 | | | | |
| 9/16-18 | | | 3626 | 250 |
| 3/4-16 | | | | |
| 7/8-14 | 3626 | 250 | 2900 | 200 |
| 1 1/16-12 | | | | |
| 1 3/16-12 | 2900 | 200 | 2320 | 160 |
| 1 5/16-12 | | | | |
| 1 5/8-12 | 2320 | 160 | 1813 | 125 |
| 1 7/8-12 | | | | |
| 2 1/2-12 | 1813 | 125 | 1450 | 100 |

Working pressure is based on ISO 11926-3 at ambient temperature

### Metric Thread (M)

In Accordance with Standard ISO 261.

☐ Thread Flank Angle 60
☐ Measure the pitch in millimeters
☐ The cross-sections of the thread root and thread crest are flat

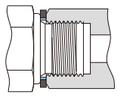


Thread Parameters

| Thread Size | Pitch | Basic Diameter (mm) | | |
|---|---|---|---|---|
| | | Large Diameter | Median Diameter | Small Diameter |
| M6 x 1 | 1 | 6.000 | 5.350 | 4.917 |
| M8 x 1 | | 8.000 | 7.350 | 6.917 |
| M10 x 1 | | 10.000 | 9.350 | 8.917 |
| M12 x 1.5 | 1.5 | 12.000 | 11.026 | 10.376 |
| M14 x 1.5 | | 14.000 | 13.026 | 12.376 |
| M16 x 1.5 | | 16.000 | 15.026 | 14.376 |
| M18 x 1.5 | | 18.000 | 17.026 | 16.376 |
| M20 x 1.5 | | 20.000 | 19.026 | 18.376 |
| M22 x 1.5 | | 22.000 | 21.026 | 20.376 |
| M24 x 1.5 | | 24.000 | 23.026 | 22.376 |
| M27 x 2 | 2 | 27.000 | 25.701 | 24.835 |
| M30 x 2 | | 30.000 | 28.701 | 27.835 |
| M33 x 2 | | 33.000 | 31.701 | 30.835 |
| M36 x 2 | | 36.000 | 34.701 | 33.835 |
| M39 x 2 | | 39.000 | 37.701 | 36.835 |
| M42 x 2 | | 42.000 | 40.701 | 39.835 |
| M45 x 2 | | 45.000 | 43.701 | 42.835 |
| M48 x 2 | | 48.000 | 46.701 | 45.835 |

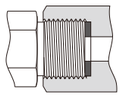
## Metric Thread Seal Types

1. MRS male end, RS-M gasket and MS port



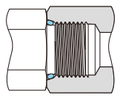
- ☐ MRS male thread end complies with DIN3852-1 Type A
- ☐ RS-M Gasket

2. MS Male End RG-M Gasket MS Port



- ☐ RS-M Gasket

3. MST male ends and ISO 6149-1 ports



- ☐ MST male thread ends comply with ISO 6149-3
- ☐ O-Ring

## Metric thread end working pressure

1. MRS/MS Male and MS Port Operating Pressures

| Thread size | 316 stainless steel and carbon steel | | | |
|---|---|---|---|---|
| | | | Female thread | |
| | psig | bar | psig | bar |
| M6 x 1 | 12000 | 825 | 6900 | 476 |
| M8 x 1 | 11000 | 759 | 6700 | 462 |
| M10 x 1 | 10000 | 690 | 6500 | 448 |
| M12 x 1.5 | 9000 | 621 | 6500 | 448 |
| M14 x 1.5 | 8000 | 552 | 6600 | 455 |
| M16 x 1.5 | 7800 | 538 | 5800 | 400 |
| M18 x 1.5 | 7800 | 538 | 5300 | 366 |
| M20 x 1.5 | 7700 | 531 | 5000 | 345 |
| M22 x 1.5 | 7700 | 531 | 4900 | 338 |
| M27 x 2 | 7300 | 503 | 4600 | 317 |
| M30 x 2 | 6100 | 421 | 4500 | 310 |
| M33 x 2 | 5300 | 366 | 4400 | 303 |
| M36 x 2 | 5100 | 352 | 4000 | 276 |
| M39 x 2 | 5000 | 345 | 3900 | 269 |
| M42 x 2 | 6000 | 414 | 5000 | 345 |
| M45 x 2 | 5400 | 372 | 4700 | 324 |
| M48 x 2 | 5000 | 345 | 4600 | 317 |

2. MST male thread end working pressure

| Thread size | Stainless steel and carbon steel | | | |
|---|---|---|---|---|
| | Position not adjustable | | Adjustable position | |
| | psig | bar | psig | bar |
| M8 x 1 | 5800 | 400 | 4568 | 315 |
| M10 x 1 | | | | |
| M12 x 1.5 | | | | |
| M14 x 1.5 | | | | |
| M16 x 1.5 | 4568 | 315 | 3626 | 250 |
| M18 x 1.5 | | | | |
| M20 x 1.5 | | | | |
| M22 x 1.5 | | | | |
| M27 x 2 | 2900 | 200 | 2320 | 160 |
| M30 x 2 | | | | |
| M33 x 2 | | | | |
| M42 x 2 | | | | |
| M48 x 2 | | | | |
| M60 x 2 | 2320 | 160 | 1450 | 100 |

Working pressure is based on IS0 6149-3 at ambient temperature.

## ◎ Operating temperature

Ferrule end

| Material | Minimum temperature | Maximum temperature |
|---|---|---|
| Stainless steel | -325°F (-198°C) | 800°F (426°C) |
| Brass | -325°F (-198°C) | 400°F (204°C) |
| Alloy 400/R-405 | -325°F (-198°C) | 800°F (426°C) |

Threaded end

The operating temperature of the threaded end may be limited by Teflon tape or thread sealant or gasket or O-ring. When using gaskets or O-rings, the operating temperature is shown in the following table:

| Sealing elements | Material | Minimum temperature | Maximum temperature |
|---|---|---|---|
| RS Gasket | Nitrile rubber | -22°F (-30°C) | 230°F (110°C) |
| | Fluorocarbon FKM | -4°F (-20°C) | 400°F (204°C) |
| RP/RG Gaskets | Copper | -452°F (-269°C) | 500°F (260°C) |
| | Stainless steel | -425°F (-254°C) | 1000°F (538°C) |
| | PTFE | -65°F (-54°C) | 450°F (232°C) |
| | Hardened cardboard | -76°F (-60°C) | 221°F (105°C) |
| O-Ring | Nitrile rubber | -22°F (-30°C) | 230°F (110°C) |







## ◎ Work Pressure

- At ambient temperature, the working pressure at the ferrule end is determined by the working pressure of the E-JOE Tube used. For the working pressure of the Tube, refer to the Tube data.
- At ambient temperature, the working pressure of the threaded end is as specified above.
- To obtain the maximum working pressure at a higher temperature, multiply the maximum working pressure at ambient temperature by the coefficient in the temperature rise coefficient table.
- The working pressure of the connector is the minimum of all port working pressure values.

## Material

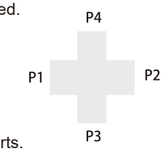
| Material | Rods | Forging | Code |
|---|---|---|---|
| 316 Stainless Steel | ASTM A276, ASME SA479, EN 1.4401 | ASTM A182, ASME SA182, EN 1.4401 | SS |
| 304 Stainless Steel | ASTM A276, ASME SA479, EN 1.4301 | ASTM A182, ASME SA182, EN 1.4301 | S4 |
| 321 Stainless Steel | ASTM A276, ASME SA479, EN 1.4541 | ASTM A182, ASME SA182, EN 1.4541 | S1 |
| Alloy 20 | ASTM B473 | ASTM B462 | A20 |
| Alloy 400/R-405 | ASTM B164, ASME SB164 | ASTM B564, ASME SB564 | M |
| Alloy 600 | ASTM B166, ASME SB166 | ASTM B564, ASME SB564 | INC |
| Alloy 625 | ASTM B446 | ASTM B564, ASME SB564 | A65 |
| Alloy C-276 | ASTM B574 | ASTM B564 | HC |
| Aluminum | ASTM B211 | ASTM B247 | AL |
| Brass | ASTM B16/B453 | ASTM B283 | B |
| Carbon steel | ASTM A108 | / | CS |
| Nylon | ASTM D4066 | / | PA |
| PTFE | ASTM D1710 | ASTM D3294 | T |
| Duplex Steel 2205 | ASTM A479 | ASTM A182 | D5 |
| Duplex Steel 2507 | ASTM A479 | ASTM A182 | D7 |
| Titanium (Level 4) | ASTM B348 | ASTM B381 | TI |

## Ordering Information

Note: Model description is used to explain the composition rules of E-JOE product models. It is not applicable to the specific selection of products and cannot be combined at will. If you have any questions, please contact E-JOE or an authorized agent.

The P1, P2, P3 and P4 ports should be described according to the following rules:

- ◎ Ferrule-Tube-NPT Thread-IS0 Taper Thread-IS0 Parallel Thread-SAE/MS Straight Thread-37° Flare-Pipe Butt Weld-Imperial Tube Plug Weld-Other
- ◎ When the connector types are the same, they are described in order of connector size from largest to smallest.
- ◎ If all connectors are the same type and size, only the P1 port needs to be described.




Cleaning and packaging:

FC-01: Standard cleaning and packaging for general industrial use.

FC-02: Special cleaning and packaging of wetted system components shall comply with ASTM G93C cleaning requirements.

Special applications:

Sulfur passivation: Sulfur passivation treatment is mainly performed on wet metal parts.

## Ordering Information

| Port Description | Schematic diagram | E-J0E Code |
|---|---|---|
| NPT female thread ASME B1.20.1 | | FN |
| NPT male thread ASME B1.20.1 | | N |
| BSPT female thread ISO 7-1 | | FRT |
| BSPT male thread ISO 7-1 | | RT |
| BSPP female thread (RS and RP gasket seal) ISO 228-1 | | FP |
| BSPP female thread (RG gasket seal) ISO 228-1 | | FG |
| BSPP male thread (RS gasket seal) ISO 228-1 | | BS |
| BSPP male thread (RP gasket seal) ISO 228-1 | | BR |
| BSPP male thread (RG gasket seal) ISO 228-1 | | BP |
| ISO metric female thread (metric RS gasket/ O-ring seal) Metric Thread | | MP |
| ISO metric female thread (RG gasket PTFE or copper) Metric Thread | | FM |
| ISO metric male thread (RP metric gasket) Metric Thread | | MR |
| ISO metric male thread (RG metric gasket PTFE or copper) Metric Thread | | MS |
| ISO metric male thread (O-ring seal) Metric Thread | | MO |
| SAE unified thread female thread (O-ring seal) UN,UNJ | | FST |
| SAE unified thread male thread (O-ring seal) UN,UNJ | | ST |
| SAE 37 degree male thread (37°) UN,UNJ | | AN |

| Port Description | Schematic diagram | E-J0E Code |
|---|---|---|
| NPT male screw (O-ring seal) ASME B1.20.1 | | NO |
| SAE unified thread male thread (0 turn seal) UN,UNJ | | STO |
| Imperial ferrule ports | | FJ |
| Metric Ferrule Ports | | MJ |
| Imperial bulkhead ferrule ports | | BFJ |
| Metric bulkhead ferrule ports | | BMJ |
| Imperial thermocouple ferrule ports | | TFJ |
| Metric thermocouple ferrule ports | | TMJ |
| Imperial ferrule pre-assembled ports | | SFJ |
| Metric ferrule pre-assembled ports | | SMJ |
| Imperial tube ports | | FT |
| Metric tube ports | | MT |
| British Tbe pipe insert hose type thorn | | AT |
| Metric Tbe pipe insert hose type thorn | | NT |
| BSPP male thread plate union ISO 228-1 | | SBP |
| SAE unified male threaded union UN,UNJ | | SOT |
| British Pipc pipe welding | | PS |
| British Tube welding | | TS |
| Metric Tube welding | | MTS |
| SAE unified female threaded union (37°) UN,UNJ | | FAN |

| Port Description | Schematic diagram | E-J0E Code |
|---|---|---|
| Imperial T-tube butt welding | | TB |
| Metric T-tube butt welding | | MTB |
| Imperial P-tube butt welding | | PB |

| Port Description | Schematic diagram | E-J0E Code |
|---|---|---|
| P-tube to T-tube joint butt welding | | PUW- |
| P-tube system internal thread to P-tube system external thread joint | | PUP- |
| UBJ hard seal union | | UBJ- |
| Male thread to union butt welding | | MUW- |
| Straight joint | | S- |
| 90° elbow | | L- |
| 45° elbow | | R- |
| Three-way connector | | T- |
| Four-way connector | | C- |
| External hexagon thread plug | | HP- |
| Counter-sunkinternal hexagon thread plug | ΦD | DP- |
| Internal thread plug | | CP- |
| Flange plug | | TC- |
| Flange body plug | | TP- |
| Network plug | | VP- |







## E-JOE Installation Instructions

◎ E-JOE tube fittings up to 1" or 25 mm

1. Loosen the nut 1/4 turn from the finger-tight position.
2. Insert the tube into the ferrule fitting, making sure the tube is against the shoulder of the port.
3. Tighten the nut by hand.
4. Hold the fitting or valve body firmly in place and tighten the nut 11/4 turns with a wrench (Figure 1). For small size fittings (1/16", 1/8" and 3/16", 2 mm, 3 mm and 4 mm), tighten the nut 3/4 turn with a wrench (Figure 2).

◎ E-JOE tube fittings over 1" or 25 mm

1. Install the ferrule on the tube using a pre-installer. For details, see the instructions for the ferrule pre-installer.
2. Insert the tube with the ferrule and nut into the body of the connector and tighten the nut by hand.
3. Tighten the nut 1/2 turn with a wrench.

◎ Repackaging (all sizes)

1. Before removing the ferrule fitting, mark the nut and body.
2. When reinstalling, screw the nut to the position marked before removal.
3. Tighten the nut slightly with a wrench.

◎ Plugs and Port Fittings

1. Hold the connector body firmly and tighten the plug or port connector 1/4 turn from the finger-tight position. For small-sized connectors (1/16", 1/8" and 3/16", 2 mm, 3 mm and 4 mm), tighten the nut 1/8 turn with a wrench.
2. Reinstall: Tighten slightly with a wrench from the finger-tight position.

The Tube end of the port fittings is installed the same as the E-JOE tube fittings.

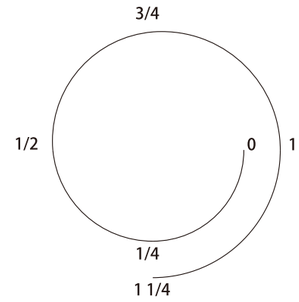



Fig.1

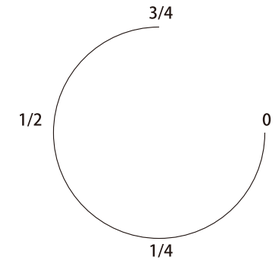



Fig.2

## Warn:

◎ Do not loosen and tighten fittings while the system is pressurized.

◎ Make sure the tube rests against the shoulder of the port.

◎ Leave enough straight ends on the tube ends for the compression fittings.

◎ For very soft plastic tubes, use hose plugs.

◎ Tubes should always be made of a softer material than the compression fittings, e.g., do not use brass compression fittings on stainless steel tubes. When tubes and compression fittings are the same material, the tubes must be fully annealed.

◎ The allowable working pressure of the ferrule fitting is related to the maximum working pressure of the tube in the pipeline system. The specific parameters can be found in the E-JOE tube data sheet. When the tube used with the ferrule fitting is not in the E-JOE tube data sheet, please contact E-JOE or an authorized representative to obtain relevant information on its allowable working pressure.

◎ Ensure that the end faces and surfaces of the tube are clean and smooth.

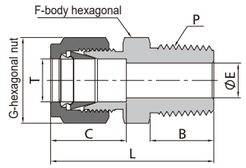
◎ Always use appropriate thread sealant on tapered pipe threads. Make sure that the operating temperature does not exceed the usetemperature of the sealant.

◎ When installing the ferrule fitting, use a wrench to fix the body and rotate the nut, rather than fixing the nut and rotating the body.

◎ When the ferrule end is used on the valve, the valve body should be fixed and the nut should be rotated.

◎ When the ferrule fitting is threaded with the valve, the valve body should be fixed and the ferrule fitting body should be rotated.

## Ferrule male threaded connector




Imperial Tube — NPT Thread

| T-Tube outer diameter (in.) | P-NPT Size | Basic order number | Size,mm | | | | | |
|---|---|---|---|---|---|---|---|---|
| | | | L | B | C | E | G | F |
| 1/16 | 1/16 | -S-FJ1N1 | 23.9 | 9.7 | 8.6 | 1.3 | 7.9 | 7.9 |
| 1/16 | 1/8 | -S-FJ1N2 | 26.2 | 9.7 | 8.6 | 1.3 | 7.9 | 11.1 |
| 1/16 | 1/4 | -S-FJ1N4 | 31.0 | 14.2 | 8.6 | 1.3 | 7.9 | 14.3 |
| 1/8 | 1/16 | -S-FJ2N1 | 29.7 | 9.7 | 12.7 | 2.3 | 11.1 | 11.1 |
| 1/8 | 1/8 | -S-FJ2N2 | 30.5 | 9.7 | 12.7 | 2.3 | 11.1 | 11.1 |
| 1/8 | 1/4 | -S-FJ2N4 | 35.6 | 14.2 | 12.7 | 2.3 | 11.1 | 14.3 |
| 1/8 | 3/8 | -S-FJ2N6 | 35.8 | 14.2 | 12.7 | 2.3 | 11.1 | 17.5 |
| 1/8 | 1/2 | -S-FJ2N8 | 42.2 | 19.1 | 12.7 | 2.3 | 11.1 | 22.2 |
| 3/16 | 1/16 | -S-FJ3N1 | 31.2 | 9.7 | 13.7 | 2.3 | 12.7 | 11.1 |
| 3/16 | 1/8 | -S-FJ3N2 | 31.2 | 9.7 | 13.7 | 3.0 | 12.7 | 11.1 |
| 3/16 | 1/4 | -S-FJ3N4 | 36.3 | 14.2 | 13.7 | 3.0 | 12.7 | 14.3 |
| 1/4 | 1/16 | -S-FJ4N1 | 32.8 | 9.7 | 15.2 | 3.0 | 14.3 | 12.7 |
| 1/4 | 1/8 | -S-FJ4N2 | 32.8 | 9.7 | 15.2 | 4.8 | 14.3 | 12.7 |
| 1/4 | 1/4 | -S-FJ4N4 | 37.8 | 14.2 | 15.2 | 4.8 | 14.3 | 14.3 |
| 1/4 | 3/8 | -S-FJ4N6 | 38.4 | 14.2 | 15.2 | 4.8 | 14.3 | 17.5 |
| 1/4 | 1/2 | -S-FJ4N8 | 44.7 | 19.1 | 15.2 | 4.8 | 14.3 | 22.2 |
| 1/4 | 3/4 | -S-FJ4N12 | 46.2 | 19.1 | 15.2 | 4.8 | 14.3 | 27.0 |
| 5/16 | 1/8 | -S-FJ5N2 | 34.0 | 9.7 | 16.3 | 4.8 | 15.9 | 14.3 |
| 5/16 | 1/4 | -S-FJ5N4 | 38.6 | 9.7 | 16.3 | 6.4 | 15.9 | 14.3 |
| 5/16 | 3/8 | -S-FJ5N6 | 39.1 | 14.2 | 16.3 | 6.4 | 15.9 | 17.5 |
| 5/16 | 1/2 | -S-FJ5N8 | 45.5 | 19.1 | 16.3 | 6.4 | 15.9 | 22.2 |
| 3/8 | 1/8 | -S-FJ6N2 | 35.3 | 9.7 | 16.8 | 4.8 | 17.5 | 15.9 |
| 3/8 | 1/4 | -S-FJ6N4 | 39.9 | 14.2 | 16.8 | 7.1 | 17.5 | 15.9 |
| 3/8 | 3/8 | -S-FJ6N6 | 39.9 | 14.2 | 16.8 | 7.1 | 17.5 | 17.5 |
| 3/8 | 1/2 | -S-FJ6N8 | 46.2 | 19.1 | 16.8 | 7.1 | 17.5 | 22.2 |
| 3/8 | 3/4 | -S-FJ6N12 | 47.8 | 19.1 | 16.8 | 7.1 | 17.5 | 27.0 |
| 3/8 | 1 | -S-FJ6N16 | 47.0 | 23.9 | 16.8 | 7.1 | 17.5 | 34.9 |
| 1/2 | 1/8 | -S-FJ8N2 | 38.9 | 9.7 | 22.9 | 4.8 | 22.2 | 20.6 |
| 1/2 | 1/4 | -S-FJ8N4 | 43.4 | 14.2 | 22.9 | 7.1 | 22.2 | 20.6 |
| 1/2 | 3/8 | -S-FJ8N6 | 43.4 | 14.2 | 22.9 | 9.7 | 22.2 | 20.6 |
| 1/2 | 1/2 | -S-FJ8N8 | 49.0 | 19.1 | 22.9 | 10.4 | 22.2 | 22.2 |
| 1/2 | 3/4 | -S-FJ8N12 | 50.5 | 19.1 | 22.9 | 10.4 | 22.2 | 27.0 |
| 1/2 | 1 | -S-FJ8N16 | 57.2 | 23.9 | 22.9 | 10.4 | 22.2 | 34.9 |
| 5/8 | 1/4 | -S-FJ10N4 | 44.2 | 14.2 | 24.4 | 7.1 | 25.4 | 23.8 |
| 5/8 | 3/8 | -S-FJ10N6 | 44.2 | 14.2 | 24.4 | 9.7 | 25.4 | 23.8 |
| 5/8 | 1/2 | -S-FJ10N8 | 49.0 | 19.1 | 24.4 | 11.9 | 25.4 | 23.8 |
| 5/8 | 3/4 | -S-FJ10N12 | 50.5 | 19.1 | 24.4 | 12.7 | 25.4 | 27.0 |
| 3/4 | 3/8 | -S-FJ12N6 | 45.7 | 14.2 | 24.4 | 10.4 | 28.6 | 27.0 |
| 3/4 | 1/2 | -S-FJ12N8 | 50.5 | 19.1 | 24.4 | 11.9 | 28.6 | 27.0 |
| 3/4 | 3/4 | -S-FJ12N12 | 50.5 | 19.1 | 24.4 | 15.7 | 28.6 | 27.0 |
| 3/4 | 1 | -S-FJ12N16 | 57.2 | 23.9 | 24.4 | 15.7 | 28.6 | 34.9 |
| 7/8 | 1/2 | -S-FJ14N8 | 50.5 | 19.1 | 25.9 | 11.9 | 31.8 | 30.2 |
| 7/8 | 3/4 | -S-FJ14N12 | 50.5 | 19.1 | 25.9 | 15.7 | 31.8 | 30.2 |
| 7/8 | 1 | -S-FJ14N16 | 57.2 | 23.9 | 25.9 | 18.3 | 31.8 | 34.9 |
| 1 | 1/2 | -S-FJ16N8 | 57.4 | 19.1 | 31.2 | 11.9 | 38.1 | 34.9 |
| 1 | 3/4 | -S-FJ16N12 | 57.4 | 19.1 | 31.2 | 15.7 | 38.1 | 34.9 |
| 1 | 1 | -S-FJ16N16 | 62.2 | 23.9 | 31.2 | 22.4 | 38.1 | 34.9 |
| 1 1/8 | 1 | -S-FJ18N16 | 62.2 | 23.9 | 31.2 | 22.4 | 46.0 | 41.3 |
| 1 1/4 | 1 | -S-FJ20N16 | 77.2 | 23.9 | 41.1 | 22.4 | 47.6 | 44.5 |
| 1 1/4 | 1 1/4 | -S-FJ20N20 | 77.2 | 23.9 | 41.1 | 27.7 | 47.6 | 44.5 |
| 1 1/2 | 1 1/2 | -S-FJ24N24 | 88.9 | 26.2 | 50.0 | 34.0 | 57.2 | 54.0 |

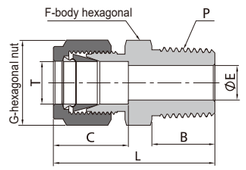
1. Dimensions are for reference only and are subject to change.
2. Dimensions shown are hand-tight.





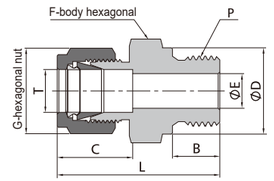


## Ferrule male threaded connector




Imperial Tube — ISO tapered thread (RT)

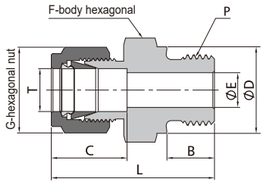
| T-Tube outer diameter (in.) | P-RT Size | Basic order number | Size,mm | | | | | |
|---|---|---|---|---|---|---|---|---|
| | | | L | B | C | E | G | F |
| 1/8 | 1/8 | -S-FJ2RT2 | 30.5 | 9.7 | 12.7 | 2.3 | 11.1 | 11.1 |
| 1/8 | 1/4 | -S-FJ2RT4 | 35.6 | 14.2 | 12.7 | 2.3 | 11.1 | 14.3 |
| 1/4 | 1/8 | -S-FJ4RT2 | 32.8 | 9.7 | 15.2 | 4.8 | 14.3 | 12.7 |
| 1/4 | 1/4 | -S-FJ4RT4 | 37.8 | 14.2 | 15.2 | 4.8 | 14.3 | 14.3 |
| 1/4 | 3/8 | -S-FJ4RT6 | 38.4 | 14.2 | 15.2 | 4.8 | 14.3 | 17.5 |
| 1/4 | 1/2 | -S-FJ4RT8 | 44.7 | 19.1 | 15.2 | 4.8 | 14.3 | 22.2 |
| 5/16 | 1/8 | -S-FJ5RT2 | 34.0 | 9.7 | 16.3 | 4.8 | 15.9 | 14.3 |
| 5/16 | 1/4 | -S-FJ5RT4 | 38.6 | 9.7 | 16.3 | 6.4 | 15.9 | 14.3 |
| 3/8 | 1/8 | -S-FJ6RT2 | 35.3 | 9.7 | 16.8 | 4.8 | 17.5 | 15.9 |
| 3/8 | 1/4 | -S-FJ6RT4 | 39.9 | 14.2 | 16.8 | 7.1 | 17.5 | 15.9 |
| 3/8 | 3/8 | -S-FJ6RT6 | 39.9 | 14.2 | 16.8 | 7.1 | 17.5 | 17.5 |
| 3/8 | 1/2 | -S-FJ6RT8 | 46.2 | 19.1 | 16.8 | 7.1 | 17.5 | 22.2 |
| 3/8 | 3/4 | -S-FJ6RT12 | 47.8 | 19.1 | 16.8 | 7.1 | 17.5 | 27.0 |
| 1/2 | 1/4 | -S-FJ8RT4 | 43.4 | 14.2 | 22.9 | 7.1 | 22.2 | 20.6 |
| 1/2 | 3/8 | -S-FJ8RT6 | 43.4 | 14.2 | 22.9 | 9.7 | 22.2 | 20.6 |
| 1/2 | 1/2 | -S-FJ8RT8 | 49.0 | 19.1 | 22.9 | 10.4 | 22.2 | 22.2 |
| 1/2 | 3/4 | -S-FJ8RT12 | 50.5 | 19.1 | 22.9 | 10.4 | 22.2 | 27.0 |
| 5/8 | 1/2 | -S-FJ10RT8 | 49.0 | 19.1 | 24.4 | 11.9 | 25.4 | 23.8 |
| 3/4 | 3/4 | -S-FJ12RT12 | 50.5 | 19.1 | 24.4 | 15.7 | 28.6 | 27.0 |
| 3/4 | 1 | -S-FJ12RT16 | 57.2 | 23.9 | 24.4 | 15.7 | 28.6 | 34.9 |
| 1 | 3/4 | -S-FJ16RT12 | 57.4 | 19.1 | 31.2 | 15.7 | 38.1 | 34.9 |
| 1 | 1 | -S-FJ16RT16 | 62.2 | 23.9 | 31.2 | 22.4 | 38.1 | 34.9 |




Imperial Tube — ISO straight thread (BS)

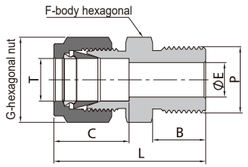
| T-Tube outer diameter (in.) | P-BS Size | Basic order number | Size,mm | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | | | L | B | C | E | G | F | D |
| 1/8 | 1/8 | -S-FJ2BS2 | 30.0 | 7.1 | 12.7 | 2.3 | 11.1 | 14.3 | 13.7 |
| 1/8 | 1/4 | -S-FJ2BS4 | 35.3 | 11.2 | 12.7 | 2.3 | 11.1 | 19.1 | 18.0 |
| 1/8 | 3/8 | -S-FJ2BS6 | 36.3 | 11.2 | 12.7 | 2.3 | 11.1 | 22.2 | 21.8 |
| 1/4 | 1/8 | -S-FJ4BS2 | 32.3 | 7.1 | 15.2 | 4.0 | 14.3 | 14.3 | 13.7 |
| 1/4 | 1/4 | -S-FJ4BS4 | 37.6 | 11.2 | 15.2 | 4.8 | 14.3 | 19.1 | 18.0 |
| 1/4 | 3/8 | -S-FJ4BS6 | 38.9 | 11.2 | 15.2 | 4.8 | 14.3 | 22.2 | 21.8 |
| 1/4 | 1/2 | -S-FJ4BS8 | 44.7 | 14.2 | 15.2 | 4.8 | 14.3 | 27.0 | 25.9 |
| 3/8 | 1/8 | -S-FJ6BS2 | 37.8 | 7.1 | 16.8 | 4.0 | 17.5 | 15.9 | 13.7 |
| 3/8 | 1/4 | -S-FJ6BS4 | 39.1 | 11.2 | 16.8 | 5.9 | 17.5 | 19.1 | 18.0 |
| 3/8 | 3/8 | -S-FJ6BS6 | 40.4 | 11.2 | 16.8 | 7.1 | 17.5 | 22.2 | 21.8 |
| 3/8 | 1/2 | -S-FJ6BS8 | 46.2 | 14.2 | 16.8 | 7.1 | 17.5 | 27.0 | 25.9 |
| 1/2 | 1/4 | -S-FJ8BS4 | 42.7 | 11.2 | 22.9 | 5.9 | 22.2 | 20.6 | 18.0 |
| 1/2 | 3/8 | -S-FJ8BS6 | 43.2 | 11.2 | 22.9 | 7.9 | 22.2 | 22.2 | 21.8 |
| 1/2 | 1/2 | -S-FJ8BS8 | 49.0 | 14.2 | 22.9 | 10.4 | 22.2 | 27.0 | 25.9 |
| 3/4 | 1/2 | -S-FJ12BS8 | 49.0 | 14.2 | 24.4 | 11.9 | 28.6 | 27.0 | 25.9 |
| 3/4 | 3/4 | -S-FJ12BS12 | 52.9 | 15.7 | 24.4 | 15.7 | 28.6 | 33.3 | 32.0 |
| 1 | 1/2 | -S-FJ16BS8 | 55.5 | 14.2 | 31.2 | 11.9 | 38.1 | 34.9 | 25.9 |
| 1 | 3/4 | -S-FJ16BS12 | 57.7 | 15.7 | 31.2 | 16.0 | 38.1 | 34.9 | 32.0 |
| 1 | 1 | -S-FJ16BS16 | 59.9 | 18.3 | 31.2 | 19.8 | 38.1 | 41.3 | 39.1 |

## Ferrule male threaded connector



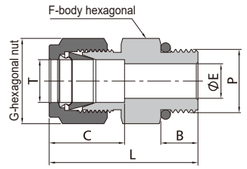

Imperial Tube — ISO straight thread (BS)

| T-Tube outer diameter (in.) | P-RP Size | Basic order number | Size,mm | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | | | L | B | C | E | G | F | D |
| 1/8 | 1/8 | -S-FJ2BR2 | 30.0 | 7.1 | 12.7 | 2.3 | 11.1 | 14.3 | 13.7 |
| 1/8 | 1/4 | -S-FJ2BR4 | 35.3 | 11.2 | 12.7 | 2.3 | 11.1 | 19.1 | 18.0 |
| 1/4 | 1/8 | -S-FJ4BR2 | 32.3 | 7.1 | 15.2 | 4.1 | 14.3 | 14.3 | 13.8 |
| 1/4 | 1/4 | -S-FJ4BR4 | 37.6 | 11.2 | 15.2 | 4.8 | 14.3 | 19.1 | 18.0 |
| 1/2 | 3/8 | -S-FJ8BR6 | 40.4 | 11.2 | 22.9 | 7.9 | 22.2 | 22.2 | 21.8 |
| 1/2 | 1/2 | -S-FJ8BR8 | 49.0 | 14.2 | 22.9 | 10.4 | 22.2 | 27.0 | 25.9 |
| 3/4 | 1/2 | -S-FJ12BR8 | 49.0 | 14.2 | 24.4 | 11.9 | 28.6 | 27.0 | 25.9 |
| 3/4 | 3/4 | -S-FJ12BR12 | 52.9 | 15.7 | 24.4 | 15.7 | 28.6 | 33.3 | 32.0 |
| 1 | 1 | -S-FJ16BR16 | 59.9 | 18.3 | 31.2 | 19.8 | 38.1 | 41.3 | 39.1 |




Imperial Tube — ISO straight thread (BP)

| T-Tube outer diameter (in.) | P-BP Size | Basic order number | Size,mm | | | | | |
|---|---|---|---|---|---|---|---|---|
| | | | L | B | C | E | G | F |
| 1/4 | 3/8 | -S-FJ4BP6 | 38.4 | 14.2 | 15.2 | 4.8 | 14.3 | 17.5 |
| 3/8 | 3/8 | -S-FJ6BP6 | 39.9 | 14.2 | 16.8 | 7.1 | 17.5 | 17.5 |




Adapts to SAE J1926-1, ISO 11926-1 and MS 16142 straight thread bosses.

Imperial Tube — SAE/MS straight thread

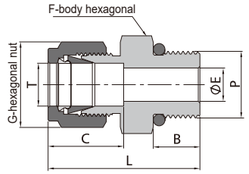
| T-Tube outer diameter (in.) | P-SAE/MS thread size | Basic order number | Size,mm | | | | | |
|---|---|---|---|---|---|---|---|---|
| | | | L | B | C | E | G | F |
| 1/16 | 5/16-24 | -S-FJ1ST5 | 23.4 | 7.6 | 8.6 | 1.3 | 7.9 | 11.1 |
| 1/8 | 5/16-24 | -S-FJ2ST5 | 30.0 | 7.6 | 12.7 | 2.3 | 11.1 | 11.1 |
| 1/8 | 7/16-20 | -S-FJ2ST7 | 31.5 | 9.1 | 12.7 | 2.3 | 11.1 | 14.3 |
| 1/8 | 9/16-18 | -S-FJ2ST9 | 33.3 | 9.9 | 12.7 | 2.3 | 11.1 | 17.5 |
| 3/16 | 3/8-24 | -S-FJ3ST6 | 30.5 | 7.6 | 13.7 | 3.0 | 12.7 | 12.7 |
| 1/4 | 5/16-24 | -S-FJ4ST5 | 32.3 | 7.6 | 15.2 | 2.3 | 14.3 | 12.7 |
| 1/4 | 7/16-20 | -S-FJ4ST7 | 34.0 | 9.1 | 15.2 | 4.8 | 14.3 | 14.3 |
| 1/4 | 9/16-18 | -S-FJ4ST9 | 35.6 | 9.9 | 15.2 | 4.8 | 14.3 | 17.5 |
| 1/4 | 3/4-16 | -S-FJ4ST12 | 37.6 | 11.2 | 15.2 | 4.8 | 14.3 | 22.2 |
| 1/4 | 7/8-14 | -S-FJ4ST14 | 40.6 | 12.7 | 15.2 | 4.8 | 14.3 | 25.4 |
| 5/16 | 1/2-20 | -S-FJ5ST8 | 34.8 | 9.1 | 16.3 | 6.4 | 15.9 | 15.9 |
| 3/8 | 7/16-20 | -S-FJ6ST7 | 35.6 | 9.1 | 16.8 | 5.1 | 17.5 | 15.9 |
| 3/8 | 9/16-18 | -S-FJ6ST9 | 37.1 | 9.9 | 16.8 | 7.1 | 17.5 | 17.5 |
| 3/8 | 3/4-16 | -S-FJ6ST12 | 39.1 | 11.2 | 16.8 | 7.1 | 17.5 | 22.2 |
| 3/8 | 7/8-14 | -S-FJ6ST14 | 42.2 | 12.7 | 16.8 | 7.1 | 17.5 | 25.4 |
| 1/2 | 9/16-18 | -S-FJ8ST9 | 39.1 | 9.9 | 22.9 | 7.1 | 22.2 | 20.6 |
| 1/2 | 3/4-16 | -S-FJ8ST12 | 41.9 | 11.2 | 22.9 | 10.4 | 22.2 | 22.2 |
| 1/2 | 7/8-14 | -S-FJ8ST14 | 45.0 | 12.7 | 22.9 | 10.4 | 22.2 | 25.4 |
| 1/2 | 1 1/16-12 | -S-FJ8ST17 | 49.0 | 15.0 | 22.9 | 10.4 | 22.2 | 31.8 |
| 5/8 | 3/4-16 | -S-FJ10ST12 | 41.9 | 11.2 | 24.4 | 10.7 | 25.4 | 23.8 |
| 5/8 | 7/8-14 | -S-FJ10ST14 | 45.2 | 12.7 | 24.4 | 12.7 | 25.4 | 25.4 |
| 3/4 | 3/4-16 | -S-FJ12ST12 | 46.0 | 11.2 | 24.4 | 10.7 | 28.6 | 27.0 |
| 3/4 | 1 1/16-12 | -S-FJ12ST17 | 49.0 | 15.0 | 24.4 | 15.7 | 28.6 | 31.8 |
| 3/4 | 1 5/16-12 | -S-FJ12ST21 | 49.8 | 15.0 | 24.4 | 16.0 | 28.6 | 38.1 |
| 7/8 | 1 3/16-12 | -S-FJ14ST19 | 49.0 | 15.0 | 25.9 | 18.3 | 31.8 | 34.9 |
| 1 | 1 1/16-12 | -S-FJ16ST17 | 53.3 | 15.0 | 31.2 | 16.8 | 38.1 | 34.9 |
| 1 | 1 5/16-12 | -S-FJ16ST21 | 54.4 | 15.0 | 31.2 | 22.4 | 38.1 | 38.1 |
| 1 1/4 | 1 5/8-12 | -S-FJ20ST26 | 68.3 | 15.0 | 41.1 | 27.7 | 47.6 | 47.6 |
| 1 1/2 | 1 7/8-12 | -S-FJ24ST30 | 77.7 | 15.0 | 50.0 | 34.0 | 57.2 | 54.0 |





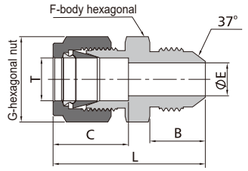


## Ferrule male threaded connector



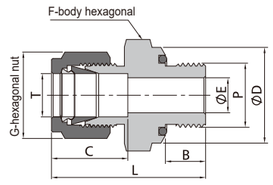

Imperial Tube — SAE/MS straight thread

| T-Tube outer diameter (in.) | P-SAE/MS thread size | Basic order number | Size,mm | | | | | |
|---|---|---|---|---|---|---|---|---|
| | | | L | B | C | E | G | F |
| 1/4 | 7/16-20 | -S-FJ4ST7 | 57.4 | 9.1 | 15.2 | 4.8 | 14.3 | 14.3 |
| 1/2 | 3/4-16 | -S-FJ8ST12 | 76.5 | 11.2 | 22.9 | 10.4 | 22.2 | 22.2 |



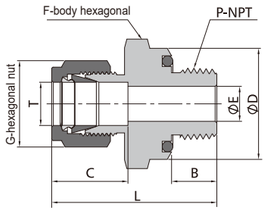

Imperial Tube — 37° flare (AN)

| T-Tube outer diameter (in.) | AN Tube flare size (in.) | Basic order number | Size,mm | | | | | |
|---|---|---|---|---|---|---|---|---|
| | | | L | B | C | E | G | F |
| 1/16 | 1/8 | -S-FJ1AN2 | 27.2 | 11.4 | 8.6 | 1.3 | 7.9 | 11.1 |
| 1/8 | 1/8 | -S-FJ2AN2 | 32.3 | 11.4 | 12.7 | 1.5 | 11.1 | 11.1 |
| 1/8 | 1/4 | -S-FJ2AN4 | 35.1 | 14.0 | 12.7 | 2.3 | 11.1 | 12.7 |
| 3/16 | 3/16 | -S-FJ3AN3 | 33.5 | 12.2 | 13.7 | 2.3 | 12.7 | 11.1 |
| 1/4 | 1/4 | -S-FJ4AN4 | 37.6 | 14.0 | 15.2 | 4.3 | 14.3 | 12.7 |
| 5/16 | 5/16 | -S-FJ5AN5 | 38.4 | 14.0 | 16.2 | 5.8 | 15.9 | 14.3 |
| 3/8 | 1/4 | -S-FJ6AN4 | 39.6 | 14.0 | 16.8 | 4.3 | 17.5 | 15.9 |
| 3/8 | 3/8 | -S-FJ6AN6 | 39.6 | 14.1 | 16.8 | 7.1 | 17.5 | 15.9 |
| 1/2 | 1/2 | -S-FJ8AN8 | 46.0 | 16.7 | 22.8 | 9.9 | 22.2 | 20.6 |
| 5/8 | 5/8 | -S-FJ10AN10 | 49.0 | 19.3 | 24.5 | 12.3 | 25.4 | 23.8 |
| 3/4 | 3/4 | -S-FJ12AN12 | 53.3 | 21.9 | 24.4 | 15.5 | 28.6 | 28.6 |
| 1 | 1 | -S-FJ16AN16 | 61.5 | 23.1 | 31.2 | 21.3 | 38.1 | 34.9 |




Imperial Tube — O-ring seal SAE/MS straight thread

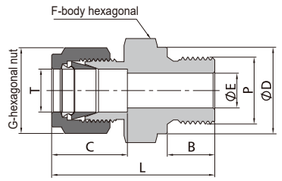
| T-Tube outer diameter (in.) | P-SAE/MS thread size | Basic order number | Size,mm | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | | | L | B | C | E | G | F | D |
| 1/16 | 5/16-24 | -S-FJ1STO5 | 26.7 | 8.6 | 8.6 | 1.3 | 7.9 | 14.3 | 14.0 |
| 1/8 | 5/16-24 | -S-FJ2STO5 | 32.8 | 8.6 | 12.7 | 2.3 | 11.1 | 14.3 | 14.0 |
| 3/16 | 3/8-24 | -S-FJ3STO6 | 34.3 | 9.7 | 13.7 | 3.0 | 12.7 | 15.9 | 15.7 |
| 1/4 | 7/16-20 | -S-FJ4STO7 | 38.4 | 10.4 | 15.2 | 4.8 | 14.3 | 19.1 | 18.8 |
| 5/16 | 1/2-20 | -S-FJ5STO8 | 40.6 | 11.2 | 16.3 | 6.4 | 15.9 | 22.2 | 21.8 |
| 3/8 | 9/16-18 | -S-FJ6STO9 | 42.4 | 11.9 | 16.8 | 7.1 | 17.5 | 23.8 | 23.6 |
| 1/2 | 3/4-16 | -S-FJ8STO12 | 46.0 | 11.9 | 22.9 | 10.4 | 22.2 | 28.6 | 28.4 |
| 3/4 | 1 1/16-12 | -S-FJ12STO17 | 52.3 | 14.2 | 24.4 | 15.7 | 28.6 | 38.1 | 37.8 |
| 1 | 1 5/16-12 | -S-FJ16STO21 | 58.2 | 14.2 | 31.2 | 22.4 | 38.1 | 44.5 | 44.2 |




Imperial Tube — O-ring seal NPT thread

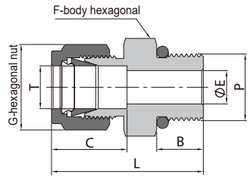
| T-Tube outer diameter (in.) | P-NPT size | Basic order number | Size,mm | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | | | L | B | C | E | G | F | D |
| 1/8 | 1/8 | -S-FJ2NO2 | 32.8 | 7.1 | 8.6 | 2.3 | 11.1 | 19.1 | 18.8 |
| 1/4 | 1/8 | -S-FJ4NO2 | 35.1 | 7.1 | 15.2 | 4.8 | 14.3 | 19.1 | 18.8 |
| 1/4 | 1/4 | -S-FJ4NO4 | 38.4 | 9.7 | 15.2 | 4.8 | 14.3 | 23.8 | 23.6 |
| 3/8 | 1/4 | -S-FJ6NO4 | 39.9 | 9.7 | 16.8 | 7.1 | 17.5 | 23.8 | 23.6 |
| 3/8 | 3/8 | -S-FJ6NO6 | 41.4 | 10.4 | 16.8 | 7.1 | 17.5 | 28.6 | 28.4 |
| 3/8 | 1/2 | -S-FJ6NO8 | 47.0 | 13.5 | 16.8 | 7.1 | 17.5 | 33.3 | 33.0 |
| 1/2 | 1/2 | -S-FJ8NO8 | 49.8 | 13.5 | 22.9 | 10.4 | 22.2 | 33.3 | 33.0 |

## Ferrule male threaded connector




Imperial Tube — Metric thread (MR)

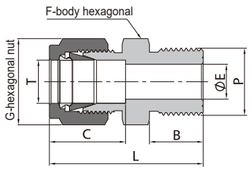
| T-Tube outer diameter (in.) | P - Metric thread size | Basic order number | Size,mm | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | | | L | B | C | E | G | F | D |
| 1/8 | M14 x 1.5 | -S-FJ2MR14 | 36.7 | 12 | 12.7 | 2.3 | 11.1 | 19.1 | 19 |
| 1/8 | M16 x 1.5 | -S-FJ2MR16 | 37.5 | 12 | 12.7 | 2.3 | 11.1 | 22.2 | 21 |
| 1/8 | M18 x 1.5 | -S-FJ2MR18 | 38.5 | 12 | 12.7 | 2.3 | 11.1 | 23.8 | 23 |
| 1/8 | M20 x 1.5 | -S-FJ2MR20 | 41.1 | 14 | 12.7 | 2.3 | 11.1 | 25.4 | 25 |
| 1/4 | M14 x 1.5 | -S-FJ4MR14 | 38.0 | 12 | 15.2 | 4.8 | 14.3 | 19.1 | 19 |
| 1/4 | M16 x 1.5 | -S-FJ4MR16 | 39.9 | 12 | 15.2 | 4.8 | 14.3 | 22.2 | 21 |
| 1/4 | M18 x 1.5 | -S-FJ4MR18 | 40.8 | 12 | 15.2 | 4.8 | 14.3 | 23.8 | 23 |
| 1/4 | M20 x 1.5 | -S-FJ4MR20 | 43.6 | 14 | 15.2 | 4.8 | 14.3 | 25.4 | 25 |
| 3/8 | M14 x 1.5 | -S-FJ6MR14 | 41.3 | 12 | 16.8 | 7.1 | 17.5 | 19.1 | 19 |
| 3/8 | M16 x 1.5 | -S-FJ6MR16 | 41.3 | 12 | 16.8 | 7.1 | 17.5 | 22.2 | 21 |
| 3/8 | M18 x 1.5 | -S-FJ6MR18 | 41.8 | 12 | 16.8 | 7.1 | 17.5 | 23.8 | 23 |
| 3/8 | M20 x 1.5 | -S-FJ6MR20 | 45.1 | 14 | 16.8 | 7.1 | 17.5 | 25.4 | 25 |
| 1/2 | M16 x 1.5 | -S-FJ8MR16 | 44.0 | 12 | 22.9 | 9 | 22.2 | 22.2 | 21 |
| 1/2 | M18 x 1.5 | -S-FJ8MR18 | 44.0 | 12 | 22.9 | 10 | 22.2 | 23.8 | 23 |
| 1/2 | M20 x 1.5 | -S-FJ8MR20 | 47.9 | 14 | 22.9 | 10.4 | 22.2 | 25.4 | 25 |
| 1/2 | M22 x 1.5 | -S-FJ8MR22 | 48.5 | 14 | 22.9 | 10.4 | 22.2 | 27.0 | 27 |




Adapts to ISO 6149-1 straight thread boss.

Imperial Tube — Metric thread (MO)

| T-Tube outer diameter (in.) | P - Metric thread size | Basic order number | Size,mm | | | | | |
|---|---|---|---|---|---|---|---|---|
| | | | L | B | C | E | G | F |
| 1/4 | M14X1.5 | -S-FJ4MO14 | 35.2 | 11 | 15.2 | 4.8 | 14.3 | 19.1 |
| 3/8 | M14X1.5 | -S-FJ6MO14 | 36.7 | 11 | 16.8 | 7.1 | 17.5 | 19.1 |
| 3/8 | M20X1.5 | -S-FJ6MO20 | 41.2 | 14 | 16.8 | 7.1 | 17.5 | 27.0 |
| 1/2 | M14X1.5 | -S-FJ8MO14 | 40.2 | 11 | 22.9 | 7.5 | 22.2 | 20.6 |
| 1/2 | M20X1.5 | -S-FJ8MO20 | 44.0 | 14 | 22.9 | 10.4 | 22.2 | 27.0 |



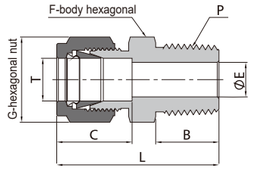

Imperial Tube — Metric thread (MS)

| T-Tube outer diameter (in.) | P - Metric thread size | Basic order number | Size,mm | | | | | |
|---|---|---|---|---|---|---|---|---|
| | | | L | B | C | E | G | F |
| 1/16 | M5 x 0.8 | -S-FJ1MS5 | 21.8 | 8 | 8.6 | 1.3 | 7.9 | 7.9 |
| 1/8 | M14 x 1.5 | -S-FJ2MS14 | 34.8 | 13 | 12.7 | 2.3 | 11.1 | 15.9 |
| 1/8 | M16 x 1.5 | -S-FJ2MS16 | 35.8 | 14 | 12.7 | 2.3 | 11.1 | 17.5 |
| 1/8 | M18 x 1.5 | -S-FJ2MS18 | 37.2 | 15 | 12.7 | 2.3 | 11.1 | 19.1 |
| 1/8 | M20 x 1.5 | -S-FJ2MS20 | 38.2 | 16 | 12.7 | 2.3 | 11.1 | 22.2 |
| 1/4 | M14 x 1.5 | -S-FJ4MS14 | 36.9 | 13 | 15.2 | 4.8 | 14.3 | 15.9 |
| 1/4 | M16 x 1.5 | -S-FJ4MS16 | 38.1 | 14 | 15.2 | 4.8 | 14.3 | 17.5 |
| 1/4 | M18 x 1.5 | -S-FJ4MS18 | 39.5 | 15 | 15.2 | 4.8 | 14.3 | 19.1 |
| 1/4 | M20 x 1.5 | -S-FJ4MS20 | 40.7 | 16 | 15.2 | 4.8 | 14.3 | 22.2 |
| 3/8 | M10 x 1.0 | -S-FJ6MS10 | 36.4 | 11 | 16.8 | 4.8 | 17.5 | 15.9 |
| 3/8 | M14 x 1.5 | -S-FJ6MS14 | 39.3 | 13 | 16.8 | 7.1 | 17.5 | 15.9 |
| 3/8 | M16 x 1.5 | -S-FJ6MS16 | 39.7 | 14 | 16.8 | 7.1 | 17.5 | 17.5 |
| 3/8 | M18 x 1.5 | -S-FJ6MS18 | 41.5 | 15 | 16.8 | 7.1 | 17.5 | 19.1 |
| 3/8 | M20 x 1.5 | -S-FJ6MS20 | 42.3 | 16 | 16.8 | 7.1 | 17.5 | 22.2 |
| 1/2 | M16 x 1.5 | -S-FJ8MS16 | 43.2 | 14 | 22.9 | 8.4 | 22.2 | 20.6 |
| 1/2 | M18 x 1.5 | -S-FJ8MS18 | 43.7 | 15 | 22.9 | 9.6 | 22.2 | 20.6 |
| 1/2 | M20 x 1.5 | -S-FJ8MS20 | 44.9 | 16 | 22.9 | 10.4 | 22.2 | 22.2 |
| 1/2 | M22 x 1.5 | -S-FJ8MS22 | 47.0 | 17 | 22.9 | 10.4 | 22.2 | 23.8 |





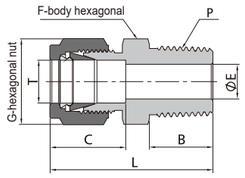
## Ferrule male threaded connector




Metric Tube — NPT Thread

| T-Tube outer diameter (mm) | P-NPT size | Basic order number | Size,mm | | | | | |
|---|---|---|---|---|---|---|---|---|
| | | | L | B | C | E | G | F |
| 2 | 1/8 | -S-MJ2N2 | 30.5 | 9.7 | 12.9 | 1.7 | 12 | 12 |
| 3 | 1/8 | -S-MJ3N2 | 30.5 | 9.7 | 12.9 | 2.4 | 12 | 12 |
| 3 | 1/4 | -S-MJ3N4 | 35.6 | 14.2 | 12.9 | 2.4 | 12 | 14 |
| 4 | 1/8 | -S-MJ4N2 | 31.2 | 9.7 | 13.7 | 2.4 | 12 | 12 |
| 4 | 1/4 | -S-MJ4N4 | 36.3 | 14.2 | 13.7 | 2.4 | 12 | 14 |
| 6 | 1/8 | -S-MJ6N2 | 32.8 | 9.7 | 15.3 | 4.8 | 14 | 14 |
| 6 | 1/4 | -S-MJ6N4 | 37.9 | 14.2 | 15.3 | 4.8 | 14 | 14 |
| 6 | 3/8 | -S-MJ6N6 | 38.4 | 14.2 | 15.3 | 4.8 | 14 | 18 |
| 6 | 1/2 | -S-MJ6N8 | 44.7 | 19.1 | 15.3 | 4.8 | 14 | 22 |
| 8 | 1/8 | -S-MJ8N2 | 34.2 | 9.7 | 16.2 | 4.8 | 16 | 15 |
| 8 | 1/4 | -S-MJ8N4 | 38.7 | 14.2 | 16.2 | 6.4 | 16 | 15 |
| 8 | 3/8 | -S-MJ8N6 | 39.3 | 14.2 | 16.2 | 6.4 | 16 | 18 |
| 8 | 1/2 | -S-MJ8N8 | 45.6 | 19.1 | 16.2 | 6.4 | 16 | 22 |
| 10 | 1/8 | -S-MJ10N2 | 36.3 | 9.7 | 17.2 | 4.8 | 19 | 18 |
| 10 | 1/4 | -S-MJ10N4 | 40.9 | 14.2 | 17.2 | 7.1 | 19 | 18 |
| 10 | 3/8 | -S-MJ10N6 | 40.9 | 14.2 | 17.2 | 7.9 | 19 | 18 |
| 10 | 1/2 | -S-MJ10N8 | 46.5 | 19.1 | 17.2 | 7.9 | 19 | 22 |
| 10 | 3/4 | -S-MJ10N12 | 48.0 | 19.1 | 17.2 | 7.9 | 19 | 27 |
| 10 | 1 | -S-MJ10N16 | 54.6 | 23.9 | 17.2 | 7.9 | 19 | 35 |
| 12 | 1/8 | -S-MJ12N2 | 38.8 | 9.7 | 22.8 | 4.8 | 22 | 22 |
| 12 | 1/4 | -S-MJ12N4 | 43.4 | 14.2 | 22.8 | 7.1 | 22 | 22 |
| 12 | 3/8 | -S-MJ12N6 | 43.4 | 14.2 | 22.8 | 9.5 | 22 | 22 |
| 12 | 1/2 | -S-MJ12N8 | 49.0 | 19.1 | 22.8 | 9.5 | 22 | 22 |
| 12 | 3/4 | -S-MJ12N12 | 50.5 | 19.1 | 22.8 | 9.5 | 22 | 27 |
| 14 | 1/8 | -S-MJ14N2 | 38.8 | 9.7 | 24.4 | 4.8 | 25 | 24 |
| 14 | 1/4 | -S-MJ14N4 | 44.1 | 14.2 | 24.4 | 7.1 | 25 | 24 |
| 14 | 3/8 | -S-MJ14N6 | 44.1 | 14.2 | 24.4 | 9.5 | 25 | 24 |
| 14 | 1/2 | -S-MJ14N8 | 49.0 | 19.1 | 24.4 | 11.1 | 25 | 24 |
| 14 | 3/4 | -S-MJ14N12 | 50.5 | 19.1 | 24.4 | 11.1 | 25 | 27 |
| 15 | 1/2 | -S-MJ15N8 | 49.0 | 19.1 | 24.4 | 11.9 | 25 | 24 |
| 15 | 3/4 | -S-MJ15N12 | 50.5 | 19.1 | 24.4 | 11.9 | 25 | 27 |
| 15 | 1 | -S-MJ15N16 | 57.1 | 23.9 | 24.4 | 11.9 | 25 | 35 |
| 16 | 1/4 | -S-MJ16N4 | 44.1 | 14.2 | 24.4 | 7.1 | 25 | 24 |
| 16 | 3/8 | -S-MJ16N6 | 44.1 | 14.2 | 24.4 | 9.5 | 25 | 24 |
| 16 | 1/2 | -S-MJ16N8 | 49.0 | 19.1 | 24.4 | 11.9 | 25 | 24 |
| 16 | 3/4 | -S-MJ16N12 | 50.5 | 19.1 | 24.4 | 12.7 | 25 | 27 |
| 18 | 3/8 | -S-MJ18N6 | 45.6 | 14.2 | 24.4 | 9.5 | 30 | 27 |
| 18 | 1/2 | -S-MJ18N8 | 50.5 | 19.1 | 24.4 | 11.9 | 30 | 27 |
| 18 | 3/4 | -S-MJ18N12 | 50.5 | 19.1 | 24.4 | 15.1 | 30 | 27 |
| 20 | 1/2 | -S-MJ20N8 | 52.3 | 19.1 | 26.0 | 11.9 | 32 | 30 |
| 20 | 3/4 | -S-MJ20N12 | 52.3 | 19.1 | 26.0 | 15.9 | 32 | 30 |
| 20 | 1 | -S-MJ20N16 | 57.1 | 23.9 | 26.0 | 15.9 | 32 | 35 |
| 22 | 1/2 | -S-MJ22N8 | 52.3 | 19.1 | 26.0 | 11.9 | 32 | 30 |
| 22 | 3/4 | -S-MJ22N12 | 52.3 | 19.1 | 26.0 | 15.9 | 32 | 30 |
| 22 | 1 | -S-MJ22N16 | 57.1 | 23.9 | 26.0 | 18.3 | 32 | 35 |
| 25 | 1/2 | -S-MJ25N8 | 57.5 | 19.1 | 31.3 | 11.9 | 38 | 35 |
| 25 | 3/4 | -S-MJ25N12 | 57.5 | 19.1 | 31.3 | 15.9 | 38 | 35 |
| 25 | 1 | -S-MJ25N16 | 62.3 | 23.9 | 31.3 | 21.8 | 38 | 35 |
| 28 | 1 | -S-MJ28N16 | 72.4 | 23.9 | 36.6 | 21.8 | 46 | 41 |
| 28 | 1 1/4 | -S-MJ28N20 | 73.1 | 23.9 | 36.6 | 21.8 | 46 | 46 |
| 30 | 1 1/4 | -S-MJ30N20 | 77.2 | 23.9 | 39.6 | 26.2 | 50 | 46 |
| 32 | 1 1/4 | -S-MJ32N20 | 79.6 | 23.9 | 42.0 | 28.6 | 50 | 46 |
| 38 | 1 1/2 | -S-MJ38N24 | 91.6 | 26.2 | 49.4 | 33.7 | 60 | 55 |

## Ferrule male threaded connector



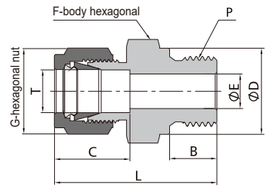

Metric Tube — ISO tapered thread (RT)

| T-Tube outer diameter (mm) | P-RT size | Basic order number | Size,mm | | | | | |
|---|---|---|---|---|---|---|---|---|
| | | | L | B | C | E | G | F |
| 2 | 1/8 | -S-MJ2RT2 | 30.5 | 9.7 | 12.9 | 1.7 | 12 | 12 |
| 3 | 1/8 | -S-MJ3RT2 | 30.5 | 9.7 | 12.9 | 2.4 | 12 | 12 |
| 3 | 1/4 | -S-MJ3RT4 | 35.6 | 14.2 | 12.9 | 2.4 | 12 | 14 |
| 4 | 1/8 | -S-MJ4RT2 | 31.2 | 9.7 | 13.7 | 2.4 | 12 | 12 |
| 4 | 1/4 | -S-MJ4RT4 | 36.3 | 14.2 | 13.7 | 2.4 | 12 | 14 |
| 6 | 1/8 | -S-MJ6RT2 | 32.8 | 9.7 | 15.3 | 4.8 | 14 | 14 |
| 6 | 1/4 | -S-MJ6RT4 | 37.9 | 14.2 | 15.3 | 4.8 | 14 | 14 |
| 6 | 3/8 | -S-MJ6RT6 | 38.4 | 14.2 | 15.3 | 4.8 | 14 | 18 |
| 6 | 1/2 | -S-MJ6RT8 | 44.7 | 19.1 | 15.3 | 4.8 | 14 | 22 |
| 8 | 1/8 | -S-MJ8RT2 | 34.2 | 9.7 | 16.2 | 4.8 | 16 | 15 |
| 8 | 1/4 | -S-MJ8RT4 | 38.7 | 14.2 | 16.2 | 6.4 | 16 | 15 |
| 8 | 3/8 | -S-MJ8RT6 | 39.2 | 14.2 | 16.2 | 6.4 | 16 | 18 |
| 8 | 1/2 | -S-MJ8RT8 | 45.6 | 19.1 | 16.2 | 6.4 | 16 | 22 |
| 10 | 1/8 | -S-MJ10RT2 | 36.3 | 9.7 | 17.2 | 4.8 | 19 | 18 |
| 10 | 1/4 | -S-MJ10RT4 | 40.9 | 14.2 | 17.2 | 7.1 | 19 | 18 |
| 10 | 3/8 | -S-MJ10RT6 | 40.9 | 14.2 | 17.2 | 7.9 | 19 | 18 |
| 10 | 1/2 | -S-MJ10RT8 | 46.5 | 19.1 | 17.2 | 7.9 | 19 | 22 |
| 10 | 3/4 | -S-MJ10RT12 | 48.0 | 19.1 | 17.2 | 7.9 | 19 | 27 |
| 12 | 1/8 | -S-MJ12RT2 | 38.3 | 9.7 | 22.8 | 4.8 | 22 | 22 |
| 12 | 1/4 | -S-MJ12RT4 | 43.4 | 14.2 | 22.8 | 7.1 | 22 | 22 |
| 12 | 3/8 | -S-MJ12RT6 | 43.4 | 14.2 | 22.8 | 9.5 | 22 | 22 |
| 12 | 1/2 | -S-MJ12RT8 | 49.0 | 19.1 | 22.8 | 9.5 | 22 | 22 |
| 12 | 3/4 | -S-MJ12RT12 | 50.5 | 19.1 | 22.8 | 9.5 | 22 | 27 |
| 14 | 1/8 | -S-MJ14RT2 | 38.8 | 9.7 | 24.4 | 4.8 | 25 | 24 |
| 14 | 1/4 | -S-MJ14RT4 | 44.1 | 14.2 | 24.4 | 7.1 | 25 | 24 |
| 14 | 3/8 | -S-MJ14RT6 | 44.1 | 14.2 | 24.4 | 7.9 | 25 | 24 |
| 14 | 1/2 | -S-MJ14RT8 | 49.0 | 19.1 | 24.4 | 11.1 | 25 | 24 |
| 14 | 3/4 | -S-MJ14RT12 | 50.5 | 19.1 | 24.4 | 11.1 | 25 | 27 |
| 15 | 1/2 | -S-MJ15RT8 | 49.0 | 19.1 | 24.4 | 11.9 | 25 | 24 |
| 16 | 1/4 | -S-MJ16RT4 | 44.1 | 14.2 | 24.4 | 7.1 | 25 | 24 |
| 16 | 3/8 | -S-MJ16RT6 | 44.1 | 14.2 | 24.4 | 9.5 | 25 | 24 |
| 16 | 1/2 | -S-MJ16RT8 | 49.0 | 19.1 | 24.4 | 11.9 | 25 | 24 |
| 16 | 3/4 | -S-MJ16RT12 | 50.5 | 19.1 | 24.4 | 12.7 | 25 | 27 |
| 18 | 1/2 | -S-MJ18RT8 | 50.5 | 19.1 | 24.4 | 11.9 | 30 | 27 |
| 18 | 3/4 | -S-MJ18RT12 | 50.5 | 19.1 | 24.4 | 15.1 | 30 | 27 |
| 20 | 1/2 | -S-MJ20RT8 | 52.3 | 19.1 | 26.0 | 11.9 | 32 | 30 |
| 20 | 3/4 | -S-MJ20RT12 | 52.3 | 19.1 | 26.0 | 15.9 | 32 | 30 |
| 22 | 3/4 | -S-MJ22RT12 | 52.3 | 19.1 | 26.0 | 15.9 | 32 | 30 |
| 22 | 1 | -S-MJ22RT16 | 57.1 | 23.9 | 26.0 | 18.3 | 32 | 35 |
| 25 | 1/2 | -S-MJ25RT8 | 57.5 | 19.1 | 31.3 | 11.9 | 38 | 35 |
| 25 | 3/4 | -S-MJ25RT12 | 57.5 | 19.1 | 31.3 | 15.9 | 38 | 35 |
| 25 | 1 | -S-MJ25RT16 | 62.3 | 23.9 | 31.3 | 21.8 | 38 | 35 |
| 28 | 1 | -S-MJ28RT16 | 72.4 | 23.9 | 36.6 | 21.8 | 46 | 41 |
| 28 | 1 1/4 | -S-MJ28RT20 | 73.1 | 23.9 | 36.6 | 21.8 | 46 | 46 |
| 30 | 1 1/4 | -S-MJ30RT20 | 77.2 | 23.9 | 39.6 | 26.2 | 50 | 46 |
| 32 | 1 1/4 | -S-MJ32RT20 | 79.6 | 23.9 | 42.0 | 28.6 | 50 | 46 |
| 38 | 1 1/2 | -S-MJ38RT24 | 91.6 | 26.2 | 49.4 | 33.7 | 60 | 55 |





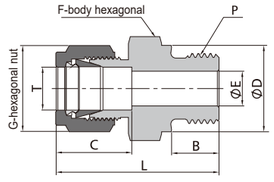
## Ferrule male threaded connector




Metric Tube — ISO straight thread (BS)

| T-Tube outer diameter (mm) | P-RS size | Basic order number | Size,mm | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | | | L | B | C | E | G | F | D |
| 2 | 1/8 | -S-MJ2BS2 | 30.0 | 7.1 | 12.9 | 1.7 | 12 | 14 | 13.7 |
| 3 | 1/8 | -S-MJ3BS2 | 30.0 | 7.1 | 12.9 | 2.4 | 12 | 14 | 13.7 |
| 3 | 1/4 | -S-MJ3BS4 | 35.3 | 11.2 | 12.9 | 2.4 | 12 | 19 | 18.0 |
| 4 | 1/8 | -S-MJ4BS2 | 30.7 | 7.1 | 13.7 | 2.4 | 12 | 14 | 13.7 |
| 4 | 1/4 | -S-MJ4BS4 | 36.0 | 11.2 | 13.7 | 2.4 | 12 | 19 | 18.0 |
| 6 | 1/8 | -S-MJ6BS2 | 32.3 | 7.1 | 15.3 | 4.0 | 14 | 14 | 13.7 |
| 6 | 1/4 | -S-MJ6BS4 | 37.6 | 11.2 | 15.3 | 4.8 | 14 | 19 | 18.0 |
| 6 | 3/8 | -S-MJ6BS6 | 38.9 | 11.2 | 15.3 | 4.8 | 14 | 22 | 21.6 |
| 6 | 1/2 | -S-MJ6BS8 | 44.7 | 14.2 | 15.3 | 4.8 | 14 | 27 | 25.9 |
| 8 | 1/8 | -S-MJ8BS2 | 33.2 | 7.1 | 16.2 | 4.0 | 16 | 15 | 14.5 |
| 8 | 1/4 | -S-MJ8BS4 | 38.5 | 11.2 | 16.2 | 6.4 | 16 | 19 | 18.0 |
| 8 | 3/8 | -S-MJ8BS6 | 39.8 | 11.2 | 16.2 | 6.4 | 16 | 22 | 21.6 |
| 8 | 1/2 | -S-MJ8BS8 | 45.6 | 14.2 | 16.2 | 6.4 | 16 | 27 | 25.9 |
| 8 | 3/4 | -S-MJ8BS12 | 49.5 | 15.7 | 16.2 | 6.4 | 16 | 35 | 32.0 |
| 10 | 1/4 | -S-MJ10BS4 | 39.4 | 11.2 | 17.2 | 5.9 | 19 | 19 | 18.0 |
| 10 | 3/8 | -S-MJ10BS6 | 40.6 | 11.2 | 17.2 | 7.9 | 19 | 22 | 21.6 |
| 10 | 1/2 | -S-MJ10BS8 | 46.5 | 14.2 | 17.2 | 7.9 | 19 | 27 | 25.9 |
| 12 | 1/4 | -S-MJ12BS4 | 42.6 | 11.2 | 22.8 | 5.9 | 22 | 22 | 21.6 |
| 12 | 3/8 | -S-MJ12BS6 | 43.1 | 11.2 | 22.8 | 7.9 | 22 | 22 | 21.6 |
| 12 | 1/2 | -S-MJ12BS8 | 49.0 | 14.2 | 22.8 | 9.5 | 22 | 27 | 25.9 |
| 12 | 3/4 | -S-MJ12BS12 | 52.8 | 15.7 | 22.8 | 9.5 | 22 | 35 | 32.0 |
| 14 | 1/4 | -S-MJ14BS4 | 42.9 | 11.2 | 24.4 | 7.1 | 25 | 24 | 18.0 |
| 14 | 3/8 | -S-MJ14BS6 | 43.9 | 11.2 | 24.4 | 7.9 | 25 | 24 | 21.6 |
| 14 | 1/2 | -S-MJ14BS8 | 49.0 | 14.2 | 24.4 | 11.1 | 25 | 27 | 25.9 |
| 14 | 3/4 | -S-MJ14BS12 | 52.8 | 15.7 | 24.4 | 11.1 | 25 | 35 | 32.0 |
| 15 | 3/8 | -S-MJ15BS6 | 43.9 | 11.2 | 24.4 | 7.9 | 25 | 24 | 21.6 |
| 15 | 1/2 | -S-MJ15BS8 | 49.0 | 14.2 | 24.4 | 11.9 | 25 | 27 | 25.9 |
| 15 | 3/4 | -S-MJ15BS12 | 52.8 | 15.7 | 24.4 | 11.9 | 25 | 35 | 32.0 |
| 16 | 3/8 | -S-MJ16BS6 | 43.9 | 11.2 | 24.4 | 7.9 | 25 | 24 | 21.6 |
| 16 | 1/2 | -S-MJ16BS8 | 49.0 | 14.2 | 24.4 | 11.9 | 25 | 27 | 25.9 |
| 16 | 3/4 | -S-MJ16BS12 | 52.8 | 15.7 | 24.4 | 12.7 | 25 | 35 | 32.0 |
| 18 | 1/2 | -S-MJ18BS8 | 49.0 | 14.2 | 24.4 | 11.9 | 30 | 27 | 25.9 |
| 18 | 3/4 | -S-MJ18BS12 | 52.8 | 15.7 | 24.4 | 15.1 | 30 | 35 | 32.0 |
| 20 | 1/2 | -S-MJ20BS8 | 50.5 | 14.2 | 26.0 | 11.9 | 32 | 30 | 25.9 |
| 20 | 3/4 | -S-MJ20BS12 | 52.8 | 15.7 | 26.0 | 15.9 | 32 | 35 | 32.0 |
| 22 | 3/4 | -S-MJ22BS12 | 52.8 | 15.7 | 26.0 | 15.9 | 32 | 35 | 32.0 |
| 22 | 1 | -S-MJ22BS16 | 55.3 | 18.3 | 26.0 | 18.3 | 32 | 41 | 39.1 |
| 25 | 3/4 | -S-MJ25BS12 | 57.5 | 15.7 | 31.3 | 15.9 | 38 | 35 | 32.0 |
| 25 | 1 | -S-MJ25BS16 | 60.1 | 18.3 | 31.3 | 19.8 | 38 | 41 | 39.1 |
| 28 | 1 | -S-MJ28BS16 | 70.1 | 18.3 | 36.6 | 19.8 | 46 | 41 | 39.1 |
| 28 | 1 1/4 | -S-MJ28BS20 | 73.9 | 19.8 | 36.6 | 21.8 | 46 | 50 | 49.0 |
| 30 | 1 1/4 | -S-MJ30BS20 | 76.5 | 19.8 | 39.6 | 25.0 | 50 | 50 | 49.0 |
| 32 | 1 1/4 | -S-MJ32BS20 | 78.9 | 19.8 | 42.0 | 25.0 | 50 | 50 | 49.0 |
| 38 | 1 1/2 | -S-MJ38BS24 | 90.8 | 22.1 | 49.4 | 31.8 | 60 | 55 | 54.7 |

## Ferrule male threaded connector



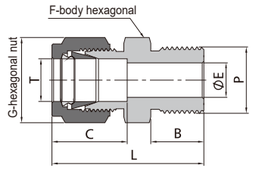

Metric Tube — ISO straight thread (BR)

| T-Tube outer diameter (mm) | P-RP size | Basic order number | Size,mm | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | | | L | B | C | E | G | F | D |
| 3 | 1/8 | -S-MJ3BR2 | 30.0 | 7.1 | 12.9 | 2.4 | 12 | 14 | 13.8 |
| 3 | 1/4 | -S-MJ3BR4 | 35.3 | 11.2 | 12.9 | 2.4 | 12 | 19 | 18.0 |
| 4 | 1/8 | -S-MJ4BR2 | 30.7 | 7.1 | 13.7 | 2.4 | 12 | 14 | 13.8 |
| 6 | 1/8 | -S-MJ6BR2 | 32.3 | 7.1 | 15.3 | 4.0 | 14 | 14 | 13.8 |
| 6 | 1/4 | -S-MJ6BR4 | 37.6 | 11.2 | 15.3 | 4.8 | 14 | 19 | 18.0 |
| 6 | 3/8 | -S-MJ6BR6 | 38.9 | 11.2 | 15.3 | 4.8 | 14 | 22 | 21.8 |
| 6 | 1/2 | -S-MJ6BR8 | 44.7 | 14.2 | 15.3 | 4.8 | 14 | 27 | 26.0 |
| 8 | 1/8 | -S-MJ8BR2 | 33.3 | 7.1 | 16.2 | 4.0 | 16 | 15 | 13.8 |
| 8 | 1/4 | -S-MJ8BR4 | 38.5 | 11.2 | 16.2 | 5.9 | 16 | 19 | 18.0 |
| 8 | 3/8 | -S-MJ8BR6 | 39.8 | 11.2 | 16.2 | 6.4 | 16 | 22 | 21.8 |
| 8 | 1/2 | -S-MJ8BR8 | 45.6 | 14.2 | 16.2 | 6.4 | 16 | 27 | 26.0 |
| 10 | 1/4 | -S-MJ10BR4 | 39.4 | 11.2 | 17.2 | 5.9 | 19 | 19 | 18.0 |
| 10 | 3/8 | -S-MJ10BR6 | 40.6 | 11.2 | 17.2 | 7.9 | 19 | 22 | 21.8 |
| 10 | 1/2 | -S-MJ10BR8 | 46.5 | 14.2 | 17.2 | 7.9 | 19 | 27 | 26.0 |
| 12 | 1/4 | -S-MJ12BR4 | 42.6 | 11.2 | 22.8 | 5.9 | 22 | 22 | 18.0 |
| 12 | 3/8 | -S-MJ12BR6 | 43.1 | 11.2 | 22.8 | 7.9 | 22 | 22 | 21.8 |
| 12 | 1/2 | -S-MJ12BR8 | 49.0 | 14.2 | 22.8 | 9.5 | 22 | 27 | 26.0 |
| 12 | 3/4 | -S-MJ12BR12 | 52.8 | 15.7 | 22.8 | 9.5 | 22 | 35 | 32.0 |
| 15 | 1/2 | -S-MJ15BR8 | 49.0 | 14.2 | 24.4 | 11.9 | 25 | 27 | 26.0 |
| 16 | 3/8 | -S-MJ16BR6 | 43.9 | 11.2 | 24.4 | 7.9 | 25 | 24 | 21.8 |
| 16 | 1/2 | -S-MJ16BR8 | 49.0 | 14.2 | 24.4 | 11.9 | 25 | 27 | 26.0 |
| 18 | 1/2 | -S-MJ18BR8 | 49.0 | 14.2 | 24.4 | 11.9 | 30 | 27 | 26.0 |
| 18 | 3/4 | -S-MJ18BR12 | 52.8 | 15.7 | 24.4 | 15.1 | 30 | 35 | 32.0 |
| 20 | 1/2 | -S-MJ20BR8 | 50.5 | 14.2 | 26.0 | 11.9 | 32 | 30 | 26.0 |
| 20 | 3/4 | -S-MJ20BR12 | 52.8 | 15.7 | 26.0 | 15.9 | 32 | 35 | 32.0 |
| 22 | 3/4 | -S-MJ22BR12 | 52.8 | 15.7 | 26.0 | 15.9 | 32 | 35 | 32.0 |
| 22 | 1 | -S-MJ22BR16 | 55.3 | 18.3 | 26.0 | 18.3 | 32 | 41 | 39.0 |
| 25 | 3/4 | -S-MJ25BR12 | 57.5 | 15.7 | 31.3 | 15.9 | 38 | 35 | 32.0 |
| 25 | 1 | -S-MJ25BR16 | 60.1 | 18.3 | 31.3 | 19.8 | 38 | 41 | 39.0 |
| 28 | 1 | -S-MJ28BR16 | 70.1 | 18.3 | 36.6 | 19.8 | 46 | 41 | 39.0 |
| 28 | 1 1/4 | -S-MJ28BR20 | 73.9 | 19.8 | 36.6 | 21.8 | 46 | 50 | 49.0 |
| 30 | 1 1/4 | -S-MJ30BR20 | 76.5 | 19.8 | 39.6 | 26.2 | 50 | 50 | 49.0 |
| 32 | 1 1/4 | -S-MJ32BR20 | 78.9 | 19.8 | 42.0 | 28.6 | 50 | 50 | 49.0 |
| 38 | 1 1/2 | -S-MJ38BR24 | 89.3 | 20.6 | 49.4 | 31.8 | 60 | 55 | 54.7 |



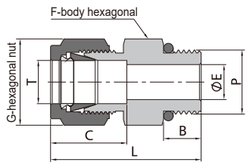


## Ferrule male threaded connector




Metric Tube — ISO straight thread (BP)

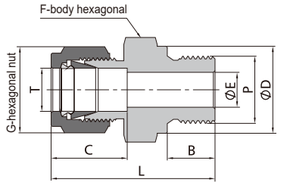
| T-Tube outer diameter (mm) | P-BP size | Basic order number | Size,mm | | | | | |
|---|---|---|---|---|---|---|---|---|
| | | | L | B | C | E | G | F |
| 6 | 1/4 | -S-MJ6BP4 | 36.9 | 12.9 | 15.3 | 4.8 | 14 | 14 |
| 6 | 3/8 | -S-MJ6BP6 | 39.5 | 14.2 | 15.3 | 4.8 | 14 | 18 |
| 8 | 1/8 | -S-MJ8BP2 | 33.9 | 9.8 | 16.2 | 4.0 | 16 | 14 |
| 8 | 1/4 | -S-MJ8BP4 | 37.0 | 12.9 | 16.2 | 6.4 | 16 | 14 |
| 8 | 3/8 | -S-MJ8BP6 | 39.3 | 14.2 | 16.2 | 6.4 | 16 | 18 |
| 8 | 1/2 | -S-MJ8BP8 | 45.4 | 18.8 | 16.2 | 6.4 | 16 | 22 |
| 10 | 1/4 | -S-MJ10BP4 | 39.5 | 12.9 | 17.2 | 5.9 | 19 | 18 |
| 10 | 1/2 | -S-MJ10BP8 | 46.3 | 18.8 | 17.2 | 7.9 | 19 | 22 |
| 12 | 3/8 | -S-MJ12BP6 | 44.2 | 14.2 | 22.8 | 7.9 | 22 | 22 |
| 12 | 1/2 | -S-MJ12BP8 | 49.0 | 18.8 | 22.8 | 9.5 | 22 | 22 |
| 14 | 1/4 | -S-MJ14BP4 | 42.9 | 12.9 | 24.4 | 5.9 | 25 | 24 |
| 16 | 3/8 | -S-MJ16BP6 | 43.4 | 14.2 | 24.4 | 7.9 | 25 | 24 |
| 16 | 1/2 | -S-MJ16BP8 | 47.9 | 18.8 | 24.4 | 9.5 | 25 | 24 |
| 18 | 1/2 | -S-MJ18BP8 | 49.8 | 18.8 | 24.4 | 9.5 | 30 | 27 |




Adapts to SAE J1926-1, ISO 11926-1 and MS 16142 straight thread bosses.

Metric Tube — SAE/MS straight thread

| T-Tube outer diameter (mm) | P-SAE/MS thread size | Basic order number | Size,mm | | | | | |
|---|---|---|---|---|---|---|---|---|
| | | | L | B | C | E | G | F |
| 6 | 9/16-18 | -S-MJ6ST9 | 35.6 | 9.9 | 15.3 | 4.8 | 14 | 18 |
| 10 | 9/16-18 | -S-MJ10ST9 | 37.3 | 9.9 | 17.2 | 7.1 | 19 | 22 |
| 10 | 3/4-16 | -S-MJ10ST12 | 39.4 | 11.2 | 17.2 | 7.9 | 19 | 22 |
| 12 | 7/16-20 | -S-MJ12ST7 | 40.6 | 9.1 | 22.8 | 5.2 | 22 | 22 |
| 12 | 9/16-18 | -S-MJ12ST9 | 39.9 | 9.9 | 22.8 | 7.1 | 22 | 22 |




Metric Tube — Metric thread (MR)

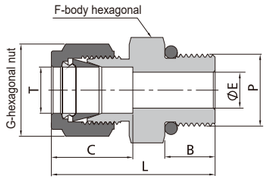
| T-Tube outer diameter (mm) | P - Metric thread size | Basic order number | Size,mm | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | | | L | B | C | E | G | F | D |
| 6 | M8 x 1 | -S-MJ6MR8 | 33.3 | 8 | 15.3 | 3.0 | 14 | 14 | 12 |
| 6 | M10 x 1 | -S-MJ6MR10 | 36.3 | 8 | 15.3 | 4.0 | 14 | 14 | 14 |
| 6 | M12 x 1.5 | -S-MJ6MR12 | 38.2 | 12 | 15.3 | 4.8 | 14 | 18 | 17 |
| 6 | M14 x 1.5 | -S-MJ6MR14 | 39.7 | 12 | 15.3 | 4.8 | 14 | 19 | 19 |
| 8 | M8 x 1 | -S-MJ8MR8 | 34.1 | 8 | 16.2 | 3.0 | 16 | 14 | 12 |
| 8 | M10 x 1 | -S-MJ8MR10 | 34.1 | 8 | 16.2 | 5.0 | 16 | 15 | 14 |
| 8 | M12 x 1.5 | -S-MJ8MR12 | 40.4 | 12 | 16.2 | 6.0 | 16 | 18 | 17 |
| 8 | M14 x 1.5 | -S-MJ8MR14 | 40.4 | 12 | 16.2 | 6.4 | 16 | 19 | 19 |
| 10 | M12 x 1.5 | -S-MJ10MR12 | 40.7 | 12 | 17.2 | 6.0 | 19 | 18 | 17 |
| 10 | M14 x 1.5 | -S-MJ10MR14 | 41.5 | 12 | 17.2 | 7.9 | 19 | 19 | 19 |
| 12 | M16 x 1.5 | -S-MJ12MR16 | 45.5 | 12 | 22.8 | 9 | 22 | 22 | 21 |
| 12 | M20 x 1.5 | -S-MJ12MR20 | 48.0 | 14 | 22.8 | 9.5 | 22 | 25 | 25 |
| 12 | M22 x 1.5 | -S-MJ12MR22 | 49.5 | 14 | 22.8 | 9.5 | 22 | 27 | 27 |
| 14 | M14 x 1.5 | -S-MJ14MR14 | 44.9 | 12 | 24.4 | 8 | 25 | 24 | 19 |
| 14 | M20 x 1.5 | -S-MJ14MR20 | 48.0 | 14 | 24.4 | 11.1 | 25 | 25 | 25 |
| 16 | M20 x 1.5 | -S-MJ16MR20 | 48.0 | 14 | 24.4 | 12 | 25 | 25 | 25 |
| 18 | M20 x 1.5 | -S-MJ18MR20 | 48.5 | 14 | 24.4 | 12 | 30 | 27 | 25 |
| 20 | M20 x 1.5 | -S-MJ20MR20 | 50.0 | 14 | 26.0 | 12 | 32 | 30 | 25 |
| 22 | M24 x 1.5 | -S-MJ22MR24 | 50.5 | 14 | 26.0 | 15 | 32 | 30 | 29 |
| 25 | M27 x 2 | -S-MJ25MR27 | 57.5 | 16 | 31.3 | 16.8 | 38 | 35 | 32 |



idealPower

idealPower

## Ferrule male threaded connector




Adapts to ISO 6149-1 straight thread boss.

Metric Tube — Metric thread (MO)

| T-Tube outer diameter (mm) | P - Metric thread size | Basic order number | Size,mm | | | | | |
|---|---|---|---|---|---|---|---|---|
| | | | L | B | C | E | G | F |
| 6 | M14 x 1.5 | -S-MJ6MO14 | 35.2 | 11 | 15.3 | 4.8 | 14 | 19 |
| 10 | M14 x 1.5 | -S-MJ10MO14 | 36.7 | 11 | 17.2 | 7.5 | 19 | 19 |
| 10 | M20 x 1.5 | -S-MJ10MO20 | 41.2 | 14 | 17.2 | 7.9 | 19 | 27 |
| 12 | M14 x 1.5 | -S-MJ12MO14 | 40.2 | 11 | 22.8 | 7.5 | 22 | 22 |
| 12 | M20 x 1.5 | -S-MJ12MO20 | 44.0 | 14 | 22.8 | 10.4 | 22 | 27 |




Metric Tube — Metric thread (MS)

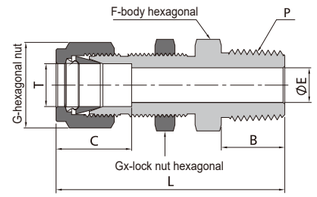
| T-Tube outer diameter (mm) | P - Metric thread size | Basic order number | Size,mm | | | | | |
|---|---|---|---|---|---|---|---|---|
| | | | L | B | C | E | G | F |
| 6 | M6 x 1 | -S-MJ6MS6 | 32.4 | 8 | 15.3 | 2.0 | 14 | 14 |
| 6 | M8 x 1 | -S-MJ6MS8 | 32.4 | 9 | 15.3 | 3.0 | 14 | 14 |
| 6 | M10 x 1 | -S-MJ6MS10 | 35.2 | 11 | 15.3 | 4.7 | 14 | 14 |
| 6 | M12 x 1.5 | -S-MJ6MS12 | 36.4 | 12 | 15.3 | 4.8 | 14 | 14 |
| 6 | M14 x 1.5 | -S-MJ6MS14 | 37.4 | 13 | 15.3 | 4.8 | 14 | 16 |
| 6 | M16 x 1.5 | -S-MJ6MS16 | 38.4 | 14 | 15.3 | 4.8 | 14 | 18 |
| 6 | M18 x 1.5 | -S-MJ6MS18 | 40.0 | 15 | 15.3 | 4.8 | 14 | 19 |
| 6 | M20 x 1.5 | -S-MJ6MS20 | 41.7 | 16 | 15.3 | 4.8 | 14 | 22 |
| 8 | M8 x 1 | -S-MJ8MS8 | 34.5 | 9 | 16.2 | 3.0 | 16 | 14 |
| 8 | M10 x 1 | -S-MJ8MS10 | 35.6 | 11 | 16.2 | 4.7 | 16 | 14 |
| 8 | M12 x 1.5 | -S-MJ8MS12 | 36.6 | 12 | 16.2 | 6.0 | 16 | 14 |
| 8 | M14 x 1.5 | -S-MJ8MS14 | 37.7 | 13 | 16.2 | 6.4 | 16 | 16 |
| 8 | M20 x 1.5 | -S-MJ8MS20 | 42.5 | 16 | 16.2 | 6.4 | 16 | 22 |
| 10 | M12 x 1.5 | -S-MJ10MS12 | 38.7 | 12 | 17.2 | 6.0 | 19 | 18 |
| 10 | M14 x 1.5 | -S-MJ10MS14 | 39.7 | 13 | 17.2 | 7.2 | 19 | 18 |
| 10 | M20 x 1.5 | -S-MJ10MS20 | 43.5 | 16 | 17.2 | 7.9 | 19 | 22 |
| 12 | M12 x 1.5 | -S-MJ12MS12 | 41.2 | 12 | 22.8 | 6.0 | 22 | 22 |
| 12 | M16 x 1.5 | -S-MJ12MS16 | 43.2 | 14 | 22.8 | 9.5 | 22 | 22 |
| 12 | M18 x 1.5 | -S-MJ12MS18 | 44.2 | 15 | 22.8 | 9.5 | 22 | 22 |
| 12 | M20 x 1.5 | -S-MJ12MS20 | 45.2 | 16 | 22.8 | 9.5 | 22 | 22 |
| 14 | M14 x 1.5 | -S-MJ14MS14 | 42.5 | 13 | 24.4 | 7.2 | 25 | 24 |
| 14 | M16 x 1.5 | -S-MJ14MS16 | 43.9 | 14 | 24.4 | 8.4 | 25 | 24 |
| 14 | M20 x 1.5 | -S-MJ14MS20 | 45.1 | 16 | 24.4 | 10.8 | 25 | 24 |
| 16 | M20 x 1.5 | -S-MJ16MS20 | 46.1 | 16 | 24.4 | 10.8 | 25 | 24 |
| 18 | M20 x 1.5 | -S-MJ18MS20 | 47.5 | 16 | 24.4 | 10.8 | 30 | 27 |
| 18 | M22 x 1.5 | -S-MJ18MS22 | 48.5 | 17 | 24.4 | 12 | 30 | 27 |
| 20 | M20 x 1.5 | -S-MJ20MS20 | 49.5 | 16 | 26.0 | 10.8 | 32 | 30 |
| 22 | M24 x 1.5 | -S-MJ22MS24 | 50.5 | 17 | 26.0 | 14.4 | 32 | 30 |
| 25 | M27 x 2 | -S-MJ25MS27 | 57.0 | 18 | 31.3 | 16.1 | 38 | 35 |







## Male threaded bulkhead connector



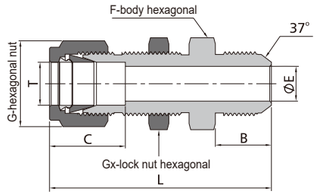

Imperial Tube — NPT Thread

| T-Tube outer diameter (in.) | P-NPT Size | Basic order number | Size,mm | | | | | | | Perforated plate size (mm) | Maximum perforated plate thickness (mm) |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | L | B | C | E | G | F | Gx | | |
| 1/16 | 1/16 | -S-BFJ1N1 | 30.2 | 9.7 | 8.6 | 1.3 | 7.9 | 7.9 | 7.9 | 5.2 | 6.4 |
| 1/16 | 1/8 | -S-BFJ1N2 | 32.3 | 9.7 | 8.6 | 1.3 | 7.9 | 11.1 | 7.9 | 5.2 | 6.4 |
| 1/8 | 1/8 | -S-BFJ2N2 | 46.5 | 9.7 | 12.7 | 2.3 | 11.1 | 12.7 | 12.7 | 8.3 | 12.7 |
| 3/16 | 1/8 | -S-BFJ3N2 | 48.0 | 9.7 | 13.7 | 3.0 | 12.7 | 14.3 | 14.3 | 9.9 | 12.7 |
| 1/4 | 1/8 | -S-BFJ4N2 | 49.5 | 9.7 | 15.2 | 4.8 | 14.3 | 15.9 | 15.9 | 11.5 | 10.2 |
| 1/4 | 1/4 | -S-BFJ4N4 | 54.1 | 14.2 | 15.2 | 4.8 | 14.3 | 15.9 | 15.9 | 11.5 | 10.2 |
| 1/4 | 3/8 | -S-BFJ4N6 | 54.9 | 14.2 | 15.2 | 4.8 | 14.3 | 17.5 | 15.9 | 11.5 | 10.2 |
| 1/4 | 1/2 | -S-BFJ4N8 | 60.3 | 19.1 | 15.2 | 4.8 | 14.3 | 22.2 | 15.9 | 11.5 | 10.2 |
| 5/16 | 1/8 | -S-BFJ5N2 | 52.8 | 9.7 | 16.3 | 4.8 | 15.9 | 17.5 | 17.5 | 13.1 | 11.2 |
| 5/16 | 1/4 | -S-BFJ5N4 | 57.7 | 14.2 | 16.3 | 6.4 | 15.9 | 17.5 | 17.5 | 13.1 | 11.2 |
| 3/8 | 1/8 | -S-BFJ6N2 | 52.9 | 9.7 | 16.8 | 4.8 | 17.5 | 19.1 | 19.1 | 14.7 | 11.2 |
| 3/8 | 1/4 | -S-BFJ6N4 | 57.4 | 14.2 | 16.8 | 7.1 | 17.5 | 19.1 | 19.1 | 14.7 | 11.2 |
| 3/8 | 3/8 | -S-BFJ6N6 | 57.4 | 14.2 | 16.8 | 7.1 | 17.5 | 19.1 | 19.1 | 14.7 | 11.2 |
| 3/8 | 1/2 | -S-BFJ6N8 | 63.8 | 19.1 | 16.8 | 7.1 | 17.5 | 22.2 | 19.1 | 14.7 | 11.2 |
| 1/2 | 1/8 | -S-BFJ8N2 | 58.7 | 9.7 | 22.9 | 4.8 | 22.2 | 23.8 | 23.8 | 19.4 | 12.7 |
| 1/2 | 1/4 | -S-BFJ8N4 | 63.2 | 14.2 | 22.9 | 7.1 | 22.2 | 23.8 | 23.8 | 19.4 | 12.7 |
| 1/2 | 3/8 | -S-BFJ8N6 | 63.2 | 14.2 | 22.9 | 9.7 | 22.2 | 23.8 | 23.8 | 19.4 | 12.7 |
| 1/2 | 1/2 | -S-BFJ8N8 | 68.8 | 19.1 | 22.9 | 10.4 | 22.2 | 23.8 | 23.8 | 19.4 | 12.7 |
| 5/8 | 3/8 | -S-BFJ10N6 | 66.7 | 14.2 | 24.4 | 9.7 | 25.4 | 27.0 | 27.0 | 22.6 | 15.1 |
| 5/8 | 1/2 | -S-BFJ10N8 | 71.5 | 19.1 | 24.4 | 11.9 | 25.4 | 27.0 | 27.0 | 22.6 | 15.1 |
| 3/4 | 1/2 | -S-BFJ12N8 | 76.2 | 19.1 | 24.4 | 11.9 | 28.6 | 30.2 | 30.2 | 25.8 | 16.8 |
| 3/4 | 3/4 | -S-BFJ12N12 | 76.2 | 19.1 | 24.4 | 15.7 | 28.6 | 30.2 | 30.2 | 25.8 | 16.8 |
| 7/8 | 3/4 | -S-BFJ14N12 | 84.1 | 19.1 | 25.9 | 15.7 | 31.8 | 33.3 | 33.3 | 29.0 | 19.1 |
| 1 | 3/4 | -S-BFJ16N12 | 88.4 | 19.1 | 31.2 | 15.7 | 38.1 | 41.3 | 41.3 | 33.7 | 19.1 |
| 1 | 1 | -S-BFJ16N16 | 93.2 | 23.9 | 31.2 | 22.4 | 38.1 | 41.3 | 41.3 | 33.7 | 19.1 |

Metric Tube — NPT Thread

| T-Tube outer diameter (in.) | P-NPT Size | Basic order number | Size,mm | | | | | | | Perforated plate size (mm) | Maximum perforated plate thickness (mm) |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | L | B | C | E | G | F | Gx | | |
| 6 | 1/8 | -S-BMJ6N2 | 49.6 | 9.7 | 15.3 | 4.8 | 14 | 16 | 16 | 11.5 | 10.2 |
| 6 | 1/4 | -S-BMJ6N4 | 53.6 | 14.2 | 15.3 | 4.8 | 14 | 16 | 16 | 11.5 | 10.2 |
| 8 | 1/8 | -S-BMJ8N2 | 52.3 | 9.7 | 16.2 | 4.8 | 16 | 18 | 18 | 13.1 | 11.2 |
| 8 | 1/4 | -S-BMJ8N4 | 57.5 | 14.2 | 16.2 | 6.4 | 16 | 18 | 18 | 13.1 | 11.2 |
| 10 | 1/4 | -S-BMJ10N4 | 58.4 | 14.2 | 17.2 | 7.9 | 19 | 22 | 22 | 16.3 | 11.2 |
| 10 | 3/8 | -S-BMJ10N6 | 58.4 | 14.2 | 17.2 | 7.9 | 19 | 22 | 22 | 16.3 | 11.2 |
| 10 | 1/2 | -S-BMJ10N8 | 63.1 | 19.1 | 17.2 | 7.9 | 19 | 22 | 22 | 16.3 | 11.2 |
| 12 | 1/4 | -S-BMJ12N4 | 63.9 | 14.2 | 22.8 | 7.9 | 22 | 24 | 24 | 19.5 | 12.7 |
| 12 | 3/8 | -S-BMJ12N6 | 63.9 | 14.2 | 22.8 | 9.5 | 22 | 24 | 24 | 19.5 | 12.7 |
| 12 | 1/2 | -S-BMJ12N8 | 68.8 | 19.1 | 22.8 | 9.5 | 22 | 24 | 24 | 19.5 | 12.7 |

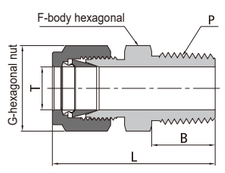
## Male threaded bulkhead connector




Imperial Tube — 37° flared (AN)

| T-Tube outer diameter (in.) | AN Tube expansion size | Basic order number | Size,mm | | | | | | | Perforated plate size (mm) | Maximum perforated plate thickness (mm) |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | L | B | C | E | G | F | Gx | | |
| 1/8 | 1/8 | -S-BFJ2AN2 | 48.5 | 11.4 | 12.7 | 1.5 | 11.1 | 12.7 | 12.7 | 8.3 | 12.7 |
| 1/8 | 1/4 | -S-BFJ2AN4 | 51.8 | 14.0 | 12.7 | 2.3 | 11.1 | 15.9 | 12.7 | 8.3 | 12.7 |
| 3/16 | 3/16 | -S-BFJ3AN3 | 50.3 | 12.2 | 13.7 | 2.3 | 12.7 | 14.3 | 14.3 | 9.9 | 12.7 |
| 1/4 | 1/4 | -S-BFJ4AN4 | 53.8 | 14.0 | 15.2 | 4.3 | 14.3 | 15.9 | 15.9 | 11.5 | 10.2 |
| 5/16 | 5/16 | -S-BFJ5AN5 | 56.1 | 14.0 | 16.2 | 5.8 | 15.9 | 17.5 | 17.5 | 13.1 | 14.3 |
| 3/8 | 1/4 | -S-BFJ6AN4 | 57.2 | 14.0 | 16.8 | 4.3 | 17.5 | 19.1 | 19.1 | 14.7 | 11.2 |
| 3/8 | 3/8 | -S-BFJ6AN6 | 57.2 | 14.2 | 16.8 | 7.1 | 17.5 | 19.1 | 19.1 | 14.7 | 11.2 |
| 1/2 | 1/2 | -S-BFJ8AN8 | 65.8 | 16.8 | 22.8 | 9.9 | 22.2 | 23.8 | 23.8 | 19.4 | 12.7 |
| 5/8 | 5/8 | -S-BFJ10AN10 | 69.6 | 19.3 | 24.4 | 12.3 | 25.4 | 27.0 | 27.0 | 22.6 | 15.1 |
| 3/4 | 3/4 | -S-BFJ12AN12 | 79.0 | 21.8 | 24.4 | 15.5 | 28.6 | 30.2 | 30.2 | 25.8 | 16.8 |
| 1 | 1 | -S-BFJ16AN16 | 92.5 | 23.1 | 31.2 | 21.3 | 38.1 | 41.3 | 41.3 | 33.7 | 19.1 |

## Male threaded boring joint



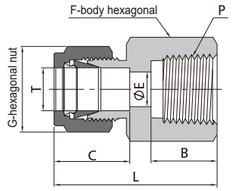

Imperial Tube — NPT Thread

| T-Tube outer diameter (in.) | P-NPT Size | Basic order number | Size,mm | | | |
|---|---|---|---|---|---|---|
| | | | L | B | G | F |
| 1/16 | 1/16 | -S-TFJ1N1 | 23.9 | 9.7 | 7.9 | 7.9 |
| 1/16 | 1/8 | -S-TFJ1N2 | 26.2 | 9.7 | 7.9 | 11.1 |
| 1/16 | 1/4 | -S-TFJ1N4 | 31.0 | 14.2 | 7.9 | 14.3 |
| 1/8 | 1/16 | -S-TFJ2N1 | 29.7 | 9.7 | 11.1 | 11.1 |
| 1/8 | 1/8 | -S-TFJ2N2 | 30.5 | 9.7 | 11.1 | 11.1 |
| 1/8 | 1/4 | -S-TFJ2N4 | 35.6 | 14.2 | 11.1 | 14.3 |
| 3/16 | 1/8 | -S-TFJ3N2 | 31.2 | 9.7 | 12.7 | 11.1 |
| 3/16 | 1/4 | -S-TFJ3N4 | 36.3 | 14.2 | 12.7 | 14.3 |
| 1/4 | 1/8 | -S-TFJ4N2 | 32.8 | 9.7 | 14.3 | 12.7 |
| 1/4 | 1/4 | -S-TFJ4N4 | 37.8 | 14.2 | 14.3 | 14.3 |
| 1/4 | 3/8 | -S-TFJ4N6 | 38.4 | 14.2 | 14.3 | 17.5 |
| 1/4 | 1/2 | -S-TFJ4N8 | 44.7 | 19.1 | 14.3 | 22.2 |
| 5/16 | 1/4 | -S-TFJ5N4 | 38.6 | 14.2 | 15.9 | 14.3 |
| 3/8 | 1/4 | -S-TFJ6N4 | 39.9 | 14.2 | 17.5 | 15.9 |
| 3/8 | 3/8 | -S-TFJ6N6 | 39.9 | 14.2 | 17.5 | 17.5 |
| 3/8 | 1/2 | -S-TFJ6N8 | 46.2 | 19.1 | 17.5 | 22.2 |
| 3/8 | 3/4 | -S-TFJ6N12 | 47.8 | 19.1 | 17.5 | 27.0 |
| 1/2 | 1/2 | -S-TFJ8N8 | 49.0 | 19.1 | 22.2 | 22.2 |
| 1/2 | 3/4 | -S-TFJ8N12 | 50.5 | 19.1 | 22.2 | 27.0 |
| 5/8 | 3/4 | -S-TFJ10N12 | 50.5 | 19.1 | 25.4 | 27.0 |
| 3/4 | 3/4 | -S-TFJ12N12 | 50.5 | 19.1 | 28.6 | 27.0 |
| 1 | 1 | -S-TFJ16N16 | 62.2 | 23.9 | 38.1 | 34.9 |





## Male threaded bulkhead connector



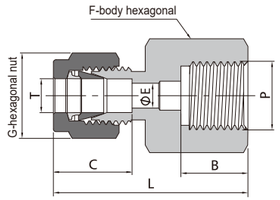

Imperial Tube — NPT Thread

| T-Tube outer diameter (in.) | P-NPT Size | Basic order number | Size,mm | | | | | |
|---|---|---|---|---|---|---|---|---|
| | | | L | B | C | E | G | F |
| 1/16 | 1/16 | -S-FJ1FN1 | 23.6 | 9.9 | 8.6 | 1.3 | 7.9 | 11.1 |
| 1/16 | 1/8 | -S-FJ1FN2 | 24.4 | 10.4 | 8.6 | 1.3 | 7.9 | 14.3 |
| 1/8 | 1/8 | -S-FJ2FN2 | 28.7 | 10.4 | 12.7 | 2.3 | 11.1 | 14.3 |
| 1/8 | 1/4 | -S-FJ2FN4 | 33.5 | 15.0 | 12.7 | 2.3 | 11.1 | 19.1 |
| 3/16 | 1/8 | -S-FJ3FN2 | 29.7 | 10.4 | 13.7 | 3.0 | 12.7 | 14.3 |
| 1/4 | 1/8 | -S-FJ4FN2 | 31.2 | 10.4 | 15.2 | 4.8 | 14.3 | 14.3 |
| 1/4 | 1/4 | -S-FJ4FN4 | 35.8 | 15.0 | 15.2 | 4.8 | 14.3 | 19.1 |
| 1/4 | 3/8 | -S-FJ4FN6 | 37.6 | 15.0 | 15.2 | 4.8 | 14.3 | 22.2 |
| 1/4 | 1/2 | -S-FJ4FN8 | 42.4 | 19.8 | 15.2 | 4.8 | 14.3 | 27.0 |
| 5/16 | 1/8 | -S-FJ5FN2 | 32.0 | 10.4 | 16.3 | 6.4 | 15.9 | 14.3 |
| 5/16 | 1/4 | -S-FJ5FN4 | 36.8 | 15.0 | 16.3 | 6.4 | 15.9 | 19.1 |
| 3/8 | 1/8 | -S-FJ6FN2 | 32.8 | 10.4 | 16.8 | 7.1 | 17.5 | 15.9 |
| 3/8 | 1/4 | -S-FJ6FN4 | 37.6 | 15.0 | 16.8 | 7.1 | 17.5 | 19.1 |
| 3/8 | 3/8 | -S-FJ6FN6 | 39.1 | 15.0 | 16.8 | 7.1 | 17.5 | 22.2 |
| 3/8 | 1/2 | -S-FJ6FN8 | 43.9 | 19.8 | 16.8 | 7.1 | 17.5 | 27.0 |
| 3/8 | 3/4 | -S-FJ6FN12 | 47.8 | 20.6 | 16.8 | 7.1 | 17.5 | 33.3 |
| 1/2 | 1/4 | -S-FJ8FN4 | 40.4 | 15.0 | 22.9 | 10.4 | 22.2 | 20.6 |
| 1/2 | 3/8 | -S-FJ8FN6 | 41.9 | 15.0 | 22.9 | 10.4 | 22.2 | 22.2 |
| 1/2 | 1/2 | -S-FJ8FN8 | 46.7 | 19.8 | 22.9 | 10.4 | 22.2 | 27.0 |
| 1/2 | 3/4 | -S-FJ8FN12 | 48.3 | 20.6 | 22.9 | 10.4 | 22.2 | 33.3 |
| 5/8 | 3/8 | -S-FJ10FN6 | 41.9 | 15.0 | 24.4 | 12.7 | 25.4 | 23.8 |
| 5/8 | 1/2 | -S-FJ10FN8 | 46.7 | 19.8 | 24.4 | 12.7 | 25.4 | 27.0 |
| 3/4 | 1/2 | -S-FJ12FN8 | 46.7 | 19.8 | 24.4 | 15.7 | 28.6 | 27.0 |
| 3/4 | 3/4 | -S-FJ12FN12 | 48.3 | 20.6 | 24.4 | 15.7 | 28.6 | 33.3 |
| 7/8 | 3/4 | -S-FJ14FN12 | 49.8 | 20.6 | 25.9 | 18.3 | 31.8 | 33.3 |
| 1 | 3/4 | -S-FJ16FN12 | 53.3 | 20.6 | 31.2 | 22.4 | 38.1 | 34.9 |
| 1 | 1 | -S-FJ16FN16 | 62.2 | 25.4 | 31.2 | 22.4 | 38.1 | 41.3 |
| 1 1/4 | 1 1/4 | -S-FJ20FN20 | 74.7 | 25.4 | 41.1 | 27.7 | 47.6 | 54.0 |
| 1 1/2 | 1 1/2 | -S-FJ24FN24 | 83.3 | 27.7 | 50.0 | 36.3 | 57.2 | 60.3 |

Imperial Tube — ISO Tapered Thread (FRT)

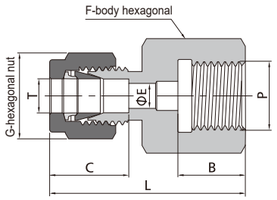
| T-Tube O.D. (in.) | P-FR Size | Basic order number | Size,mm | | | | | |
|---|---|---|---|---|---|---|---|---|
| | | | L | B | C | E | G | F |
| 1/4 | 1/8 | -S-FJ4FRT2 | 31.2 | 10.4 | 15.2 | 4.8 | 14.3 | 14.3 |
| 1/4 | 1/4 | -S-FJ4FRT4 | 35.8 | 15.0 | 15.2 | 4.8 | 14.3 | 19.1 |
| 1/4 | 3/8 | -S-FJ4FRT6 | 37.6 | 15.0 | 15.2 | 4.8 | 14.3 | 22.2 |
| 1/4 | 1/2 | -S-FJ4FRT8 | 42.4 | 19.8 | 15.2 | 4.8 | 14.3 | 27.0 |
| 3/8 | 1/4 | -S-FJ6FRT4 | 37.6 | 15.0 | 16.8 | 7.1 | 17.5 | 19.1 |
| 3/8 | 3/8 | -S-FJ6FRT6 | 39.1 | 15.0 | 16.8 | 7.1 | 17.5 | 22.2 |
| 3/8 | 1/2 | -S-FJ6FRT8 | 43.9 | 19.8 | 16.8 | 7.1 | 17.5 | 27.0 |
| 1/2 | 1/4 | -S-FJ8FRT4 | 40.4 | 15.0 | 22.9 | 10.4 | 22.2 | 20.6 |
| 1/2 | 3/8 | -S-FJ8FRT6 | 41.9 | 15.0 | 22.9 | 10.4 | 22.2 | 22.2 |
| 1/2 | 1/2 | -S-FJ8FRT8 | 46.7 | 19.8 | 22.9 | 10.4 | 22.2 | 27.0 |

## Ferrule female thread connector




Imperial Tube — ISO straight thread (FG)

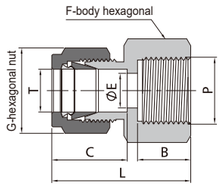
| T-Tube outer diameter (in.) | P-RG Size | Basic order number | Size,mm | | | | | |
|---|---|---|---|---|---|---|---|---|
| | | | L | B | C | E | G | F |
| 1/8 | 1/4 | -S-FJ2FG4 | 35.3 | 12.9 | 12.7 | 2.3 | 11.1 | 19.1 |
| 1/8 | 3/8 | -S-FJ2FG6 | 38.7 | 14.2 | 12.7 | 2.3 | 11.1 | 23.8 |
| 1/4 | 1/4 | -S-FJ4FG4 | 37.6 | 12.9 | 15.2 | 4.8 | 14.3 | 19.1 |
| 1/4 | 3/8 | -S-FJ4FG6 | 37.6 | 14.2 | 15.2 | 4.8 | 14.3 | 23.8 |
| 1/4 | 1/2 | -S-FJ4FG8 | 43.4 | 18.8 | 15.2 | 4.8 | 14.3 | 27.0 |
| 5/16 | 1/4 | -S-FJ5FG4 | 38.4 | 12.9 | 16.3 | 5.6 | 15.9 | 19.1 |
| 5/16 | 3/8 | -S-FJ5FG6 | 39.2 | 14.2 | 16.3 | 6.4 | 15.9 | 23.8 |
| 5/16 | 1/2 | -S-FJ5FG8 | 40.9 | 18.8 | 16.3 | 7.1 | 15.9 | 27.0 |
| 3/8 | 1/4 | -S-FJ6FG4 | 39.1 | 12.9 | 16.8 | 5.6 | 17.5 | 19.1 |
| 3/8 | 3/8 | -S-FJ6FG6 | 38.6 | 14.2 | 16.8 | 6.4 | 17.5 | 23.8 |
| 3/8 | 1/2 | -S-FJ6FG8 | 41.9 | 18.8 | 16.8 | 7.1 | 17.5 | 27.0 |
| 1/2 | 1/4 | -S-FJ8FG4 | 41.9 | 12.9 | 22.9 | 5.6 | 22.2 | 22.2 |
| 1/2 | 3/8 | -S-FJ8FG6 | 44.5 | 14.2 | 22.9 | 6.4 | 22.2 | 23.8 |
| 1/2 | 1/2 | -S-FJ8FG8 | 48.3 | 18.8 | 22.9 | 7.1 | 22.2 | 27.0 |




Adapter to Japanese pressure gauge bolt.

Imperial Tube — ISO straight thread (RJ)

| T-Tube outer diameter (in.) | P-RJ Size | Basic order number | Size,mm | | | | | |
|---|---|---|---|---|---|---|---|---|
| | | | L | B | C | E | G | F |
| 1/4 | 1/4 | -S-FJ4RJ4 | 37.6 | 12.9 | 15.2 | 4.6 | 14.3 | 19.1 |
| 1/4 | 3/8 | -S-FJ4RJ6 | 37.6 | 14.2 | 15.2 | 4.8 | 14.3 | 23.8 |
| 1/4 | 1/2 | -S-FJ4RJ8 | 43.4 | 18.8 | 15.2 | 4.8 | 14.3 | 27.0 |
| 5/16 | 1/4 | -S-FJ5RJ4 | 38.4 | 12.9 | 16.3 | 5.6 | 15.9 | 19.1 |
| 5/16 | 1/2 | -S-FJ5RJ8 | 40.9 | 18.8 | 16.3 | 7.1 | 15.9 | 27.0 |
| 3/8 | 1/4 | -S-FJ6RJ4 | 39.1 | 12.9 | 16.8 | 5.6 | 17.5 | 19.1 |
| 3/8 | 3/8 | -S-FJ6RJ6 | 38.6 | 14.2 | 16.8 | 6.4 | 17.5 | 23.8 |
| 3/8 | 1/2 | -S-FJ6RJ8 | 41.9 | 18.8 | 16.8 | 7.1 | 17.5 | 27.0 |
| 1/2 | 1/4 | -S-FJ8RJ4 | 41.9 | 12.9 | 22.9 | 5.6 | 22.2 | 20.6 |
| 1/2 | 3/8 | -S-FJ8RJ6 | 44.5 | 14.2 | 22.9 | 6.4 | 22.2 | 23.8 |
| 1/2 | 1/2 | -S-FJ8RJ8 | 48.3 | 18.8 | 22.9 | 7.1 | 22.2 | 27.0 |




Imperial Tube — Metric thread

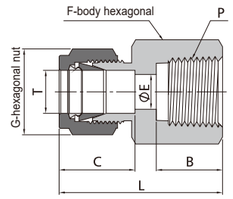
| T-Tube outer diameter (in.) | P - Metric thread size | Basic order number | Size,mm | | | | | |
|---|---|---|---|---|---|---|---|---|
| | | | L | B | C | E | G | F |
| 1/8 | M14 x 1.5 | -S-FJ2FM14 | 32.3 | 13 | 12.7 | 2.3 | 11.1 | 19.1 |
| 1/8 | M16 x 1.5 | -S-FJ2FM16 | 33.3 | 14 | 12.7 | 2.3 | 11.1 | 22.2 |
| 1/8 | M18 x 1.5 | -S-FJ2FM18 | 34.3 | 15 | 12.7 | 2.3 | 11.1 | 25.4 |
| 1/8 | M20 x 1.5 | -S-FJ2FM20 | 35.3 | 16 | 12.7 | 2.3 | 11.1 | 27.0 |
| 1/4 | M16 x 1.5 | -S-FJ4FM16 | 35.8 | 14 | 15.2 | 4.8 | 14.3 | 22.2 |
| 1/4 | M18 x 1.5 | -S-FJ4FM18 | 36.8 | 15 | 15.2 | 4.8 | 14.3 | 25.4 |
| 1/4 | M20 x 1.5 | -S-FJ4FM20 | 37.8 | 16 | 15.2 | 4.8 | 14.3 | 27.0 |
| 3/8 | M14 x 1.5 | -S-FJ6FM14 | 37.1 | 13 | 16.8 | 7.1 | 17.5 | 19.1 |
| 3/8 | M16 x 1.5 | -S-FJ6FM16 | 37.5 | 14 | 16.8 | 7.1 | 17.5 | 22.2 |
| 3/8 | M18 x 1.5 | -S-FJ6FM18 | 38.5 | 15 | 16.8 | 7.1 | 17.5 | 25.4 |
| 3/8 | M20 x 1.5 | -S-FJ6FM20 | 39.5 | 16 | 16.8 | 7.1 | 17.5 | 27.0 |
| 1/2 | M16 x 1.5 | -S-FJ8FM16 | 41.4 | 14 | 22.9 | 8.4 | 22.2 | 22.2 |
| 1/2 | M18 x 1.5 | -S-FJ8FM18 | 42.4 | 15 | 22.9 | 9.6 | 22.2 | 25.4 |
| 1/2 | M20 x 1.5 | -S-FJ8FM20 | 43.4 | 16 | 22.9 | 10.4 | 22.2 | 27.0 |
| 1/2 | M22 x 1.5 | -S-FJ8FM22 | 44.4 | 17 | 22.9 | 10.4 | 22.2 | 27.0 |







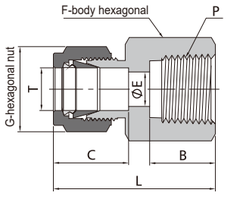
## Ferrule female thread connector




Metric Tube — NPT Thread

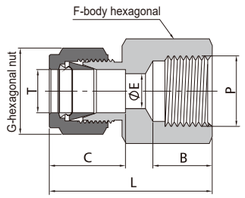
| T-Tube outer diameter (mm) | P-NPT Size | Basic order number | Size,mm | | | | | |
|---|---|---|---|---|---|---|---|---|
| | | | L | B | C | E | G | F |
| 3 | 1/8 | -S-MJ3FN2 | 28.7 | 10.4 | 12.9 | 2.4 | 12 | 14 |
| 3 | 1/4 | -S-MJ3FN4 | 33.5 | 15.0 | 12.9 | 2.4 | 12 | 19 |
| 4 | 1/8 | -S-MJ4FN2 | 29.7 | 10.4 | 13.7 | 2.4 | 12 | 14 |
| 6 | 1/8 | -S-MJ6FN2 | 31.3 | 10.4 | 15.3 | 4.8 | 14 | 14 |
| 6 | 1/4 | -S-MJ6FN4 | 35.8 | 15.0 | 15.3 | 4.8 | 14 | 19 |
| 6 | 3/8 | -S-MJ6FN6 | 37.7 | 15.0 | 15.3 | 4.8 | 14 | 22 |
| 6 | 1/2 | -S-MJ6FN8 | 42.5 | 19.8 | 15.3 | 4.8 | 14 | 27 |
| 8 | 1/8 | -S-MJ8FN2 | 32.1 | 10.4 | 16.2 | 4.8 | 16 | 15 |
| 8 | 1/4 | -S-MJ8FN4 | 37.0 | 15.0 | 16.2 | 6.4 | 16 | 19 |
| 8 | 3/8 | -S-MJ8FN6 | 38.5 | 15.0 | 16.2 | 6.4 | 16 | 22 |
| 8 | 1/2 | -S-MJ8FN8 | 43.3 | 19.8 | 16.2 | 6.4 | 16 | 27 |
| 10 | 1/8 | -S-MJ10FN2 | 33.0 | 10.4 | 17.2 | 4.8 | 19 | 15 |
| 10 | 1/4 | -S-MJ10FN4 | 37.8 | 15.0 | 17.2 | 7.9 | 19 | 19 |
| 10 | 3/8 | -S-MJ10FN6 | 39.4 | 15.0 | 17.2 | 7.9 | 19 | 22 |
| 10 | 1/2 | -S-MJ10FN8 | 44.2 | 19.8 | 17.2 | 7.9 | 19 | 27 |
| 12 | 1/4 | -S-MJ12FN4 | 40.3 | 15.0 | 22.8 | 7.9 | 22 | 22 |
| 12 | 3/8 | -S-MJ12FN6 | 41.9 | 15.0 | 22.8 | 9.5 | 22 | 22 |
| 12 | 1/2 | -S-MJ12FN8 | 46.7 | 19.8 | 22.8 | 9.5 | 22 | 27 |
| 12 | 3/4 | -S-MJ12FN12 | 49.7 | 20.6 | 22.8 | 9.5 | 22 | 35 |
| 14 | 3/4 | -S-MJ14FN12 | 49.7 | 20.6 | 24.4 | 11.1 | 25 | 35 |
| 15 | 1/2 | -S-MJ15FN8 | 46.7 | 19.8 | 24.4 | 11.9 | 25 | 27 |
| 16 | 3/8 | -S-MJ16FN6 | 41.9 | 15.0 | 24.4 | 9.5 | 25 | 27 |
| 16 | 1/2 | -S-MJ16FN8 | 46.9 | 19.8 | 24.4 | 11.9 | 25 | 27 |
| 20 | 1/2 | -S-MJ20FN8 | 47.9 | 19.8 | 26.0 | 11.9 | 32 | 30 |
| 20 | 3/4 | -S-MJ20FN12 | 49.7 | 20.6 | 26.0 | 15.9 | 32 | 35 |
| 22 | 3/4 | -S-MJ22FN12 | 49.7 | 20.6 | 26.0 | 15.9 | 32 | 35 |
| 22 | 1 | -S-MJ22FN16 | 57.9 | 25.4 | 26.0 | 18.3 | 32 | 41 |
| 25 | 3/4 | -S-MJ25FN12 | 53.4 | 20.6 | 31.3 | 15.9 | 38 | 35 |
| 25 | 1 | -S-MJ25FN16 | 62.3 | 25.4 | 31.3 | 21.8 | 38 | 41 |

## Ferrule female thread connector




Metric Tube — ISO Tapered Thread (RT)

| T-Tube outer diameter (mm) | P-RT Size | Basic order number | Size,mm | | | | | |
|---|---|---|---|---|---|---|---|---|
| | | | L | B | C | E | G | F |
| 3 | 1/8 | -S-MJ3FRT2 | 28.7 | 10.4 | 12.9 | 2.4 | 12 | 14 |
| 6 | 1/8 | -S-MJ6FRT2 | 31.3 | 10.4 | 15.3 | 4.8 | 14 | 14 |
| 6 | 1/4 | -S-MJ6FRT4 | 35.8 | 15.0 | 15.3 | 4.8 | 14 | 19 |
| 6 | 3/8 | -S-MJ6FRT6 | 36.9 | 15.0 | 15.3 | 4.8 | 14 | 22 |
| 6 | 1/2 | -S-MJ6FRT8 | 42.5 | 19.8 | 15.3 | 4.8 | 14 | 27 |
| 8 | 1/8 | -S-MJ8FRT2 | 32.1 | 10.4 | 16.2 | 6.4 | 16 | 15 |
| 8 | 1/4 | -S-MJ8FRT4 | 37.0 | 15.0 | 16.2 | 6.4 | 16 | 19 |
| 8 | 3/8 | -S-MJ8FRT6 | 38.5 | 15.0 | 16.2 | 6.4 | 16 | 22 |
| 8 | 1/2 | -S-MJ8FRT8 | 43.3 | 19.8 | 16.2 | 6.4 | 16 | 27 |
| 10 | 1/8 | -S-MJ10FRT2 | 33.0 | 10.4 | 17.2 | 7.9 | 19 | 18 |
| 10 | 1/4 | -S-MJ10FRT4 | 37.8 | 15.0 | 17.2 | 7.9 | 19 | 19 |
| 10 | 3/8 | -S-MJ10FRT6 | 39.4 | 15.0 | 17.2 | 7.9 | 19 | 22 |
| 10 | 1/2 | -S-MJ10FRT8 | 44.2 | 19.8 | 17.2 | 7.9 | 19 | 27 |
| 12 | 1/8 | -S-MJ12FRT2 | 35.5 | 10.4 | 22.8 | 8.3 | 22 | 22 |
| 12 | 1/4 | -S-MJ12FRT4 | 40.3 | 15.0 | 22.8 | 9.5 | 22 | 22 |
| 12 | 3/8 | -S-MJ12FRT6 | 41.9 | 15.0 | 22.8 | 9.5 | 22 | 22 |
| 12 | 1/2 | -S-MJ12FRT8 | 46.7 | 19.8 | 22.8 | 9.5 | 22 | 27 |
| 12 | 3/4 | -S-MJ12FRT12 | 49.0 | 20.6 | 22.8 | 9.5 | 22 | 35 |
| 15 | 1/2 | -S-MJ15FRT8 | 46.7 | 19.8 | 24.4 | 11.9 | 25 | 27 |
| 16 | 1/2 | -S-MJ16FRT8 | 48.4 | 19.8 | 24.4 | 11.9 | 25 | 27 |
| 16 | 3/4 | -S-MJ16FRT12 | 49.7 | 20.6 | 24.4 | 12.7 | 25 | 35 |
| 20 | 1/2 | -S-MJ20FRT8 | 47.9 | 19.8 | 26.0 | 11.9 | 32 | 30 |
| 20 | 3/4 | -S-MJ20FRT12 | 49.7 | 20.6 | 26.0 | 15.9 | 32 | 35 |
| 22 | 3/4 | -S-MJ22FRT12 | 49.7 | 20.6 | 26.0 | 15.9 | 32 | 35 |
| 22 | 1 | -S-MJ22FRT16 | 57.9 | 25.4 | 26.0 | 18.3 | 32 | 41 |
| 25 | 3/4 | -S-MJ25FRT12 | 53.4 | 20.6 | 31.3 | 15.9 | 38 | 35 |
| 25 | 1 | -S-MJ25FRT16 | 62.3 | 25.4 | 31.3 | 21.8 | 38 | 41 |



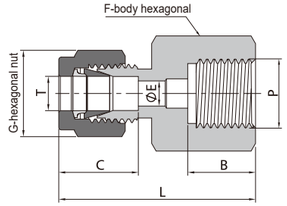

Metric Tube — ISO Parallel Thread (RP)

| T-Tube outer diameter (mm) | P-RP Size | Basic order number | Size,mm | | | | | |
|---|---|---|---|---|---|---|---|---|
| | | | L | B | C | E | G | F |
| 6 | 1/8 | -S-MJ6FP2 | 33.5 | 13.0 | 15.3 | 4.8 | 14 | 14 |
| 6 | 1/4 | -S-MJ6FP4 | 39.4 | 18.5 | 15.3 | 4.8 | 14 | 19 |
| 22 | 3/4 | -S-MJ22FP12 | 53.3 | 25.9 | 26.0 | 18.3 | 32 | 35 |
| 25 | 1 | -S-MJ25FP16 | 63.9 | 28.2 | 31.3 | 21.8 | 38 | 40 |



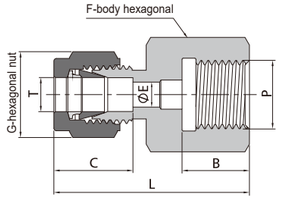


## Ferrule female thread connector




Metric Tube — ISO straight thread (FG)

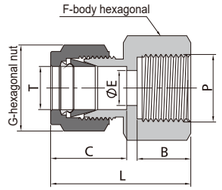
| T-Tube O.D. (mm) | P-RG Size | Basic order number | Size,mm | | | | | |
|---|---|---|---|---|---|---|---|---|
| | | | L | B | C | E | G | F |
| 3 | 1/4 | -S-MJ3FG4 | 35.3 | 12.9 | 12.9 | 2.4 | 12 | 19 |
| 6 | 1/4 | -S-MJ6FG4 | 37.6 | 12.9 | 15.3 | 4.8 | 14 | 19 |
| 6 | 3/8 | -S-MJ6FG6 | 37.6 | 14.2 | 15.3 | 4.8 | 14 | 24 |
| 6 | 1/2 | -S-MJ6FG8 | 43.5 | 18.8 | 15.3 | 4.8 | 14 | 27 |
| 8 | 1/4 | -S-MJ8FG4 | 38.5 | 12.9 | 16.2 | 6.4 | 16 | 19 |
| 8 | 3/8 | -S-MJ8FG6 | 36.2 | 14.2 | 16.2 | 6.4 | 16 | 24 |
| 8 | 1/2 | -S-MJ8FG8 | 41.0 | 18.8 | 16.2 | 6.4 | 16 | 27 |
| 10 | 1/4 | -S-MJ10FG4 | 39.4 | 12.9 | 17.2 | 5.9 | 19 | 19 |
| 10 | 3/8 | -S-MJ10FG6 | 38.8 | 14.2 | 17.2 | 7.9 | 19 | 24 |
| 10 | 1/2 | -S-MJ10FG8 | 42.1 | 18.8 | 17.2 | 7.9 | 19 | 27 |
| 12 | 1/4 | -S-MJ12FG4 | 41.9 | 12.9 | 22.8 | 5.9 | 22 | 22 |
| 12 | 3/8 | -S-MJ12FG6 | 44.4 | 14.2 | 22.8 | 7.9 | 22 | 24 |
| 12 | 1/2 | -S-MJ12FG8 | 48.2 | 18.8 | 22.8 | 9.5 | 22 | 27 |
| 20 | 1/2 | -S-MJ20FG8 | 54.3 | 18.8 | 26.0 | 11.9 | 32 | 30 |
| 22 | 1/2 | -S-MJ22FG8 | 54.3 | 18.8 | 26.0 | 11.9 | 32 | 30 |




Adapter to Japanese pressure gauge bolt.

Metric Tube — ISO Parallel thread (RJ)

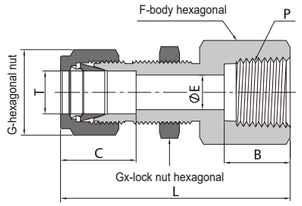
| T-Tube outer diameter (mm) | P-RJ Size | Basic order number | Size,mm | | | | | |
|---|---|---|---|---|---|---|---|---|
| | | | L | B | C | E | G | F |
| 6 | 1/4 | -S-MJ6RJ4 | 37.6 | 12.9 | 15.3 | 4.8 | 14 | 19 |
| 6 | 3/8 | -S-MJ6RJ6 | 37.6 | 14.2 | 15.3 | 4.8 | 14 | 24 |
| 6 | 1/2 | -S-MJ6RJ8 | 43.5 | 18.8 | 15.3 | 4.8 | 14 | 27 |
| 8 | 1/4 | -S-MJ8RJ4 | 38.5 | 12.9 | 16.2 | 5.5 | 16 | 19 |
| 8 | 3/8 | -S-MJ8RJ6 | 36.2 | 14.2 | 16.2 | 6.5 | 16 | 24 |
| 8 | 1/2 | -S-MJ8RJ8 | 41.0 | 18.8 | 16.2 | 7.0 | 16 | 27 |
| 10 | 1/4 | -S-MJ10RJ4 | 39.4 | 12.9 | 17.2 | 5.5 | 19 | 19 |
| 10 | 3/8 | -S-MJ10RJ6 | 38.8 | 14.2 | 17.2 | 6.5 | 19 | 24 |
| 10 | 1/2 | -S-MJ10RJ8 | 42.1 | 18.8 | 17.2 | 7.0 | 19 | 27 |
| 12 | 1/4 | -S-MJ12RJ4 | 41.9 | 12.9 | 22.8 | 5.5 | 22 | 22 |
| 12 | 3/8 | -S-MJ12RJ6 | 44.4 | 14.2 | 22.8 | 6.5 | 22 | 24 |
| 12 | 1/2 | -S-MJ12RJ8 | 48.2 | 18.8 | 22.8 | 7.0 | 22 | 27 |




Metric Tube — Metric thread

| T-Tube outer diameter (mm) | P - Metric thread size | Basic order number | Size,mm | | | | | |
|---|---|---|---|---|---|---|---|---|
| | | | L | B | C | E | G | F |
| 6 | M10 x 1 | -S-MJ6FM10 | 32.7 | 11 | 15.3 | 4.0 | 14 | 16 |
| 6 | M14 x 1.5 | -S-MJ6FM14 | 34.7 | 13 | 15.3 | 4.8 | 14 | 19 |
| 6 | M20 x 1.5 | -S-MJ6FM20 | 37.7 | 16 | 15.3 | 4.8 | 14 | 27 |
| 8 | M8 x 1 | -S-MJ8FM8 | 31.6 | 9 | 16.2 | 3.2 | 16 | 14 |
| 8 | M10 x 1 | -S-MJ8FM10 | 33.6 | 11 | 16.2 | 4.0 | 16 | 16 |
| 8 | M14 x 1.5 | -S-MJ8FM14 | 35.6 | 13 | 16.2 | 6.0 | 16 | 19 |
| 8 | M20 x 1.5 | -S-MJ8FM20 | 38.6 | 16 | 16.2 | 6.4 | 16 | 27 |
| 10 | M16 x 1.5 | -S-MJ10FM16 | 38.1 | 14 | 17.2 | 7.9 | 19 | 22 |
| 12 | M20 x 1.5 | -S-MJ12FM20 | 44.9 | 16 | 22.8 | 9.5 | 22 | 27 |
| 14 | M10 x 1 | -S-MJ14FM10 | 42.5 | 11 | 24.4 | 4.0 | 25 | 24 |
| 14 | M20 x 1.5 | -S-MJ14FM20 | 44.9 | 16 | 24.4 | 10.8 | 25 | 27 |
| 14 | M22 x 1.5 | -S-MJ14FM22 | 45.9 | 17 | 24.4 | 11.1 | 25 | 27 |
| 16 | M20 x 1.5 | -S-MJ16FM20 | 44.9 | 16 | 24.4 | 10.8 | 26 | 27 |
| 20 | M20 x 1.5 | -S-MJ20FM20 | 46.5 | 16 | 26.0 | 10.8 | 32 | 30 |
| 25 | M27 x 2 | -S-MJ25FM27 | 54.4 | 18 | 31.3 | 16.1 | 38 | 35 |

## Compression Fitting Female Thread Bulkhead Fitting




Imperial Tube — NPT Thread

| T-Tube outer diameter (in.) | P-NPT Size | Basic order number | Size,mm | | | | | | | Panel hole size (mm) | Maximum panel thickness (mm) |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | L | B | C | E | G | F | Gx | | |
| 1/16 | 1/16 | -S-BFJ1FN1 | 26.2 | 9.9 | 8.6 | 1.3 | 7.9 | 11.1 | 7.9 | 5.2 | 3.2 |
| 1/16 | 1/8 | -S-BFJ1FN2 | 26.9 | 10.4 | 8.6 | 1.3 | 7.9 | 14.3 | 7.9 | 5.2 | 3.2 |
| 1/8 | 1/8 | -S-BFJ2FN2 | 44.7 | 10.4 | 12.7 | 2.3 | 11.1 | 14.3 | 12.7 | 8.3 | 12.7 |
| 1/8 | 1/4 | -S-BFJ2FN4 | 49.6 | 15.0 | 12.7 | 2.3 | 11.1 | 19.1 | 12.7 | 8.3 | 12.7 |
| 3/16 | 1/8 | -S-BFJ3FN2 | 45.5 | 10.4 | 13.7 | 3.0 | 12.7 | 14.3 | 14.3 | 9.9 | 12.7 |
| 1/4 | 1/8 | -S-BFJ4FN2 | 47.0 | 10.4 | 15.2 | 4.8 | 14.3 | 15.9 | 15.9 | 11.5 | 10.2 |
| 1/4 | 1/4 | -S-BFJ4FN4 | 51.8 | 15.0 | 15.2 | 4.8 | 14.3 | 19.1 | 15.9 | 11.5 | 10.2 |
| 1/4 | 3/8 | -S-BFJ4FN6 | 53.3 | 15.0 | 15.2 | 4.8 | 14.3 | 22.2 | 15.9 | 11.5 | 10.2 |
| 1/4 | 1/2 | -S-BFJ4FN8 | 58.2 | 19.8 | 15.2 | 4.8 | 14.3 | 27.0 | 15.9 | 11.5 | 10.2 |
| 5/16 | 1/8 | -S-BFJ5FN2 | 49.8 | 10.4 | 16.3 | 6.4 | 15.9 | 14.3 | 17.5 | 13.1 | 11.2 |
| 5/16 | 1/4 | -S-BFJ5FN4 | 60.5 | 15.0 | 16.3 | 6.4 | 15.9 | 19.1 | 17.5 | 13.1 | 11.2 |
| 3/8 | 1/8 | -S-BFJ6FN2 | 50.3 | 10.4 | 16.8 | 7.1 | 17.5 | 15.9 | 19.1 | 14.5 | 11.2 |
| 3/8 | 1/4 | -S-BFJ6FN4 | 55.1 | 15.0 | 16.8 | 7.1 | 17.5 | 19.1 | 19.1 | 14.5 | 11.2 |
| 3/8 | 3/8 | -S-BFJ6FN6 | 56.6 | 15.0 | 16.8 | 7.1 | 17.5 | 22.2 | 19.1 | 14.5 | 11.2 |
| 3/8 | 1/2 | -S-BFJ6FN8 | 61.5 | 19.8 | 16.8 | 7.1 | 17.5 | 27.0 | 19.1 | 14.5 | 11.2 |
| 3/8 | 3/4 | -S-BFJ6FN12 | 65.3 | 20.6 | 16.8 | 7.1 | 17.5 | 33.3 | 19.1 | 14.5 | 11.2 |
| 1/2 | 1/4 | -S-BFJ8FN4 | 60.2 | 15.0 | 22.9 | 10.4 | 22.2 | 23.8 | 23.8 | 19.4 | 12.7 |
| 1/2 | 3/8 | -S-BFJ8FN6 | 61.7 | 15.0 | 22.9 | 10.4 | 22.2 | 23.8 | 23.8 | 19.4 | 12.7 |
| 1/2 | 1/2 | -S-BFJ8FN8 | 66.5 | 19.8 | 22.9 | 10.4 | 22.2 | 27.0 | 23.8 | 19.4 | 12.7 |
| 1/2 | 3/4 | -S-BFJ8FN12 | 68.1 | 20.6 | 22.9 | 10.4 | 22.2 | 33.3 | 23.8 | 19.4 | 12.7 |
| 5/8 | 3/8 | -S-BFJ10FN6 | 62.5 | 15.0 | 24.4 | 12.7 | 25.4 | 23.8 | 27.0 | 22.6 | 15.1 |
| 5/8 | 1/2 | -S-BFJ10FN8 | 67.3 | 19.8 | 24.4 | 12.7 | 25.4 | 27.0 | 27.0 | 22.6 | 15.1 |
| 3/4 | 1/2 | -S-BFJ12FN8 | 72.2 | 19.8 | 24.4 | 15.7 | 28.6 | 27.0 | 30.2 | 25.8 | 19.8 |
| 3/4 | 3/4 | -S-BFJ12FN12 | 73.7 | 20.6 | 24.4 | 15.7 | 28.6 | 33.3 | 30.2 | 25.8 | 19.8 |
| 7/8 | 3/4 | -S-BFJ14FN12 | 80.8 | 20.6 | 25.9 | 18.3 | 31.8 | 33.3 | 33.3 | 29.0 | 23.8 |
| 1 | 3/4 | -S-BFJ16FN12 | 84.7 | 20.6 | 31.2 | 22.4 | 38.1 | 41.3 | 41.3 | 33.7 | 23.8 |
| 1 | 1 | -S-BFJ16FN16 | 93.5 | 25.4 | 31.2 | 22.4 | 38.1 | 41.3 | 41.3 | 33.7 | 23.8 |

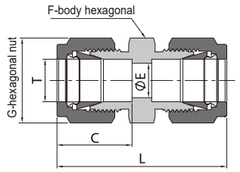
Metric Tube — NPT Thread

| T-Tube outer diameter (mm) | P-NPT Size | Basic order number | Size,mm | | | | | | | Panel hole size (mm) | Maximum panel thickness (mm) |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | L | B | C | E | G | F | Gx | | |
| 6 | 1/8 | -S-BMJ6FN2 | 47.2 | 10.4 | 15.3 | 4.8 | 14 | 16 | 16 | 11.5 | 10.2 |
| 6 | 1/4 | -S-BMJ6FN4 | 51.8 | 15.0 | 15.3 | 4.8 | 14 | 19 | 16 | 11.5 | 10.2 |
| 8 | 1/8 | -S-BMJ8FN2 | 49.6 | 10.4 | 16.2 | 4.8 | 16 | 18 | 18 | 13.1 | 11.2 |
| 10 | 1/4 | -S-BMJ10FN4 | 55.2 | 15.0 | 17.2 | 7.9 | 19 | 22 | 22 | 16.3 | 11.2 |
| 12 | 3/8 | -S-BMJ12FN6 | 60.9 | 15.0 | 22.8 | 9.5 | 22 | 24 | 24 | 19.5 | 12.7 |
| 12 | 1/2 | -S-BMJ12FN8 | 66.5 | 19.8 | 22.8 | 9.5 | 22 | 27 | 24 | 19.5 | 12.7 |





## Ferrule straight connector



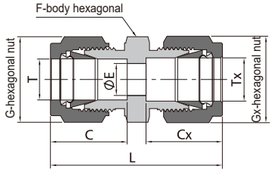

Imperial Tube

| T-Tube outer diameter (in.) | Basic order number | Size,mm | | | | |
|---|---|---|---|---|---|---|
| | | L | C | G | F | E |
| 1/16 | -S-FJ1 | 25.1 | 8.6 | 7.9 | 11.1 | 1.3 |
| 1/8 | -S-FJ2 | 35.6 | 12.7 | 11.1 | 11.1 | 2.3 |
| 3/16 | -S-FJ3 | 37.3 | 13.7 | 12.7 | 12.7 | 3.0 |
| 1/4 | -S-FJ4 | 40.9 | 15.2 | 14.3 | 12.7 | 4.8 |
| 5/16 | -S-FJ5 | 42.9 | 16.2 | 15.9 | 14.3 | 6.4 |
| 3/8 | -S-FJ6 | 45.0 | 16.8 | 17.5 | 15.9 | 7.1 |
| 1/2 | -S-FJ8 | 51.3 | 22.9 | 22.2 | 20.6 | 10.4 |
| 5/8 | -S-FJ10 | 52.1 | 24.4 | 25.4 | 23.9 | 12.7 |
| 3/4 | -S-FJ12 | 53.6 | 24.4 | 28.6 | 27.0 | 15.7 |
| 7/8 | -S-FJ14 | 55.1 | 25.9 | 31.8 | 34.9 | 18.3 |
| 1 | -S-FJ16 | 64.8 | 31.2 | 38.1 | 34.9 | 22.4 |
| 1 1/8 | -S-FJ18 | 64.8 | 31.2 | 44.5 | 41.3 | 24.6 |
| 1 1/4 | -S-FJ20 | 92.2 | 41.1 | 47.6 | 44.5 | 27.7 |
| 1 1/2 | -S-FJ24 | 108 | 50.0 | 57.2 | 54.0 | 34.0 |

Metric Tube

| T-Tube outer diameter (mm) | Basic order number | Size,mm | | | | |
|---|---|---|---|---|---|---|
| | | L | C | G | F | E |
| 2 | -S-MJ2 | 35.6 | 12.9 | 12 | 12 | 1.7 |
| 3 | -S-MJ3 | 35.3 | 12.9 | 12 | 12 | 2.4 |
| 4 | -S-MJ4 | 37.3 | 13.7 | 12 | 12 | 2.4 |
| 6 | -S-MJ6 | 41.0 | 15.3 | 14 | 14 | 4.8 |
| 8 | -S-MJ8 | 43.2 | 16.2 | 16 | 15 | 6.4 |
| 10 | -S-MJ10 | 46.2 | 17.2 | 19 | 18 | 7.9 |
| 12 | -S-MJ12 | 51.2 | 22.8 | 22 | 22 | 9.5 |
| 14 | -S-MJ14 | 52.0 | 24.4 | 25 | 24 | 11.1 |
| 15 | -S-MJ15 | 52.0 | 24.4 | 25 | 24 | 11.9 |
| 16 | -S-MJ16 | 52.0 | 24.4 | 25 | 24 | 12.7 |
| 18 | -S-MJ18 | 53.5 | 24.4 | 30 | 27 | 15.1 |
| 20 | -S-MJ20 | 55.0 | 26.0 | 32 | 30 | 15.9 |
| 22 | -S-MJ22 | 55.0 | 26.0 | 32 | 30 | 18.3 |
| 25 | -S-MJ25 | 65.0 | 31.3 | 38 | 35 | 21.8 |
| 28 | -S-MJ28 | 85.0 | 36.6 | 46 | 41 | 21.8 |
| 30 | -S-MJ30 | 92.7 | 39.6 | 50 | 46 | 26.2 |
| 32 | -S-MJ32 | 97.3 | 42.0 | 50 | 46 | 28.6 |
| 38 | -S-MJ38 | 113.6 | 49.4 | 60 | 55 | 33.7 |

## Ferrule straight adapter

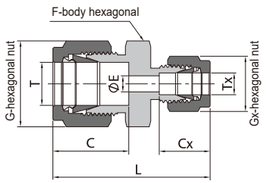



Metric Tube — Imperial Tube

| T-Tube outer diameter (mm) | Tx-Tube outer diameter (in.) | Basic order number | Size,mm | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | | | L | C | G | F | E | Cx | Gx |
| 3 | 1/8 | -S-MJ3FJ2 | 35.2 | 12.9 | 12 | 12 | 2.4 | 12.7 | 11.1 |
| 4 | 1/8 | -S-MJ4FJ2 | 36.5 | 13.7 | 12 | 12 | 2.4 | 12.7 | 11.1 |
| 4 | 1/4 | -S-MJ4FJ4 | 39.4 | 13.7 | 12 | 14 | 2.4 | 15.2 | 14.3 |
| 6 | 1/8 | -S-MJ6FJ2 | 38.5 | 15.3 | 14 | 14 | 2.4 | 12.7 | 11.1 |
| 6 | 1/4 | -S-MJ6FJ4 | 41.0 | 15.3 | 14 | 14 | 4.8 | 15.2 | 14.3 |
| 6 | 5/16 | -S-MJ6FJ5 | 42.3 | 15.3 | 14 | 14 | 4.8 | 16.2 | 15.9 |
| 8 | 1/4 | -S-MJ8FJ4 | 42.3 | 16.2 | 16 | 15 | 4.8 | 15.2 | 14.3 |
| 8 | 3/8 | -S-MJ8FJ6 | 44.3 | 16.2 | 16 | 16 | 6.4 | 16.8 | 17.5 |
| 10 | 1/8 | -S-MJ10FJ2 | 41.8 | 17.2 | 19 | 18 | 2.4 | 12.7 | 11.1 |
| 10 | 1/4 | -S-MJ10FJ4 | 44.5 | 17.2 | 19 | 18 | 4.8 | 15.2 | 14.3 |
| 10 | 5/16 | -S-MJ10FJ5 | 45.1 | 17.2 | 19 | 18 | 6.4 | 16.2 | 15.9 |
| 10 | 3/8 | -S-MJ10FJ6 | 45.9 | 17.2 | 19 | 18 | 7.1 | 16.8 | 17.5 |
| 12 | 5/16 | -S-MJ12FJ5 | 47.8 | 22.8 | 22 | 22 | 6.4 | 16.2 | 15.9 |
| 12 | 3/8 | -S-MJ12FJ6 | 48.4 | 22.8 | 22 | 22 | 7.1 | 16.8 | 17.5 |
| 12 | 1/2 | -S-MJ12FJ8 | 51.2 | 22.8 | 22 | 22 | 9.5 | 22.9 | 22.2 |
| 15 | 1/2 | -S-MJ15FJ8 | 52.0 | 24.4 | 25 | 24 | 10.4 | 22.9 | 22.2 |
| 16 | 5/8 | -S-MJ16FJ10 | 52.0 | 24.4 | 25 | 24 | 12.7 | 24.4 | 25.4 |
| 18 | 3/4 | -S-MJ18FJ12 | 53.5 | 24.4 | 30 | 27 | 15.1 | 24.4 | 28.6 |
| 20 | 1/2 | -S-MJ20FJ8 | 55.0 | 26.0 | 32 | 30 | 10.4 | 22.9 | 22.2 |
| 20 | 1 | -S-MJ20FJ16 | 62.8 | 26.0 | 32 | 35 | 15.9 | 31.2 | 38.1 |
| 25 | 1 | -S-MJ25FJ16 | 65.0 | 31.3 | 38 | 35 | 21.8 | 31.2 | 38.1 |



## Ferrule Straight Through Reducer



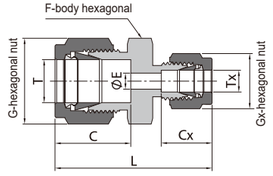

Imperial Tube

| T-Tube outer diameter (in.) | Tx-Tube outer diameter (in.) | Basic order number | Size,mm | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | | | L | C | G | F | E | Cx | Gx |
| 1/8 | 1/16 | -S-FJ2FJ1 | 31.0 | 12.7 | 11.1 | 11.1 | 1.3 | 8.6 | 7.9 |
| 3/16 | 1/16 | -S-FJ3FJ1 | 32.3 | 13.7 | 12.7 | 11.1 | 1.3 | 8.6 | 7.9 |
| 3/16 | 1/8 | -S-FJ3FJ2 | 36.6 | 13.7 | 12.7 | 11.1 | 2.3 | 12.7 | 11.1 |
| 1/4 | 1/16 | -S-FJ4FJ1 | 34.3 | 15.2 | 14.3 | 12.7 | 1.3 | 8.6 | 7.9 |
| 1/4 | 1/8 | -S-FJ4FJ2 | 38.6 | 15.2 | 14.3 | 12.7 | 2.3 | 12.7 | 11.1 |
| 1/4 | 3/16 | -S-FJ4FJ3 | 39.4 | 15.2 | 14.3 | 12.7 | 3.0 | 13.7 | 12.7 |
| 5/16 | 1/8 | -S-FJ5FJ2 | 39.6 | 16.2 | 15.9 | 14.3 | 2.3 | 12.7 | 11.1 |
| 5/16 | 1/4 | -S-FJ5FJ4 | 42.2 | 16.2 | 15.9 | 14.3 | 4.8 | 15.2 | 14.3 |
| 3/8 | 1/16 | -S-FJ6FJ1 | 36.6 | 16.8 | 17.5 | 15.9 | 1.3 | 8.6 | 7.9 |
| 3/8 | 1/8 | -S-FJ6FJ2 | 40.9 | 16.8 | 17.5 | 15.9 | 2.3 | 12.7 | 11.1 |
| 3/8 | 1/4 | -S-FJ6FJ4 | 43.2 | 16.8 | 17.5 | 15.9 | 4.8 | 15.2 | 14.3 |
| 3/8 | 5/16 | -S-FJ6FJ5 | 44.2 | 16.8 | 17.5 | 15.9 | 6.4 | 16.2 | 15.9 |
| 1/2 | 1/8 | -S-FJ8FJ2 | 45.2 | 22.8 | 22.2 | 20.6 | 2.3 | 12.7 | 11.1 |
| 1/2 | 1/4 | -S-FJ8FJ4 | 47.0 | 22.8 | 22.2 | 20.6 | 4.8 | 15.2 | 14.3 |
| 1/2 | 3/8 | -S-FJ8FJ6 | 48.5 | 22.8 | 22.2 | 20.6 | 7.1 | 16.8 | 17.5 |
| 5/8 | 3/8 | -S-FJ10FJ6 | 49.3 | 24.4 | 25.4 | 23.9 | 7.1 | 16.8 | 17.5 |
| 5/8 | 1/2 | -S-FJ10FJ8 | 52.1 | 24.4 | 25.4 | 23.9 | 10.4 | 22.8 | 22.2 |
| 3/4 | 1/4 | -S-FJ12FJ4 | 49.3 | 24.4 | 28.6 | 27.0 | 4.8 | 15.2 | 14.3 |
| 3/4 | 3/8 | -S-FJ12FJ6 | 50.8 | 24.4 | 28.6 | 27.0 | 7.1 | 16.8 | 17.5 |
| 3/4 | 1/2 | -S-FJ12FJ8 | 53.6 | 24.4 | 28.6 | 27.0 | 10.4 | 22.8 | 22.2 |
| 3/4 | 5/8 | -S-FJ12FJ10 | 53.6 | 24.4 | 28.6 | 27.0 | 12.7 | 24.4 | 25.4 |
| 1 | 1/2 | -S-FJ16FJ8 | 60.5 | 31.2 | 38.1 | 34.9 | 10.4 | 22.8 | 22.2 |
| 1 | 3/4 | -S-FJ16FJ12 | 60.5 | 31.2 | 38.1 | 34.9 | 15.7 | 24.4 | 28.6 |





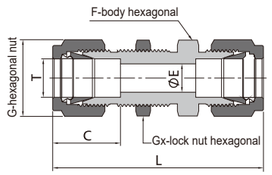
## Ferrule Straight Through Reducer




Metric Tube

| T-Tube outer diameter (mm) | Tx-Tube outer diameter (mm) | Basic order number | Size,mm | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | | | L | C | G | F | E | Cx | Gx |
| 3 | 2 | -S-MJ3MJ2 | 35.3 | 12.9 | 12 | 12 | 1.7 | 12.9 | 12 |
| 6 | 2 | -S-MJ6MJ2 | 38.6 | 15.3 | 14 | 14 | 1.7 | 12.9 | 12 |
| 6 | 3 | -S-MJ6MJ3 | 38.6 | 15.3 | 14 | 14 | 2.4 | 12.9 | 12 |
| 6 | 4 | -S-MJ6MJ4 | 39.4 | 15.3 | 14 | 14 | 2.4 | 13.7 | 12 |
| 8 | 6 | -S-MJ8MJ6 | 42.3 | 16.3 | 16 | 15 | 4.8 | 15.3 | 14 |
| 10 | 6 | -S-MJ10MJ6 | 44.5 | 17.2 | 19 | 18 | 4.8 | 15.3 | 14 |
| 10 | 8 | -S-MJ10MJ8 | 45.1 | 17.2 | 19 | 18 | 6.4 | 16.3 | 16 |
| 12 | 6 | -S-MJ12MJ6 | 47.0 | 22.8 | 22 | 22 | 4.8 | 15.3 | 14 |
| 12 | 8 | -S-MJ12MJ8 | 47.8 | 22.8 | 22 | 22 | 6.4 | 16.3 | 16 |
| 12 | 10 | -S-MJ12MJ10 | 48.7 | 22.8 | 22 | 22 | 7.9 | 17.2 | 19 |
| 16 | 10 | -S-MJ16MJ10 | 49.5 | 24.4 | 25 | 24 | 7.9 | 17.2 | 19 |
| 16 | 12 | -S-MJ16MJ12 | 52.0 | 24.4 | 25 | 24 | 9.5 | 22.8 | 22 |
| 18 | 12 | -S-MJ18MJ12 | 53.5 | 24.4 | 30 | 27 | 9.5 | 22.8 | 22 |
| 25 | 18 | -S-MJ25MJ18 | 61.0 | 31.3 | 38 | 35 | 15.1 | 24.4 | 30 |
| 25 | 20 | -S-MJ25MJ20 | 62.3 | 31.3 | 38 | 35 | 15.9 | 26.0 | 32 |
| 30 | 18 | -S-MJ30MJ18 | 75.4 | 39.6 | 50 | 46 | 15.1 | 24.4 | 30 |
| 30 | 20 | -S-MJ30MJ20 | 75.4 | 39.6 | 50 | 46 | 15.9 | 26.0 | 32 |
| 30 | 25 | -S-MJ30MJ25 | 80.1 | 39.6 | 50 | 46 | 21.8 | 31.3 | 38 |
| 32 | 18 | -S-MJ32MJ18 | 77.8 | 42.0 | 50 | 46 | 15.1 | 24.4 | 30 |
| 32 | 20 | -S-MJ32MJ20 | 77.8 | 42.0 | 50 | 46 | 15.9 | 26.0 | 32 |
| 32 | 25 | -S-MJ32MJ25 | 82.3 | 42.0 | 50 | 46 | 21.8 | 31.3 | 38 |
| 38 | 20 | -S-MJ38MJ20 | 87.5 | 49.4 | 60 | 55 | 15.9 | 26.0 | 32 |
| 38 | 25 | -S-MJ38MJ25 | 92.0 | 49.4 | 60 | 55 | 21.8 | 31.3 | 38 |
| 38 | 30 | -S-MJ38MJ30 | 104.6 | 49.4 | 60 | 55 | 26.2 | 39.6 | 50 |

## Ferrule straight-through bulkhead connector



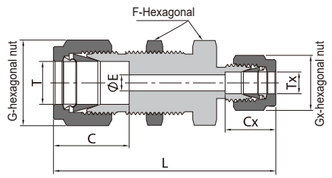

Imperial Tube

| Tx-Tube outer diameter (in.) | Basic order number | Size,mm | | | | | | Panel hole size (mm) | Maximum panel thickness (mm) |
|---|---|---|---|---|---|---|---|---|---|
| | | L | C | E | G | F | Gx | | |
| 1/16 | -S-BFJ1 | 31.5 | 8.6 | 1.3 | 7.9 | 7.9 | 7.9 | 5.2 | 3.0 |
| 1/8 | -S-BFJ2 | 51.3 | 12.7 | 2.3 | 11.1 | 12.7 | 12.7 | 8.3 | 12.7 |
| 3/16 | -S-BFJ3 | 53.6 | 13.7 | 3.0 | 12.7 | 14.3 | 14.3 | 9.9 | 12.7 |
| 1/4 | -S-BFJ4 | 57.7 | 15.2 | 4.8 | 14.3 | 15.9 | 15.9 | 11.5 | 10.2 |
| 5/16 | -S-BFJ5 | 60.7 | 16.3 | 6.4 | 15.9 | 17.5 | 17.5 | 13.1 | 11.2 |
| 3/8 | -S-BFJ6 | 62.2 | 16.8 | 7.1 | 17.5 | 19.1 | 19.1 | 14.7 | 11.2 |
| 1/2 | -S-BFJ8 | 71.1 | 22.9 | 10.4 | 22.2 | 23.8 | 23.8 | 19.4 | 12.7 |
| 5/8 | -S-BFJ10 | 72.6 | 24.4 | 12.7 | 25.4 | 27.0 | 27.0 | 22.6 | 12.7 |
| 3/4 | -S-BFJ12 | 79.0 | 24.4 | 15.7 | 28.6 | 30.2 | 30.2 | 25.8 | 16.8 |
| 7/8 | -S-BFJ14 | 84.6 | 25.9 | 18.3 | 31.8 | 34.9 | 34.9 | 29.0 | 19.1 |
| 1 | -S-BFJ16 | 95.8 | 31.2 | 22.4 | 38.1 | 41.3 | 41.3 | 33.7 | 19.1 |
| 1 1/4 | -S-BFJ20 | 123.2 | 41.1 | 27.8 | 47.6 | 47.6 | 47.6 | 41.7 | 19.1 |
| 1 1/2 | -S-BFJ24 | 139.2 | 50.0 | 34.0 | 57.2 | 57.2 | 57.2 | 49.6 | 19.1 |

Metric Tube

| Tx-Tube outer diameter (mm) | Basic order number | Size,mm | | | | | | Panel hole size (mm) | Maximum panel thickness (mm) |
|---|---|---|---|---|---|---|---|---|---|
| | | L | C | E | G | F | Gx | | |
| 3 | -S-BMJ3 | 51.3 | 12.9 | 2.4 | 12 | 14 | 14 | 8.3 | 12.7 |
| 4 | -S-BMJ4 | 53.6 | 13.7 | 2.4 | 12 | 14 | 14 | 9.9 | 12.7 |
| 6 | -S-BMJ6 | 57.7 | 15.3 | 4.8 | 14 | 16 | 16 | 11.5 | 10.2 |
| 8 | -S-BMJ8 | 61.0 | 16.2 | 6.4 | 16 | 18 | 18 | 13.1 | 11.2 |
| 10 | -S-BMJ10 | 63.7 | 17.2 | 7.9 | 19 | 22 | 22 | 16.3 | 11.2 |
| 12 | -S-BMJ12 | 71.0 | 22.8 | 9.5 | 22 | 24 | 24 | 19.5 | 12.7 |
| 14 | -S-BMJ14 | 72.5 | 24.4 | 11.1 | 25 | 27 | 27 | 22.5 | 12.7 |
| 15 | -S-BMJ15 | 72.5 | 24.4 | 11.9 | 25 | 27 | 27 | 22.8 | 12.7 |
| 16 | -S-BMJ16 | 72.5 | 24.4 | 12.7 | 25 | 27 | 27 | 22.8 | 12.7 |
| 18 | -S-BMJ18 | 78.9 | 24.4 | 15.1 | 30 | 30 | 30 | 26.0 | 16.8 |
| 20 | -S-BMJ20 | 84.5 | 26.0 | 15.9 | 32 | 35 | 35 | 29.0 | 19.0 |
| 25 | -S-BMJ25 | 96.0 | 31.3 | 21.8 | 38 | 41 | 41 | 34.0 | 19.0 |
| 30 | -S-BMJ30 | 124.0 | 39.6 | 26.2 | 50 | 50 | 50 | 40.5 | 19.0 |
| 32 | -S-BMJ32 | 128.0 | 42.0 | 28.6 | 50 | 50 | 50 | 42.5 | 19.0 |
| 38 | -S-BMJ38 | 145.0 | 49.4 | 33.7 | 60 | 60 | 60 | 50.5 | 19.0 |

## Ferrule straight-through plate reducer



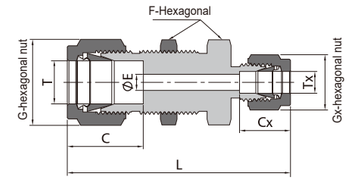

Imperial Tube

| T-Tube outer diameter (in.) | Tx-Tube outer diameter (in.) | Basic order number | Size,mm | | | | | | | Panel hole size (mm) | Maximum panel thickness (mm) |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | L | C | E | G | F | Cx | Gx | | |
| 1/4 | 1/8 | S-BFJ4FJ2 | 55.1 | 15.2 | 2.3 | 14.3 | 15.9 | 12.7 | 11.1 | 11.5 | 10.2 |
| 3/8 | 1/4 | S-BFJ6FJ4 | 60.7 | 16.8 | 4.8 | 17.5 | 19.1 | 15.2 | 14.3 | 14.7 | 11.2 |
| 1/2 | 1/4 | S-BFJ8FJ4 | 66.8 | 22.9 | 4.8 | 22.2 | 23.8 | 15.2 | 14.3 | 19.4 | 12.7 |





## Ferrule straight-through plate reducer




Metric Tube

| T-Tube outer diameter (mm) | Tx-Tube outer diameter (mm) | Basic order number | Size,mm | | | | | | | Panel hole size (mm) | Maximum panel thickness (mm) |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | L | C | E | G | F | Cx | Gx | | |
| 6 | 3 | -S-BMJ6MJ3 | 55.1 | 15.3 | 2.4 | 14 | 16 | 12.9 | 12 | 11.5 | 10.2 |
| 8 | 6 | -S-BMJ8MJ6 | 60.1 | 16.2 | 4.8 | 16 | 18 | 15.3 | 14 | 13.1 | 11.2 |
| 12 | 8 | -S-BMJ12MJ8 | 67.6 | 22.8 | 6.4 | 22 | 24 | 16.2 | 16 | 19.5 | 12.7 |

## Ferrule straight-through plate adapter

Imperial Tube — Metric Tube

| T-Tube outer diameter (in.) | Tx-Tube outer diameter (mm) | Basic order number | Size,mm | | | | | | | Panel hole size (mm) | Maximum panel thickness (mm) |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | L | C | E | G | F | Cx | Gx | | |
| 1/4 | 6 | -S-BFJ4MJ6 | 57.7 | 16.8 | 4.8 | 14.3 | 15.9 | 15.3 | 14 | 11.5 | 10.2 |

Metric Tube — Imperial Tube

| T-Tube outer diameter (mm) | Tx-Tube outer diameter (in.) | Basic order number | Size,mm | | | | | | | Panel hole size (mm) | Maximum panel thickness (mm) |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | L | C | E | G | F | Cx | Gx | | |
| 6 | 1/8 | -S-BMJ6FJ2 | 55.1 | 15.3 | 2.3 | 14 | 16 | 15.2 | 11.1 | 11.5 | 10.2 |
| 6 | 1/4 | -S-BMJ6FJ4 | 57.7 | 15.3 | 4.8 | 14 | 16 | 16.8 | 14.3 | 11.5 | 10.2 |

## Bulkhead lock nut



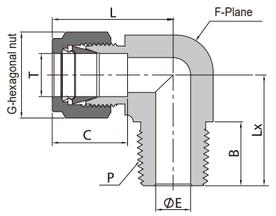
Imperial Tube

| T-Tube outer diameter (in.) | Basic order number |
|---|---|
| 1/16 | -BN-FJ1 |
| 1/8 | -BN-FJ2 |
| 3/16 | -BN-FJ3 |
| 1/4 | -BN-FJ4 |
| 5/16 | -BN-FJ5 |
| 3/8 | -BN-FJ6 |
| 1/2 | -BN-FJ8 |
| 5/8 | -BN-FJ10 |
| 3/4 | -BN-FJ12 |
| 7/8 | -BN-FJ14 |
| 1 | -BN-FJ16 |
| 1 1/4 | -BN-FJ20 |
| 1 1/2 | -BN-FJ24 |

Metric Tube

| T-Tube outer diameter (mm) | Basic order number |
|---|---|
| 3 | -BN-MJ3 |
| 4 | -BN-MJ4 |
| 6 | -BN-MJ6 |
| 8 | -BN-BMJ8 |
| 10 | -BN-MJ10 |
| 12 | -BN-MJ12 |
| 14 | -BN-MJ14 |
| 18 | -BN-MJ18 |
| 20 | -BN-MJ20 |
| 22 | -BN-MJ22 |
| 25 | -BN-MJ25 |
| 28 | -BN-MJ28 |
| 30 | -BN-MJ30 |
| 32 | -BN-MJ32 |
| 38 | -BN-MJ38 |

## Male thread elbow




Imperial Tube — NPT Thread

| T-Tube outer diameter (in.) | P-NPT Size | Basic order number | Size,mm | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | | | L | C | G | F | E | B | Lx |
| 1/16 | 1/16 | -L-FJ1N1 | 19.1 | 8.6 | 7.9 | 11.1 | 1.3 | 9.7 | 17.8 |
| 1/16 | 1/8 | -L-FJ1N2 | 19.1 | 8.6 | 7.9 | 11.1 | 1.3 | 9.7 | 17.8 |
| 1/8 | 1/16 | -L-FJ2N1 | 23.6 | 12.7 | 11.1 | 11.1 | 2.4 | 9.7 | 17.8 |
| 1/8 | 1/8 | -L-FJ2N2 | 23.6 | 12.7 | 11.1 | 11.1 | 2.4 | 9.7 | 17.8 |
| 1/8 | 1/4 | -L-FJ2N4 | 24.6 | 12.7 | 11.1 | 12.7 | 2.4 | 14.2 | 23.4 |
| 3/16 | 1/8 | -L-FJ3N2 | 25.4 | 13.7 | 12.7 | 12.7 | 3.0 | 9.7 | 18.8 |
| 3/16 | 1/4 | -L-FJ3N4 | 25.4 | 13.7 | 12.7 | 12.7 | 3.0 | 14.2 | 23.4 |
| 1/4 | 1/16 | -L-FJ4N1 | 26.9 | 15.2 | 14.3 | 12.7 | 3.0 | 9.7 | 18.8 |
| 1/4 | 1/8 | -L-FJ4N2 | 26.9 | 15.2 | 14.3 | 12.7 | 4.8 | 9.7 | 18.8 |
| 1/4 | 1/4 | -L-FJ4N4 | 26.9 | 15.2 | 14.3 | 12.7 | 4.8 | 14.2 | 23.4 |
| 1/4 | 3/8 | -L-FJ4N6 | 29.7 | 15.2 | 14.3 | 17.5 | 4.8 | 14.2 | 26.2 |
| 1/4 | 1/2 | -L-FJ4N8 | 31.8 | 15.2 | 14.3 | 20.6 | 4.8 | 19.1 | 33.0 |
| 5/16 | 1/8 | -L-FJ5N2 | 28.7 | 16.3 | 15.9 | 14.3 | 4.8 | 9.7 | 19.8 |
| 5/16 | 1/4 | -L-FJ5N4 | 28.7 | 16.3 | 15.9 | 14.3 | 6.4 | 14.2 | 24.4 |
| 5/16 | 3/8 | -L-FJ5N6 | 30.5 | 16.3 | 15.9 | 17.5 | 6.4 | 14.2 | 26.2 |
| 3/8 | 1/8 | -L-FJ6N2 | 30.5 | 16.8 | 17.5 | 15.9 | 4.8 | 9.7 | 20.8 |
| 3/8 | 1/4 | -L-FJ6N4 | 30.5 | 16.8 | 17.5 | 15.9 | 7.1 | 14.2 | 25.4 |
| 3/8 | 3/8 | -L-FJ6N6 | 31.2 | 16.8 | 17.5 | 17.5 | 7.1 | 14.2 | 26.2 |
| 3/8 | 1/2 | -L-FJ6N8 | 33.3 | 16.8 | 17.5 | 20.6 | 7.1 | 19.1 | 33.0 |
| 3/8 | 3/4 | -L-FJ6N12 | 37.1 | 16.8 | 17.5 | 27.0 | 7.1 | 19.1 | 36.8 |
| 1/2 | 1/4 | -L-FJ8N4 | 36.1 | 22.9 | 22.2 | 20.6 | 7.1 | 14.2 | 28.2 |
| 1/2 | 3/8 | -L-FJ8N6 | 36.1 | 22.9 | 22.2 | 20.6 | 9.7 | 14.2 | 28.2 |
| 1/2 | 1/2 | -L-FJ8N8 | 36.1 | 22.9 | 22.2 | 20.6 | 10.4 | 19.1 | 33.0 |
| 1/2 | 3/4 | -L-FJ8N12 | 39.9 | 22.9 | 22.2 | 27.0 | 10.4 | 19.1 | 36.8 |
| 5/8 | 3/8 | -L-FJ10N6 | 38.1 | 24.4 | 25.4 | 23.8 | 9.7 | 14.2 | 30.2 |
| 5/8 | 1/2 | -L-FJ10N8 | 38.1 | 24.4 | 25.4 | 23.8 | 11.9 | 19.1 | 35.1 |
| 5/8 | 3/4 | -L-FJ10N12 | 39.9 | 24.4 | 25.4 | 27.0 | 12.7 | 19.1 | 36.8 |
| 3/4 | 1/2 | -L-FJ12N8 | 39.9 | 24.4 | 28.6 | 27.0 | 11.9 | 19.1 | 36.8 |
| 3/4 | 3/4 | -L-FJ12N12 | 39.9 | 24.4 | 28.6 | 27.0 | 15.7 | 19.1 | 36.8 |
| 7/8 | 3/4 | -L-FJ14N12 | 44.7 | 25.9 | 31.8 | 34.9 | 15.7 | 19.1 | 41.7 |
| 1 | 3/4 | -L-FJ16N12 | 49.0 | 31.2 | 38.1 | 34.9 | 15.7 | 19.1 | 41.7 |
| 1 | 1 | -L-FJ16N16 | 49.0 | 31.2 | 38.1 | 34.9 | 22.4 | 23.9 | 46.5 |
| 1 1/4 | 1 1/4 | -L-FJ20N20 | 66.5 | 41.1 | 47.6 | 42.9 | 27.7 | 23.9 | 47.8 |
| 1 1/2 | 1 1/2 | -L-FJ24N24 | 78.0 | 50.0 | 57.2 | 50.8 | 34.0 | 26.2 | 60.5 |

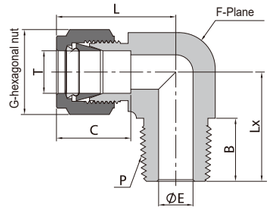
Imperial Tube — ISO tapered thread (RT)

| T-Tube outer diameter (in.) | P-RT Size | Basic order number | Size,mm | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | | | L | C | G | F | E | B | Lx |
| 1/8 | 1/8 | -L-FJ2RT2 | 23.6 | 12.7 | 11.1 | 11.1 | 2.4 | 9.7 | 17.8 |
| 1/8 | 1/4 | -L-FJ2RT4 | 24.6 | 12.7 | 11.1 | 12.7 | 2.4 | 14.2 | 23.4 |
| 1/4 | 1/8 | -L-FJ4RT2 | 26.9 | 15.2 | 14.3 | 12.7 | 4.8 | 9.7 | 18.8 |
| 1/4 | 1/4 | -L-FJ4RT4 | 26.9 | 15.2 | 14.3 | 12.7 | 4.8 | 14.2 | 23.4 |
| 1/4 | 3/8 | -L-FJ4RT6 | 29.7 | 15.2 | 14.3 | 17.5 | 4.8 | 14.2 | 26.2 |
| 1/4 | 1/2 | -L-FJ4RT8 | 31.8 | 15.2 | 14.3 | 20.6 | 4.8 | 19.1 | 33.0 |
| 5/16 | 1/4 | -L-FJ5RT4 | 28.7 | 16.3 | 15.9 | 14.3 | 6.4 | 14.2 | 24.4 |
| 3/8 | 1/8 | -L-FJ6RT2 | 30.5 | 16.8 | 17.5 | 15.9 | 4.8 | 9.7 | 20.8 |
| 3/8 | 1/4 | -L-FJ6RT4 | 30.5 | 16.8 | 17.5 | 15.9 | 7.1 | 14.2 | 25.4 |
| 3/8 | 3/8 | -L-FJ6RT6 | 31.2 | 16.8 | 17.5 | 17.5 | 7.1 | 14.2 | 26.2 |
| 1/2 | 3/8 | -L-FJ8RT6 | 36.1 | 22.9 | 22.2 | 20.6 | 9.7 | 14.2 | 27.9 |
| 1/2 | 1/2 | -L-FJ8RT8 | 36.1 | 22.9 | 22.2 | 20.6 | 10.4 | 19.1 | 33.0 |
| 3/4 | 1/2 | -L-FJ12RT8 | 39.9 | 24.4 | 28.6 | 27.0 | 11.9 | 19.1 | 36.8 |
| 1 | 1 | -L-FJ16RT16 | 49.0 | 31.2 | 38.1 | 34.9 | 22.4 | 23.9 | 46.5 |





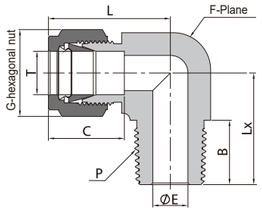
## Male thread elbow




Metric Tube — NPT Thread

| T-Tube outer diameter (mm) | P-NPT Size | Basic order number | Size,mm | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | | | L | C | G | F | E | B | Lx |
| 3 | 1/8 | -L-MJ3N2 | 23.6 | 12.9 | 12 | 11.1 | 2.4 | 9.7 | 17.8 |
| 3 | 1/4 | -L-MJ3N4 | 24.6 | 12.9 | 12 | 12.7 | 2.4 | 14.2 | 23.4 |
| 4 | 1/8 | -L-MJ4N2 | 25.4 | 13.7 | 12 | 12.7 | 2.4 | 9.7 | 18.8 |
| 4 | 1/4 | -L-MJ4N4 | 25.4 | 13.7 | 12 | 12.7 | 2.4 | 14.2 | 23.4 |
| 6 | 1/8 | -L-MJ6N2 | 27.0 | 15.3 | 14 | 12.7 | 4.8 | 9.7 | 18.8 |
| 6 | 1/4 | -L-MJ6N4 | 27.0 | 15.3 | 14 | 12.7 | 4.8 | 14.2 | 23.4 |
| 6 | 3/8 | -L-MJ6N6 | 29.8 | 15.3 | 14 | 17.5 | 4.8 | 14.2 | 26.2 |
| 6 | 1/2 | -L-MJ6N8 | 31.8 | 15.3 | 14 | 20.6 | 4.8 | 19.0 | 33.0 |
| 8 | 1/8 | -L-MJ8N2 | 28.8 | 16.2 | 16 | 14.3 | 4.8 | 9.7 | 19.8 |
| 8 | 1/4 | -L-MJ8N4 | 28.8 | 16.2 | 16 | 14.3 | 6.4 | 14.2 | 24.4 |
| 8 | 3/8 | -L-MJ8N6 | 30.6 | 16.2 | 16 | 17.5 | 6.4 | 14.2 | 26.2 |
| 8 | 1/2 | -L-MJ8N8 | 32.6 | 16.2 | 16 | 20.6 | 6.4 | 19.1 | 33.0 |
| 10 | 1/8 | -L-MJ10N2 | 31.5 | 17.2 | 19 | 17.5 | 4.8 | 9.7 | 21.6 |
| 10 | 1/4 | -L-MJ10N4 | 31.5 | 17.2 | 19 | 17.5 | 7.1 | 14.2 | 26.2 |
| 10 | 3/8 | -L-MJ10N6 | 31.5 | 17.2 | 19 | 17.5 | 7.9 | 14.2 | 26.2 |
| 10 | 1/2 | -L-MJ10N8 | 33.5 | 17.2 | 19 | 20.6 | 7.9 | 19.1 | 33.0 |
| 12 | 1/8 | -L-MJ12N2 | 36.0 | 22.8 | 22 | 20.6 | 4.8 | 9.7 | 23.6 |
| 12 | 1/4 | -L-MJ12N4 | 36.0 | 22.8 | 22 | 20.6 | 7.1 | 14.2 | 28.2 |
| 12 | 3/8 | -L-MJ12N6 | 36.0 | 22.8 | 22 | 20.6 | 9.5 | 14.2 | 28.2 |
| 12 | 1/2 | -L-MJ12N8 | 36.0 | 22.8 | 22 | 20.6 | 9.5 | 19.1 | 33.0 |
| 12 | 3/4 | -L-MJ12N12 | 39.8 | 22.8 | 22 | 27.0 | 9.5 | 19.1 | 36.8 |
| 15 | 1/2 | -L-MJ15N8 | 38.0 | 24.4 | 25 | 23.8 | 11.9 | 19.1 | 35.1 |
| 16 | 1/4 | -L-MJ16N4 | 38.0 | 24.4 | 25 | 23.8 | 7.1 | 14.2 | 30.2 |
| 16 | 3/8 | -L-MJ16N6 | 38.0 | 24.4 | 25 | 23.8 | 9.5 | 14.2 | 30.2 |
| 16 | 1/2 | -L-MJ16N8 | 38.0 | 24.4 | 25 | 23.8 | 11.9 | 19.1 | 35.1 |
| 16 | 3/4 | -L-MJ16N12 | 39.8 | 24.4 | 25 | 27.0 | 12.7 | 19.1 | 36.8 |
| 18 | 1/2 | -L-MJ18N8 | 39.8 | 24.4 | 30 | 27.0 | 11.9 | 19.1 | 36.8 |
| 18 | 3/4 | -L-MJ18N12 | 39.8 | 24.4 | 30 | 27.0 | 15.1 | 19.1 | 36.8 |
| 20 | 1/2 | -L-MJ20N8 | 44.6 | 26.0 | 32 | 34.9 | 11.9 | 19.1 | 41.7 |
| 20 | 3/4 | -L-MJ20N12 | 44.6 | 26.0 | 32 | 34.9 | 15.9 | 19.1 | 41.7 |
| 22 | 3/4 | -L-MJ22N12 | 44.6 | 26.0 | 32 | 34.9 | 15.9 | 19.1 | 41.7 |
| 22 | 1 | -L-MJ22N16 | 44.6 | 26.0 | 32 | 34.9 | 18.3 | 23.9 | 46.5 |
| 25 | 3/4 | -L-MJ25N12 | 49.1 | 31.3 | 38 | 34.9 | 15.9 | 19.0 | 41.7 |
| 25 | 1 | -L-MJ25N16 | 49.1 | 31.3 | 38 | 34.9 | 21.8 | 23.9 | 46.5 |
| 30 | 1 1/4 | -L-MJ30N20 | 69.9 | 39.6 | 50 | 42.9 | 26.2 | 23.9 | 53.1 |
| 32 | 1 1/4 | -L-MJ32N20 | 72.3 | 42.0 | 50 | 42.9 | 27.8 | 23.9 | 53.1 |
| 38 | 1 1/2 | -L-MJ38N24 | 84.0 | 49.4 | 60 | 50.8 | 33.7 | 26.2 | 60.4 |

## Male thread elbow




Metric Tube — ISO tapered thread (RT)

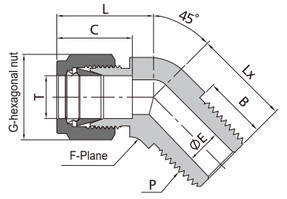
| T-Tube outer diameter (mm) | P-RT Size | Basic order number | Size,mm | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | | | L | C | G | F | E | B | Lx |
| 3 | 1/8 | -L-MJ3RT2 | 23.6 | 12.9 | 12 | 11.1 | 2.4 | 9.7 | 17.8 |
| 3 | 1/4 | -L-MJ3RT4 | 24.6 | 12.9 | 12 | 12.7 | 2.4 | 14.2 | 23.4 |
| 4 | 1/8 | -L-MJ4RT2 | 25.4 | 13.7 | 12 | 12.7 | 2.4 | 9.7 | 18.8 |
| 4 | 1/4 | -L-MJ4RT4 | 25.4 | 13.7 | 12 | 12.7 | 2.4 | 14.2 | 23.4 |
| 6 | 1/8 | -L-MJ6RT2 | 27.0 | 15.3 | 14 | 12.7 | 4.8 | 9.7 | 18.8 |
| 6 | 1/4 | -L-MJ6RT4 | 27.0 | 15.3 | 14 | 12.7 | 4.8 | 14.2 | 23.4 |
| 6 | 3/8 | -L-MJ6RT6 | 29.8 | 15.3 | 14 | 17.5 | 4.8 | 14.2 | 26.2 |
| 6 | 1/2 | -L-MJ6RT8 | 31.8 | 15.3 | 14 | 20.6 | 4.8 | 19.0 | 33.0 |
| 8 | 1/8 | -L-MJ8RT2 | 28.8 | 16.2 | 16 | 14.3 | 4.8 | 9.7 | 19.8 |
| 8 | 1/4 | -L-MJ8RT4 | 28.8 | 16.2 | 16 | 14.3 | 6.4 | 14.2 | 24.4 |
| 8 | 3/8 | -L-MJ8RT6 | 30.6 | 16.2 | 16 | 17.5 | 6.4 | 14.2 | 26.2 |
| 8 | 1/2 | -L-MJ8RT8 | 32.6 | 16.2 | 16 | 20.6 | 6.4 | 19.1 | 33.0 |
| 10 | 1/8 | -L-MJ10RT2 | 31.5 | 17.2 | 19 | 17.5 | 4.8 | 9.7 | 21.6 |
| 10 | 1/4 | -L-MJ10RT4 | 31.5 | 17.2 | 19 | 17.5 | 7.1 | 14.2 | 26.2 |
| 10 | 3/8 | -L-MJ10RT6 | 31.5 | 17.2 | 19 | 17.5 | 7.9 | 14.2 | 26.2 |
| 10 | 1/2 | -L-MJ10RT8 | 33.5 | 17.2 | 19 | 20.6 | 7.9 | 19.1 | 33.0 |
| 12 | 1/8 | -L-MJ12RT2 | 36.0 | 22.8 | 22 | 20.6 | 4.8 | 9.7 | 23.6 |
| 12 | 1/4 | -L-MJ12RT4 | 36.0 | 22.8 | 22 | 20.6 | 7.1 | 14.2 | 28.2 |
| 12 | 3/8 | -L-MJ12RT6 | 36.0 | 22.8 | 22 | 20.6 | 9.5 | 14.2 | 28.2 |
| 12 | 1/2 | -L-MJ12RT8 | 36.0 | 22.8 | 22 | 20.6 | 9.5 | 19.1 | 33.0 |
| 12 | 3/4 | -L-MJ12RT12 | 39.8 | 22.8 | 22 | 27.0 | 9.5 | 19.1 | 36.8 |
| 14 | 1/2 | -L-MJ14RT8 | 38.1 | 24.4 | 25 | 23.8 | 11.1 | 19.1 | 35.1 |
| 15 | 1/2 | -L-MJ15RT8 | 38.1 | 24.4 | 25 | 23.8 | 11.9 | 19.1 | 35.1 |
| 16 | 1/4 | -L-MJ16RT4 | 38.0 | 24.4 | 25 | 23.8 | 7.1 | 14.2 | 30.2 |
| 16 | 3/8 | -L-MJ16RT6 | 38.0 | 24.4 | 25 | 23.8 | 9.5 | 14.2 | 30.2 |
| 16 | 1/2 | -L-MJ16RT8 | 38.0 | 24.4 | 25 | 23.8 | 11.9 | 19.1 | 35.1 |
| 16 | 3/4 | -L-MJ16RT12 | 39.8 | 24.4 | 25 | 27.0 | 12.7 | 19.1 | 36.8 |
| 18 | 1/2 | -L-MJ18RT8 | 39.8 | 24.4 | 30 | 27.0 | 11.9 | 19.1 | 36.8 |
| 18 | 3/4 | -L-MJ18RT12 | 39.8 | 24.4 | 30 | 27.0 | 15.1 | 19.1 | 36.8 |
| 20 | 1/2 | -L-MJ20RT8 | 44.6 | 26.0 | 32 | 34.9 | 11.9 | 19.1 | 41.7 |
| 20 | 3/4 | -L-MJ20RT12 | 44.6 | 26.0 | 32 | 34.9 | 15.9 | 19.1 | 41.7 |
| 22 | 3/4 | -L-MJ22RT12 | 44.6 | 26.0 | 32 | 34.9 | 15.9 | 19.1 | 41.7 |
| 22 | 1 | -L-MJ22RT16 | 44.6 | 26.0 | 32 | 34.9 | 18.3 | 23.9 | 46.5 |
| 25 | 3/4 | -L-MJ25RT12 | 49.1 | 31.3 | 38 | 34.9 | 15.9 | 19.1 | 41.7 |
| 25 | 1 | -L-MJ25RT16 | 49.1 | 31.3 | 38 | 34.9 | 21.8 | 23.9 | 46.5 |
| 28 | 1 | -L-MJ28RT16 | 64.0 | 36.6 | 46 | 42.9 | 21.8 | 23.9 | 53.1 |







## 45° male thread elbow




Imperial Tube — NPT Thread

| T-Tube outer diameter (in.) | P-NPT Size | Basic order number | Size,mm | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | | | L | C | G | F | E | B | Lx |
| 1/16 | 1/16 | -R-FJ1N1 | 15.7 | 8.6 | 7.9 | 9.5 | 1.3 | 9.7 | 14.5 |
| 1/8 | 1/8 | -R-FJ2N2 | 20.8 | 12.7 | 11.1 | 11.1 | 2.3 | 9.7 | 16.8 |
| 3/16 | 1/8 | -R-FJ3N2 | 21.6 | 13.7 | 12.7 | 11.1 | 3.0 | 9.7 | 14.7 |
| 1/4 | 1/8 | -R-FJ4N2 | 24.6 | 15.2 | 14.3 | 12.7 | 4.8 | 9.7 | 16.5 |
| 1/4 | 1/4 | -R-FJ4N4 | 24.6 | 15.2 | 14.3 | 12.7 | 4.8 | 14.3 | 21.1 |
| 5/16 | 1/8 | -R-FJ5N2 | 24.1 | 16.3 | 15.9 | 14.3 | 4.8 | 9.7 | 16.8 |
| 3/8 | 1/8 | -R-FJ6N2 | 27.9 | 16.8 | 17.5 | 15.9 | 4.8 | 9.7 | 18.3 |
| 3/8 | 1/4 | -R-FJ6N4 | 27.9 | 16.8 | 17.5 | 15.9 | 7.1 | 14.3 | 22.9 |
| 3/8 | 3/8 | -R-FJ6N6 | 29.2 | 16.8 | 17.5 | 20.6 | 7.1 | 19.1 | 24.1 |
| 1/2 | 3/8 | -R-FJ8N6 | 32.0 | 22.9 | 22.2 | 20.6 | 9.7 | 19.1 | 24.1 |
| 5/8 | 1/2 | -R-FJ10N8 | 30.7 | 24.4 | 25.4 | 23.8 | 11.9 | 19.1 | 29.7 |
| 3/4 | 3/4 | -R-FJ12N12 | 34.0 | 24.4 | 28.6 | 27.0 | 15.7 | 19.1 | 31.0 |
| 7/8 | 3/4 | -R-FJ14N12 | 40.4 | 25.9 | 31.8 | 31.8 | 15.7 | 19.1 | 32.3 |
| 1 | 1 | -R-FJ16N16 | 40.4 | 31.2 | 38.1 | 34.9 | 22.4 | 23.9 | 37.8 |

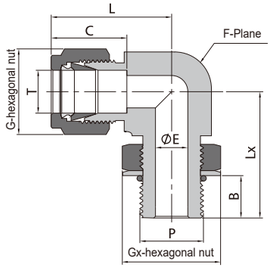
Metric Tube — NPT Thread

| T-Tube outer diameter (mm) | P-NPT Size | Basic order number | Size,mm | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | | | L | C | G | F | E | B | Lx |
| 6 | 1/8 | -R-MJ6N2 | 23.4 | 15.3 | 14 | 12.7 | 4.8 | 9.7 | 16.8 |
| 6 | 1/4 | -R-MJ6N4 | 23.4 | 15.3 | 14 | 12.7 | 4.8 | 14.3 | 21.8 |
| 8 | 1/8 | -R-MJ8N2 | 24.3 | 16.2 | 16 | 15.9 | 4.8 | 9.7 | 16.8 |
| 10 | 1/4 | -R-MJ10N4 | 26.6 | 17.2 | 19 | 17.5 | 7.9 | 14.3 | 24.1 |
| 12 | 3/8 | -R-MJ12N6 | 29.1 | 22.8 | 22 | 20.6 | 9.5 | 19.1 | 24.1 |
| 12 | 1/2 | -R-MJ12N8 | 30.7 | 22.8 | 22 | 20.6 | 9.5 | 19.1 | 29.7 |
| 16 | 1/2 | -R-MJ16N8 | 30.7 | 24.4 | 25 | 23.8 | 11.9 | 19.1 | 29.7 |

## Male thread elbow with adjustable position

### SAE/MS straight thread

Adapts to SAE J19261-1, ISO 11926-1 and MS 16142 straight thread bosses.




Imperial Tube — SAE/MS straight thread

| T-Tube outer diameter (in.) | P-SAE/MS thread size | Basic order number | Size,mm | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | L | B | C | G | E | F | Lx | Gx |
| 1/4 | 7/16-20 | -L-FJ4SOT7 | 28.4 | 9.9 | 15.2 | 14.3 | 4.8 | 12.7 | 28.4 | 14.3 |
| 1/4 | 9/16-18 | -L-FJ4SOT9 | 30.5 | 11.2 | 15.2 | 14.3 | 4.8 | 15.9 | 32.3 | 17.5 |
| 5/16 | 1/2-20 | -L-FJ5SOT8 | 30.2 | 9.9 | 16.3 | 15.9 | 5.8 | 14.3 | 29.5 | 15.9 |
| 3/8 | 7/16-20 | -L-FJ6SOT7 | 33.3 | 9.9 | 16.8 | 17.5 | 5.1 | 15.9 | 31.5 | 14.3 |
| 3/8 | 9/16-18 | -L-FJ6SOT9 | 32.0 | 11.2 | 16.8 | 17.5 | 7.1 | 15.9 | 32.3 | 17.5 |
| 3/8 | 3/4-16 | -L-FJ6SOT12 | 34.8 | 12.7 | 16.8 | 17.5 | 7.1 | 20.6 | 37.8 | 22.2 |
| 1/2 | 9/16-18 | -L-FJ8SOT9 | 37.6 | 11.2 | 22.9 | 22.2 | 7.1 | 20.6 | 37.5 | 17.5 |
| 1/2 | 3/4-16 | -L-FJ8SOT12 | 37.6 | 12.7 | 22.9 | 22.2 | 10.4 | 20.6 | 37.8 | 22.2 |
| 5/8 | 7/8-14 | -L-FJ10SOT14 | 39.6 | 14.2 | 24.4 | 25.4 | 12.7 | 23.8 | 43.4 | 25.4 |
| 3/4 | 1 1/16-12 | -L-FJ12SOT17 | 41.4 | 16.8 | 24.4 | 28.6 | 15.7 | 27.0 | 48.8 | 31.8 |
| 7/8 | 1 3/16-12 | -L-FJ14SOT19 | 43.2 | 16.8 | 25.9 | 31.8 | 18.3 | 30.2 | 50.5 | 34.9 |
| 1 | 1 5/16-12 | -L-FJ16SOT21 | 50.5 | 16.8 | 31.2 | 38.1 | 22.4 | 34.9 | 53.6 | 38.1 |
| 1 1/4 | 1 5/8-12 | -L-FJ20SOT26 | 67.8 | 16.8 | 41.1 | 47.6 | 27.7 | 42.9 | 58.2 | 47.6 |
| 1 1/2 | 1 7/8-12 | -L-FJ24SOT30 | 78.0 | 16.8 | 50.0 | 57.2 | 34.0 | 50.8 | 60.5 | 54.0 |

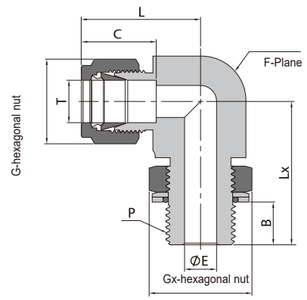






## Male thread elbow with adjustable position

### ISO parallel thread




Imperial Tube — ISO Parallel Thread (BP)

| T-Tube outer diameter (in.) | P-IS0 Parallel thread size | Basic order number | Size,mm | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | L | B | C | G | E | F | Lx | Gx |
| 1/4 | 1/8 | -L-FJ4SBP2 | 26.9 | 8.1 | 15.2 | 14.3 | 4.1 | 12.7 | 26.4 | 14.3 |
| 1/4 | 1/4 | -L-FJ4SBP4 | 29.0 | 9.1 | 15.2 | 14.3 | 4.8 | 15.9 | 32.3 | 19.1 |
| 3/8 | 1/4 | -L-FJ6SBP4 | 30.5 | 9.1 | 16.8 | 17.5 | 5.8 | 15.9 | 32.3 | 19.1 |
| 3/8 | 3/8 | -L-FJ6SBP6 | 33.3 | 9.4 | 16.8 | 17.5 | 7.1 | 20.6 | 37.1 | 22.2 |
| 1/2 | 1/4 | -L-FJ8SBP4 | 36.1 | 9.1 | 22.9 | 22.2 | 5.8 | 20.6 | 35.1 | 19.1 |
| 1/2 | 3/8 | -L-FJ8SBP6 | 36.1 | 9.4 | 22.9 | 22.2 | 7.9 | 20.6 | 37.1 | 22.2 |
| 1/2 | 1/2 | -L-FJ8SBP8 | 38.1 | 13.0 | 22.9 | 22.2 | 10.4 | 23.8 | 43.4 | 27.0 |
| 5/8 | 1/2 | -L-FJ10SBP8 | 38.1 | 13.0 | 24.4 | 25.4 | 11.9 | 23.8 | 43.4 | 27.0 |
| 3/4 | 1/2 | -L-FJ12SBP8 | 39.9 | 13.0 | 24.4 | 28.6 | 11.9 | 27.0 | 45.2 | 27.0 |
| 3/4 | 3/4 | -L-FJ12SBP12 | 39.9 | 13.0 | 24.4 | 28.6 | 15.7 | 27.0 | 48.8 | 34.9 |
| 1 | 3/4 | -L-FJ16SBP12 | 49.0 | 13.0 | 31.2 | 38.1 | 15.7 | 34.9 | 53.3 | 34.9 |
| 1 | 1 | -L-FJ16SBP16 | 49.0 | 14.0 | 31.2 | 38.1 | 19.8 | 34.9 | 53.6 | 41.3 |

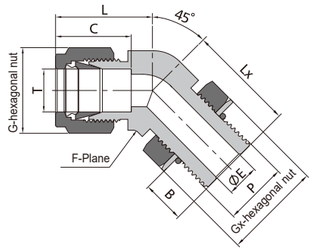
Metric Tube — ISO Parallel Thread (BP)

| T-Tube outer diameter (mm) | P-IS0 Parallel thread size | Basic order number | Size,mm | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | L | B | C | G | E | F | Lx | Gx |
| 6 | 1/8 | -L-MJ6SBP2 | 27.0 | 8.1 | 15.3 | 14 | 4.0 | 12.7 | 26.4 | 14.3 |
| 6 | 1/4 | -L-MJ6SBP4 | 29.0 | 9.1 | 15.3 | 14 | 4.8 | 15.9 | 32.3 | 19.1 |
| 8 | 1/8 | -L-MJ8SBP2 | 28.8 | 8.1 | 16.2 | 16 | 4.0 | 14.3 | 27.4 | 14.3 |
| 8 | 1/4 | -L-MJ8SBP4 | 29.9 | 9.1 | 16.2 | 16 | 5.9 | 15.9 | 32.2 | 19.1 |
| 10 | 1/4 | -L-MJ10SBP4 | 33.5 | 9.1 | 17.2 | 19 | 5.9 | 20.6 | 35.0 | 19.1 |
| 10 | 3/8 | -L-MJ10SBP6 | 33.5 | 9.4 | 17.2 | 19 | 7.9 | 20.6 | 37.1 | 22.2 |
| 12 | 1/4 | -L-MJ12SBP4 | 36.0 | 9.1 | 22.8 | 22 | 5.9 | 20.6 | 35.0 | 19.1 |
| 12 | 3/8 | -L-MJ12SBP6 | 36.0 | 9.4 | 22.8 | 22 | 7.9 | 20.6 | 37.1 | 22.2 |
| 12 | 1/2 | -L-MJ12SBP8 | 38.0 | 13.0 | 22.8 | 22 | 9.5 | 23.8 | 43.4 | 27.0 |
| 12 | 3/4 | -L-MJ12SBP12 | 39.8 | 13.0 | 22.8 | 22 | 9.5 | 27.0 | 48.8 | 34.9 |

## 45° male thread elbow with adjustable position

### SAE/MS straight thread

Adapts to SAE J19261-1, ISO 11926-1 and MS 16142 straight thread bosses.




Imperial Tube — SAE/MS straight thread

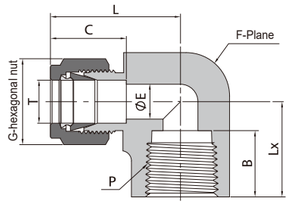
| T-Tube outer diameter (in.) | P-SAE/MS thread size | Basic order number | Size,mm | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | L | B | C | G | E | F | Lx | Gx |
| 1/4 | 7/16-20 | -R-FJ4SOT7 | 25.7 | 9.9 | 15.2 | 14.3 | 4.8 | 12.7 | 25.7 | 14.3 |
| 3/8 | 9/16-18 | -R-FJ6SOT9 | 27.9 | 11.2 | 16.8 | 17.5 | 7.1 | 15.9 | 28.2 | 17.5 |
| 1/2 | 3/4-16 | -R-FJ8SOT12 | 32.0 | 12.7 | 22.9 | 22.2 | 10.4 | 20.6 | 32.3 | 22.2 |
| 3/4 | 1 1/16-12 | -R-FJ12SOT17 | 39.9 | 16.8 | 24.4 | 28.6 | 15.7 | 27.0 | 47.2 | 31.8 |
| 1 | 1 5/16-12 | -R-FJ16SOT21 | 47.5 | 16.8 | 31.2 | 38.1 | 22.4 | 33.3 | 50.5 | 38.1 |







## Female thread elbow



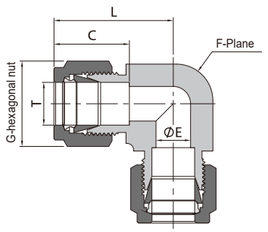

Imperial Tube — NPT Thread

| T-Tube outer diameter (in.) | P-NPT size | Basic order number | Size,mm | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | | | L | B | C | G | E | F | Lx |
| 1/16 | 1/16 | -L-FJ1FN1 | 18.0 | 9.9 | 8.6 | 7.9 | 1.3 | 11.1 | 14.2 |
| 1/16 | 1/8 | -L-FJ1FN2 | 20.6 | 10.4 | 8.6 | 7.9 | 1.3 | 14.3 | 19.1 |
| 1/8 | 1/8 | -L-FJ2FN2 | 24.6 | 10.4 | 12.7 | 11.1 | 2.3 | 14.3 | 19.1 |
| 1/8 | 1/4 | -L-FJ2FN4 | 27.4 | 15.0 | 12.7 | 11.1 | 2.3 | 17.5 | 22.4 |
| 3/16 | 1/8 | -L-FJ3FN2 | 25.4 | 10.4 | 13.7 | 12.7 | 3.0 | 12.7 | 19.1 |
| 1/4 | 1/8 | -L-FJ4FN2 | 26.9 | 10.4 | 15.2 | 14.3 | 4.8 | 14.3 | 19.1 |
| 1/4 | 1/4 | -L-FJ4FN4 | 29.7 | 15.0 | 15.2 | 14.3 | 4.8 | 17.5 | 22.4 |
| 1/4 | 3/8 | -L-FJ4FN6 | 31.8 | 15.0 | 15.2 | 14.3 | 4.8 | 20.6 | 22.4 |
| 1/4 | 1/2 | -L-FJ4FN8 | 34.5 | 19.8 | 15.2 | 14.3 | 4.8 | 25.4 | 28.4 |
| 5/16 | 1/8 | -L-FJ5FN2 | 28.7 | 10.4 | 16.3 | 15.9 | 6.4 | 14.3 | 19.1 |
| 5/16 | 1/4 | -L-FJ5FN4 | 30.5 | 15.0 | 16.3 | 15.9 | 6.4 | 17.5 | 22.4 |
| 3/8 | 1/8 | -L-FJ6FN2 | 30.5 | 10.4 | 16.8 | 17.5 | 7.1 | 15.9 | 19.1 |
| 3/8 | 1/4 | -L-FJ6FN4 | 31.2 | 15.0 | 16.8 | 17.5 | 7.1 | 17.5 | 22.4 |
| 3/8 | 3/8 | -L-FJ6FN6 | 33.3 | 15.0 | 16.8 | 17.5 | 7.1 | 20.6 | 22.4 |
| 3/8 | 1/2 | -L-FJ6FN8 | 36.1 | 19.8 | 16.8 | 17.5 | 7.1 | 25.4 | 28.4 |
| 1/2 | 1/4 | -L-FJ8FN4 | 36.1 | 15.0 | 22.9 | 22.2 | 10.4 | 20.6 | 22.4 |
| 1/2 | 3/8 | -L-FJ8FN6 | 36.1 | 15.0 | 22.9 | 22.2 | 10.4 | 20.6 | 22.4 |
| 1/2 | 1/2 | -L-FJ8FN8 | 38.9 | 19.8 | 22.9 | 22.2 | 10.4 | 25.4 | 28.4 |
| 5/8 | 3/8 | -L-FJ10FN6 | 38.1 | 15.0 | 24.4 | 25.4 | 12.7 | 23.8 | 22.4 |
| 5/8 | 1/2 | -L-FJ10FN8 | 39.9 | 19.8 | 24.4 | 25.4 | 12.7 | 27.0 | 28.4 |
| 3/4 | 1/2 | -L-FJ12FN8 | 39.9 | 19.8 | 24.4 | 28.6 | 15.7 | 27.0 | 28.4 |
| 3/4 | 3/4 | -L-FJ12FN12 | 44.7 | 20.6 | 24.4 | 28.6 | 15.7 | 34.9 | 31.8 |
| 7/8 | 3/4 | -L-FJ14FN12 | 44.7 | 20.6 | 25.9 | 31.8 | 18.3 | 34.9 | 31.8 |
| 1 | 3/4 | -L-FJ16FN12 | 49.0 | 20.6 | 31.2 | 38.1 | 22.4 | 34.9 | 31.8 |
| 1 | 1 | -L-FJ16FN16 | 53.6 | 25.4 | 31.2 | 38.1 | 22.4 | 42.9 | 38.1 |

Metric Tube — NPT Thread

| T-Tube outer diameter (mm) | P-NPT size | Basic order number | Size,mm | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | | | L | B | C | G | E | F | Lx |
| 6 | 1/8 | -L-MJ6FN2 | 27.0 | 10.4 | 15.3 | 14 | 4.8 | 12.7 | 19.0 |
| 6 | 1/4 | -L-MJ6FN4 | 29.8 | 15.0 | 15.3 | 14 | 4.8 | 17.5 | 22.4 |
| 8 | 1/8 | -L-MJ8FN2 | 28.8 | 10.4 | 16.2 | 16 | 4.8 | 14.3 | 19.1 |
| 8 | 1/4 | -L-MJ8FN4 | 30.6 | 15.0 | 16.2 | 16 | 6.4 | 17.5 | 22.4 |
| 10 | 1/4 | -L-MJ10FN4 | 33.5 | 15.0 | 17.2 | 19 | 7.9 | 20.6 | 22.4 |
| 10 | 3/8 | -L-MJ10FN6 | 33.5 | 15.0 | 17.2 | 19 | 7.9 | 20.6 | 22.4 |
| 10 | 1/2 | -L-MJ10FN8 | 36.6 | 19.8 | 17.2 | 19 | 7.9 | 25.4 | 28.5 |
| 12 | 1/4 | -L-MJ12FN4 | 36.0 | 15.0 | 22.8 | 22 | 7.9 | 20.6 | 22.4 |
| 12 | 3/8 | -L-MJ12FN6 | 36.0 | 15.0 | 22.8 | 22 | 9.5 | 20.6 | 22.4 |
| 12 | 1/2 | -L-MJ12FN8 | 38.8 | 19.8 | 22.8 | 22 | 9.5 | 25.4 | 28.4 |
| 16 | 3/8 | -L-MJ16FN6 | 39.5 | 15.0 | 24.4 | 25 | 9.5 | 27.0 | 23.6 |
| 16 | 1/2 | -L-MJ16FN8 | 39.5 | 19.8 | 24.4 | 25 | 12.7 | 27.0 | 28.5 |

## Ferrule elbow




Imperial Tube

| T-Tube outer diameter (in.) | Basic order number | Size,mm | | | | |
|---|---|---|---|---|---|---|
| | | L | C | G | F | E |
| 1/16 | -L-FJ1 | 17.8 | 8.6 | 7.9 | 9.5 | 1.3 |
| 1/8 | -L-FJ2 | 22.4 | 12.7 | 11.1 | 9.5 | 2.3 |
| 3/16 | -L-FJ3 | 25.4 | 13.7 | 12.7 | 12.7 | 3.0 |
| 1/4 | -L-FJ4 | 26.9 | 15.2 | 14.3 | 12.7 | 4.8 |
| 5/16 | -L-FJ5 | 28.7 | 16.3 | 15.9 | 14.3 | 6.4 |
| 3/8 | -L-FJ6 | 30.5 | 16.8 | 17.5 | 15.9 | 7.1 |
| 1/2 | -L-FJ8 | 36.1 | 22.9 | 22.2 | 20.6 | 10.4 |
| 5/8 | -L-FJ10 | 38.1 | 24.4 | 25.4 | 23.8 | 12.7 |
| 3/4 | -L-FJ12 | 39.9 | 24.4 | 28.6 | 27.0 | 15.7 |
| 7/8 | -L-FJ14 | 44.7 | 25.9 | 31.8 | 34.9 | 18.3 |
| 1 | -L-FJ16 | 49.0 | 31.2 | 38.1 | 34.9 | 22.4 |
| 1 1/8 | -L-FJ18 | 55.1 | 31.2 | 41.3 | 42.9 | 24.6 |
| 1 1/8 | -L-FJ20 | 66.5 | 41.1 | 47.6 | 42.9 | 27.7 |
| 1 1/2 | -L-FJ24 | 78.0 | 50.0 | 57.2 | 50.8 | 34.0 |

Metric Tube

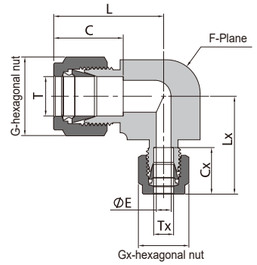
| T-Tube outer diameter (mm) | Basic order number | Size,mm | | | | |
|---|---|---|---|---|---|---|
| | | L | C | G | F | E |
| 3 | -L-MJ3 | 22.3 | 12.9 | 12 | 9.5 | 2.4 |
| 4 | -L-MJ4 | 25.4 | 13.7 | 12 | 12.7 | 2.4 |
| 6 | -L-MJ6 | 27.0 | 15.3 | 14 | 12.7 | 4.8 |
| 8 | -L-MJ8 | 28.8 | 16.2 | 16 | 14.3 | 6.4 |
| 10 | -L-MJ10 | 31.5 | 17.2 | 19 | 17.5 | 7.9 |
| 12 | -L-MJ12 | 36.0 | 22.8 | 22 | 20.6 | 9.5 |
| 14 | -L-MJ14 | 38.0 | 24.4 | 25 | 23.8 | 11.0 |
| 15 | -L-MJ15 | 38.8 | 24.4 | 25 | 23.8 | 11.9 |
| 16 | -L-MJ16 | 38.0 | 24.4 | 25 | 23.8 | 12.7 |
| 18 | -L-MJ18 | 39.8 | 24.4 | 30 | 27.0 | 15.1 |
| 20 | -L-MJ20 | 44.6 | 26.0 | 32 | 34.9 | 15.9 |
| 22 | -L-MJ22 | 44.6 | 26.0 | 32 | 34.9 | 18.3 |
| 25 | -L-MJ25 | 49.1 | 31.3 | 38 | 34.9 | 21.8 |
| 28 | -L-MJ28 | 64.0 | 36.6 | 46 | 42.9 | 21.8 |
| 30 | -L-MJ30 | 69.9 | 39.6 | 50 | 42.9 | 26.2 |
| 32 | -L-MJ32 | 72.3 | 42.0 | 50 | 42.9 | 28.6 |
| 38 | -L-MJ38 | 84.0 | 49.4 | 60 | 50.8 | 33.7 |







## Ferrule elbow



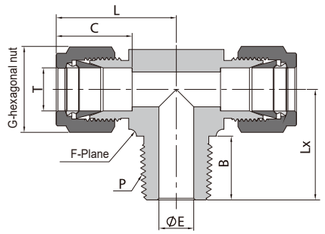

Imperial Tube

| T-Tube outer diameter (in.) | Tx-Tube outer diameter (in.) | Basic order number | Size,mm | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | L | C | G | F | E | Cx | Gx | Lx |
| 3/16 | 1/8 | -L-FJ3FJ2 | 25.4 | 13.7 | 12.7 | 12.7 | 2.3 | 12.7 | 11.1 | 24.7 |
| 1/4 | 1/8 | -L-FJ4FJ2 | 26.9 | 15.2 | 14.3 | 12.7 | 2.3 | 12.7 | 11.1 | 25.4 |
| 5/16 | 1/8 | -L-FJ5FJ2 | 29.7 | 16.3 | 15.9 | 14.3 | 2.3 | 12.7 | 11.1 | 26.4 |
| 5/16 | 1/4 | -L-FJ5FJ4 | 29.7 | 16.3 | 15.9 | 14.3 | 4.8 | 15.2 | 14.3 | 29.0 |
| 3/8 | 1/8 | -L-FJ6FJ2 | 30.5 | 16.8 | 17.5 | 15.9 | 2.3 | 12.7 | 11.1 | 26.4 |
| 3/8 | 1/4 | -L-FJ6FJ4 | 30.5 | 16.8 | 17.5 | 15.9 | 4.8 | 15.2 | 14.3 | 29.0 |
| 3/8 | 5/16 | -L-FJ6FJ5 | 30.5 | 16.8 | 17.5 | 15.9 | 6.4 | 16.3 | 15.9 | 29.7 |
| 1/2 | 1/4 | -L-FJ8FJ4 | 36.1 | 22.9 | 22.2 | 20.6 | 4.8 | 15.2 | 14.3 | 32.2 |
| 1/2 | 5/16 | -L-FJ8FJ5 | 36.1 | 22.9 | 22.2 | 20.6 | 6.4 | 16.3 | 15.9 | 32.5 |
| 1/2 | 3/8 | -L-FJ8FJ6 | 36.1 | 22.9 | 22.2 | 20.6 | 7.1 | 16.8 | 17.5 | 33.6 |
| 5/8 | 3/8 | -L-FJ10FJ6 | 38.1 | 24.4 | 25.4 | 23.8 | 7.1 | 16.8 | 17.5 | 35.6 |
| 5/8 | 1/2 | -L-FJ10FJ8 | 38.1 | 24.4 | 25.4 | 23.8 | 10.4 | 22.9 | 22.2 | 38.1 |
| 3/4 | 1/4 | -L-FJ12FJ4 | 39.9 | 24.4 | 28.6 | 27.0 | 4.8 | 15.2 | 14.3 | 35.9 |
| 3/4 | 3/8 | -L-FJ12FJ6 | 39.9 | 24.4 | 28.6 | 27.0 | 7.1 | 16.8 | 17.5 | 37.4 |
| 3/4 | 1/2 | -L-FJ12FJ8 | 39.9 | 24.4 | 28.6 | 27.0 | 10.4 | 22.9 | 22.2 | 39.9 |
| 7/8 | 1/4 | -L-FJ14FJ4 | 44.7 | 25.9 | 31.8 | 34.9 | 4.8 | 15.2 | 14.3 | 40.7 |
| 1 | 1/2 | -L-FJ16FJ8 | 49.0 | 31.2 | 38.1 | 34.9 | 10.4 | 22.9 | 22.2 | 44.4 |
| 1 | 3/4 | -L-FJ16FJ12 | 49.0 | 31.2 | 38.1 | 34.9 | 15.7 | 24.4 | 28.6 | 44.4 |

Metric Tube

| T-Tube outer diameter (mm) | Tx-Tube outer diameter (mm) | Basic order number | Size,mm | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | L | C | G | F | E | Cx | Gx | Lx |
| 8 | 6 | -L-MJ8MJ6 | 28.8 | 16.2 | 16 | 14.3 | 4.8 | 15.3 | 14 | 27.9 |
| 10 | 8 | -L-MJ10MJ8 | 31.5 | 17.2 | 19 | 17.5 | 6.4 | 16.2 | 16 | 30.5 |
| 12 | 8 | -L-MJ12MJ8 | 36.0 | 22.8 | 22 | 20.6 | 6.4 | 16.2 | 16 | 32.6 |
| 14 | 8 | -L-MJ14MJ8 | 38.8 | 24.4 | 25 | 23.8 | 6.4 | 16.2 | 16 | 35.4 |
| 14 | 10 | -L-MJ14MJ10 | 38.8 | 24.4 | 25 | 23.8 | 7.9 | 17.2 | 19 | 36.4 |

## Branch pipe male thread ferrule tee




Imperial Tube — NPT Thread

| T-Tube outer diameter (in.) | P-NPT size | Basic order number | Size,mm | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | | | L | C | G | F | E | B | Lx |
| 1/8 | 1/8 | -T-FJ2FJ2N2 | 23.6 | 12.7 | 11.1 | 11.1 | 2.3 | 9.7 | 17.8 |
| 1/8 | 1/4 | -T-FJ2FJ2N4 | 24.6 | 12.7 | 11.1 | 12.7 | 2.3 | 14.2 | 23.4 |
| 3/16 | 1/8 | -T-FJ3FJ3N2 | 24.4 | 13.7 | 12.7 | 11.1 | 3.0 | 9.7 | 17.8 |
| 1/4 | 1/8 | -T-FJ4FJ4N2 | 26.9 | 15.2 | 14.3 | 12.7 | 4.8 | 9.7 | 18.8 |
| 1/4 | 1/4 | -T-FJ4FJ4N4 | 26.9 | 15.2 | 14.3 | 12.7 | 4.8 | 14.2 | 23.4 |
| 5/16 | 1/8 | -T-FJ5FJ5N2 | 29.7 | 16.3 | 15.9 | 15.9 | 4.8 | 9.7 | 20.8 |
| 5/16 | 1/4 | -T-FJ5FJ5N4 | 29.7 | 16.3 | 15.9 | 15.9 | 6.4 | 14.2 | 25.7 |
| 3/8 | 1/4 | -T-FJ6FJ6N4 | 30.5 | 16.8 | 17.5 | 15.9 | 7.1 | 14.2 | 25.4 |
| 3/8 | 3/8 | -T-FJ6FJ6N6 | 33.3 | 16.8 | 17.5 | 20.6 | 7.1 | 14.2 | 28.2 |
| 1/2 | 3/8 | -T-FJ8FJ8N6 | 36.1 | 22.9 | 22.2 | 20.6 | 9.7 | 14.2 | 28.2 |
| 1/2 | 1/2 | -T-FJ8FJ8N8 | 36.1 | 22.9 | 22.2 | 20.6 | 10.4 | 19.1 | 33.0 |
| 5/8 | 1/2 | -T-FJ10FJ10N8 | 38.9 | 24.4 | 25.4 | 25.4 | 11.9 | 19.1 | 35.8 |
| 3/4 | 3/4 | -T-FJ12FJ12N12 | 39.9 | 24.4 | 28.6 | 27.0 | 15.7 | 19.1 | 36.8 |
| 7/8 | 3/4 | -T-FJ14FJ14N12 | 44.7 | 25.9 | 31.8 | 33.3 | 15.7 | 19.1 | 38.1 |
| 1 | 3/4 | -T-FJ16FJ16N12 | 49.3 | 31.2 | 38.1 | 33.3 | 15.7 | 19.1 | 42.2 |
| 1 | 1 | -T-FJ16FJ16N16 | 49.3 | 31.2 | 38.1 | 34.9 | 22.4 | 23.9 | 46.7 |

Metric Tube — NPT Thread

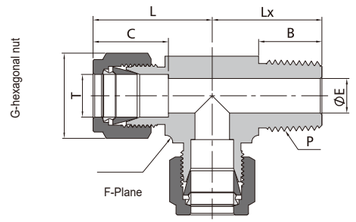
| T-Tube outer diameter (mm) | P-NPT size | Basic order number | Size,mm | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | | | L | C | G | F | E | B | Lx |
| 6 | 1/8 | -T-MJ6MJ6N2 | 27.0 | 15.3 | 14 | 12.7 | 4.8 | 9.7 | 18.8 |
| 6 | 1/4 | -T-MJ6MJ6N4 | 27.0 | 15.3 | 14 | 12.7 | 4.8 | 14.2 | 23.4 |
| 8 | 1/8 | -T-MJ8MJ8N2 | 29.9 | 16.2 | 16 | 15.9 | 4.8 | 9.7 | 20.8 |
| 8 | 1/4 | -T-MJ8MJ8N4 | 29.9 | 16.2 | 16 | 15.9 | 6.4 | 14.2 | 25.4 |
| 10 | 1/4 | -T-MJ10MJ10N4 | 33.5 | 17.2 | 19 | 20.6 | 7.9 | 14.2 | 28.2 |
| 10 | 3/8 | -T-MJ10MJ10N6 | 33.5 | 17.2 | 19 | 20.6 | 7.9 | 14.2 | 28.2 |
| 12 | 1/4 | -T-MJ12MJ12N4 | 36.0 | 22.8 | 22 | 20.6 | 7.9 | 14.2 | 28.2 |
| 12 | 3/8 | -T-MJ12MJ12N6 | 36.0 | 22.8 | 22 | 20.6 | 9.5 | 14.2 | 28.2 |
| 12 | 1/2 | -T-MJ12MJ12N8 | 36.0 | 22.8 | 22 | 20.6 | 9.5 | 19.1 | 33.0 |
| 16 | 1/2 | -T-MJ16MJ16N8 | 38.8 | 24.4 | 25 | 25.4 | 11.9 | 19.1 | 35.8 |







## Main male thread ferrule tee




Imperial Tube — NPT Thread

| T-Tube outer diameter (in.) | P-NPT size | Basic order number | Size,mm | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | | | L | C | G | F | E | B | Lx |
| 1/8 | 1/8 | -T-FJ2N2FJ2 | 23.6 | 12.7 | 11.1 | 11.1 | 2.3 | 9.7 | 17.8 |
| 1/8 | 1/4 | -T-FJ2N4FJ2 | 24.6 | 12.7 | 11.1 | 12.7 | 2.3 | 14.2 | 23.4 |
| 3/16 | 1/8 | -T-FJ3N2FJ3 | 24.4 | 13.7 | 12.7 | 11.1 | 3.0 | 9.7 | 17.8 |
| 1/4 | 1/8 | -T-FJ4N2FJ4 | 26.9 | 15.2 | 14.3 | 12.7 | 4.8 | 9.7 | 18.8 |
| 1/4 | 1/4 | -T-FJ4N4FJ4 | 26.9 | 15.2 | 14.3 | 12.7 | 4.8 | 14.2 | 23.4 |
| 5/16 | 1/8 | -T-FJ5N2FJ5 | 29.7 | 16.3 | 15.9 | 15.9 | 4.8 | 9.7 | 20.8 |
| 5/16 | 1/4 | -T-FJ5N4FJ5 | 29.7 | 16.3 | 15.9 | 15.9 | 6.4 | 14.2 | 25.7 |
| 3/8 | 1/4 | -T-FJ6N4FJ6 | 30.5 | 16.8 | 17.5 | 15.9 | 7.1 | 14.2 | 25.4 |
| 3/8 | 3/8 | -T-FJ6N6FJ6 | 33.3 | 16.8 | 17.5 | 20.6 | 7.1 | 14.2 | 28.2 |
| 1/2 | 3/8 | -T-FJ8N6FJ8 | 36.1 | 22.9 | 22.2 | 20.6 | 9.7 | 14.2 | 28.2 |
| 1/2 | 1/2 | -T-FJ8N8FJ8 | 36.1 | 22.9 | 22.2 | 20.6 | 10.4 | 19.1 | 33.0 |
| 5/8 | 1/2 | -T-FJ10N8FJ10 | 38.1 | 24.4 | 25.4 | 23.8 | 11.9 | 19.1 | 35.8 |
| 3/4 | 3/4 | -T-FJ12N12FJ12 | 39.9 | 24.4 | 28.6 | 27.0 | 15.7 | 19.1 | 36.8 |
| 7/8 | 3/4 | -T-FJ14N12FJ14 | 44.7 | 25.9 | 31.8 | 33.3 | 15.7 | 19.1 | 38.1 |
| 1 | 3/4 | -T-FJ16N12FJ16 | 49.3 | 31.2 | 38.1 | 33.3 | 15.7 | 19.1 | 42.2 |
| 1 | 1 | -T-FJ16N16FJ16 | 49.3 | 31.2 | 38.1 | 34.9 | 22.4 | 23.9 | 46.7 |

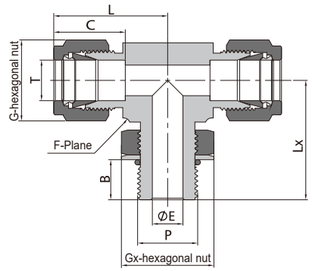
Metric Tube — NPT Thread

| T-Tube outer diameter (mm) | P-NPT size | Basic order number | Size,mm | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | | | L | C | G | F | E | B | Lx |
| 6 | 1/8 | -T-MJ6N2MJ6 | 27.0 | 15.3 | 14 | 12.7 | 4.8 | 9.7 | 18.0 |
| 6 | 1/4 | -T-MJ6N4MJ6 | 27.0 | 15.3 | 14 | 12.7 | 4.8 | 14.2 | 23.4 |
| 8 | 1/8 | -T-MJ8N2MJ8 | 29.9 | 16.2 | 16 | 15.9 | 4.8 | 9.7 | 20.8 |
| 8 | 1/4 | -T-MJ8N4MJ8 | 29.9 | 16.2 | 16 | 15.9 | 6.4 | 14.2 | 25.4 |
| 10 | 1/4 | -T-MJ10N4MJ10 | 33.5 | 17.2 | 19 | 20.6 | 7.9 | 14.2 | 28.2 |
| 10 | 1/2 | -T-MJ10N8MJ10 | 33.5 | 17.2 | 19 | 20.6 | 7.9 | 14.2 | 28.2 |
| 12 | 1/4 | -T-MJ12N4MJ12 | 36.0 | 22.8 | 22 | 20.6 | 7.9 | 14.2 | 28.2 |
| 12 | 3/8 | -T-MJ12N6MJ12 | 36.0 | 22.8 | 22 | 20.6 | 9.5 | 14.2 | 28.2 |
| 12 | 1/2 | -T-MJ12N8MJ12 | 36.0 | 22.8 | 22 | 20.6 | 9.5 | 19.1 | 33.0 |
| 16 | 1/2 | -T-MJ16N8MJ16 | 38.0 | 24.4 | 25 | 23.8 | 11.9 | 19.1 | 35.0 |

## Branch pipe male thread position adjustable ferrule tee

### SAE/MS straight thread

Adapts to SAE J19261-1, ISO 11926-1 and MS 16142 straight thread bosses.

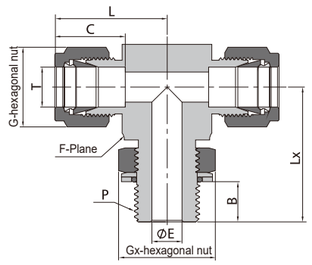



Imperial Tube — SAE/MS straight thread

| T-Tube outer diameter (in.) | P-SAE/MS thread size | Basic order number | Size,mm | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | L | B | C | E | G | F | Lx | Gx |
| 1/4 | 7/16-20 | -T-FJ4FJ4SOT7 | 28.5 | 9.9 | 15.2 | 4.8 | 14.3 | 12.7 | 28.5 | 14.3 |
| 3/8 | 9/16-18 | -T-FJ6FJ6SOT9 | 32.0 | 11.2 | 16.8 | 7.1 | 17.5 | 15.9 | 32.3 | 17.5 |
| 1/2 | 3/4-16 | -T-FJ8FJ8SOT12 | 37.6 | 12.7 | 22.9 | 10.4 | 22.2 | 20.6 | 37.8 | 22.2 |
| 3/4 | 1 1/16-12 | -T-FJ12FJ12SOT17 | 41.4 | 16.8 | 24.4 | 15.7 | 28.6 | 27.0 | 48.8 | 28.6 |
| 1 | 1 5/16-12 | -T-FJ16FJ16SOT21 | 50.5 | 16.8 | 31.2 | 22.4 | 38.1 | 34.9 | 53.6 | 38.1 |
| 1 1/4 | 1 5/8-12 | -T-FJ20FJ20SOT26 | 67.8 | 16.8 | 41.1 | 27.7 | 47.6 | 42.9 | 58.2 | 47.6 |
| 1 1/4 | 1 7/8-12 | -T-FJ24FJ24SOT30 | 78.0 | 16.8 | 50.0 | 34.0 | 57.2 | 50.8 | 60.5 | 54.0 |

## Branch pipe male thread position adjustable ferrule tee

### ISO parallel thread




Imperial Tube — ISO parallel thread (BP)

| T-Tube outer diameter (in.) | P-ISO parallel thread size | Basic order number | Size,mm | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | L | B | C | E | G | F | Lx | Gx |
| 1/4 | 1/8 | -T-FJ4FJ4SBP2 | 26.9 | 8.1 | 15.2 | 4.1 | 14.3 | 12.7 | 26.4 | 14.3 |
| 1/4 | 1/4 | -T-FJ4FJ4SBP4 | 29.0 | 9.1 | 15.2 | 4.8 | 14.3 | 15.9 | 32.3 | 19.1 |
| 3/8 | 1/4 | -T-FJ6FJ6SBP4 | 30.5 | 9.1 | 16.8 | 5.8 | 17.5 | 15.9 | 32.3 | 19.1 |
| 1/2 | 3/8 | -T-FJ8FJ8SBP6 | 36.1 | 9.4 | 22.9 | 7.9 | 22.2 | 20.6 | 37.1 | 22.2 |
| 1/2 | 1/2 | -T-FJ8FJ8SBP8 | 38.1 | 13.0 | 22.9 | 10.4 | 22.2 | 23.8 | 43.4 | 27.0 |
| 5/8 | 1/2 | -T-FJ10FJ10SBP8 | 38.1 | 13.0 | 24.4 | 11.9 | 25.4 | 23.8 | 43.4 | 27.0 |
| 3/4 | 1/2 | -T-FJ12FJ12SBP8 | 39.9 | 13.0 | 24.4 | 11.9 | 28.6 | 27.0 | 45.2 | 27.0 |
| 3/4 | 3/4 | -T-FJ12FJ12SBP12 | 39.9 | 13.0 | 24.4 | 15.7 | 28.6 | 27.0 | 48.8 | 34.9 |
| 1 | 1 | -T-FJ16FJ16SBP16 | 49.0 | 14.0 | 31.2 | 19.8 | 38.1 | 34.9 | 53.6 | 41.3 |

Metric Tube — ISO parallel thread (BP)

| T-Tube outer diameter (mm) | P-ISO parallel thread size | Basic order number | Size,mm | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | L | B | C | E | G | F | Lx | Gx |
| 6 | 1/8 | -T-MJ6MJ6SBP2 | 27.0 | 8.1 | 15.3 | 4.0 | 14 | 12.7 | 26.4 | 14.3 |
| 6 | 1/4 | -T-MJ6MJ6SBP4 | 29.0 | 9.1 | 15.3 | 4.8 | 14 | 15.9 | 32.2 | 19.1 |
| 8 | 1/8 | -T-MJ8MJ8SBP2 | 28.8 | 8.1 | 16.2 | 4.0 | 16 | 14.3 | 27.5 | 14.3 |
| 8 | 1/4 | -T-MJ8MJ8SBP4 | 29.9 | 9.1 | 16.2 | 5.9 | 16 | 15.9 | 32.2 | 19.1 |
| 10 | 1/4 | -T-MJ10MJ10SBP4 | 33.5 | 9.1 | 17.2 | 5.9 | 19 | 20.6 | 35.1 | 19.1 |
| 12 | 3/8 | -T-MJ12MJ12SBP6 | 36.0 | 9.4 | 22.8 | 7.9 | 22 | 20.6 | 37.1 | 22.2 |
| 12 | 1/2 | -T-MJ12MJ12SBP8 | 38.0 | 13.0 | 22.8 | 9.5 | 22 | 23.8 | 43.5 | 27.0 |

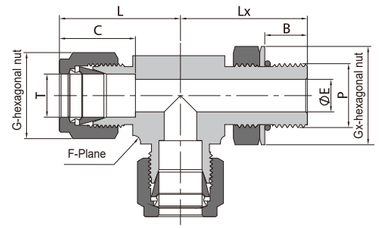




## Main male thread position adjustable ferrule tee

### SAE/MS straight thread

Adapts to SAE J19261-1, ISO 11926-1 and MS 16142 straight thread bosses.

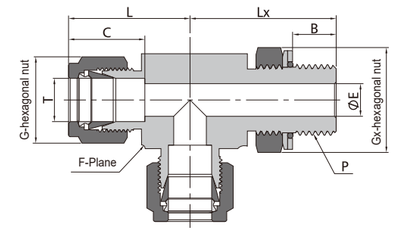



Imperial Tube — SAE/MS straight thread

| T-Tube outer diameter (in.) | P-SAE/MS thread size | Basic order number | Size,mm | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | L | B | C | E | G | F | Lx | Gx |
| 1/4 | 7/16-20 | -T-FJ4SOT7FJ4 | 28.5 | 9.9 | 15.2 | 4.8 | 14.3 | 12.7 | 28.5 | 14.3 |
| 3/8 | 9/16-18 | -T-FJ6SOT9FJ6 | 32.0 | 11.2 | 16.8 | 7.1 | 17.5 | 15.9 | 32.3 | 17.5 |
| 1/2 | 3/4-16 | -T-FJ8SOT12FJ8 | 37.6 | 12.7 | 22.9 | 10.4 | 22.2 | 20.6 | 37.8 | 22.2 |
| 3/4 | 1 1/16-12 | -T-FJ12SOT17FJ12 | 41.4 | 16.8 | 24.4 | 15.7 | 28.6 | 27.0 | 48.8 | 28.6 |
| 1 | 1 5/16-12 | -T-FJ16SOT21FJ16 | 50.5 | 16.8 | 31.2 | 22.4 | 38.1 | 34.9 | 53.6 | 38.1 |
| 1 1/4 | 1 5/8-12 | -T-FJ20SOT26FJ20 | 67.8 | 16.8 | 41.1 | 27.7 | 47.6 | 42.9 | 58.2 | 47.6 |
| 1 1/2 | 1 7/8-12 | -T-FJ24SOT30FJ24 | 78.0 | 16.8 | 50.0 | 34.0 | 57.2 | 50.8 | 60.5 | 54.0 |

## Main male thread position adjustable ferrule tee

### ISO parallel thread



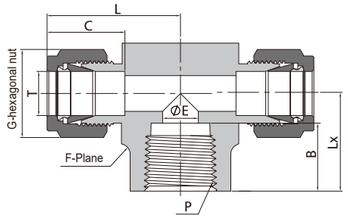

Imperial Tube — ISO parallel thread (PP)

| T-Tube outer diameter (in.) | P-ISO parallel thread size | Basic order number | Size,mm | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | L | B | C | E | G | F | Lx | Gx |
| 1/4 | 1/8 | -T-FJ4SBP2FJ4 | 26.9 | 8.1 | 15.2 | 4.1 | 14.3 | 12.7 | 26.4 | 14.3 |
| 1/4 | 1/4 | -T-FJ4SBP4FJ4 | 29.0 | 9.1 | 15.2 | 4.8 | 14.3 | 15.9 | 32.3 | 19.1 |
| 3/8 | 1/4 | -T-FJ6SBP4FJ6 | 30.5 | 9.1 | 16.8 | 5.8 | 17.5 | 15.9 | 32.3 | 19.1 |
| 1/2 | 3/8 | -T-FJ8SBP6FJ8 | 36.1 | 9.4 | 22.9 | 7.9 | 22.2 | 20.6 | 37.1 | 22.2 |
| 1/2 | 1/2 | -T-FJ8SBP8FJ8 | 38.1 | 13.0 | 22.9 | 10.4 | 22.2 | 23.8 | 43.4 | 27.0 |
| 5/8 | 1/2 | -T-FJ10SBP8FJ10 | 38.1 | 13.0 | 24.4 | 11.9 | 25.4 | 23.8 | 43.4 | 27.0 |
| 3/4 | 1/2 | -T-FJ12SBP8FJ12 | 39.9 | 13.0 | 24.4 | 11.9 | 28.6 | 27.0 | 45.2 | 27.0 |
| 3/4 | 3/4 | -T-FJ12SBP12FJ12 | 39.9 | 13.0 | 24.4 | 15.7 | 28.6 | 27.0 | 48.8 | 34.9 |
| 1 | 1 | -T-FJ16SBP16FJ16 | 49.0 | 14.0 | 31.2 | 19.8 | 38.1 | 34.9 | 53.6 | 41.3 |

Metric Tube — ISO parallel thread (BP)

| T-Tube outer diameter (mm) | P-ISO parallel thread size | Basic order number | Size,mm | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | L | B | C | E | G | F | Lx | Gx |
| 6 | 1/8 | -T-MJ6SBP2MJ6 | 27.0 | 8.1 | 15.3 | 4.0 | 14 | 12.7 | 26.4 | 14.3 |
| 6 | 1/4 | -T-MJ6SBP4MJ6 | 29.0 | 9.1 | 15.3 | 4.8 | 14 | 15.9 | 32.2 | 19.1 |
| 8 | 1/8 | -T-MJ8SBP2MJ8 | 28.8 | 8.1 | 16.2 | 4.0 | 16 | 14.3 | 27.5 | 14.3 |
| 8 | 1/4 | -T-MJ8SBP4MJ8 | 29.9 | 9.1 | 16.2 | 5.9 | 16 | 15.9 | 32.2 | 19.1 |
| 10 | 1/4 | -T-MJ10SBP4MJ10 | 33.5 | 9.1 | 17.2 | 5.9 | 19 | 20.6 | 35.1 | 19.1 |
| 12 | 3/8 | -T-MJ12SBP6MJ12 | 36.0 | 9.4 | 22.8 | 7.9 | 22 | 20.6 | 37.1 | 22.2 |
| 12 | 1/2 | -T-MJ12SBP8MJ12 | 38.0 | 13.0 | 22.8 | 9.5 | 22 | 23.8 | 43.5 | 27.0 |

## Branch pipe female thread ferrule tee




Imperial Tube — NPT Thread

| T-Tube outer diameter (in.) | P-NPT size | Basic order number | Size,mm | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | | | L | C | G | F | E | B | Lx |
| 1/8 | 1/8 | -T-FJ2FJ2FN2 | 24.6 | 12.7 | 11.1 | 12.7 | 2.3 | 10.4 | 19.1 |
| 3/16 | 1/8 | -T-FJ3FJ3FN2 | 25.7 | 13.7 | 12.7 | 12.7 | 3.0 | 10.4 | 19.1 |
| 1/4 | 1/8 | -T-FJ4FJ4FN2 | 26.9 | 15.2 | 14.3 | 12.7 | 4.8 | 10.4 | 19.1 |
| 1/4 | 1/4 | -T-FJ4FJ4FN4 | 29.7 | 15.2 | 14.3 | 17.5 | 4.8 | 15.0 | 22.4 |
| 5/16 | 1/8 | -T-FJ5FJ5FN2 | 29.7 | 16.2 | 15.9 | 15.9 | 6.4 | 10.4 | 19.1 |
| 3/8 | 1/4 | -T-FJ6FJ6FN4 | 31.2 | 16.8 | 17.5 | 17.5 | 7.1 | 15.0 | 22.4 |
| 3/8 | 3/8 | -T-FJ6FJ6FN6 | 33.3 | 16.8 | 17.5 | 20.6 | 7.1 | 15.0 | 22.4 |
| 3/8 | 1/2 | -T-FJ6FJ6FN8 | 36.1 | 16.8 | 17.5 | 25.4 | 7.1 | 19.8 | 28.4 |
| 1/2 | 1/4 | -T-FJ8FJ8FN4 | 36.1 | 22.9 | 22.2 | 20.6 | 10.4 | 15.0 | 22.4 |
| 1/2 | 3/8 | -T-FJ8FJ8FN6 | 36.1 | 22.9 | 22.2 | 20.6 | 10.4 | 15.0 | 22.4 |
| 1/2 | 1/2 | -T-FJ8FJ8FN8 | 38.9 | 22.9 | 22.2 | 25.4 | 10.4 | 19.8 | 28.4 |
| 5/8 | 1/2 | -T-FJ10FJ10FN8 | 38.9 | 24.4 | 25.4 | 25.4 | 12.7 | 19.8 | 28.4 |
| 3/4 | 3/4 | -T-FJ12FJ12FN12 | 44.7 | 24.4 | 28.6 | 34.9 | 15.7 | 20.6 | 31.8 |
| 7/8 | 3/4 | -T-FJ14FJ14FN12 | 44.7 | 25.9 | 31.8 | 34.9 | 18.3 | 20.6 | 31.8 |
| 1 | 3/4 | -T-FJ16FJ16FN12 | 49.0 | 31.2 | 38.1 | 34.9 | 22.4 | 20.6 | 31.8 |
| 1 | 1 | -T-FJ16FJ16FN16 | 53.6 | 31.2 | 38.1 | 42.9 | 22.4 | 25.4 | 38.1 |

Metric Tube — NPT Thread

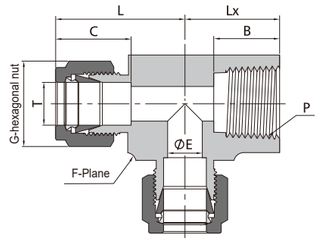
| T-Tube outer diameter (mm) | P-NPT size | Basic order number | Size,mm | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | | | L | C | G | F | E | B | Lx |
| 6 | 1/8 | -T-MJ6MJ6FN2 | 27.0 | 15.3 | 14 | 12.7 | 4.8 | 10.4 | 19.0 |
| 6 | 1/4 | -T-MJ6MJ6FN4 | 29.8 | 15.3 | 14 | 17.5 | 4.8 | 15.0 | 22.4 |
| 8 | 1/8 | -T-MJ8MJ8FN2 | 29.9 | 16.2 | 16 | 15.9 | 4.8 | 10.4 | 19.0 |
| 8 | 1/4 | -T-MJ8MJ8FN4 | 30.6 | 16.2 | 16 | 17.5 | 6.4 | 15.0 | 22.4 |
| 10 | 1/4 | -T-MJ10MJ10FN4 | 33.5 | 17.2 | 19 | 20.6 | 7.9 | 15.0 | 22.4 |
| 12 | 1/8 | -T-MJ12MJ12FN2 | 36.0 | 22.8 | 22 | 20.6 | 6.4 | 10.4 | 22.3 |
| 12 | 1/4 | -T-MJ12MJ12FN4 | 36.0 | 22.8 | 22 | 20.6 | 9.5 | 15.0 | 22.4 |
| 12 | 3/8 | -T-MJ12MJ12FN6 | 36.0 | 22.8 | 22 | 20.6 | 9.5 | 15.0 | 22.4 |
| 12 | 1/2 | -T-MJ12MJ12FN8 | 38.8 | 22.8 | 22 | 25.4 | 9.5 | 19.8 | 28.5 |
| 16 | 1/2 | -T-MJ16MJ16FN8 | 38.8 | 24.4 | 25 | 25.4 | 12.7 | 19.8 | 28.4 |







## Main female thread tee



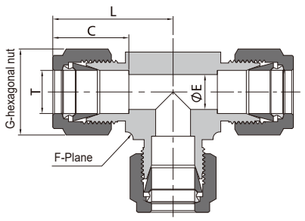

Imperial Tube — NPT Thread

| T-Tube outer diameter (in.) | P-NPT size | Basic order number | Size,mm | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | | | L | C | G | F | E | B | Lx |
| 1/8 | 1/8 | -T-FJ2FN2FJ2 | 24.6 | 12.7 | 11.1 | 12.7 | 2.3 | 10.4 | 19.1 |
| 3/16 | 1/8 | -T-FJ3FN2FJ3 | 25.7 | 13.7 | 12.7 | 12.7 | 3.0 | 10.4 | 19.1 |
| 1/4 | 1/8 | -T-FJ4FN2FJ4 | 26.9 | 15.2 | 14.3 | 12.7 | 4.8 | 10.4 | 19.1 |
| 1/4 | 1/4 | -T-FJ4FN4FJ4 | 29.7 | 15.2 | 14.3 | 17.5 | 4.8 | 15.0 | 22.4 |
| 5/16 | 1/8 | -T-FJ5FN2FJ5 | 29.7 | 16.2 | 15.9 | 15.9 | 6.4 | 10.4 | 19.1 |
| 3/8 | 1/4 | -T-FJ6FN4FJ6 | 31.2 | 16.8 | 17.5 | 17.5 | 7.1 | 15.0 | 22.4 |
| 1/2 | 1/4 | -T-FJ8FN4FJ8 | 36.1 | 22.9 | 22.2 | 20.6 | 10.4 | 15.0 | 22.4 |
| 1/2 | 3/8 | -T-FJ8FN6FJ8 | 36.1 | 22.9 | 22.2 | 20.6 | 10.4 | 15.0 | 22.4 |
| 1/2 | 1/2 | -T-FJ8FN8FJ8 | 39.9 | 22.9 | 22.2 | 27.0 | 10.4 | 19.8 | 28.4 |
| 5/8 | 1/2 | -T-FJ10FN8FJ10 | 39.9 | 24.4 | 25.4 | 27.0 | 12.7 | 19.8 | 28.4 |
| 3/4 | 3/4 | -T-FJ12FN12FJ12 | 44.7 | 24.4 | 28.6 | 34.9 | 15.7 | 20.6 | 31.8 |
| 7/8 | 1/2 | -T-FJ14FN8FJ14 | 44.7 | 25.9 | 31.8 | 34.9 | 15.7 | 19.8 | 28.4 |
| 7/8 | 3/4 | -T-FJ14FN12FJ14 | 44.7 | 25.9 | 31.8 | 34.9 | 18.3 | 20.6 | 31.8 |
| 1 | 3/4 | -T-FJ16FN12FJ16 | 49.0 | 31.2 | 38.1 | 34.9 | 22.4 | 20.6 | 31.8 |
| 1 | 1 | -T-FJ16FN16FJ16 | 53.6 | 31.2 | 38.1 | 42.9 | 22.4 | 25.4 | 38.1 |

Metric Tube — NPT Thread

| T-Tube outer diameter (mm) | P-NPT size | Basic order number | Size,mm | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | | | L | C | G | F | E | B | Lx |
| 6 | 1/8 | -T-MJ6FN2MJ6 | 27.0 | 15.3 | 14 | 12.7 | 4.8 | 10.4 | 19.0 |
| 6 | 1/4 | -T-MJ6FN4MJ6 | 29.8 | 15.3 | 14 | 17.5 | 4.8 | 15.0 | 22.4 |
| 8 | 1/8 | -T-MJ8FN2MJ8 | 29.9 | 16.2 | 16 | 15.9 | 4.8 | 10.4 | 19.0 |
| 8 | 1/4 | -T-MJ8FN4MJ8 | 30.6 | 16.2 | 16 | 17.5 | 6.4 | 15.0 | 22.4 |
| 10 | 1/4 | -T-MJ10FN4MJ10 | 33.5 | 17.2 | 19 | 20.6 | 7.9 | 15.0 | 22.4 |
| 12 | 1/4 | -T-MJ12FN4MJ12 | 36.0 | 22.8 | 22 | 20.6 | 9.5 | 15.0 | 22.4 |
| 12 | 3/8 | -T-MJ12FN6MJ12 | 36.0 | 22.8 | 22 | 20.6 | 9.5 | 15.0 | 23.1 |
| 12 | 1/2 | -T-MJ12FN8MJ12 | 38.8 | 22.8 | 22 | 25.4 | 9.5 | 19.8 | 28.5 |
| 16 | 1/2 | -T-MJ16FN8MJ16 | 39.8 | 24.4 | 25 | 27.0 | 11.9 | 19.8 | 28.4 |

## Ferrule Tee




Imperial Tube

| T-Tube outer diameter (in.) | Basic order number | Size,mm | | | | |
|---|---|---|---|---|---|---|
| | | L | C | G | F | E |
| 1/16 | -T-FJ1 | 17.8 | 8.6 | 7.9 | 9.5 | 1.3 |
| 1/8 | -T-FJ2 | 22.4 | 12.7 | 11.1 | 9.5 | 2.3 |
| 3/16 | -T-FJ3 | 24.4 | 13.7 | 12.7 | 11.1 | 3.0 |
| 1/4 | -T-FJ4 | 26.9 | 15.2 | 14.3 | 12.7 | 4.8 |
| 5/16 | -T-FJ5 | 29.7 | 16.2 | 15.9 | 15.9 | 6.4 |
| 3/8 | -T-FJ6 | 30.5 | 16.8 | 17.5 | 15.9 | 7.1 |
| 1/2 | -T-FJ8 | 36.1 | 22.9 | 22.2 | 20.6 | 10.4 |
| 5/8 | -T-FJ10 | 38.9 | 24.4 | 25.4 | 25.4 | 12.7 |
| 3/4 | -T-FJ12 | 39.9 | 24.4 | 28.6 | 27.0 | 15.7 |
| 7/8 | -T-FJ14 | 44.7 | 25.9 | 31.8 | 34.9 | 18.3 |
| 1 | -T-FJ16 | 49.0 | 31.2 | 38.1 | 34.9 | 22.4 |
| 1 1/8 | -T-FJ18 | 55.1 | 31.2 | 46.0 | 42.9 | 24.6 |
| 1 1/4 | -T-FJ20 | 66.5 | 41.1 | 47.6 | 42.9 | 27.7 |
| 1 1/2 | -T-FJ24 | 78.0 | 50.0 | 57.2 | 50.8 | 34.0 |

Metric Tube

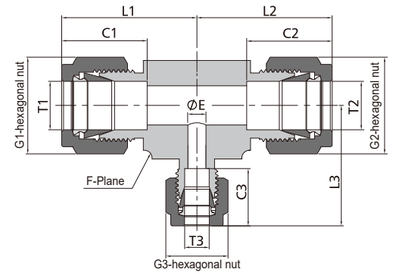
| T-Tube outer diameter (mm) | Basic order number | Size,mm | | | | |
|---|---|---|---|---|---|---|
| | | L | C | G | F | E |
| 2 | -T-MJ2 | 22.3 | 12.9 | 12 | 9.5 | 1.7 |
| 3 | -T-MJ3 | 22.3 | 12.9 | 12 | 9.5 | 2.4 |
| 4 | -T-MJ4 | 25.4 | 13.7 | 12 | 12.7 | 2.4 |
| 6 | -T-MJ6 | 27.0 | 15.3 | 14 | 12.7 | 4.8 |
| 8 | -T-MJ8 | 29.9 | 16.2 | 16 | 15.9 | 6.4 |
| 10 | -T-MJ10 | 31.5 | 17.2 | 19 | 17.5 | 7.9 |
| 12 | -T-MJ12 | 36.0 | 22.8 | 22 | 20.6 | 9.5 |
| 14 | -T-MJ14 | 38.8 | 24.4 | 25 | 25.4 | 11.1 |
| 15 | -T-MJ15 | 38.8 | 24.4 | 25 | 25.4 | 11.9 |
| 16 | -T-MJ16 | 38.8 | 24.4 | 25 | 25.4 | 12.7 |
| 18 | -T-MJ18 | 38.8 | 24.4 | 30 | 27.0 | 15.1 |
| 20 | -T-MJ20 | 44.6 | 26.0 | 32 | 34.9 | 15.9 |
| 22 | -T-MJ22 | 44.6 | 26.0 | 32 | 34.9 | 18.3 |
| 25 | -T-MJ25 | 49.1 | 31.3 | 38 | 34.9 | 21.8 |
| 28 | -T-MJ28 | 64.0 | 36.6 | 46 | 42.9 | 21.8 |
| 30 | -T-MJ30 | 69.9 | 39.6 | 50 | 42.9 | 26.2 |
| 32 | -T-MJ32 | 72.3 | 42.0 | 50 | 42.9 | 28.6 |
| 38 | -T-MJ38 | 84.0 | 49.4 | 60 | 50.8 | 33.7 |







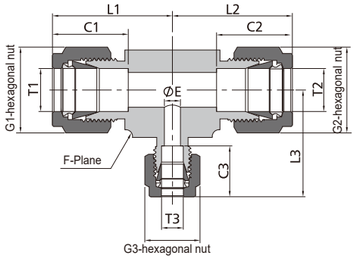
## Ferrule reducing tee




Imperial Tube

| T1-Tube outer diameter (in.) | T2-Tube outer diameter (in.) | T3-Tube outer diameter (in.) | Basic order number | Size,mm | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | L1 | L2 | L3 | C1 | C2 | C3 | G1 | G2 | G3 | F | E |
| 1/4 | 1/4 | 1/8 | -T-FJ4FJ4FJ2 | 26.7 | 26.7 | 24.4 | 15.2 | 15.2 | 12.7 | 14.3 | 14.3 | 11.1 | 12.7 | 2.3 |
| 3/8 | 1/4 | 1/4 | -T-FJ6FJ4FJ4 | 30.5 | 29.0 | 29.0 | 16.8 | 15.2 | 15.2 | 17.5 | 14.3 | 14.3 | 15.9 | 4.8 |
| 3/8 | 1/4 | 3/8 | -T-FJ6FJ4FJ6 | 30.5 | 29.0 | 30.5 | 16.8 | 15.2 | 16.8 | 17.5 | 14.3 | 17.5 | 15.9 | 4.8 |
| 3/8 | 3/8 | 1/4 | -T-FJ6FJ6FJ4 | 30.5 | 30.5 | 29.0 | 16.8 | 16.8 | 15.2 | 17.5 | 17.5 | 14.3 | 15.9 | 4.8 |
| 1/2 | 1/4 | 1/4 | -T-FJ8FJ4FJ4 | 36.1 | 31.8 | 31.8 | 22.9 | 15.2 | 15.2 | 22.2 | 14.3 | 14.3 | 20.6 | 4.8 |
| 1/2 | 1/4 | 1/2 | -T-FJ8FJ4FJ8 | 36.1 | 31.8 | 36.1 | 22.9 | 15.2 | 22.9 | 22.2 | 14.3 | 22.2 | 20.6 | 4.8 |
| 1/2 | 3/8 | 3/8 | -T-FJ8FJ6FJ6 | 36.1 | 33.3 | 33.3 | 22.9 | 16.8 | 16.8 | 22.2 | 17.5 | 17.5 | 20.6 | 7.1 |
| 1/2 | 3/8 | 1/2 | -T-FJ8FJ6FJ8 | 36.1 | 33.3 | 36.1 | 22.9 | 16.8 | 22.9 | 22.2 | 17.5 | 22.2 | 20.6 | 7.1 |
| 1/2 | 1/2 | 1/4 | -T-FJ8FJ8FJ4 | 36.1 | 36.1 | 31.8 | 22.9 | 22.9 | 15.2 | 22.2 | 22.2 | 14.3 | 20.6 | 4.8 |
| 1/2 | 1/2 | 3/8 | -T-FJ8FJ8FJ6 | 36.1 | 36.1 | 33.3 | 22.9 | 22.9 | 16.8 | 22.2 | 22.2 | 17.5 | 20.6 | 7.1 |
| 5/8 | 3/8 | 3/8 | -T-FJ10FJ6FJ6 | 38.9 | 36.1 | 36.1 | 24.4 | 16.8 | 16.8 | 25.4 | 17.5 | 17.5 | 25.4 | 7.1 |
| 5/8 | 3/8 | 1/2 | -T-FJ10FJ6FJ8 | 38.9 | 36.1 | 38.9 | 24.4 | 16.8 | 22.9 | 25.4 | 17.5 | 22.2 | 25.4 | 7.1 |
| 5/8 | 1/2 | 3/8 | -T-FJ10FJ8FJ6 | 38.9 | 38.9 | 36.1 | 24.4 | 22.9 | 16.8 | 25.4 | 22.2 | 17.5 | 25.4 | 7.1 |
| 5/8 | 1/2 | 1/2 | -T-FJ10FJ8FJ8 | 38.9 | 38.9 | 38.9 | 24.4 | 22.9 | 22.9 | 25.4 | 22.2 | 22.2 | 25.4 | 10.4 |
| 5/8 | 5/8 | 3/8 | -T-FJ10FJ10FJ6 | 38.9 | 38.9 | 36.1 | 24.4 | 24.4 | 16.8 | 25.4 | 25.4 | 17.5 | 25.4 | 7.1 |
| 5/8 | 5/8 | 1/2 | -T-FJ10FJ10FJ8 | 38.9 | 38.9 | 38.9 | 24.4 | 24.4 | 22.9 | 25.4 | 25.4 | 22.2 | 25.4 | 10.4 |
| 3/4 | 3/8 | 3/8 | -T-FJ12FJ6FJ6 | 39.6 | 36.9 | 36.9 | 24.4 | 16.8 | 16.8 | 28.6 | 17.5 | 17.5 | 27.0 | 7.1 |
| 3/4 | 1/2 | 3/8 | -T-FJ12FJ8FJ6 | 39.6 | 39.6 | 36.9 | 24.4 | 22.9 | 16.8 | 28.6 | 22.2 | 17.5 | 27.0 | 7.1 |
| 3/4 | 1/2 | 1/2 | -T-FJ12FJ8FJ8 | 39.6 | 39.6 | 39.6 | 24.4 | 22.9 | 22.9 | 28.6 | 22.2 | 22.2 | 27.0 | 10.4 |
| 3/4 | 5/8 | 3/8 | -T-FJ12FJ10FJ6 | 39.6 | 39.6 | 36.9 | 24.4 | 24.4 | 16.8 | 28.6 | 25.4 | 17.5 | 27.0 | 7.1 |
| 3/4 | 5/8 | 1/2 | -T-FJ12FJ10FJ8 | 39.6 | 39.6 | 39.6 | 24.4 | 24.4 | 22.9 | 28.6 | 25.4 | 22.2 | 27.0 | 10.4 |
| 3/4 | 5/8 | 5/8 | -T-FJ12FJ10FJ10 | 39.6 | 39.6 | 39.6 | 24.4 | 24.4 | 24.4 | 28.6 | 25.4 | 25.4 | 27.0 | 12.7 |
| 3/4 | 3/4 | 1/4 | -T-FJ12FJ12FJ4 | 39.6 | 39.6 | 35.1 | 24.4 | 24.4 | 15.2 | 28.6 | 28.6 | 14.3 | 27.0 | 4.8 |
| 3/4 | 3/4 | 3/8 | -T-FJ12FJ12FJ6 | 39.6 | 39.6 | 36.9 | 24.4 | 24.4 | 16.8 | 28.6 | 28.6 | 17.5 | 27.0 | 7.1 |
| 3/4 | 3/4 | 1/2 | -T-FJ12FJ12FJ8 | 39.6 | 39.6 | 39.6 | 24.4 | 24.4 | 22.9 | 28.6 | 28.6 | 22.2 | 27.0 | 10.4 |
| 3/4 | 3/4 | 5/8 | -T-FJ12FJ12FJ10 | 39.6 | 39.6 | 39.6 | 24.4 | 24.4 | 24.4 | 28.6 | 28.6 | 25.4 | 27.0 | 12.7 |
| 7/8 | 1/2 | 3/4 | -T-FJ14FJ8FJ12 | 44.7 | 44.7 | 44.7 | 25.9 | 22.9 | 24.4 | 31.8 | 22.2 | 28.6 | 34.9 | 10.4 |
| 7/8 | 5/8 | 3/8 | -T-FJ14FJ10FJ6 | 44.7 | 44.7 | 41.9 | 25.9 | 24.4 | 16.8 | 31.8 | 25.4 | 17.5 | 34.9 | 7.1 |
| 7/8 | 3/4 | 3/8 | -T-FJ14FJ12FJ6 | 44.7 | 44.7 | 41.9 | 25.9 | 24.4 | 16.8 | 31.8 | 28.6 | 17.5 | 34.9 | 7.1 |
| 7/8 | 3/4 | 1/2 | -T-FJ14FJ12FJ8 | 44.7 | 44.7 | 44.7 | 25.9 | 24.4 | 22.9 | 31.8 | 28.6 | 22.2 | 34.9 | 10.4 |
| 7/8 | 3/4 | 3/4 | -T-FJ14FJ12FJ12 | 44.7 | 44.7 | 44.7 | 25.9 | 24.4 | 24.4 | 31.8 | 28.6 | 28.6 | 34.9 | 15.7 |
| 7/8 | 7/8 | 1/4 | -T-FJ14FJ14FJ4 | 44.7 | 44.7 | 40.4 | 25.9 | 25.9 | 15.2 | 31.8 | 31.8 | 14.3 | 34.9 | 4.8 |
| 7/8 | 7/8 | 3/8 | -T-FJ14FJ14FJ6 | 44.7 | 44.7 | 41.9 | 25.9 | 25.9 | 16.8 | 31.8 | 31.8 | 17.5 | 34.9 | 7.1 |
| 1 | 3/8 | 3/8 | -T-FJ16FJ6FJ6 | 49.3 | 41.9 | 41.9 | 31.2 | 16.8 | 16.8 | 38.1 | 17.5 | 17.5 | 34.9 | 7.1 |
| 1 | 1/2 | 1/4 | -T-FJ16FJ8FJ4 | 49.3 | 44.7 | 40.4 | 31.2 | 22.9 | 15.2 | 38.1 | 22.2 | 14.3 | 34.9 | 4.8 |
| 1 | 1/2 | 3/8 | -T-FJ16FJ8FJ6 | 49.3 | 44.7 | 41.9 | 31.2 | 22.9 | 16.8 | 38.1 | 22.2 | 17.5 | 34.9 | 7.1 |
| 1 | 1/2 | 1/2 | -T-FJ16FJ8FJ8 | 49.3 | 44.7 | 44.7 | 31.2 | 22.9 | 22.9 | 38.1 | 22.2 | 22.2 | 34.9 | 10.4 |
| 1 | 1/2 | 1 | -T-FJ16FJ8FJ16 | 49.3 | 44.7 | 49.3 | 31.2 | 22.9 | 31.2 | 38.1 | 22.2 | 38.1 | 34.9 | 10.4 |
| 1 | 5/8 | 3/8 | -T-FJ16FJ10FJ6 | 49.3 | 44.7 | 41.9 | 31.2 | 24.4 | 16.8 | 38.1 | 25.4 | 17.5 | 34.9 | 7.1 |
| 1 | 3/4 | 3/8 | -T-FJ16FJ12FJ6 | 49.3 | 44.7 | 41.9 | 31.2 | 24.4 | 16.8 | 38.1 | 28.6 | 17.5 | 34.9 | 7.1 |
| 1 | 3/4 | 1/2 | -T-FJ16FJ12FJ8 | 49.3 | 44.7 | 44.7 | 31.2 | 24.4 | 22.9 | 38.1 | 28.6 | 22.2 | 34.9 | 10.4 |
| 1 | 3/4 | 5/8 | -T-FJ16FJ12FJ10 | 49.3 | 44.7 | 44.7 | 31.2 | 24.4 | 24.4 | 38.1 | 28.6 | 25.4 | 34.9 | 12.7 |
| 1 | 3/4 | 1 | -T-FJ16FJ12FJ16 | 49.3 | 44.7 | 49.3 | 31.2 | 24.4 | 31.2 | 38.1 | 28.6 | 38.1 | 34.9 | 15.7 |
| 1 | 7/8 | 1/4 | -T-FJ16FJ14FJ4 | 49.3 | 44.7 | 40.4 | 31.2 | 25.9 | 15.2 | 38.1 | 31.8 | 14.3 | 34.9 | 4.8 |
| 1 | 7/8 | 3/8 | -T-FJ16FJ14FJ6 | 49.3 | 44.7 | 41.9 | 31.2 | 25.9 | 16.8 | 38.1 | 31.8 | 17.5 | 34.9 | 7.1 |
| 1 | 7/8 | 1/2 | -T-FJ16FJ14FJ8 | 49.3 | 44.7 | 44.7 | 31.2 | 25.9 | 22.9 | 38.1 | 31.8 | 22.2 | 34.9 | 10.4 |
| 1 | 7/8 | 3/4 | -T-FJ16FJ14FJ12 | 49.3 | 44.7 | 44.7 | 31.2 | 25.9 | 24.4 | 38.1 | 31.8 | 28.6 | 34.9 | 12.7 |
| 1 | 7/8 | 7/8 | -T-FJ16FJ14FJ14 | 49.3 | 44.7 | 44.7 | 31.2 | 25.9 | 25.9 | 38.1 | 31.8 | 31.8 | 34.9 | 18.3 |
| 1 | 1 | 1/4 | -T-FJ16FJ16FJ4 | 49.3 | 49.3 | 40.4 | 31.2 | 31.2 | 15.2 | 38.1 | 38.1 | 14.3 | 34.9 | 4.8 |
| 1 | 1 | 3/8 | -T-FJ16FJ16FJ6 | 49.3 | 49.3 | 41.9 | 31.2 | 31.2 | 16.8 | 38.1 | 38.1 | 17.5 | 34.9 | 7.1 |
| 1 | 1 | 1/2 | -T-FJ16FJ16FJ8 | 49.3 | 49.3 | 44.7 | 31.2 | 31.2 | 22.9 | 38.1 | 38.1 | 22.2 | 34.9 | 10.4 |
| 1 | 1 | 5/8 | -T-FJ16FJ16FJ10 | 49.3 | 49.3 | 44.7 | 31.2 | 31.2 | 24.4 | 38.1 | 38.1 | 25.4 | 34.9 | 12.7 |
| 1 | 1 | 3/4 | -T-FJ16FJ16FJ12 | 49.3 | 49.3 | 44.7 | 31.2 | 31.2 | 24.4 | 38.1 | 38.1 | 28.6 | 34.9 | 15.7 |
| 1 | 1 | 7/8 | -T-FJ16FJ16FJ14 | 49.3 | 49.3 | 44.7 | 31.2 | 31.2 | 25.9 | 38.1 | 38.1 | 31.8 | 34.9 | 18.3 |
| 1 1/4 | 1 1/4 | 1 | -T-FJ20FJ20FJ16 | 67.8 | 67.8 | 55.1 | 41.2 | 41.2 | 31.3 | 47.6 | 47.6 | 38.1 | 42.9 | 22.4 |
| 1 1/2 | 1 1/2 | 1 | -T-FJ24FJ24FJ16 | 78.7 | 78.7 | 60.0 | 50.0 | 50.0 | 31.3 | 57.2 | 57.2 | 38.1 | 50.8 | 22.4 |

## Ferrule reducing tee




Metric Tube

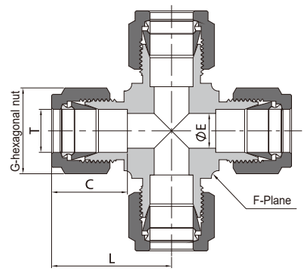
| T1-Tube outer diameter (mm) | T2-Tube outer diameter (mm) | T3-Tube outer diameter (mm) | Basic order number | Size,mm | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | L1 | L2 | L3 | C1 | C2 | C3 | G1 | G2 | G3 | F | E |
| 3 | 3 | 6 | -T-MJ3MJ3MJ6 | 24.7 | 24.7 | 27.0 | 12.9 | 12.9 | 15.3 | 12 | 12 | 14 | 12.7 | 2.4 |
| 6 | 6 | 3 | -T-MJ6MJ6MJ3 | 27.0 | 27.0 | 25.4 | 15.3 | 15.3 | 12.9 | 14 | 14 | 12 | 12.7 | 2.4 |
| 6 | 6 | 8 | -T-MJ6MJ6MJ8 | 28.0 | 28.0 | 28.8 | 15.3 | 15.3 | 16.2 | 14 | 14 | 16 | 14.3 | 4.8 |
| 8 | 8 | 6 | -T-MJ8MJ8MJ6 | 30.0 | 30.0 | 29.0 | 16.2 | 16.2 | 15.3 | 16 | 16 | 14 | 15.9 | 4.8 |
| 8 | 8 | 12 | -T-MJ8MJ8MJ12 | 35.2 | 35.2 | 36.0 | 16.2 | 16.2 | 22.8 | 16 | 16 | 22 | 20.6 | 6.4 |
| 10 | 10 | 6 | -T-MJ10MJ10MJ6 | 31.5 | 31.5 | 29.9 | 17.2 | 17.2 | 15.3 | 19 | 19 | 14 | 17.5 | 4.8 |
| 10 | 10 | 8 | -T-MJ10MJ10MJ8 | 31.5 | 31.5 | 30.7 | 17.2 | 17.2 | 16.2 | 19 | 19 | 16 | 17.5 | 6.4 |
| 12 | 12 | 6 | -T-MJ12MJ12MJ6 | 36.0 | 36.0 | 31.8 | 22.8 | 22.8 | 15.3 | 22 | 22 | 14 | 20.6 | 4.8 |
| 12 | 12 | 8 | -T-MJ12MJ12MJ8 | 36.0 | 36.0 | 35.2 | 22.8 | 22.8 | 16.2 | 22 | 22 | 16 | 20.6 | 6.4 |
| 12 | 12 | 14 | -T-MJ12MJ12MJ14 | 38.0 | 38.0 | 38.0 | 22.8 | 22.8 | 24.4 | 22 | 22 | 25 | 25.4 | 9.5 |
| 12 | 12 | 18 | -T-MJ12MJ12MJ18 | 39.8 | 39.8 | 39.8 | 22.8 | 22.8 | 24.4 | 22 | 22 | 30 | 27.0 | 9.5 |
| 14 | 14 | 8 | -T-MJ14MJ14MJ8 | 38.0 | 38.0 | 37.2 | 24.4 | 24.4 | 16.2 | 25 | 25 | 16 | 25.4 | 6.4 |
| 14 | 14 | 10 | -T-MJ14MJ14MJ10 | 38.0 | 38.0 | 38.0 | 24.4 | 24.4 | 17.2 | 25 | 25 | 19 | 25.4 | 7.9 |
| 15 | 15 | 12 | -T-MJ15MJ15MJ12 | 38.8 | 38.8 | 38.8 | 24.4 | 24.4 | 22.8 | 25 | 25 | 22 | 25.4 | 9.5 |
| 16 | 8 | 16 | -T-MJ16MJ8MJ16 | 38.8 | 37.2 | 38.8 | 24.4 | 16.2 | 24.4 | 25 | 16 | 25 | 25.4 | 6.4 |
| 16 | 16 | 12 | -T-MJ16MJ16MJ12 | 38.8 | 38.8 | 38.9 | 24.4 | 24.4 | 22.8 | 25 | 25 | 22 | 25.4 | 9.5 |
| 18 | 18 | 8 | -T-MJ18MJ18MJ8 | 39.8 | 39.8 | 39.0 | 24.4 | 24.4 | 16.2 | 30 | 30 | 16 | 27.0 | 6.4 |
| 18 | 18 | 10 | -T-MJ18MJ18MJ10 | 39.8 | 39.8 | 39.8 | 24.4 | 24.4 | 17.2 | 30 | 30 | 19 | 27.0 | 7.9 |
| 18 | 18 | 12 | -T-MJ18MJ18MJ12 | 39.8 | 39.8 | 39.8 | 24.4 | 24.4 | 22.8 | 30 | 30 | 22 | 27.0 | 9.5 |
| 18 | 18 | 14 | -T-MJ18MJ18MJ14 | 39.8 | 39.8 | 39.8 | 24.4 | 24.4 | 24.4 | 30 | 30 | 25 | 27.0 | 11.1 |
| 20 | 20 | 14 | -T-MJ20MJ20MJ14 | 44.6 | 44.6 | 44.6 | 26.0 | 26.0 | 24.4 | 32 | 32 | 25 | 34.9 | 11.1 |
| 22 | 22 | 12 | -T-MJ22MJ22MJ12 | 44.6 | 44.6 | 44.6 | 26.0 | 26.0 | 22.8 | 32 | 32 | 22 | 34.9 | 9.5 |
| 25 | 25 | 12 | -T-MJ25MJ25MJ12 | 49.1 | 49.1 | 44.7 | 31.3 | 31.3 | 22.8 | 38 | 38 | 22 | 34.9 | 9.5 |







## Ferrule Cross



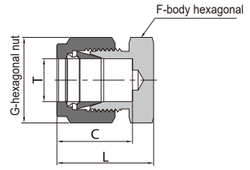

Imperial Tube

| T-Tube outer diameter (in.) | Basic order number | Size,mm | | | | |
|---|---|---|---|---|---|---|
| | | L | C | G | F | E |
| 1/8 | -C-FJ2 | 22.4 | 12.7 | 11.1 | 9.5 | 2.3 |
| 3/16 | -C-FJ3 | 24.4 | 13.7 | 12.7 | 11.1 | 3.0 |
| 1/4 | -C-FJ4 | 26.9 | 15.2 | 14.3 | 12.7 | 4.8 |
| 5/16 | -C-FJ5 | 29.7 | 16.2 | 15.9 | 15.9 | 6.4 |
| 3/8 | -C-FJ6 | 30.5 | 16.8 | 17.5 | 15.9 | 7.1 |
| 1/2 | -C-FJ8 | 36.1 | 22.9 | 22.2 | 20.6 | 10.4 |
| 5/8 | -C-FJ10 | 36.3 | 24.4 | 25.4 | 27.0 | 12.7 |
| 3/4 | -C-FJ12 | 39.9 | 24.4 | 28.6 | 27.0 | 15.7 |
| 7/8 | -C-FJ14 | 44.7 | 25.9 | 31.8 | 34.9 | 18.3 |
| 1 | -C-FJ16 | 49.0 | 31.2 | 38.1 | 34.9 | 22.4 |

Metric Tube

| T-Tube outer diameter (mm) | Basic order number | Size,mm | | | | |
|---|---|---|---|---|---|---|
| | | L | C | G | F | E |
| 3 | -C-MJ3 | 22.3 | 12.9 | 12 | 9.5 | 2.4 |
| 4 | -C-MJ4 | 25.4 | 13.7 | 12 | 12.7 | 2.4 |
| 6 | -C-MJ6 | 27.0 | 15.3 | 14 | 12.7 | 4.8 |
| 8 | -C-MJ8 | 29.9 | 16.2 | 16 | 15.9 | 6.4 |
| 10 | -C-MJ10 | 33.5 | 17.2 | 19 | 20.6 | 7.9 |
| 12 | -C-MJ12 | 36.0 | 22.8 | 22 | 20.6 | 9.5 |
| 16 | -C-MJ16 | 37.0 | 24.4 | 25 | 23.8 | 12.7 |
| 18 | -C-MJ18 | 38.3 | 24.4 | 30 | 27.0 | 15.1 |
| 20 | -C-MJ20 | 44.6 | 26.0 | 32 | 34.9 | 15.9 |
| 22 | -C-MJ22 | 44.7 | 26.0 | 32 | 34.9 | 18.3 |
| 25 | -C-MJ25 | 49.2 | 31.3 | 38 | 34.9 | 21.8 |

## Tube Caps



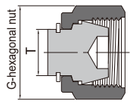

Imperial Tube

| T-Tube outer diameter (in.) | Basic order number | Size,mm | | | |
|---|---|---|---|---|---|
| | | L | C | G | F |
| 1/16 | -TC-FJ1 | 15.0 | 8.6 | 7.9 | 7.9 |
| 1/8 | -TC-FJ2 | 20.1 | 12.7 | 11.1 | 11.1 |
| 3/16 | -TC-FJ3 | 21.3 | 13.7 | 12.7 | 11.1 |
| 1/4 | -TC-FJ4 | 23.4 | 15.2 | 14.3 | 12.7 |
| 5/16 | -TC-FJ5 | 24.4 | 16.3 | 15.9 | 14.3 |
| 3/8 | -TC-FJ6 | 25.7 | 16.8 | 17.5 | 15.9 |
| 1/2 | -TC-FJ8 | 29.2 | 22.9 | 22.2 | 20.6 |
| 5/8 | -TC-FJ10 | 30.0 | 24.4 | 25.4 | 23.8 |
| 3/4 | -TC-FJ12 | 31.5 | 24.4 | 28.6 | 27.0 |
| 7/8 | -TC-FJ14 | 34.0 | 25.9 | 31.8 | 30.2 |
| 1 | -TC-FJ16 | 38.4 | 31.2 | 38.1 | 34.9 |
| 1 1/8 | -TC-FJ18 | 38.4 | 31.2 | 46.0 | 41.3 |
| 1 1/4 | -TC-FJ20 | 53.3 | 41.1 | 47.6 | 44.5 |
| 1 1/2 | -TC-FJ24 | 64.5 | 50.0 | 57.2 | 54.0 |

Metric Tube

| T-Tube outer diameter (mm) | Basic order number | Size,mm | | | |
|---|---|---|---|---|---|
| | | L | C | G | F |
| 2 | -TC-MJ2 | 20.1 | 12.9 | 12 | 12 |
| 3 | -TC-MJ3 | 20.1 | 12.9 | 12 | 12 |
| 4 | -TC-MJ4 | 21.3 | 13.7 | 12 | 12 |
| 6 | -TC-MJ6 | 23.1 | 15.3 | 14 | 14 |
| 8 | -TC-MJ8 | 24.5 | 16.2 | 16 | 15 |
| 10 | -TC-MJ10 | 26.6 | 17.2 | 19 | 18 |
| 12 | -TC-MJ12 | 29.1 | 22.8 | 22 | 22 |
| 14 | -TC-MJ14 | 29.9 | 24.4 | 25 | 24 |
| 15 | -TC-MJ15 | 29.9 | 24.4 | 25 | 24 |
| 16 | -TC-MJ16 | 29.9 | 24.4 | 25 | 24 |
| 18 | -TC-MJ18 | 31.4 | 24.4 | 30 | 27 |
| 20 | -TC-MJ20 | 34.0 | 26.0 | 32 | 30 |
| 22 | -TC-MJ22 | 34.0 | 26.0 | 32 | 30 |
| 25 | -TC-MJ25 | 38.5 | 31.3 | 38 | 35 |
| 28 | -TC-MJ28 | 48.5 | 36.6 | 46 | 41 |
| 30 | -TC-MJ30 | 53.4 | 39.6 | 50 | 46 |
| 32 | -TC-MJ32 | 55.8 | 42.0 | 50 | 46 |
| 38 | -TC-MJ38 | 65.4 | 49.4 | 60 | 55 |

## Ferrule plug



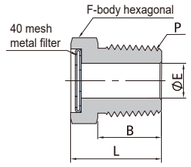

Imperial Tube

| T-Tube outer diameter (in.) | Basic order number | Size,mm G |
|---|---|---|
| 1/16 | -TP-FJ1 | 7.9 |
| 1/8 | -TP-FJ2 | 11.1 |
| 3/16 | -TP-FJ3 | 12.7 |
| 1/4 | -TP-FJ4 | 14.3 |
| 5/16 | -TP-FJ5 | 15.9 |
| 3/8 | -TP-FJ6 | 17.5 |
| 1/2 | -TP-FJ8 | 22.2 |
| 5/8 | -TP-FJ10 | 25.4 |
| 3/4 | -TP-FJ12 | 28.6 |
| 7/8 | -TP-FJ14 | 31.8 |
| 1 | -TP-FJ16 | 38.1 |
| 1 1/4 | -TP-FJ20 | 47.6 |
| 1 1/2 | -TP-FJ24 | 57.2 |

Metric Tube

| T-Tube outer diameter (mm) | Basic order number | Size,mm G |
|---|---|---|
| 2 | -TP-MJ2 | 12 |
| 3 | -TP-MJ3 | 12 |
| 4 | -TP-MJ4 | 12 |
| 6 | -TP-MJ6 | 14 |
| 8 | -TP-MJ8 | 16 |
| 10 | -TP-MJ10 | 19 |
| 12 | -TP-MJ12 | 22 |
| 14 | -TP-MJ14 | 25 |
| 15 | -TP-MJ15 | 25 |
| 16 | -TP-MJ16 | 25 |
| 18 | -TP-MJ18 | 30 |
| 20 | -TP-MJ20 | 32 |
| 22 | -TP-MJ22 | 32 |
| 25 | -TP-MJ25 | 38 |
| 28 | -TP-MJ28 | 46 |
| 30 | -TP-MJ30 | 50 |
| 32 | -TP-MJ32 | 50 |
| 38 | -TP-MJ38 | 60 |

## Emission protector

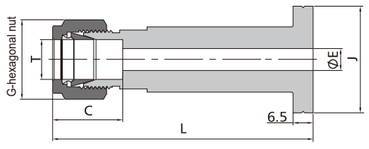



40 mesh 300 series stainless steel filter assembly

| P-NPT Size | Order Number | Size,mm L | F | B | E |
|---|---|---|---|---|---|
| 1/8 | -VP-N2 | 14.2 | 12.7 | 9.7 | 4.8 |
| 1/4 | -VP-N4 | 19.8 | 14.3 | 14.2 | 7.1 |
| 3/8 | -VP-N6 | 20.6 | 17.5 | 14.2 | 10.4 |
| 1/2 | -VP-N8 | 26.2 | 22.2 | 19.1 | 12.7 |
| 3/4 | -VP-N12 | 26.9 | 27.0 | 19.2 | 18.3 |
| 1 | -VP-N16 | 34.8 | 34.9 | 23.9 | 22.4 |

To order brass material, replace SS in the ordering number with B.
Example: B-VP-N2

## Compression fittings




- Standard material is 316 or monel.
- Flange end for NPS 1/2 loose tube flange
- Flange end dimensions meet "ANSI B16.5 Class 2500" specifications.
- Flange seal A means surface roughness is Ra 3.2-6.3 μm,
  Flange seal B means surface roughness is Ra 6.3-12.5μm.

Imperial Tube

| T-Tube outer diameter (in.) | Flange seal | Basic order number | Size,mm L | G | C | E | J |
|---|---|---|---|---|---|---|---|
| 1/4 | A | -LFC-FJ4A | 80.8 | 14.3 | 15.2 | 4.8 | 34.5 |
| 1/4 | B | -LFC-FJ4B | 80.8 | 14.3 | 15.2 | 4.8 | 34.5 |
| 3/8 | A | -LFC-FJ6A | 82.9 | 17.5 | 16.8 | 7.1 | 34.5 |
| 3/8 | B | -LFC-FJ6B | 82.9 | 17.5 | 16.8 | 7.1 | 34.5 |
| 1/2 | A | -LFC-FJ8A | 85.1 | 22.2 | 22.9 | 7.9 | 34.5 |
| 1/2 | B | -LFC-FJ8B | 85.1 | 22.2 | 22.9 | 7.9 | 34.5 |

Metric Tube

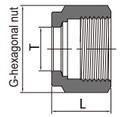
| T-Tube outer diameter (mm) | Flange seal | Basic order number | Size,mm L | G | C | E | J |
|---|---|---|---|---|---|---|---|
| 10 | A | -LFC-MJ10A | 82.6 | 19 | 17.2 | 7.9 | 34.5 |
| 10 | B | -LFC-MJ10B | 82.6 | 19 | 17.2 | 7.9 | 34.5 |







## Ferrule nut



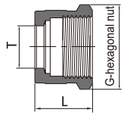

Imperial Tube

| T-Tube outer diameter (in.) | Basic order number | Size,mm L | G |
|---|---|---|---|
| 1/16 | -N-FJ1 | 7.9 | 7.9 |
| 1/8 | -N-FJ2 | 11.9 | 11.1 |
| 3/16 | -N-FJ3 | 11.9 | 12.7 |
| 1/4 | -N-FJ4 | 12.7 | 14.3 |
| 5/16 | -N-FJ5 | 13.5 | 15.9 |
| 3/8 | -N-FJ6 | 14.2 | 17.5 |
| 1/2 | -N-FJ8 | 17.5 | 22.2 |
| 5/8 | -N-FJ10 | 17.5 | 25.4 |
| 3/4 | -N-FJ12 | 17.5 | 28.6 |
| 7/8 | -N-FJ14 | 17.5 | 31.8 |
| 1 | -N-FJ16 | 20.6 | 38.1 |
| 1 1/8 | -N-FJ18 | 30.8 | 46.0 |
| 1 1/4 | -N-FJ20 | 31.8 | 47.6 |
| 1 1/2 | -N-FJ24 | 38.1 | 57.2 |

Metric Tube

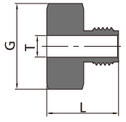
| T-Tube outer diameter (mm) | Basic order number | Size,mm L | G |
|---|---|---|---|
| 2 | -N-MJ2 | 11.9 | 12 |
| 3 | -N-MJ3 | 11.9 | 12 |
| 4 | -N-MJ4 | 11.9 | 12 |
| 6 | -N-MJ6 | 12.7 | 14 |
| 8 | -N-MJ8 | 13.5 | 16 |
| 10 | -N-MJ10 | 15.1 | 19 |
| 12 | -N-MJ12 | 17.4 | 22 |
| 14 | -N-MJ14 | 17.4 | 25 |
| 15 | -N-MJ15 | 17.4 | 25 |
| 16 | -N-MJ16 | 17.4 | 25 |
| 18 | -N-MJ18 | 17.4 | 30 |
| 20 | -N-MJ20 | 17.4 | 32 |
| 22 | -N-MJ22 | 17.4 | 32 |
| 25 | -N-MJ25 | 20.6 | 38 |
| 28 | -N-MJ28 | 30.6 | 46 |
| 30 | -N-MJ30 | 32.7 | 50 |
| 32 | -N-MJ32 | 34.4 | 50 |
| 38 | -N-MJ38 | 40.6 | 60 |

## Knurled nut with ferrule




To order knurled nuts, add K to the ferrule nut ordering number.
Example: B-KN-FJ4

## Ferrule male thread nut




Imperial Tube

| T-Tube outer diameter (in.) | Basic order number | Size,mm L | G |
|---|---|---|---|
| 1/16 | -MN-FJ1 | 9.7 | 6.4 |
| 1/8 | -MN-FJ2 | 13.5 | 9.5 |
| 1/4 | -MN-FJ4 | 15.7 | 12.7 |
| 1/2 | -MN-FJ8 | 22.1 | 23.8 |

Metric Tube

| T-Tube outer diameter (mm) | Basic order number | Size,mm L | G |
|---|---|---|---|
| 3 | -MN-MJ3 | 13.5 | 10 |
| 6 | -MN-MJ6 | 15.7 | 14 |
| 10 | -MN-MJ10 | 22.1 | 22 |
| 12 | -MN-MJ12 | 22.1 | 24 |

## Front card sleeve




Imperial Tube

| T-Tube outer diameter (in.) | Basic order number |
|---|---|
| 1/16 | -FF-FJ1 |
| 1/8 | -FF-FJ2 |
| 3/16 | -FF-FJ3 |
| 1/4 | -FF-FJ4 |
| 5/16 | -FF-FJ5 |
| 3/8 | -FF-FJ6 |
| 1/2 | -FF-FJ8 |
| 5/8 | -FF-FJ10 |
| 3/4 | -FF-FJ12 |
| 7/8 | -FF-FJ14 |
| 1 | -FF-FJ16 |
| 1 1/8 | -FF-FJ18* |
| 1 1/4 | -FF-FJ20* |
| 1 1/2 | -FF-FJ24* |

Metric Tube

| T-Tube outer diameter (mm) | Basic order number |
|---|---|
| 2 | -FF-MJ2 |
| 3 | -FF-MJ3 |
| 4 | -FF-MJ4 |
| 6 | -FF-MJ6 |
| 8 | -FF-MJ8 |
| 10 | -FF-MJ10 |
| 12 | -FF-MJ12 |
| 14 | -FF-MJ14 |
| 15 | -FF-MJ15 |
| 16 | -FF-MJ16 |
| 18 | -FF-MJ18 |
| 20 | -FF-MJ20 |
| 22 | -FF-MJ22 |
| 25 | -FF-MJ25 |
| 28 | -FF-MJ28* |
| 30 | -FF-MJ30* |
| 32 | -FF-MJ32* |
| 38 | -FF-MJ38* |

*Stainless steel front ferrules over 1 in. or 25 mm are coated with PFA.

## Rear card sleeve




Imperial Tube

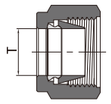
| T-Tube outer diameter (in.) | Basic order number |
|---|---|
| 1/16 | -RF-FJ1 |
| 1/8 | -RF-FJ2 |
| 3/16 | -RF-FJ3 |
| 1/4 | -RF-FJ4 |
| 5/16 | -RF-FJ5 |
| 3/8 | -RF-FJ6 |
| 1/2 | -RF-FJ8 |
| 5/8 | -RF-FJ10 |
| 3/4 | -RF-FJ12 |
| 7/8 | -RF-FJ14 |
| 1 | -RF-FJ16 |
| 1 1/8 | -RF-FJ18* |
| 1 1/4 | -RF-FJ20* |
| 1 1/2 | -RF-FJ24* |

Metric Tube

| T-Tube outer diameter (mm) | Basic order number |
|---|---|
| 2 | -RF-MJ2 |
| 3 | -RF-MJ3 |
| 4 | -RF-MJ4 |
| 6 | -RF-MJ6 |
| 8 | -RF-MJ8 |
| 10 | -RF-MJ10 |
| 12 | -RF-MJ12 |
| 14 | -RF-MJ14 |
| 15 | -RF-MJ15 |
| 16 | -RF-MJ16 |
| 18 | -RF-MJ18 |
| 20 | -RF-MJ20 |
| 22 | -RF-MJ22 |
| 25 | -RF-MJ25 |
| 28 | -RF-MJ28* |
| 30 | -RF-MJ30* |
| 32 | -RF-MJ32* |
| 38 | -RF-MJ38* |

*Stainless steel back ferrules over 1 in. or 25 mm are coated with PFA.

## Nut+ferrule




Imperial Tube

| T-Tube outer diameter (in.) | Basic order number |
|---|---|
| 1/16 | -NFR-FJ1 |
| 1/8 | -NFR-FJ2 |
| 3/16 | -NFR-FJ3 |
| 1/4 | -NFR-FJ4 |
| 5/16 | -NFR-FJ5 |
| 3/8 | -NFR-FJ6 |
| 1/2 | -NFR-FJ8 |
| 5/8 | -NFR-FJ10 |
| 3/4 | -NFR-FJ12 |
| 7/8 | -NFR-FJ14 |
| 1 | -NFR-FJ16 |
| 1 1/8 | -NFR-FJ18 |
| 1 1/4 | -NFR-FJ20 |
| 1 1/2 | -NFR-FJ24 |

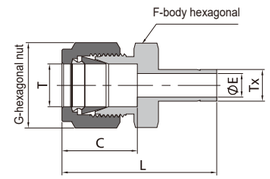
Metric Tube

| T-Tube outer diameter (mm) | Basic order number |
|---|---|
| 2 | -NFR-MJ2 |
| 3 | -NFR-MJ3 |
| 4 | -NFR-MJ4 |
| 6 | -NFR-MJ6 |
| 8 | -NFR-MJ8 |
| 10 | -NFR-MJ10 |
| 12 | -NFR-MJ12 |
| 14 | -NFR-MJ14 |
| 15 | -NFR-MJ15 |
| 16 | -NFR-MJ16 |
| 18 | -NFR-MJ18 |
| 20 | -NFR-MJ20 |
| 22 | -NFR-MJ22 |
| 25 | -NFR-MJ25 |
| 28 | -NFR-MJ28 |
| 30 | -NFR-MJ30 |
| 32 | -NFR-MJ32 |
| 38 | -NFR-MJ38 |



Instrumentation Fittings

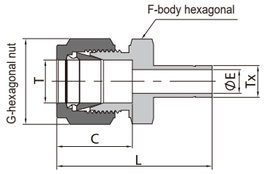
## Ferrule-Tube




Imperial Tube

| T-Tube outer diameter (in.) | Tx-Tube outer diameter (in.) | Basic order number | Size,mm | | | | |
|---|---|---|---|---|---|---|---|
| | | | L | C | G | F | E |
| 1/16 | 1/8 | -S-FJ1FT2 | 29.2 | 8.6 | 7.9 | 7.9 | 1.3 |
| 1/16 | 3/16 | -S-FJ1FT3 | 28.7 | 8.6 | 7.9 | 7.9 | 1.3 |
| 1/16 | 1/4 | -S-FJ1FT4 | 31.5 | 8.6 | 7.9 | 7.9 | 1.3 |
| 1/8 | 1/16 | -S-FJ2FT1 | 29.0 | 12.7 | 11.1 | 11.1 | 0.8 |
| 1/8 | 1/8 | -S-FJ2FT2 | 33.5 | 12.7 | 11.1 | 11.1 | 2.0 |
| 1/8 | 3/16 | -S-FJ2FT3 | 34.3 | 12.7 | 11.1 | 11.1 | 2.3 |
| 1/8 | 1/4 | -S-FJ2FT4 | 36.1 | 12.7 | 11.1 | 11.1 | 2.3 |
| 1/8 | 3/8 | -S-FJ2FT6 | 37.6 | 12.7 | 11.1 | 11.1 | 2.3 |
| 1/8 | 1/2 | -S-FJ2FT8 | 44.2 | 12.7 | 11.1 | 14.3 | 2.3 |
| 3/16 | 1/8 | -S-FJ3FT2 | 34.8 | 13.7 | 12.7 | 11.1 | 2.0 |
| 3/16 | 1/4 | -S-FJ3FT4 | 37.1 | 13.7 | 12.7 | 11.1 | 3.0 |
| 1/4 | 1/8 | -S-FJ4FT2 | 36.8 | 15.2 | 14.3 | 12.7 | 2.0 |
| 1/4 | 3/16 | -S-FJ4FT3 | 37.6 | 15.2 | 14.3 | 12.7 | 3.0 |
| 1/4 | 1/4 | -S-FJ4FT4 | 39.1 | 15.2 | 14.3 | 12.7 | 4.3 |
| 1/4 | 5/16 | -S-FJ4FT5 | 39.9 | 15.2 | 14.3 | 12.7 | 4.8 |
| 1/4 | 3/8 | -S-FJ4FT6 | 40.6 | 15.2 | 14.3 | 12.7 | 4.8 |
| 1/4 | 1/2 | -S-FJ4FT8 | 46.2 | 15.2 | 14.3 | 14.3 | 4.8 |
| 1/4 | 5/8 | -S-FJ4FT10 | 48.0 | 15.2 | 14.3 | 17.5 | 4.8 |
| 1/4 | 3/4 | -S-FJ4FT12 | 47.8 | 15.2 | 14.3 | 20.6 | 4.8 |
| 5/16 | 3/8 | -S-FJ5FT6 | 41.9 | 16.3 | 15.9 | 14.3 | 6.4 |
| 5/16 | 1/2 | -S-FJ5FT8 | 47.5 | 16.3 | 15.9 | 14.3 | 6.4 |
| 3/8 | 1/4 | -S-FJ6FT4 | 41.4 | 16.8 | 17.5 | 15.9 | 4.3 |
| 3/8 | 3/8 | -S-FJ6FT6 | 43.2 | 16.8 | 17.5 | 15.9 | 6.9 |
| 3/8 | 1/2 | -S-FJ6FT8 | 48.5 | 16.8 | 17.5 | 15.9 | 7.1 |
| 3/8 | 5/8 | -S-FJ6FT10 | 50.3 | 16.8 | 17.5 | 17.5 | 7.1 |
| 3/8 | 3/4 | -S-FJ6FT12 | 50.3 | 16.8 | 17.5 | 20.6 | 7.1 |
| 1/2 | 1/4 | -S-FJ8FT4 | 45.0 | 22.9 | 22.2 | 20.6 | 4.3 |
| 1/2 | 3/8 | -S-FJ8FT6 | 46.7 | 22.9 | 22.2 | 20.6 | 6.9 |
| 1/2 | 1/2 | -S-FJ8FT8 | 52.3 | 22.9 | 22.2 | 20.6 | 9.4 |
| 1/2 | 5/8 | -S-FJ8FT10 | 53.8 | 22.9 | 22.2 | 20.6 | 10.4 |
| 1/2 | 3/4 | -S-FJ8FT12 | 53.8 | 22.9 | 22.2 | 20.6 | 10.4 |
| 1/2 | 1 | -S-FJ8FT16 | 60.2 | 22.9 | 22.2 | 27.0 | 10.4 |
| 5/8 | 3/4 | -S-FJ10FT12 | 54.6 | 24.4 | 25.4 | 23.8 | 12.7 |
| 5/8 | 7/8 | -S-FJ10FT14 | 56.1 | 24.4 | 25.4 | 23.8 | 12.7 |
| 5/8 | 1 | -S-FJ10FT16 | 61.0 | 24.4 | 25.4 | 27.0 | 12.7 |
| 3/4 | 3/4 | -S-FJ12FT12 | 54.6 | 24.4 | 28.6 | 27.0 | 9.9 |
| 3/4 | 1 | -S-FJ12FT16 | 62.5 | 24.4 | 28.6 | 27.0 | 15.7 |
| 1 | 1 1/4 | -S-FJ16FT20 | 80.5 | 31.2 | 38.1 | 34.9 | 22.4 |
| 1 | 1 1/2 | -S-FJ16FT24 | 89.2 | 31.2 | 38.1 | 41.3 | 22.4 |
| 1 | 2 | -S-FJ16FT32 | 112.5 | 31.2 | 38.1 | 54.0 | 22.4 |
| 1 1/4 | 1 1/2 | -S-FJ20FT24 | 104.1 | 41.1 | 57.2 | 47.6 | 27.7 |

## Ferrule-Tube




Metric Tube

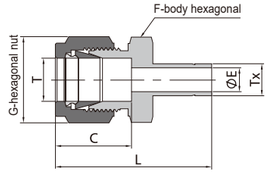
| T-Tube outer diameter (mm) | Tx-Tube outer diameter (mm) | Basic order number | Size,mm L | C | G | F | E |
|---|---|---|---|---|---|---|---|
| 2 | 3 | -S-MJ2MT3 | 33.5 | 12.9 | 12 | 12 | 1.7 |
| 3 | 4 | -S-MJ3MT4 | 35.0 | 12.9 | 12 | 12 | 2.4 |
| 3 | 6 | -S-MJ3MT6 | 36.1 | 12.9 | 12 | 12 | 2.4 |
| 3 | 10 | -S-MJ3MT10 | 38.4 | 12.9 | 12 | 14 | 2.4 |
| 4 | 6 | -S-MJ4MT6 | 37.1 | 13.7 | 12 | 12 | 2.4 |
| 6 | 3 | -S-MJ6MT3 | 36.9 | 15.3 | 14 | 14 | 1.9 |
| 6 | 8 | -S-MJ6MT8 | 39.9 | 15.3 | 14 | 14 | 4.8 |
| 6 | 10 | -S-MJ6MT10 | 40.7 | 15.3 | 14 | 14 | 4.8 |
| 6 | 12 | -S-MJ6MT12 | 46.3 | 15.3 | 14 | 14 | 4.8 |
| 6 | 18 | -S-MJ6MT18 | 49.6 | 15.3 | 14 | 22 | 4.8 |
| 8 | 6 | -S-MJ8MT6 | 40.3 | 16.2 | 16 | 15 | 4.1 |
| 8 | 10 | -S-MJ8MT10 | 42.0 | 16.2 | 16 | 15 | 6.4 |
| 8 | 12 | -S-MJ8MT12 | 47.6 | 16.2 | 16 | 15 | 6.4 |
| 10 | 6 | -S-MJ10MT6 | 42.4 | 17.2 | 19 | 18 | 4.1 |
| 10 | 8 | -S-MJ10MT8 | 43.4 | 17.2 | 19 | 18 | 5.6 |
| 10 | 12 | -S-MJ10MT12 | 49.8 | 17.2 | 19 | 18 | 7.9 |
| 10 | 15 | -S-MJ10MT15 | 51.3 | 17.2 | 19 | 18 | 7.9 |
| 10 | 18 | -S-MJ10MT18 | 51.3 | 17.2 | 19 | 22 | 7.9 |
| 12 | 6 | -S-MJ12MT6 | 44.9 | 22.8 | 22 | 22 | 4.1 |
| 12 | 8 | -S-MJ12MT8 | 45.9 | 22.8 | 22 | 22 | 5.6 |
| 12 | 10 | -S-MJ12MT10 | 46.7 | 22.8 | 22 | 22 | 7.1 |
| 12 | 16 | -S-MJ12MT16 | 53.8 | 22.8 | 22 | 22 | 9.5 |
| 12 | 18 | -S-MJ12MT18 | 53.8 | 22.8 | 22 | 22 | 9.5 |
| 12 | 20 | -S-MJ12MT20 | 56.1 | 22.8 | 22 | 22 | 9.5 |
| 12 | 22 | -S-MJ12MT22 | 56.1 | 22.8 | 22 | 24 | 9.5 |
| 12 | 25 | -S-MJ12MT25 | 62.4 | 22.8 | 22 | 27 | 9.5 |
| 16 | 12 | -S-MJ16MT12 | 53.0 | 24.4 | 25 | 24 | 8.8 |
| 18 | 12 | -S-MJ18MT12 | 54.6 | 24.4 | 30 | 27 | 8.8 |
| 18 | 16 | -S-MJ18MT16 | 56.1 | 24.4 | 30 | 27 | 12.0 |
| 18 | 20 | -S-MJ18MT20 | 57.6 | 24.4 | 30 | 27 | 15.1 |
| 18 | 22 | -S-MJ18MT22 | 57.6 | 24.4 | 30 | 27 | 15.1 |
| 18 | 25 | -S-MJ18MT25 | 62.4 | 24.4 | 30 | 27 | 15.1 |
| 20 | 16 | -S-MJ20MT16 | 57.9 | 26.0 | 32 | 30 | 12.0 |
| 20 | 18 | -S-MJ20MT18 | 57.9 | 26.0 | 32 | 30 | 13.9 |
| 20 | 22 | -S-MJ20MT22 | 59.4 | 26.0 | 32 | 30 | 15.9 |
| 20 | 25 | -S-MJ20MT25 | 64.2 | 26.0 | 32 | 30 | 15.8 |
| 22 | 18 | -S-MJ22MT18 | 57.9 | 26.0 | 32 | 30 | 13.9 |
| 22 | 20 | -S-MJ22MT20 | 59.4 | 26.0 | 32 | 30 | 15.5 |
| 22 | 25 | -S-MJ22MT25 | 64.2 | 26.0 | 32 | 30 | 18.3 |
| 25 | 18 | -S-MJ25MT18 | 63.1 | 31.3 | 38 | 35 | 13.9 |
| 25 | 20 | -S-MJ25MT20 | 64.6 | 31.3 | 38 | 35 | 15.5 |







## Ferrule-Tube



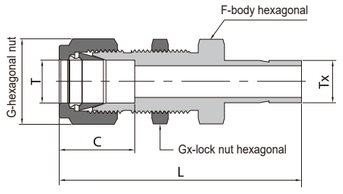

Metric Tube — Imperial Tube

| T-Tube outer diameter (mm) | Tx-Tube outer diameter (in.) | Basic order number | Size,mm L | C | G | F | E |
|---|---|---|---|---|---|---|---|
| 2 | 1/8 | -S-MJ2FT2 | 33.5 | 12.9 | 12 | 12 | 1.7 |
| 3 | 1/8 | -S-MJ3FT2 | 33.5 | 12.9 | 12 | 12 | 2.0 |
| 3 | 1/4 | -S-MJ3FT4 | 36.1 | 12.9 | 12 | 12 | 2.4 |
| 4 | 1/4 | -S-MJ4FT4 | 37.1 | 13.7 | 12 | 12 | 2.4 |
| 6 | 1/8 | -S-MJ6FT2 | 36.9 | 15.3 | 14 | 14 | 2.0 |
| 6 | 1/4 | -S-MJ6FT4 | 39.2 | 15.3 | 14 | 14 | 4.4 |
| 6 | 5/16 | -S-MJ6FT5 | 39.9 | 15.3 | 14 | 14 | 4.8 |
| 6 | 3/8 | -S-MJ6FT6 | 40.7 | 15.3 | 14 | 14 | 4.8 |
| 6 | 1/2 | -S-MJ6FT8 | 46.3 | 15.3 | 14 | 14 | 4.8 |
| 8 | 1/4 | -S-MJ8FT4 | 40.3 | 16.2 | 16 | 15 | 4.4 |
| 8 | 3/8 | -S-MJ8FT6 | 42.0 | 16.2 | 16 | 15 | 6.4 |
| 8 | 1/2 | -S-MJ8FT8 | 47.6 | 16.2 | 16 | 15 | 6.4 |
| 10 | 3/8 | -S-MJ10FT6 | 44.2 | 17.2 | 19 | 18 | 6.8 |
| 10 | 1/2 | -S-MJ10FT8 | 49.8 | 17.2 | 19 | 18 | 7.9 |
| 12 | 1/2 | -S-MJ12FT8 | 52.3 | 22.8 | 22 | 22 | 9.3 |
| 12 | 3/4 | -S-MJ12FT12 | 53.8 | 22.8 | 22 | 22 | 9.5 |
| 18 | 3/4 | -S-MJ18FT12 | 56.1 | 24.4 | 30 | 27 | 14.7 |
| 18 | 1 | -S-MJ18FT16 | 62.4 | 24.4 | 30 | 27 | 15.1 |
| 25 | 1 | -S-MJ25FT16 | 69.5 | 31.3 | 38 | 35 | 20.2 |

Imperial Tube — Metric Tube

| T-Tube outer diameter (in.) | Tx-Tube outer diameter (mm) | Basic order number | Size,mm L | C | G | F | E |
|---|---|---|---|---|---|---|---|
| 1/8 | 6 | -S-FJ2MT6 | 36.1 | 12.7 | 11.1 | 11.1 | 2.3 |

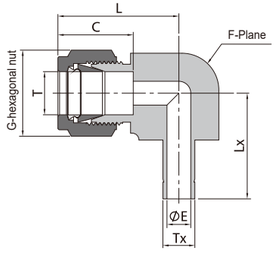
## Ferrule plate-tube




Imperial Tube

| T-Tube outer diameter (in.) | Tx-Tube outer diameter (in.) | Basic order number | Size,mm L | C | G | F | Gx | E |
|---|---|---|---|---|---|---|---|---|
| 1/8 | 1/8 | -S-BFJ2FT2 | 49.5 | 12.7 | 11.1 | 12.7 | 12.7 | 2.0 |
| 1/4 | 1/4 | -S-BFJ4FT4 | 55.9 | 15.2 | 14.3 | 15.9 | 15.9 | 4.3 |
| 3/8 | 3/8 | -S-BFJ6FT6 | 61.2 | 16.8 | 17.5 | 19.1 | 19.1 | 6.9 |
| 1/2 | 1/2 | -S-BFJ8FT8 | 72.9 | 22.9 | 22.2 | 23.8 | 23.8 | 9.4 |
| 5/8 | 5/8 | -S-BFJ10FT10 | 75.2 | 24.4 | 25.4 | 27.0 | 27.0 | 11.9 |
| 3/4 | 3/4 | -S-BFJ12FT12 | 81.5 | 24.4 | 28.6 | 30.2 | 30.2 | 14.7 |
| 1 | 1 | -S-BFJ16FT16 | 100.3 | 31.2 | 38.1 | 41.3 | 41.3 | 20.3 |

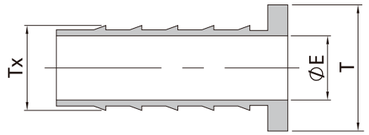
## Ferrule-Tube Elbow




Metric Tube

| T-Tube outer diameter (mm) | Tx-Tube outer diameter (mm) | Basic order number | Size,mm L | C | G | F | E | Lx |
|---|---|---|---|---|---|---|---|---|
| 6 | 6 | -L-MJ6MT6 | 27.0 | 15.3 | 14 | 12.7 | 4.6 | 18.8 |
| 12 | 12 | -L-MJ12MT12 | 38.1 | 22.8 | 22 | 23.8 | 8.8 | 23.4 |

## Hose plug




Imperial Tube

| T-Tube outer diameter (in.) | Tx-Tube inner diameter (in.) | Basic order number | E (mm) |
|---|---|---|---|
| 3/16 | 1/8 | -IN-F3AT2 | 2.3 |
| 1/4 | 1/8 | -IN-F4AT2 | 2.3 |
| 1/4 | 0.17 | -IN-F4AT017 | 2.8 |
| 1/4 | 3/16 | -IN-F4AT3 | 3.5 |
| 5/16 | 1/8 | -IN-F5AT2 | 2.3 |
| 5/16 | 3/16 | -IN-F5AT3 | 3.0 |
| 5/16 | 1/4 | -IN-F5AT4 | 4.8 |
| 3/8 | 3/16 | -IN-F6AT3 | 3.0 |
| 3/8 | 1/4 | -IN-F6AT4 | 4.8 |
| 1/2 | 1/4 | -IN-F8AT4 | 4.8 |
| 1/2 | 3/8 | -IN-F8AT6 | 7.9 |
| 5/8 | 3/8 | -IN-F10AT6 | 7.9 |
| 5/8 | 1/2 | -IN-F10AT8 | 11.1 |
| 3/4 | 1/2 | -IN-F12AT8 | 11.1 |
| 3/4 | 5/8 | -IN-F12AT10 | 14.2 |
| 1 | 3/4 | -IN-F16AT12 | 17.5 |

Metric Tube

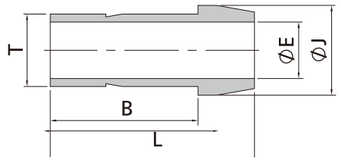
| T-Tube outer diameter (mm) | Tx-Tube inner diameter (mm) | Basic order number | E (mm) |
|---|---|---|---|
| 6 | 4 | -IN-M6NT4 | 2.8 |
| 8 | 6 | -IN-M8NT6 | 4.4 |
| 10 | 8 | -IN-M10NT8 | 6.4 |
| 12 | 8 | -IN-M12NT8 | 6.4 |
| 12 | 10 | -IN-M12NT10 | 8.3 |



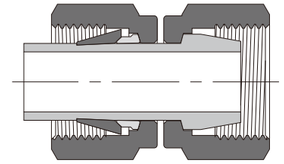




## Port Connectors




1" /25 mm and below



1 1/4" /28 mm and above

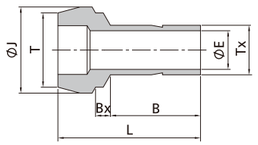
Imperial Tube

| T-Tube outer diameter (in.) | Basic order number | Size, in.(mm) | | | |
|---|---|---|---|---|---|
| | | L | B | E | J |
| 1/16 | -P-FJ1 | 0.54(13.7) | 0.42(10.7) | 0.03(0.8) | 0.13(3.3) |
| 1/8 | -P-FJ2 | 0.88(22.4) | 0.62(15.7) | 0.08(2.0) | 0.24(6.1) |
| 1/4 | -P-FJ4 | 0.97(24.6) | 0.74(18.8) | 0.17(4.3) | 0.37(9.4) |
| 5/16 | -P-FJ5 | 1.02(25.9) | 0.79(20.1) | 0.22(5.6) | 0.43(10.9) |
| 3/8 | -P-FJ6 | 1.03(26.2) | 0.80(20.3) | 0.27(6.9) | 0.50(12.7) |
| 1/2 | -P-FJ8 | 1.41(35.8) | 1.02(25.9) | 0.37(9.4) | 0.62(15.7) |
| 5/8 | -P-FJ10 | 1.64(41.7) | 1.11(28.1) | 0.47(11.9) | 0.81(20.5) |
| 3/4 | -P-FJ12 | 1.65(41.9) | 1.09(27.7) | 0.58(14.7) | 0.87(22.1) |
| 1 | -P-FJ16 | 1.89(48.0) | 1.36(34.5) | 0.80(20.3) | 1.12(28.4) |
| 1 1/4 | -P-FJ20 | 2.72(69.1) | 1.99(50.6) | 1.02(25.9) | 1.47(37.4) |
| 1 1/2 | -P-FJ24 | 3.48(88.4) | 2.5(63.6) | 1.24(31.5) | 1.85(47.0) |

Metric Tube

| T-Tube outer diameter (mm) | Basic order number | Size, mm(in.) | | | |
|---|---|---|---|---|---|
| | | L | B | E | J |
| 3 | -P-MJ3 | 22.2(0.87) | 15.7(0.62) | 1.9(0.07) | 6.0(0.24) |
| 6 | -P-MJ6 | 24.6(0.97) | 18.7(0.74) | 4.1(0.16) | 9.0(0.35) |
| 8 | -P-MJ8 | 25.9(1.02) | 20.0(0.79) | 5.6(0.22) | 11.0(0.43) |
| 10 | -P-MJ10 | 26.1(1.03) | 20.2(0.80) | 7.1(0.28) | 13.1(0.52) |
| 12 | -P-MJ12 | 35.8(1.41) | 26.0(1.02) | 8.8(0.35) | 15.0(0.59) |
| 15 | -P-MJ15 | 37.8(1.49) | 27.6(1.09) | 11.2(0.44) | 19.6(0.77) |
| 16 | -P-MJ16 | 37.8(1.49) | 27.6(1.09) | 12.0(0.47) | 20.6(0.81) |
| 18 | -P-MJ18 | 37.8(1.49) | 27.7(1.09) | 13.9(0.55) | 21.0(0.83) |
| 20 | -P-MJ20 | 39.4(1.55) | 29.2(1.15) | 15.5(0.61) | 24.6(0.97) |
| 25 | -P-MJ25 | 49.3(1.94) | 34.5(1.36) | 19.9(0.78) | 31.2(1.23) |
| 28 | -P-MJ28 | 63.5(2.5) | 48.3(1.90) | 22.5(0.89) | 34.4(1.35) |
| 30 | -P-MJ30 | 67.6(2.66) | 52.2(2.06) | 24.3(0.96) | 37.4(1.47) |
| 32 | -P-MJ32 | 69.7(2.74) | 52.4(2.06) | 26.5(1.04) | 39.4(1.55) |
| 38 | -P-MJ38 | 81.9(3.22) | 61.4(2.42) | 31.6(1.24) | 45.8(1.80) |

## Reducing port connector




Imperial Tube

| T-Tube outer diameter (in.) | Tx-Tube outer diameter (in.) | Basic order number | Size, in.(mm) | | | | |
|---|---|---|---|---|---|---|---|
| | | | L | B | E | Bx | J |
| 1/8 | 1/16 | -P-FJ2FJ1 | 0.68(17.3) | 0.34(8.6) | 0.03(0.8) | 0.08(2.0) | 0.24(6.1) |
| 1/4 | 1/16 | -P-FJ4FJ1 | 0.71(18.0) | 0.34(8.6) | 0.03(0.8) | 0.14(3.6) | 0.37(9.4) |
| 1/4 | 1/8 | -P-FJ4FJ2 | 0.89(22.6) | 0.53(13.5) | 0.08(2.0) | 0.13(3.3) | 0.37(9.4) |
| 3/8 | 1/8 | -P-FJ6FJ2 | 0.91(23.1) | 0.53(13.5) | 0.08(2.0) | 0.15(3.8) | 0.50(12.7) |
| 3/8 | 1/4 | -P-FJ6FJ4 | 0.98(24.9) | 0.62(15.7) | 0.17(4.3) | 0.13(3.3) | 0.50(12.7) |
| 1/2 | 1/4 | -P-FJ8FJ4 | 1.15(29.2) | 0.62(15.7) | 0.17(4.3) | 0.15(3.8) | 0.62(15.7) |
| 1/2 | 3/8 | -P-FJ8FJ6 | 1.20(30.5) | 0.69(17.5) | 0.27(6.9) | 0.13(3.3) | 0.62(15.7) |
| 3/4 | 1/2 | -P-FJ12FJ8 | 1.49(37.8) | 0.91(23.1) | 0.37(9.4) | 0.15(3.8) | 0.87(22.1) |
| 1 | 1/2 | -P-FJ16FJ8 | 1.69(42.9) | 0.96(24.4) | 0.37(9.4) | 0.19(4.8) | 1.12(28.5) |
| 1 | 3/4 | -P-FJ16FJ12 | 1.72(43.7) | 1.02(25.9) | 0.58(14.7) | 0.16(4.1) | 1.12(28.5) |

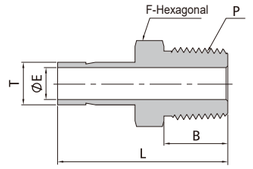
Metric Tube

| T-Tube outer diameter (mm) | Tx-Tube outer diameter (mm) | Basic order number | Size, mm(in.) | | | | |
|---|---|---|---|---|---|---|---|
| | | | L | B | E | Bx | J |
| 6 | 3 | -P-MJ6MJ3 | 22.6(0.89) | 13.5(0.53) | 1.9(0.07) | 3.2(0.13) | 9.0(0.35) |
| 8 | 6 | -P-MJ8MJ6 | 24.7(0.97) | 15.7(0.62) | 4.1(0.16) | 3.1(0.12) | 11.0(0.43) |
| 10 | 6 | -P-MJ10MJ6 | 25.0(0.98) | 15.7(0.62) | 4.1(0.16) | 3.4(0.13) | 13.1(0.52) |
| 10 | 8 | -P-MJ10MJ8 | 26.3(1.04) | 17.0(0.67) | 5.6(0.22) | 3.1(0.12) | 13.1(0.52) |
| 12 | 6 | -P-MJ12MJ6 | 29.6(1.17) | 15.7(0.62) | 4.1(0.16) | 3.6(0.14) | 15.0(0.59) |
| 12 | 8 | -P-MJ12MJ8 | 29.8(1.17) | 16.8(0.66) | 5.6(0.22) | 3.4(0.13) | 15.0(0.59) |
| 12 | 10 | -P-MJ12MJ10 | 30.4(1.20) | 17.5(0.69) | 7.1(0.28) | 3.1(0.12) | 15.0(0.59) |
| 16 | 12 | -P-MJ16MJ12 | 36.2(1.43) | 23.1(0.91) | 8.8(0.35) | 3.4(0.13) | 19.0(0.75) |
| 28 | 25 | -P-MJ28MJ25 | 56.5(2.22) | 33.0(1.30) | 19.8(0.78) | 8.2(0.32) | 34.3(1.35) |
| 32 | 25 | -P-MJ32MJ25 | 60.3(2.37) | 33.0(1.30) | 19.8(0.78) | 9.9(0.39) | 39.5(1.56) |
| 38 | 25 | -P-MJ38MJ25 | 65.8(2.59) | 33.0(1.30) | 19.8(0.78) | 12.3(0.48) | 47.1(1.85) |

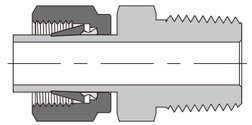


Instrumentation Fittings

## Tubing-male thread




1" and below



1 1/4" and above

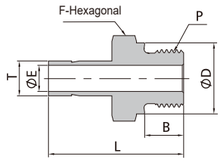
Imperial Tube — NPT Thread

| T-Tube outer diameter (in.) | P-NPT size | Basic order number | Size, (mm) | | | |
|---|---|---|---|---|---|---|
| | | | L | B | E | F |
| 1/16 | 1/8 | -S-FT1N2 | 25.4 | 9.7 | 0.8 | 11.1 |
| 1/8 | 1/8 | -S-FT2N2 | 29.5 | 9.7 | 2.0 | 11.1 |
| 1/8 | 1/4 | -S-FT2N4 | 34.8 | 14.2 | 2.0 | 14.3 |
| 3/16 | 1/8 | -S-FT3N2 | 30.2 | 9.7 | 3.0 | 11.1 |
| 3/16 | 1/4 | -S-FT3N4 | 35.6 | 14.2 | 3.0 | 14.3 |
| 1/4 | 1/8 | -S-FT4N2 | 31.8 | 9.7 | 4.3 | 11.1 |
| 1/4 | 1/4 | -S-FT4N4 | 37.1 | 14.2 | 4.3 | 14.3 |
| 1/4 | 3/8 | -S-FT4N6 | 37.8 | 14.2 | 4.3 | 17.5 |
| 1/4 | 1/2 | -S-FT4N8 | 43.4 | 19.1 | 4.3 | 22.2 |
| 5/16 | 1/8 | -S-FT5N2 | 32.8 | 9.7 | 4.8 | 11.1 |
| 5/16 | 1/4 | -S-FT5N4 | 38.1 | 14.2 | 5.6 | 14.3 |
| 5/16 | 3/8 | -S-FT5N6 | 38.9 | 14.2 | 5.6 | 17.5 |
| 5/16 | 1/2 | -S-FT5N8 | 44.2 | 19.1 | 5.6 | 22.2 |
| 3/8 | 1/8 | -S-FT6N2 | 33.5 | 9.7 | 4.8 | 11.1 |
| 3/8 | 1/4 | -S-FT6N4 | 38.9 | 14.2 | 6.9 | 14.3 |
| 3/8 | 3/8 | -S-FT6N6 | 39.6 | 14.2 | 6.9 | 17.5 |
| 3/8 | 1/2 | -S-FT6N8 | 45.2 | 19.1 | 6.9 | 22.2 |
| 1/2 | 1/4 | -S-FT8N4 | 44.5 | 14.2 | 7.1 | 14.3 |
| 1/2 | 3/8 | -S-FT8N6 | 45.2 | 14.2 | 9.4 | 17.5 |
| 1/2 | 1/2 | -S-FT8N8 | 50.8 | 19.1 | 9.4 | 22.2 |
| 5/8 | 1/2 | -S-FT10N8 | 52.3 | 19.1 | 11.9 | 22.2 |
| 3/4 | 1/2 | -S-FT12N8 | 52.3 | 19.1 | 11.9 | 22.2 |
| 3/4 | 3/4 | -S-FT12N12 | 52.3 | 19.1 | 14.7 | 27.0 |
| 3/4 | 1 | -S-FT12N16 | 61.2 | 23.9 | 20.7 | 34.9 |
| 1 | 3/4 | -S-FT16N12 | 58.7 | 19.1 | 15.7 | 27.0 |
| 1 | 1 | -S-FT16N16 | 66.0 | 23.9 | 20.3 | 34.9 |
| 1 1/4 | 1 1/4 | -S-FT20N20 | 80.3 | 23.9 | 25.9 | 44.5 |
| 1 1/2 | 1 1/2 | -S-FT24N24 | 94.5 | 26.2 | 31.8 | 54.0 |

Imperial Tube — ISO tapered thread (RT)

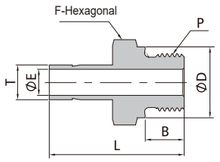
| T-Tube outer diameter (in.) | P-RT size | Basic order number | Size, (mm) | | | |
|---|---|---|---|---|---|---|
| | | | L | B | E | F |
| 1/8 | 1/8 | -S-FT2RT2 | 29.5 | 9.7 | 2.0 | 11.1 |
| 1/8 | 1/4 | -S-FT2RT4 | 34.8 | 14.2 | 2.0 | 14.3 |
| 1/4 | 1/8 | -S-FT4RT2 | 31.8 | 9.7 | 4.3 | 11.1 |
| 1/4 | 1/4 | -S-FT4RT4 | 37.1 | 14.2 | 4.3 | 14.3 |
| 1/4 | 3/8 | -S-FT4RT6 | 37.8 | 14.2 | 4.0 | 17.5 |
| 1/4 | 1/2 | -S-FT4RT8 | 43.4 | 19.1 | 4.0 | 22.2 |
| 5/16 | 1/8 | -S-FT5RT2 | 32.8 | 9.7 | 5.6 | 11.1 |
| 5/16 | 1/4 | -S-FT5RT4 | 38.1 | 14.2 | 5.6 | 14.3 |
| 3/8 | 1/4 | -S-FT6RT4 | 38.9 | 14.2 | 6.9 | 14.3 |
| 3/8 | 3/8 | -S-FT6RT6 | 39.6 | 14.2 | 6.9 | 17.5 |
| 3/8 | 1/2 | -S-FT6RT8 | 45.2 | 19.1 | 6.9 | 22.2 |
| 1/2 | 1/4 | -S-FT8RT4 | 44.5 | 14.2 | 7.1 | 14.3 |
| 1/2 | 3/8 | -S-FT8RT6 | 45.2 | 14.2 | 9.4 | 17.5 |
| 1/2 | 1/2 | -S-FT8RT8 | 50.8 | 19.1 | 9.4 | 22.2 |
| 5/8 | 3/8 | -S-FT10RT6 | 48.5 | 14.2 | 9.5 | 17.5 |
| 5/8 | 1/2 | -S-FT10RT8 | 52.3 | 19.1 | 11.9 | 22.2 |
| 3/4 | 3/4 | -S-FT12RT12 | 52.3 | 19.1 | 14.7 | 27.0 |
| 1 | 1 | -S-FT16RT16 | 66.0 | 23.9 | 20.3 | 34.9 |

## Tubing-male thread



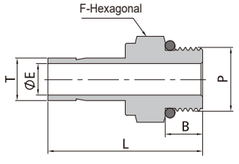

Imperial Tube — ISO Parallel Thread (RS)

| T-Tube outer diameter (in.) | P-RS size | Basic order number | Size, (mm) | | | | |
|---|---|---|---|---|---|---|---|
| | | | L | B | E | F | D |
| 1/8 | 1/8 | -S-FT2BS2 | 31.0 | 7.1 | 2.0 | 14.3 | 13.7 |
| 1/8 | 1/4 | -S-FT2BS4 | 35.8 | 11.2 | 2.0 | 19.1 | 17.8 |
| 1/4 | 1/8 | -S-FT4BS2 | 33.3 | 7.1 | 4.1 | 14.3 | 13.7 |
| 1/4 | 1/4 | -S-FT4BS4 | 38.1 | 11.2 | 4.3 | 19.1 | 17.8 |
| 3/8 | 1/8 | -S-FT6BS2 | 34.0 | 7.1 | 1.3 | 19.1 | 13.7 |
| 3/8 | 1/4 | -S-FT6BS4 | 39.9 | 11.2 | 5.8 | 19.1 | 17.8 |
| 3/8 | 3/8 | -S-FT6BS6 | 40.6 | 11.2 | 6.9 | 22.2 | 21.6 |
| 3/8 | 1/2 | -S-FT6BS8 | 42.9 | 14.2 | 7.1 | 27.0 | 25.9 |
| 1/2 | 1/4 | -S-FT8BS4 | 45.5 | 11.2 | 5.8 | 19.1 | 17.8 |
| 1/2 | 3/8 | -S-FT8BS6 | 46.2 | 11.2 | 7.9 | 22.2 | 21.6 |
| 1/2 | 1/2 | -S-FT8BS8 | 49.2 | 14.2 | 9.4 | 27.0 | 25.9 |
| 5/8 | 1/2 | -S-FT10BS8 | 50.0 | 14.2 | 11.9 | 27.0 | 25.9 |
| 3/4 | 3/4 | -S-FT12BS12 | 54.9 | 16.0 | 14.7 | 33.3 | 32.0 |
| 1 | 1 | -S-FT16BS16 | 64.5 | 18.3 | 20.3 | 41.3 | 38.9 |

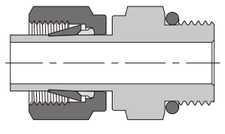



Imperial Tube — ISO Parallel Thread (RP)

| T-Tube outer diameter (in.) | P-RP size | Basic order number | Size, (mm) | | | | |
|---|---|---|---|---|---|---|---|
| | | | L | B | E | F | D |
| 1/8 | 1/8 | -S-FT2BS2 | 27.7 | 7.1 | 1.3 | 14.3 | 13.7 |
| 1/8 | 1/4 | -S-FT2BS4 | 33.3 | 11.2 | 1.3 | 19.1 | 17.8 |
| 1/4 | 1/8 | -S-FT4BS2 | 30.2 | 7.1 | 4.1 | 14.3 | 13.7 |
| 1/4 | 1/4 | -S-FT4BS4 | 38.1 | 11.2 | 4.6 | 19.1 | 17.8 |
| 3/8 | 1/8 | -S-FT6BS2 | 34.0 | 7.1 | 1.3 | 19.1 | 13.7 |
| 3/8 | 1/4 | -S-FT6BS4 | 37.3 | 11.2 | 6.4 | 19.1 | 17.8 |
| 3/8 | 3/8 | -S-FT6BS6 | 38.1 | 11.2 | 7.1 | 22.2 | 21.6 |
| 3/8 | 1/2 | -S-FT6BS8 | 42.9 | 14.2 | 7.1 | 27.0 | 25.9 |
| 1/2 | 1/4 | -S-FT8BS4 | 42.9 | 11.2 | 6.4 | 19.1 | 17.8 |
| 1/2 | 3/8 | -S-FT8BS6 | 43.7 | 11.2 | 7.9 | 22.2 | 21.6 |
| 1/2 | 1/2 | -S-FT8BS8 | 49.3 | 14.2 | 9.9 | 27.0 | 25.9 |
| 5/8 | 1/2 | -S-FT10BS8 | 50.0 | 14.2 | 11.9 | 27.0 | 25.9 |
| 3/4 | 3/4 | -S-FT12BS12 | 53.1 | 16.0 | 14.7 | 33.5 | 32.0 |
| 1 | 1 | -S-FT16BS16 | 63.3 | 18.3 | 20.3 | 41.3 | 38.9 |




1" and below



1 1/4" and above

Converts to SAE J1926-1, ISO 11926-1, and MS 16142 straight thread bosses.

Imperial Tube — SAE/MS straight thread

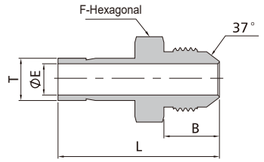
| T-Tube outer diameter (in.) | P-SAE/MS thread size | Basic order number | Size, (mm) | | | |
|---|---|---|---|---|---|---|
| | | | L | B | E | F |
| 1/8 | 5/16-24 | -S-FT2SOT5 | 30.5 | 7.6 | 2.0 | 11.1 |
| 1/4 | 7/16-20 | -S-FT4SOT7 | 35.3 | 9.1 | 4.3 | 14.3 |
| 3/8 | 7/16-20 | -S-FT6SOT7 | 37.1 | 9.1 | 5.1 | 14.3 |
| 3/8 | 9/16-18 | -S-FT6SOT9 | 38.6 | 9.9 | 6.9 | 17.5 |
| 3/8 | 3/4-16 | -S-FT6SOT12 | 40.6 | 11.2 | 6.9 | 22.2 |
| 1/2 | 9/16-18 | -S-FT8SOT9 | 44.2 | 9.9 | 7.1 | 17.5 |
| 1/2 | 3/4-16 | -S-FT8SOT12 | 46.2 | 11.2 | 9.4 | 22.2 |
| 5/8 | 7/8-14 | -S-FT10SOT14 | 49.3 | 12.7 | 11.9 | 25.4 |
| 3/4 | 1 1/16-12 | -S-FT12SOT17 | 53.3 | 15.0 | 14.7 | 31.8 |
| 1 | 1 5/16-12 | -S-FT16SOT21 | 61.2 | 15.0 | 20.3 | 38.1 |
| 1 1/4 | 1 5/8-12 | -S-FT20SOT26 | 71.4 | 15.0 | 25.9 | 47.6 |
| 1 ½ | 1 7/8-12 | -S-FT24SOT30 | 83.3 | 15.0 | 31.8 | 54.0 |





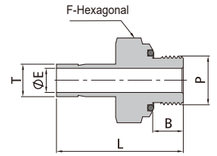


## Tubing-male thread



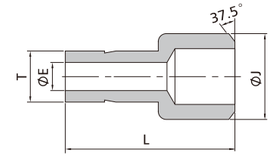

Imperial Tube — 37° flared (AN)

| T-Tube outer diameter (in.) | AN Tube flare size (in.) | Basic order number | Size, (mm) | | | |
|---|---|---|---|---|---|---|
| | | | L | B | E | F |
| 1/4 | 1/4 | -S-FT4AN4 | 37.1 | 14.0 | 4.3 | 12.7 |
| 3/8 | 1/4 | -S-FT6AN4 | 38.9 | 14.0 | 4.3 | 12.7 |
| 3/8 | 3/8 | -S-FT6AN6 | 39.6 | 14.2 | 6.9 | 15.9 |
| 1/2 | 1/2 | -S-FT8AN8 | 48.5 | 16.8 | 9.4 | 20.6 |
| 3/4 | 3/4 | -S-FT12AN12 | 56.1 | 21.8 | 14.7 | 28.6 |
| 1 | 1 | -S-FT16AN16 | 65.5 | 23.1 | 20.3 | 34.9 |




Imperial Tube — O-Ring Seal SAE/MS Straight Thread

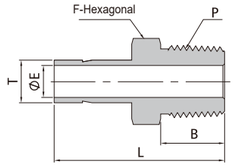
| T-Tube outer diameter (in.) | P-SAE/MS thread size | Basic order number | Size, (mm) | | | |
|---|---|---|---|---|---|---|
| | | | L | B | E | F |
| 1/8 | 5/16-24 | -S FT2STO5 | 32.5 | 8.6 | 2.0 | 14.3 |
| 3/16 | 3/8-24 | -S FT3STO6 | 35.1 | 9.7 | 3.0 | 15.9 |
| 1/4 | 7/16-20 | -S FT4STO7 | 39.1 | 10.4 | 4.3 | 19.1 |
| 5/16 | 1/2-20 | -S FT5STO8 | 41.7 | 11.2 | 5.6 | 22.2 |
| 3/8 | 9/16-18 | -S FT6STO9 | 43.2 | 11.9 | 6.9 | 23.8 |
| 1/2 | 3/4-16 | -S FT8STO12 | 49.5 | 11.9 | 9.4 | 28.6 |



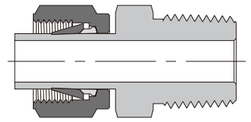

Imperial Tube — Pipe welding

| T-Tube outer diameter (in.) | Pipe welding size | Basic order number | Size, (mm) | | |
|---|---|---|---|---|---|
| | | | L | J | E |
| 1/4 | 1/4 | -S-FT4PB4 | 29.0 | 13.7 | 4.3 |
| 3/8 | 1/2 | -S-FT6PB8 | 37.1 | 21.3 | 6.9 |
| 1/2 | 1/2 | -S-FT8PB8 | 42.2 | 21.3 | 9.4 |
| 1/2 | 3/4 | -S-FT8PB12 | 42.7 | 26.7 | 9.4 |
| 3/4 | 3/4 | -S-FT12PB12 | 47.5 | 26.7 | 14.7 |

## Tubing-male thread




25 mm and below



28 mm and above

Metric Tube — NPT Thread

| T-Tube outer diameter (mm) | P-NPT size | Basic order number | Size, (mm) L | B | E | F |
|---|---|---|---|---|---|---|
| 3 | 1/8 | -S-MT3N2 | 29.4 | 9.7 | 1.8 | 12 |
| 4 | 1/8 | -S-MT4N2 | 29.4 | 9.7 | 2.0 | 12 |
| 6 | 1/8 | -S-MT6N2 | 32.8 | 9.7 | 4.1 | 12 |
| 6 | 1/4 | -S-MT6N4 | 38.1 | 14.2 | 4.1 | 14 |
| 6 | 3/8 | -S-MT6N6 | 36.5 | 14.2 | 3.0 | 18 |
| 6 | 1/2 | -S-MT6N8 | 42.1 | 19.1 | 3.0 | 22 |
| 8 | 1/4 | -S-MT8N4 | 39.1 | 14.2 | 5.6 | 14 |
| 8 | 3/8 | -S-MT8N6 | 39.9 | 14.2 | 5.6 | 19 |
| 10 | 1/4 | -S-MT10N4 | 39.9 | 14.2 | 7.1 | 14 |
| 10 | 3/8 | -S-MT10N6 | 40.6 | 14.2 | 7.1 | 18 |
| 10 | 1/2 | -S-MT10N8 | 46.2 | 19.1 | 7.1 | 22 |
| 12 | 1/4 | -S-MT12N4 | 46.5 | 14.2 | 7.1 | 14 |
| 12 | 3/8 | -S-MT12N6 | 44.5 | 14.2 | 9.1 | 18 |
| 12 | 1/2 | -S-MT12N8 | 52.0 | 19.1 | 8.8 | 22 |
| 16 | 1/2 | -S-MT16N8 | 50.8 | 19.1 | 12.7 | 22 |
| 16 | 3/4 | -S-MT16N12 | 51.6 | 19.1 | 12.7 | 27 |
| 18 | 1/2 | -S-MT18N8 | 50.8 | 19.1 | 12.7 | 27 |
| 18 | 3/4 | -S-MT18N12 | 51.6 | 19.1 | 14.0 | 27 |
| 20 | 1/2 | -S-MT20N8 | 51.8 | 19.1 | 15.0 | 22 |
| 20 | 3/4 | -S-MT20N12 | 52.4 | 19.1 | 15.1 | 27 |
| 25 | 1 | -S-MT25N16 | 65.9 | 23.9 | 19.8 | 35 |
| 28 | 1 | -S-MT28N16 | 74.4 | 23.9 | 22.2 | 35 |
| 28 | 1 1/4 | -S-MT28N20 | 76.2 | 23.9 | 22.5 | 46 |
| 30 | 1 | -S-MT30N16 | 79.2 | 23.9 | 22.5 | 41 |
| 30 | 1 1/4 | -S-MT30N20 | 80.0 | 23.9 | 24.3 | 46 |
| 32 | 1 1/4 | -S-MT32N20 | 81.0 | 23.9 | 26.5 | 46 |
| 38 | 1 1/2 | -S-MT38N24 | 92.2 | 26.2 | 31.6 | 55 |

Metric Tube — ISO tapered thread (RT)

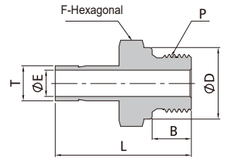
| T-Tube outer diameter (mm) | P-RT size | Basic order number | Size, (mm) L | B | E | F |
|---|---|---|---|---|---|---|
| 3 | 1/8 | -S-MT3RT2 | 29.4 | 9.7 | 1.8 | 12 |
| 4 | 1/8 | -S-MT4RT2 | 29.4 | 9.7 | 2.0 | 12 |
| 6 | 1/8 | -S-MT6RT2 | 32.8 | 9.7 | 4.1 | 12 |
| 6 | 1/4 | -S-MT6RT4 | 38.1 | 14.2 | 4.1 | 14 |
| 8 | 1/4 | -S-MT8RT4 | 39.1 | 14.2 | 5.6 | 14 |
| 8 | 3/8 | -S-MT8RT6 | 38.3 | 14.2 | 5.0 | 18 |
| 10 | 1/4 | -S-MT10RT4 | 39.9 | 14.2 | 7.1 | 14 |
| 10 | 3/8 | -S-MT10RT6 | 40.6 | 14.2 | 7.1 | 18 |
| 10 | 1/2 | -S-MT10RT8 | 44.5 | 19.1 | 7.5 | 22 |
| 12 | 1/4 | -S-MT12RT4 | 46.5 | 14.2 | 7.1 | 16 |
| 12 | 3/8 | -S-MT12RT6 | 46.2 | 14.2 | 8.8 | 18 |
| 12 | 1/2 | -S-MT12RT8 | 51.8 | 19.1 | 8.8 | 22 |
| 16 | 1/2 | -S-MT16RT8 | 50.8 | 19.1 | 12.7 | 22 |
| 18 | 3/4 | -S-MT18RT12 | 51.6 | 19.1 | 14.0 | 27 |
| 20 | 3/4 | -S-MT20RT12 | 52.4 | 19.1 | 15.1 | 27 |
| 25 | 1 | -S-MT25RT16 | 65.9 | 23.9 | 19.8 | 35 |
| 28 | 1 | -S-MT28RT16 | 74.7 | 23.9 | 22.2 | 35 |
| 28 | 1 1/4 | -S-MT28RT20 | 76.2 | 23.9 | 22.5 | 46 |
| 30 | 1 1/4 | -S-MT30RT20 | 80.0 | 23.9 | 24.3 | 46 |
| 32 | 1 1/4 | -S-MT32RT20 | 81.0 | 23.9 | 26.5 | 46 |
| 38 | 1 1/2 | -S-MT38RT24 | 92 2 | 26 2 | 31 6 | 55 |



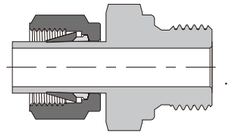




## Tubing-male thread



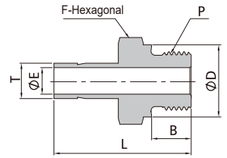

25 mm and below



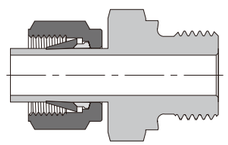
28 mm and above

Metric Tube — ISO parallel thread (RS)

| T-Tube outer diameter (mm) | P-RS size | Basic order number | Size, (mm) L | B | E | F | D |
|---|---|---|---|---|---|---|---|
| 3 | 1/8 | -S-MT3BS2 | 31.0 | 7.1 | 1.8 | 14 | 13.7 |
| 4 | 1/8 | -S-MT4BS2 | 31.8 | 7.1 | 2.0 | 14 | 13.7 |
| 6 | 1/8 | -S-MT6BS2 | 34.3 | 7.1 | 4.0 | 14 | 13.7 |
| 6 | 1/4 | -S-MT6BS4 | 39.1 | 11.2 | 4.1 | 19 | 17.8 |
| 8 | 1/4 | -S-MT8BS4 | 40.1 | 11.2 | 5.6 | 19 | 17.8 |
| 10 | 1/4 | -S-MT10BS4 | 40.9 | 11.2 | 5.9 | 19 | 17.8 |
| 10 | 3/8 | -S-MT10BS6 | 41.7 | 11.2 | 7.1 | 22 | 21.6 |
| 10 | 1/2 | -S-MT10BS8 | 44.7 | 14.2 | 7.1 | 27 | 25.9 |
| 12 | 1/4 | -S-MT12BS4 | 46.7 | 11.2 | 5.9 | 19 | 17.8 |
| 12 | 3/8 | -S-MT12BS6 | 47.2 | 11.2 | 7.9 | 22 | 21.6 |
| 12 | 1/2 | -S-MT12BS8 | 50.5 | 14.2 | 8.8 | 27 | 25.9 |
| 16 | 1/2 | -S-MT16BS8 | 50.8 | 14.2 | 11.9 | 27 | 25.9 |
| 18 | 3/4 | -S-MT18BS12 | 56.1 | 16.0 | 13.9 | 35 | 32.0 |
| 20 | 3/4 | -S-MT20BS12 | 54.0 | 16.0 | 15.1 | 33 | 32.0 |
| 25 | 1 | -S-MT25BS16 | 65.1 | 18.3 | 19.8 | 41 | 38.9 |
| 28 | 1 | -S-MT28BS16 | 72.9 | 18.3 | 19.8 | 41 | 38.9 |
| 28 | 1 1/4 | -S-MT28BS20 | 77.0 | 19.8 | 22.5 | 50 | 49.0 |
| 30 | 1 1/4 | -S-MT30BS20 | 80.8 | 19.8 | 24.3 | 50 | 49.0 |
| 32 | 1 1/4 | -S-MT32BS20 | 81.8 | 19.8 | 26.5 | 50 | 49.0 |
| 38 | 1 1/2 | -S-MT38BS24 | 94.5 | 22.1 | 31.6 | 55 | 54.7 |




25 mm and below

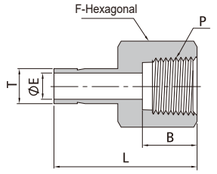


28 mm and above

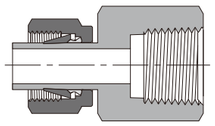
Metric Tube — ISO Parallel Thread (RP)

| T-Tube outer diameter (mm) | P-RP size | Basic order number | Size, (mm) L | B | E | F | D |
|---|---|---|---|---|---|---|---|
| 3 | 1/8 | -S-MT3BR2 | 31.0 | 7.1 | 1.8 | 14 | 13.7 |
| 4 | 1/8 | -S-MT4BR2 | 31.8 | 7.1 | 2.0 | 14 | 13.7 |
| 6 | 1/8 | -S-MT6BR2 | 33.3 | 7.1 | 4.0 | 14 | 13.7 |
| 6 | 1/4 | -S-MT6BR4 | 38.1 | 11.2 | 4.0 | 19 | 17.8 |
| 8 | 1/4 | -S-MT8BR4 | 38.9 | 11.2 | 6.4 | 19 | 17.8 |
| 10 | 1/4 | -S-MT10BR4 | 38.9 | 11.2 | 6.4 | 19 | 17.8 |
| 10 | 3/8 | -S-MT10BR6 | 39.7 | 11.2 | 7.5 | 22 | 21.6 |
| 10 | 1/2 | -S-MT10BR8 | 42.9 | 14.2 | 7.5 | 27 | 25.9 |
| 12 | 1/4 | -S-MT12BR4 | 43.7 | 11.2 | 6.4 | 19 | 17.8 |
| 12 | 3/8 | -S-MT12BR6 | 44.5 | 11.2 | 7.9 | 22 | 21.6 |
| 12 | 1/2 | -S-MT12BR8 | 49.2 | 14.2 | 9.1 | 27 | 25.9 |
| 16 | 1/2 | -S-MT16BR8 | 50.8 | 14.2 | 11.9 | 27 | 25.9 |
| 18 | 3/4 | -S-MT18BR12 | 53.2 | 16.0 | 14.0 | 33 | 32.0 |
| 20 | 3/4 | -S-MT20BR12 | 54.0 | 16.0 | 15.1 | 33 | 32.0 |
| 25 | 1 | -S-MT25BR16 | 65.1 | 18.3 | 19.8 | 41 | 38.9 |
| 28 | 1 | -S-MT28BR16 | 72.7 | 18.3 | 19.8 | 41 | 38.9 |
| 28 | 1 1/4 | -S-MT28BR20 | 77.3 | 19.8 | 22.5 | 50 | 49.0 |
| 30 | 1 1/4 | -S-MT30BR20 | 80.8 | 19.8 | 24.3 | 50 | 49.0 |
| 32 | 1 1/4 | -S-MT32BR20 | 82.1 | 19.8 | 26.5 | 50 | 49.0 |
| 38 | 1 1/2 | -S-MT38BR24 | 94.5 | 22.1 | 31.6 | 55 | 54.7 |

## Tubing-Female Thread




1" and below



1 1/4" and above

Imperial Tube — NPT Thread

| T-Tube outer diameter (in.) | P-NPT size | Basic order number | Size, (mm) L | B | E | F |
|---|---|---|---|---|---|---|
| 1/16 | 1/8 | -S-FT1FN2 | 27.2 | 10.4 | 0.8 | 14.3 |
| 1/8 | 1/8 | -S-FT2FN2 | 31.5 | 10.4 | 2.0 | 14.3 |
| 1/8 | 1/4 | -S-FT2FN4 | 35.3 | 15.0 | 2.0 | 19.1 |
| 3/16 | 1/8 | -S-FT3FN2 | 31.8 | 10.4 | 2.9 | 14.3 |
| 3/16 | 1/4 | -S-FT3FN4 | 35.8 | 15.0 | 3.0 | 19.1 |
| 1/4 | 1/8 | -S-FT4FN2 | 33.0 | 10.4 | 4.3 | 14.3 |
| 1/4 | 1/4 | -S-FT4FN4 | 37.1 | 15.0 | 4.3 | 19.1 |
| 1/4 | 3/8 | -S-FT4FN6 | 39.4 | 15.0 | 4.3 | 22.2 |
| 1/4 | 1/2 | -S-FT4FN8 | 45.5 | 19.8 | 4.3 | 27.0 |
| 5/16 | 1/8 | -S-FT5FN2 | 34.0 | 10.4 | 5.6 | 14.3 |
| 5/16 | 1/4 | -S-FT5FN4 | 37.6 | 15.0 | 5.6 | 19.1 |
| 5/16 | 3/8 | -S-FT5FN6 | 40.4 | 15.0 | 5.6 | 22.2 |
| 3/8 | 1/8 | -S-FT6FN2 | 34.3 | 10.4 | 6.9 | 14.3 |
| 3/8 | 1/4 | -S-FT6FN4 | 38.1 | 15.0 | 6.9 | 19.1 |
| 3/8 | 3/8 | -S-FT6FN6 | 40.4 | 15.0 | 6.9 | 22.2 |
| 3/8 | 1/2 | -S-FT6FN8 | 46.7 | 19.8 | 6.9 | 27.0 |
| 1/2 | 1/4 | -S-FT8FN4 | 43.4 | 15.0 | 9.4 | 19.1 |
| 1/2 | 3/8 | -S-FT8FN6 | 45.5 | 15.0 | 9.4 | 22.2 |
| 1/2 | 1/2 | -S-FT8FN8 | 51.8 | 19.8 | 9.4 | 27.0 |
| 5/8 | 3/8 | -S-FT10FN6 | 47.2 | 15.0 | 11.9 | 22.2 |
| 5/8 | 1/2 | -S-FT10FN8 | 53.1 | 19.8 | 11.9 | 27.0 |
| 3/4 | 1/2 | -S-FT12FN8 | 52.8 | 19.8 | 14.7 | 27.0 |
| 3/4 | 3/4 | -S-FT12FN12 | 54.9 | 20.6 | 14.7 | 33.3 |
| 3/4 | 1 | -S-FT12FN16 | 58.4 | 25.4 | 14.7 | 41.3 |
| 7/8 | 3/4 | -S-FT14FN12 | 56.4 | 20.6 | 14.7 | 33.3 |
| 1 | 3/4 | -S-FT16FN12 | 60.7 | 20.6 | 20.3 | 33.3 |
| 1 | 1 | -S-FT16FN16 | 64.3 | 25.4 | 20.3 | 41.3 |
| 1 1/4 | 1 1/4 | -S-FT20FN20 | 77.7 | 25.4 | 25.9 | 54.0 |
| 1 1/2 | 1 1/2 | -S-FT24FN24 | 88.9 | 27.7 | 31.8 | 60.3 |

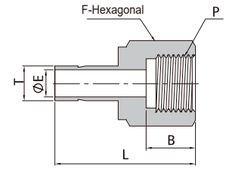
Imperial Tube — ISO tapered thread (RT)

| T-Tube outer diameter (in.) | P-RT size | Basic order number | Size, (mm) L | B | E | F |
|---|---|---|---|---|---|---|
| 1/4 | 1/8 | -S-FT4FRT2 | 33.0 | 10.4 | 4.3 | 14.3 |
| 1/4 | 1/4 | -S-FT4FRT4 | 36.8 | 15.0 | 4.3 | 19.1 |
| 3/8 | 1/4 | -S-FT6FRT4 | 38.1 | 15.0 | 6.9 | 19.1 |
| 3/8 | 3/8 | -S-FT6FRT6 | 40.4 | 15.0 | 6.9 | 22.2 |
| 1/2 | 1/4 | -S-FT8FRT4 | 43.4 | 15.0 | 9.4 | 19.1 |
| 1/2 | 3/8 | -S-FT8FRT6 | 45.7 | 15.0 | 9.4 | 22.2 |
| 1/2 | 1/2 | -S-FT8FRT8 | 52.1 | 19.8 | 9.4 | 27.0 |



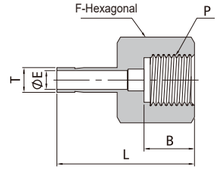


## Tubing-Female Thread



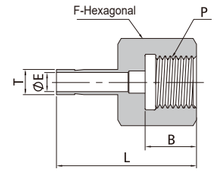

Imperial Tube

| T-Tube outer diameter (in.) | P-RP size | Basic order number | Size, (mm) L | B | E | F |
|---|---|---|---|---|---|---|
| 1/8 | 1/8 | -S-FT2FP2 | 29.7 | 10.2 | 2.0 | 14.3 |
| 1/4 | 1/8 | -S-FT4FP2 | 31.8 | 10.2 | 4.3 | 14.3 |
| 1/4 | 1/4 | -S-FT4FP4 | 38.1 | 15.2 | 4.3 | 19.1 |
| 3/8 | 1/4 | -S-FT6FP4 | 39.4 | 15.2 | 6.9 | 19.1 |
| 3/8 | 3/8 | -S-FT6FP6 | 39.9 | 15.2 | 6.9 | 23.8 |
| 1/2 | 3/8 | -S-FT8FP6 | 45.2 | 15.2 | 9.7 | 23.8 |
| 1/2 | 1/2 | -S-FT8FP8 | 49.5 | 18.2 | 9.7 | 27.0 |




Imperial Tube — IS0 parallel thread (RG)

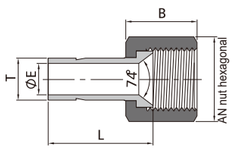
| T-Tube outer diameter (in.) | P-RG size | Basic order number | Size, (mm) L | B | E | F |
|---|---|---|---|---|---|---|
| 1/4 | 1/4 | -S-FT4FG4 | 35.3 | 12.9 | 4.3 | 19.1 |
| 3/8 | 3/8 | -S-FT6FG6 | 39.4 | 14.2 | 6.6 | 23.8 |
| 1/2 | 1/2 | -S-FT8FG8 | 45.7 | 18.8 | 7.1 | 27.0 |




Imperial Tube — ISO Parallel thread (RJ)

| T-Tube outer diameter (in.) | P-RJ size | Basic order number | Size, (mm) L | B | E | F |
|---|---|---|---|---|---|---|
| 1/4 | 1/4 | -S-FT4RJ4 | 35.3 | 12.9 | 4.3 | 19.1 |
| 3/8 | 3/8 | -S-FT6RJ6 | 39.4 | 14.2 | 6.6 | 23.8 |
| 1/2 | 1/2 | -S-FT8RJ8 | 49.3 | 18.8 | 7.1 | 27.0 |

Adapter to Japanese pressure gauge bolt.



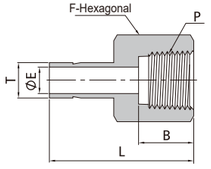

Imperial Tube — AN Thread

| T-Tube outer diameter (in.) | AN Tube flare size (in.) | Basic order number | Size, (mm) L | B | E | F |
|---|---|---|---|---|---|---|
| 1/8 | 1/8 | -S-FT2SAN2 | 22.4 | 14.0 | 2.4 | 9.5 |
| 1/8 | 1/4 | -S-FT2SAN4 | 22.4 | 15.8 | 2.4 | 14.3 |
| 1/4 | 1/4 | -S-FT4SAN4 | 24.4 | 15.8 | 4.6 | 14.3 |
| 3/8 | 3/8 | -S-FT6SAN6 | 28.1 | 18.5 | 7.1 | 17.5 |
| 1/2 | 1/2 | -S-FT8SAN8 | 36.1 | 21.6 | 9.9 | 22.2 |
| 3/4 | 3/4 | -S-FT12SAN12 | 37.8 | 26.2 | 14.7 | 31.8 |




idealPower

## Tubing-Female Thread

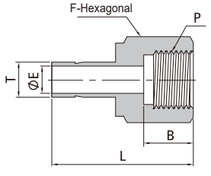



Metric Tube — NPT Thread

| T-Tube outer diameter (mm) | P-NPT size | Basic order number | Size, (mm) | | | |
|---|---|---|---|---|---|---|
| | | | L | B | E | F |
| 3 | 1/8 | -S-MT3FN2 | 28.8 | 10.4 | 1.3 | 14 |
| 4 | 1/8 | -S-MT4FN2 | 33.3 | 10.4 | 2.0 | 14 |
| 6 | 1/8 | -S-MT6FN2 | 32.5 | 10.4 | 4.1 | 14 |
| 6 | 1/4 | -S-MT6FN4 | 37.1 | 15.0 | 4.1 | 19 |
| 8 | 1/8 | -S-MT8FN2 | 35.1 | 10.4 | 6.4 | 14 |
| 8 | 1/4 | -S-MT8FN4 | 37.6 | 15.0 | 5.6 | 19 |
| 8 | 3/8 | -S-MT8FN6 | 36.5 | 15.0 | 6.4 | 22 |
| 10 | 1/4 | -S-MT10FN4 | 38.1 | 15.0 | 7.1 | 19 |
| 10 | 3/8 | -S-MT10FN6 | 40.1 | 15.0 | 7.1 | 22 |
| 10 | 1/2 | -S-MT10FN8 | 46.5 | 19.8 | 7.1 | 27 |
| 12 | 1/4 | -S-MT12FN4 | 43.7 | 15.0 | 8.8 | 19 |
| 12 | 3/8 | -S-MT12FN6 | 42.9 | 15.0 | 9.1 | 22 |
| 12 | 1/2 | -S-MT12FN8 | 52.3 | 19.8 | 8.8 | 27 |
| 16 | 1/2 | -S-MT16FN8 | 49.2 | 19.8 | 12.7 | 27 |
| 18 | 3/4 | -S-MT18FN12 | 52.4 | 20.6 | 14.0 | 32 |
| 20 | 1/2 | -S-MT20FN8 | 50.0 | 19.8 | 15.0 | 27 |
| 20 | 3/4 | -S-MT20FN12 | 53.2 | 20.6 | 15.1 | 32 |
| 25 | 1 | -S-MT25FN16 | 66.7 | 25.4 | 19.8 | 41 |

Metric Tube — ISO tapered thread (RT)

| T-Tube outer diameter (mm) | P-RT size | Basic order number | Size, (mm) | | | |
|---|---|---|---|---|---|---|
| | | | L | B | E | F |
| 3 | 1/8 | -S-MT3FRT2 | 27.8 | 10.4 | 1.8 | 14 |
| 4 | 1/8 | -S-MT4FRT2 | 28.6 | 10.4 | 2.0 | 14 |
| 6 | 1/8 | -S-MT6FRT2 | 33.0 | 10.4 | 4.1 | 14 |
| 8 | 1/4 | -S-MT8FRT4 | 37.6 | 15.0 | 5.6 | 19 |
| 10 | 1/4 | -S-MT10FRT4 | 38.1 | 15.0 | 7.1 | 19 |
| 10 | 3/8 | -S-MT10FRT6 | 36.5 | 15.0 | 7.5 | 22 |
| 10 | 1/2 | -S-MT10FRT8 | 41.3 | 19.8 | 7.5 | 27 |
| 12 | 1/4 | -S-MT12FRT4 | 40.5 | 15.0 | 9.1 | 19 |
| 12 | 3/8 | -S-MT12FRT6 | 43.7 | 15.0 | 9.1 | 22 |
| 12 | 1/2 | -S-MT12FRT8 | 46.8 | 19.8 | 9.1 | 27 |
| 16 | 1/2 | -S-MT16FRT8 | 48.4 | 19.8 | 12.7 | 27 |
| 18 | 3/4 | -S-MT18FRT12 | 61.6 | 20.6 | 14.0 | 32 |
| 20 | 3/4 | -S-MT20FRT12 | 52.4 | 20.6 | 15.1 | 32 |
| 25 | 1 | -S-MT25FRT16 | 66.7 | 25.4 | 19.8 | 41 |




Metric Tube — IS0 Parallel Thread (RP)

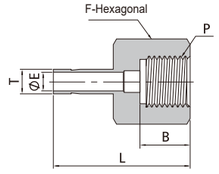
| T-Tube outer diameter (mm) | P-RP size | Basic order number | Size, (mm) | | | |
|---|---|---|---|---|---|---|
| | | | L | B | E | F |
| 6 | 1/8 | -S-MT6FP2 | 32.0 | 10.2 | | |
| 6 | 1/4 | -S-MT6FP4 | 37.8 | 15.2 | | |
| 12 | 1/2 | -S-MT12FP8 | 49.8 | 18.8 | | |





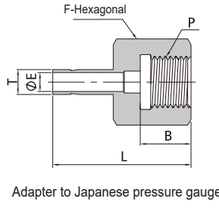


## Tubing-Female Thread




Metric Tube — ISO parallel thread (RG)

| T-Tube outer diameter (mm) | P-RG size | Basic order number | Size, (mm) | | | |
|---|---|---|---|---|---|---|
| | | | L | B | E | F |
| 3 | 1/8 | -S-MT3FG2 | 28.6 | 6.5 | 1.6 | 14 |
| 3 | 1/4 | -S-MT3FG4 | 33.5 | 10.2 | 1.9 | 19 |
| 4 | 1/8 | -S-MT4FG2 | 29.4 | 6.5 | 2.0 | 14 |
| 6 | 1/8 | -S-MT6FG2 | 31.0 | 6.5 | 4.1 | 14 |
| 6 | 1/4 | -S-MT6FG4 | 35.3 | 10.2 | 4.1 | 19 |
| 6 | 3/8 | -S-MT6FG6 | 38.4 | 14.2 | 4.1 | 24 |
| 6 | 1/2 | -S-MT6FG8 | 42.9 | 18.0 | 4.1 | 27 |
| 8 | 1/4 | -S-MT8FG4 | 33.0 | 10.2 | 5.5 | 19 |
| 8 | 3/8 | -S-MT8FG6 | 38.9 | 14.2 | 5.6 | 24 |
| 8 | 1/2 | -S-MT8FG8 | 43.7 | 18.0 | 5.6 | 27 |
| 10 | 1/4 | -S-MT10FG4 | 34.5 | 10.2 | 5.5 | 19 |
| 10 | 3/8 | -S-MT10FG6 | 36.1 | 14.2 | 6.5 | 24 |
| 10 | 1/2 | -S-MT10FG8 | 41.1 | 18.0 | 7.1 | 27 |
| 12 | 1/4 | -S-MT12FG4 | 40.1 | 10.2 | 5.5 | 19 |
| 12 | 3/8 | -S-MT12FG6 | 44.7 | 14.2 | 6.5 | 24 |
| 12 | 1/2 | -S-MT12FG8 | 48.8 | 18.0 | 7.0 | 27 |
| 16 | 1/2 | -S-MT16FG8 | 49.0 | 18.0 | 7.0 | 27 |
| 18 | 1/2 | -S-MT18FG8 | 49.3 | 18.0 | 7.0 | 27 |

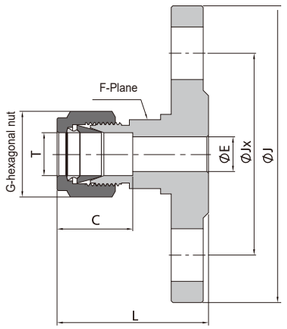



Adapter to Japanese pressure gauge bolt.

Metric Tube — ISO Parallel thread (RJ)

| T-Tube outer diameter (mm) | P-RJ size | Basic order number | Size, (mm) | | | |
|---|---|---|---|---|---|---|
| | | | L | B | E | F |
| 6 | 1/4 | -S-MT6RJ4 | 35.3 | 10.2 | 4.1 | 19 |
| 6 | 3/8 | -S-MT6RJ6 | 38.6 | 14.2 | 4.1 | 24 |
| 6 | 1/2 | -S-MT6RJ8 | 42.9 | 18.0 | 4.1 | 27 |
| 8 | 1/4 | -S-MT8RJ4 | 33.0 | 10.2 | 5.5 | 19 |
| 8 | 3/8 | -S-MT8RJ6 | 39.4 | 14.2 | 5.6 | 24 |
| 8 | 1/2 | -S-MT8RJ8 | 43.7 | 18.0 | 5.6 | 27 |
| 10 | 1/4 | -S-MT10RJ4 | 34.5 | 10.2 | 5.5 | 19 |
| 10 | 3/8 | -S-MT10RJ6 | 36.1 | 14.2 | 6.5 | 24 |
| 10 | 1/2 | -S-MT10RJ8 | 41.1 | 18.0 | 7.1 | 27 |
| 12 | 1/4 | -S-MT12RJ4 | 40.1 | 10.2 | 5.5 | 19 |
| 12 | 3/8 | -S-MT12RJ6 | 44.7 | 14.2 | 6.5 | 24 |
| 12 | 1/2 | -S-MT12RJ8 | 48.8 | 18.0 | 7.0 | 27 |

## Ferrule-flange




- Wood flanges are forged as a whole.
- ANSI flanges comply with ANSI B16.5.
- DIN flanges comply with DIN 2501/2526.
- GB flanges comply with GB/T 9123.1.
- EN flanges comply with EN 1092-1.
- JS flanges comply with JIS B 2220.

### ANSI flange

| T-Tube outer diameter (in.) | ANSI Flange NPS | Class | Raised face flange Basic ordering number | Size,mm | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | | L | J | Jx | E | C | G | F |
| 1/4 | 1/2 | 150 | -FL-FJ4F8150 | 40.9 | 88.9 | 60.5 | 4.8 | 15.2 | 14.3 | 20.6 |
| 3/8 | 1/2 | 300 | -FL-FJ6F8300 | 45.5 | 95.3 | 66.5 | 7.1 | 16.8 | 17.5 | 20.6 |
| 1/2 | 1/2 | 150 | -FL-FJ8F8150 | 45.2 | 88.9 | 60.5 | 10.4 | 22.9 | 22.2 | 20.6 |
| 1/2 | 1 | 150 | -FL-FJ8F16150 | 48.3 | 108.0 | 79.2 | 10.4 | 22.9 | 22.2 | 20.6 |
| 1/2 | 2 | 150 | -FL-FJ8F32150 | 53.1 | 152.4 | 121 | 10.4 | 22.9 | 22.2 | 20.6 |
| 3/4 | 1 | 150 | -FL-FJ12F16150 | 50.3 | 108.0 | 79.2 | 15.7 | 24.4 | 28.6 | 31.8 |
| 1 | 1 | 150 | -FL-FJ16F16150 | 60.5 | 108.0 | 79.2 | 22.4 | 31.2 | 38.1 | 34.9 |

### DIN/GB flange, pressure class PN 40

| T-Tube outer diameter (mm) | | Raised face flange Basic ordering number | Size,mm | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | | | L | J | Jx | E | C | G | F |
| 6 | 25 | -FL-MJ6F25-40C | 47.5 | 115.0 | 85.0 | 4.8 | 15.3 | 14 | 20 |
| 12 | 15 | -FL-MJ12F15-40C | 48.5 | 95.0 | 65.0 | 9.5 | 22.8 | 22 | 20 |
| 12 | 25 | -FL-MJ12F25-40C | 50.5 | 115.0 | 85.0 | 9.5 | 22.8 | 22 | 20 |
| 12 | 50 | -FL-MJ12F50-40C | 55.3 | 165.0 | 125.0 | 9.5 | 22.8 | 22 | 20 |
| 18 | 15 | -FL-MJ18F15-40C | 51.8 | 95.0 | 65.0 | 15.1 | 24.4 | 30 | 32 |
| 18 | 25 | -FL-MJ18F25-40C | 53.8 | 115.0 | 85.0 | 15.1 | 24.4 | 30 | 32 |
| 25 | 25 | -FL-MJ25F25-40C | 64.0 | 115.0 | 85.0 | 21.8 | 31.3 | 38 | 35 |

### EN flange, pressure class PN 40

| T-Tube outer diameter (mm) | | Raised face flange Basic ordering number | Size,mm | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | | | L | J | Jx | E | C | G | F |
| 6 | 25 | -FL-MJ6F25E-40B1 | 47.5 | 115.0 | 85.0 | 4.8 | 15.3 | 14 | 20 |
| 12 | 15 | -FL-MJ12F15E-40B1 | 48.5 | 95.0 | 65.0 | 9.5 | 22.8 | 22 | 20 |
| 12 | 25 | -FL-MJ12F25E-40B1 | 50.5 | 115.0 | 85.0 | 9.5 | 22.8 | 22 | 20 |
| 12 | 50 | -FL-MJ12F50E-40B1 | 55.3 | 165.0 | 125.0 | 9.5 | 22.8 | 22 | 20 |
| 18 | 15 | -FL-MJ18F15E-40B1 | 51.8 | 95.0 | 65.0 | 15.1 | 24.4 | 30 | 32 |
| 18 | 25 | -FL-MJ18F25E-40B1 | 53.8 | 115.0 | 85.0 | 15.1 | 24.4 | 30 | 32 |
| 25 | 25 | -FL-MJ25F25E-40B1 | 64.0 | 115.0 | 85.0 | 21.8 | 31.3 | 38 | 35 |

### JIS flange, pressure class 10K

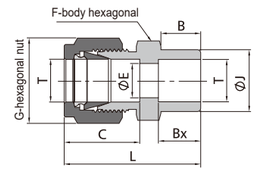
| T-Tube outer diameter | JIS flange size DN | Raised face flange Basic ordering number | Size,mm | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | | | L | J | Jx | E | C | G | F |
| 1/4" | 15 | -FL-FJ4F15-10KRF | 42.2 | 95.0 | 70.1 | 4.8 | 15.2 | 14.3 | 20.6 |
| 3/8" | 15 | -FL-FJ6F15-10KRF | 43.7 | 95.0 | 70.1 | 7.1 | 16.8 | 17.5 | 20.6 |
| 1/2" | 15 | -FL-FJ8F15-10KRF | 46.5 | 95.0 | 70.1 | 10.4 | 22.9 | 22.2 | 20.6 |
| 3/4" | 15 | -FL-FJ12F15-10KRF | 48.5 | 95.0 | 70.1 | 15.7 | 24.4 | 28.6 | 31.8 |
| 1" | 25 | -FL-FJ16F25-10KRF | 61.0 | 125.0 | 89.9 | 22.4 | 31.2 | 38.1 | 34.9 |
| 12mm | 15 | -FL-MJ12F15-10KRF | 46.5 | 95.0 | 70.0 | 9.5 | 22.8 | 22 | 20 |
| 18mm | 15 | -FL-MJ18F15-10KRF | 48.5 | 95.0 | 70.0 | 15.1 | 24.4 | 30 | 32 |
| 25mm | 25 | -FL-MJ25F25-10KRF | 61.0 | 125.0 | 90.0 | 21.8 | 31.3 | 38 | 35 |





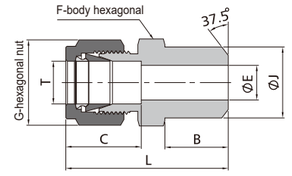


## Ferrule welding joint




Imperial Tube — Tube Socket Welding

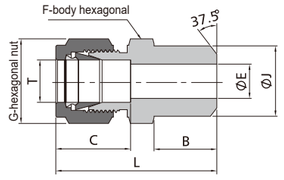
| T-Tube outer diameter (in.) | Basic order number | Size, mm | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | | L | C | G | F | B | E | Bx | J |
| 1/8 | -S-FJ2TS2 | 29.0 | 12.7 | 11.1 | 11.1 | 8.6 | 2.3 | 2.5 | 7.9 |
| 3/16 | -S-FJ3TS3 | 29.7 | 13.7 | 12.7 | 11.1 | 9.5 | 3.3 | 4.8 | 10.7 |
| 1/4 | -S-FJ4TS4 | 33.5 | 15.2 | 14.3 | 12.7 | 10.4 | 4.8 | 7.1 | 11.2 |
| 3/8 | -S-FJ6TS6 | 37.6 | 16.8 | 17.5 | 15.9 | 11.9 | 7.1 | 7.9 | 15.7 |
| 1/2 | -S-FJ8TS8 | 41.1 | 22.9 | 22.2 | 20.6 | 11.9 | 10.4 | 9.7 | 19.1 |
| 5/8 | -S-FJ10TS10 | 41.9 | 24.4 | 25.4 | 23.8 | 11.9 | 12.7 | 10.4 | 23.4 |
| 3/4 | -S-FJ12TS12 | 43.4 | 24.4 | 28.6 | 27.0 | 11.9 | 15.7 | 11.1 | 26.7 |
| 1 | -S-FJ16TS16 | 52.6 | 31.2 | 38.1 | 34.9 | 14.2 | 22.4 | 15.7 | 33.3 |




Imperial Tube — Pipe Butt Welding

| T-Tube outer diameter (in.) | Pipe welding size | Basic order number | Size, mm(in.) | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | | | L | C | G | F | E | B | J |
| 1/8 | 1/8 | -S-FJ2PB2 | 30.5 | 12.7 | 11.1 | 11.1 | 2.3 | 9.7 | 10.3 |
| 3/16 | 1/8 | -S-FJ3PB2 | 31.2 | 13.7 | 12.7 | 11.1 | 3.0 | 9.7 | 10.3 |
| 1/4 | 1/8 | -S-FJ4PB2 | 32.8 | 15.2 | 14.3 | 12.7 | 4.8 | 9.7 | 10.3 |
| 1/4 | 1/4 | -S-FJ4PB4 | 37.8 | 15.2 | 14.3 | 14.3 | 4.8 | 14.2 | 13.7 |
| 5/16 | 1/8 | -S-FJ5PB2 | 34.0 | 16.3 | 15.9 | 14.3 | 5.3 | 9.7 | 10.3 |
| 5/16 | 1/4 | -S-FJ5PB4 | 38.6 | 16.3 | 15.9 | 14.3 | 6.4 | 14.2 | 13.7 |
| 3/8 | 1/4 | -S-FJ6PB4 | 39.9 | 16.8 | 17.5 | 15.9 | 7.1 | 14.2 | 13.7 |
| 3/8 | 3/8 | -S-FJ6PB6 | 39.9 | 16.8 | 17.5 | 17.5 | 7.1 | 14.2 | 17.1 |
| 3/8 | 1/2 | -S-FJ6PB8 | 46.2 | 16.8 | 17.5 | 22.2 | 7.1 | 19.1 | 21.3 |
| 3/8 | 3/4 | -S-FJ6PB12 | 47.8 | 16.8 | 17.5 | 27.0 | 7.1 | 19.1 | 26.7 |
| 1/2 | 3/8 | -S-FJ8PB6 | 43.4 | 22.9 | 22.2 | 20.6 | 10.4 | 14.2 | 17.1 |
| 1/2 | 1/2 | -S-FJ8PB8 | 49.0 | 22.9 | 22.2 | 22.2 | 10.4 | 19.1 | 21.3 |
| 1/2 | 3/4 | -S-FJ8PB12 | 50.5 | 22.9 | 22.2 | 27.0 | 10.4 | 19.1 | 26.7 |
| 5/8 | 1/2 | -S-FJ10PB8 | 49.0 | 24.4 | 25.4 | 23.8 | 12.7 | 19.1 | 21.3 |
| 3/4 | 1/2 | -S-FJ12PB8 | 50.5 | 24.4 | 28.6 | 27.0 | 14.0 | 19.1 | 21.3 |
| 3/4 | 3/4 | -S-FJ12PB12 | 50.5 | 24.4 | 28.6 | 27.0 | 15.7 | 19.1 | 26.7 |
| 1 | 1 | -S-FJ16PB16 | 62.2 | 31.2 | 38.1 | 34.9 | 22.4 | 23.9 | 33.4 |
| 1 1/4 | 1 1/4 | -S-FJ20PB20 | 77.2 | 41.1 | 47.6 | 44.5 | 27.7 | 23.9 | 42.2 |
| 1 1/2 | 1 1/2 | -S-FJ24PB24 | 88.9 | 50.0 | 57.2 | 54.0 | 34.0 | 26.2 | 48.3 |

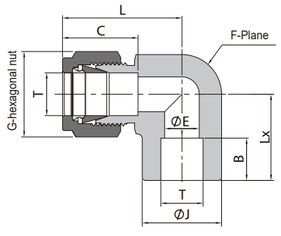
## Ferrule welding joint




Metric Tube — Pipe Butt Welding

| T-Tube outer diameter (mm) | Pipe welding size | Basic ordering number | Size,mm | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | | | L | C | G | F | E | B | J |
| 3 | 1/8 | -S-MJ3PB2 | 30.5 | 12.9 | 12 | 12 | 2.4 | 9.7 | 10.3 |
| 4 | 1/8 | -S-MJ4PB2 | 31.5 | 13.7 | 12 | 12 | 2.4 | 9.7 | 10.3 |
| 6 | 1/8 | -S-MJ6PB2 | 32.8 | 15.3 | 14 | 14 | 4.8 | 9.7 | 10.3 |
| 6 | 1/4 | -S-MJ6PB4 | 37.9 | 15.3 | 14 | 14 | 4.8 | 14.2 | 13.7 |
| 8 | 1/8 | -S-MJ8PB2 | 34.2 | 16.2 | 16 | 15 | 5.4 | 9.7 | 10.3 |
| 8 | 1/4 | -S-MJ8PB4 | 38.7 | 16.2 | 16 | 15 | 6.4 | 14.2 | 13.7 |
| 8 | 1/2 | -S-MJ8PB8 | 45.6 | 16.2 | 16 | 22 | 6.4 | 19.1 | 21.3 |
| 10 | 1/4 | -S-MJ10PB4 | 40.9 | 17.2 | 19 | 18 | 7.5 | 14.2 | 13.7 |
| 10 | 3/8 | -S-MJ10PB6 | 40.9 | 17.2 | 19 | 18 | 7.9 | 14.2 | 17.2 |
| 10 | 1/2 | -S-MJ10PB8 | 46.5 | 17.2 | 19 | 22 | 7.9 | 19.1 | 21.3 |
| 12 | 1/4 | -S-MJ12PB4 | 43.4 | 22.8 | 22 | 22 | 7.5 | 14.2 | 13.7 |
| 12 | 3/8 | -S-MJ12PB6 | 43.4 | 22.8 | 22 | 22 | 9.5 | 14.2 | 17.1 |
| 12 | 1/2 | -S-MJ12PB8 | 49.0 | 22.8 | 22 | 22 | 9.5 | 19.1 | 21.3 |
| 14 | 3/8 | -S-MJ14PB6 | 44.1 | 24.4 | 25 | 24 | 10.7 | 14.2 | 17.1 |
| 15 | 1/2 | -S-MJ15PB8 | 49.0 | 24.4 | 25 | 24 | 11.9 | 19.1 | 21.3 |
| 16 | 1/2 | -S-MJ16PB8 | 49.0 | 24.4 | 25 | 24 | 12.7 | 19.1 | 21.3 |
| 18 | 1/2 | -S-MJ18PB8 | 50.5 | 24.4 | 30 | 27 | 13.9 | 19.1 | 21.3 |
| 30 | 1 1/4 | -S-MJ30PB20 | 77.2 | 39.6 | 50 | 46 | 26.2 | 23.9 | 42.2 |
| 32 | 1 1/4 | -S-MJ32PB20 | 79.6 | 42.0 | 50 | 46 | 28.6 | 23.9 | 42.2 |
| 38 | 1 1/2 | -S-MJ38PB24 | 91.6 | 49.4 | 60 | 55 | 33.7 | 26.2 | 48.3 |

## Ferrule welding elbow




Imperial Tube — Tube welding

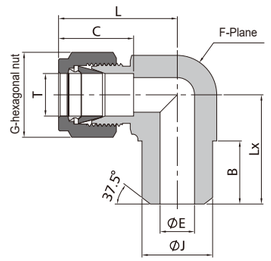
| T-Tube outer diameter (in.) | Basic ordering number | Size,mm | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | | L | C | G | F | B | E | Lx | J |
| 1/8 | -L-FJ2TS2 | 16.8 | 12.7 | 11.1 | 9.5 | 2.5 | 2.3 | 16.0 | 9.7 |
| 3/16 | -L-FJ3TS3 | 18.3 | 13.7 | 12.7 | 11.1 | 4.8 | 3.3 | 17.5 | 11.2 |
| 1/4 | -L-FJ4TS4 | 26.9 | 15.2 | 14.3 | 12.7 | 7.1 | 4.8 | 19.6 | 12.7 |
| 3/8 | -L-FJ6TS6 | 30.5 | 16.8 | 17.5 | 15.9 | 7.9 | 7.1 | 23.1 | 15.7 |
| 1/2 | -L-FJ8TS8 | 36.1 | 22.9 | 22.2 | 20.6 | 9.7 | 10.4 | 25.9 | 20.6 |
| 5/8 | -L-FJ10TS10 | 29.5 | 24.4 | 25.4 | 27.0 | 10.4 | 12.7 | 29.5 | 23.9 |
| 3/4 | -L-FJ12TS12 | 39.9 | 24.4 | 28.6 | 27.0 | 11.2 | 15.7 | 29.7 | 26.9 |
| 1 | -L-FJ16TS16 | 49.0 | 31.2 | 38.1 | 34.9 | 15.7 | 22.4 | 36.8 | 35.1 |







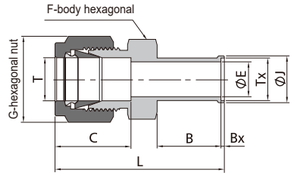
## Ferrule welding elbow




Imperial Tube — Pipe Butt Welding

| T-Tube outer diameter (in.) | Pipe welding size | Basic ordering number | Size,mm | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | L | C | G | F | B | E | Lx | J |
| 1/8 | 1/8 | -L-FJ2PB2 | 23.4 | 12.7 | 11.1 | 11.1 | 9.7 | 2.3 | 18.3 | 10.3 |
| 3/16 | 1/8 | -L-FJ3PB2 | 25.7 | 13.7 | 12.7 | 12.7 | 9.7 | 3.3 | 18.8 | 10.3 |
| 1/4 | 1/8 | -L-FJ4PB2 | 26.9 | 15.2 | 14.3 | 12.7 | 9.7 | 4.8 | 18.8 | 10.3 |
| 1/4 | 1/4 | -L-FJ4PB4 | 26.9 | 15.2 | 14.3 | 12.7 | 14.2 | 4.8 | 23.4 | 13.7 |
| 3/8 | 1/4 | -L-FJ6PB4 | 30.5 | 16.8 | 17.5 | 15.9 | 14.2 | 7.1 | 25.4 | 13.7 |
| 1/2 | 3/8 | -L-FJ8PB6 | 34.8 | 22.9 | 22.2 | 19.1 | 14.2 | 10.4 | 28.8 | 17.2 |
| 1/2 | 1/2 | -L-FJ8PB8 | 36.1 | 22.9 | 22.2 | 20.6 | 19.1 | 10.4 | 33.0 | 21.3 |
| 5/8 | 1/2 | -L-FJ10PB8 | 36.3 | 24.4 | 25.4 | 2.2 | 19.1 | 12.7 | 35.1 | 21.3 |
| 3/4 | 3/4 | -L-FJ12PB12 | 39.9 | 24.4 | 28.6 | 27.0 | 19.1 | 15.7 | 36.8 | 26.7 |
| 1 | 3/4 | -L-FJ16PB12 | 49.3 | 31.2 | 38.1 | 34.9 | 19.1 | 22.4 | 41.9 | 26.7 |
| | 1 | -L-FJ16PB16 | 49.3 | 31.2 | 38.1 | 34.9 | 20.6 | 22.4 | 46.7 | 33.4 |

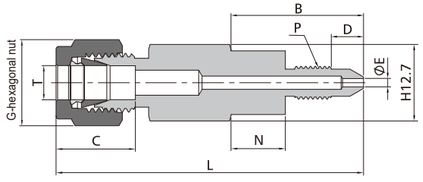
## Automatic welding head for ferrule




Imperial Tube — Tube automatic welding

| T-Tube outer diameter (in.) | Tx-Tube outer diameter (in.) | Basic ordering number | Size,mm | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | L | C | G | F | B | E | Bx | J |
| 1/4 | 1/4 | -S-FJ4TB4A | 44.2 | 15.2 | 14.3 | 12.7 | 19.1 | 4.5 | 0.5 | 7.4 |
| 3/8 | 3/8 | -S-FJ6TB6A | 46.7 | 16.8 | 17.5 | 15.9 | 19.1 | 7.8 | 0.8 | 10.4 |
| 1/2 | 1/2 | -S-FJ8TB8A | 50.5 | 22.9 | 2.2 | 20.6 | 19.1 | 10.4 | 1.0 | 14.0 |

## Compression Fittings




- The ferrule calibration connector can be directly connected to the pressure transmitter outlet, which is easy to install.
- Two structures of calibration connectors are available.

| T-Tube outer diameter (in.) | P-SAE/MS thread size | Basic ordering number | Size,mm | | | | | | | Pressure transmitter type |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | L | B | C | D | E | G | N | |
| 1/4 | 1/4-28 | -S-FJ41428 | 42.9 | 19.8 | 15.2 | 10.9 | 1.5 | 14.3 | - | Honeywell |
| 1/4 | 5/16-24 | -S-FJ451624 | 58.9 | 35.8 | 15.2 | 10.2 | 1.5 | 14.3 | 10.4 | Rosemount/Foxboro |

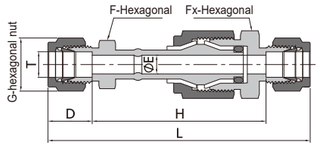
## Insulated ferrule joint

Material

| Element | Material |
|---|---|
| Insulator | Polyamide-imide |
| O-Ring | 70 degrees FKN |
| Retaining Ring | Pure PTFE |

Technical Data

- Insulator Resistance: 10x10$^6$Ω at 10 VDC and 70°F (21°C). [6]
- Maximum Working Pressure: 344 bar (5000 psig) at 70°F (21°C).
- Temperature Range: -4°F (-20°C) to 200°F (93°C).

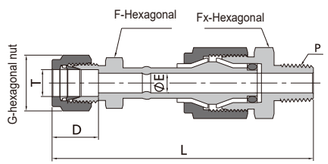



**Imperial Tube**

| T-Tube outer diameter (in.) | Basic ordering number | Size, in.(mm) | | | | | | |
|---|---|---|---|---|---|---|---|---|
| | | L | D | G | H | E | F | Fx |
| 1/4 | -DF-FJ4 | 3.77(95.7) | 0.60(15.2) | 0.56(14.3) | 2.57(65.3) | 0.19(4.8) | 0.50(12.7) | 0.81(20.6) |
| 3/8 | -DF-FJ6 | 3.92(99.6) | 0.66(16.8) | 0.69(17.5) | 2.59(65.8) | 0.28(7.1) | 0.63(15.9) | 0.81(20.6) |
| 1/2 | -DF-FJ8 | 4.17(106.0) | 0.90(22.9) | 0.87(22.2) | 2.37(60.2) | 0.28(7.1) | 0.81(20.6) | 0.81(20.6) |

**Metric Tube**

| T-Tube outer diameter (mm) | Basic ordering number | Size, mm(in.) | | | | | | |
|---|---|---|---|---|---|---|---|---|
| | | L | D | G | H | E | F | Fx |
| 12 | -DF-MJ12 | 107.0(4.21) | 22.8(0.90) | 22.0(0.87) | 61.7(2.43) | 7.1(0.28) | 22.0(0.87) | 22.0(0.87) |




Dimension "E" is the minimum nominal orifice, which may be larger on the pipe thread end or the straight thread end.

**Imperial Tube** — NPT Thread

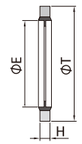
| T-Tube outer diameter (in.) | P-NPT Size | Basic ordering number | Size, in.(mm) | | | | | |
|---|---|---|---|---|---|---|---|---|
| | | | L | D | G | E | F | Fx |
| 3/8 | 1/4 | -DF-FJ6N4 | 3.73(94.7) | 0.66(16.8) | 0.69(17.5) | 0.28(7.1) | 0.63(15.9) | 0.87(22.2) |







## RS Gasket




RS gaskets provide sealing for ISO parallel male threads. The gasket consists of a fluorocarbon FKM or nitrile rubber inner ring and a carbon steel or stainless steel outer ring.

| ISO parallel thread sizes | Basic ordering number | Size, mm | | |
|---|---|---|---|---|
| | | T | E | H |
| 1/8 | -RS-2 | 16.0 | 10.4 | 2.0 |
| 1/4 | -RS-4 | 20.6 | 13.7 | |
| 3/8 | -RS-6 | 23.9 | 17.3 | |
| 1/2 | -RS-8 | 28.7 | 21.6 | 2.5 |
| 3/4 | -RS-12 | 35.1 | 26.9 | |
| 1 | -RS-16 | 42.9 | 33.8 | |

| Metric Thread Sizes | Basic ordering number | Size, mm | | |
|---|---|---|---|---|
| | | T | E | H |
| M8 x 1 | -RS-M8 | 13 | 8.7 | 1.0 |
| M10 x 1 | -RS-M10 | 16 | 10.7 | 1.5 |
| M12 x 1.5 | -RS-M12 | 18 | 12.7 | |
| M14 x 1.5 | -RS-M14 | 22 | 14.7 | |
| M16 x 1.5 | -RS-M16 | 24 | 16.7 | |
| M18 x 1.5 | -RS-M18 | 26 | 18.7 | |
| M20 x 1.5 | -RS-M20 | 28 | 20.7 | |
| M22 x 1.5 | -RS-M22 | 30 | 22.7 | 2.0 |
| M24 x 1.5 | -RS-M24 | 32 | 24.7 | |
| M27 x 2 | -RS-M27 | 36 | 27.2 | |
| M30 x 2 | -RS-M30 | 39 | 30.7 | |
| M33 x 2 | -RS-M33 | 42 | 33.7 | |
| M36 x 2 | -RS-M36 | 48 | 37.0 | 2.5 |
| M39 x 2 | -RS-M39 | 51 | 40.0 | |
| M42 x 2 | -RS-M42 | 53 | 42.7 | |
| M45 x 2 | -RS-M45 | 57 | 46.0 | 3.0 |
| M48 x 2 | -RS-M48 | 59 | 48.7 | |

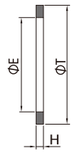
Ordering Information

| Washer | | Code |
|---|---|---|
| Outer ring | Inner Circle | |
| Stainless steel | FKM | SSF |
| Carbon Steel | FKM | CSF |
| | Nitrile rubber | CSB |

Example:
The complete ordering number for an RS gasket with a nitrile rubber inner ring and a carbon steel outer ring to provide sealing for 1/8 ISO parallel male threads is: CSB-RS-2.

RS gaskets are for use with RS fittings only.

## RP Gasket




RP gaskets provide sealing for ISO parallel male threads.
RP gaskets can be used with RS fittings.

| ISO parallel thread sizes | Basic ordering number | Size,mm | | |
|---|---|---|---|---|
| | | T | E | H |
| 1/8 | -RP-2 | 15.0 | 9.9 | 1.0 |
| 1/4 | -RP-4 | 19.1 | 13.2 | 1.5 |
| 3/8 | -RP-6 | 23.1 | 16.8 | |
| 1/2 | -RP-8 | 26.9 | 21.1 | 2.0 |
| 3/4 | -RP-12 | 33.0 | 26.7 | |
| 1 | -RP-16 | 40.1 | 33.2 | |

| Metric Thread Sizes | Basic ordering number | Size,mm | | |
|---|---|---|---|---|
| | | T | E | H |
| M8 x 1 | -RP-M8 | 13.2 | 8.2 | 1.5 |
| M10 x 1 | -RP-M10 | 15.2 | 10.2 | |
| M12 x 1.5 | -RP-M12 | 18.2 | 12.2 | 2.0 |
| M14 x 1.5 | -RP-M14 | 20.2 | 14.2 | |
| M16 x 1.5 | -RP-M16 | 22.2 | 16.2 | |
| M18 x 1.5 | -RP-M18 | 24.2 | 18.2 | |
| M20 x 1.5 | -RP-M20 | 26.2 | 20.2 | |
| M22 x 1.5 | -RP-M22 | 28.2 | 22.2 | |
| M24 x 1.5 | -RP-M24 | 30.2 | 24.2 | |
| M27 x 2 | -RP-M27 | 33.3 | 27.2 | 2.5 |
| M30 x 2 | -RP-M30 | 37.3 | 30.2 | |
| M33 x 2 | -RP-M33 | 40.3 | 33.2 | |
| M36 x 2 | -RP-M36 | 43.3 | 36.2 | |
| M39 x 2 | -RP-M39 | 47.3 | 39.2 | |
| M42 x 2 | -RP-M42 | 50.3 | 42.2 | |
| M45 x 2 | -RP-M45 | 53.3 | 45.2 | |
| M48 x 2 | -RP-M48 | 56.3 | 48.2 | |

## RG Gasket

RG provides sealing for ISO parallel male threads on pressure gauge equipment.

| ISO parallel thread sizes | Basic ordering number | Size,mm | | |
|---|---|---|---|---|
| | | T | E | H |
| 1/4 | -RG-4 | 10.7 | 7.6 | 1.8 |
| 3/8 | -RG-6 | 14.2 | 8.6 | 2.3 |
| 1/2 | -RG-8 | 17.8 | 9.1 | 2.5 |

## RG Gasket

| Metric Thread Sizes | Basic ordering number | Size,mm | | |
|---|---|---|---|---|
| | | T | E | H |
| M10 x 1 | -RG-M10 | 8.3 | 3.3 | 1.5 |
| M12 x 1.5 | -RG-M12 | 9.7 | 5.4 | 2.0 |
| M14 x 1.5 | -RG-M14 | 11.7 | 6.4 | |
| M16 x 1.5 | -RG-M16 | 13.7 | 8.4 | |
| M18 x 1.5 | -RG-M18 | 15.7 | 10.0 | |
| M20 x 1.5 | -RG-M20 | 17.6 | 11.4 | |
| M22 x 1.5 | -RG-M22 | 19.6 | 13.4 | |
| M24 x 1.5 | -RG-M24 | 21.6 | 14.8 | |
| M27 x 2 | -RG-M27 | 24.0 | 13.9 | 2.5 |
| M30 x 2 | -RG-M30 | 27.0 | 19.5 | |
| M33 x 2 | -RG-M33 | 30.0 | 21.5 | |
| M36 x 2 | -RG-M36 | 33.0 | 23.5 | |
| M39 x 2 | -RG-M39 | 36.0 | 24.5 | |
| M42 x 2 | -RG-M42 | 38.9 | 29.5 | |
| M45 x 2 | -RG-M45 | 41.9 | 30.0 | |
| M48 x 2 | -RG-M48 | 44.9 | 32.5 | |

## RJ Gasket

RJ gaskets provide sealing for ISO parallel male threads on Japanese pressure gauge equipment.

| ISO parallel thread sizes | Basic ordering number | Size,mm | | |
|---|---|---|---|---|
| | | T | E | H |
| 1/4 | -RJ-4 | 10.9 | 5.6 | 1.0 |
| 3/8 | -RJ-6 | 13.9 | 5.6 | 1.0 |
| 1/2 | -RJ-8 | 17.8 | 5.6 | 1.0 |

### Ordering Information

To complete the basic ordering number, prefix the material designator to the basic ordering number.

| Material | Code |
|---|---|
| Copper | CU |
| 316L Stainless Steel | 6L |
| Hardened cardboard | QB |
| PTFE | T |

example:
CU-RP-2, 6L-RG-6, QB-RG-M20, T-RJ-8.

## O-Ring



O-rings for SAE/MS straight thread fittings

| SAE/MS thread size | Order Number | Material |
|---|---|---|
| 5/16-24 | VI9-902 | 90 degree Fluorocarbon FKM |
| 3/8-24 | VI9-903 | |
| 7/16-20 | VI9-904 | |
| 1/2-20 | VI9-905 | |
| 9/16-18 | VI9-906 | |
| 3/4-16 | VI9-908 | |
| 7/8-14 | VI9-910 | |
| 1 1/16-12 | VI9-912 | |
| 1 3/16-12 | VI9-914 | |
| 1 5/16-12 | VI9-916 | |
| 1 5/8-12 | VI9-920 | |
| 1 7/8-12 | VI9-924 | |

O-rings for O-ring seals pipe threaded fittings

| NPT/ISO thread size | Order Number | Material |
|---|---|---|
| 1/8 | BN7-013 | 70 degrees NBR |
| 1/4 | BN7-113 | |
| 3/8 | BN7-116 | |
| 1/2 | BN7-118 | |

O-rings for ISO parallel thread adjustable position fittings

| ISO parallel thread sizes | Order Number | Material |
|---|---|---|
| 1/8 | VI9-502 | 90 degree Fluorocarbon FKM |
| 1/4 | VI9-111 | |
| 3/8 | VI9-113 | |
| 1/2 | VI9-508 | |
| 3/4 | VI9-119 | |
| 1 | VI9-217 | |

O-Ring Seal Straight Thread Fittings O-Ring Seal

| SAE/MS thread size | Order Number | Material |
|---|---|---|
| 5/16-24 | BN7-011 | 70 度 NBR |
| 3/8-24 | BN7-012 | |
| 7/16-20 | BN7-013 | |
| 1/2-20 | BN7-112 | |
| 9/16-18 | BN7-113 | |
| 3/4-16 | BN7-116 | |
| 1 1/16-12 | BN7-121 | |
| 1 5/16-12 | BN7-125 | |

O-Rings for Metric Threaded Fittings

| Metric Thread Sizes | Order Number | Material |
|---|---|---|
| M14 x 1.5 | BN9-M14 | 90 degrees NBR |
| M20 x 1.5 | BN9-M20 | |

## Threaded joint features

◎ Hardened and polished threads extend the life of the fitting and prevent male and female threads from biting.
◎ Elbow channel arc connection ensures smooth fluid flow.
◎ Size, material and heat number are engraved on each fitting.

## Technical Data

◎Sizes range from 1/16 to 2.
◎Thread Specifications:

| Thread Type | Specification |
|---|---|
| NPT thread | ASME B1.20.1, SAE AS71051 |
| ISO parallel thread | IS0 7-1, BS 21, JIS B0203 |
| ISO tapered thread | IS0 228, JIS B0202 |
| SAE/MS thread | ASME B1.1, SAE J475 |
| Metric thread | ISO 261 |

◎ Working temperature:
For the working temperature of E-JOE threaded connectors, refer to the E-JOE series double ferrule connectors catalog.

◎ Working pressure:
1. The working pressure value shown in the sample is based on ANSI/ASME B313 at room temperature. When the working pressure is to be determined according to ANSI/ASME B31.1 standard, multiply the working pressure shown in the sample by the coefficient in the table below.

| Materials | Coefficient |
|---|---|
| Stainless steel | 0.94 |
| Carbon steel | 0.85 |
| Copper | 1.0 |

2. To obtain the allowable working pressure at a higher temperature, multiply the allowable working pressure at ambient temperature by the temperature rise factor. For the temperature rise factor, please refer to the E-JOE series double ferrule fittings catalog.
3. For the installation torque of NPT thread and IS0 tapered thread, please refer to the E-JOE series double ferrule fittings catalog.

## Material

| Materials | Bars | Forgings | Code |
|---|---|---|---|
| 316 stainless steel | ASTM A276, ASME SA479, EN 1.4401 | ASTM A182, ASME SA182, EN 1.4401 | SS |
| 304 stainless steel | ASTM A276, ASME SA479, EN 1.4301 | ASTM A182, ASME SA182, EN 1.4301 | S4 |
| Alloy 400/R-405 | ASTM B164, ASME SB164 | ASTM B564 ASME SB564 | M |
| Alloy 600 | ASTM B166, ASME SB166 | ASTM B564, ASME SB564 | INC |
| Alloy C-276 | ASTM B574 | ASTM B564, | HC |
| Brass | ASME B16/ASTM B453 | ASTM B283 | B |
| Carbon Steel | ASTM A108 | A105 | CS |

## Ordering Information

◎ To complete the basic ordering number, add the material designator to the beginning of the ordering number.
Example:
1. A 316 stainless steel hexagonal male fitting with a 1/4NPT male thread has a complete ordering number of: SS-S-N4.
2. A brass male-female fitting with a 1/2NPT male thread and a 1/4-inch straight thread has a complete ordering number of: B-S-FN8BS4.

◎ When special cleaning and packaging of fittings is required, meeting the cleaning requirements of ASTM G93 Level C, add "-F2" to the end of the ordering number.
Example: SS-S-N4-F2

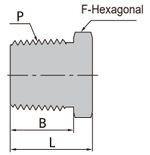
## Warn:

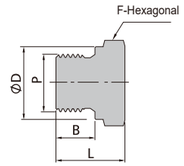
◎ Do not loosen and tighten joints while the system is pressurized.
◎ Always use appropriate thread sealants on tapered pipe threads.
◎ To ensure effective sealing of the system, parallel threads must select appropriate sealing methods.





## Threaded plug




NPT Male Thread

| P-NPT Size | Basic order number | Size,mm | | |
|---|---|---|---|---|
| | | L | F | B |
| 1/16 | -HP-N1 | 14.2 | 7.9 | 9.7 |
| 1/8 | -HP-N2 | 14.2 | 11.1 | 9.7 |
| 1/4 | -HP-N4 | 19.1 | 14.3 | 14.2 |
| 3/8 | -HP-N6 | 19.8 | 17.5 | 14.2 |
| 1/2 | -HP-N8 | 24.6 | 22.2 | 19.1 |
| 3/4 | -HP-N12 | 30.7 | 27.0 | 19.1 |
| 1 | -HP-N16 | 38.1 | 34.9 | 23.9 |
| 1 1/4 | -HP-N20 | 38.4 | 44.5 | 23.9 |
| 1 1/2 | -HP-N24 | 43.7 | 50.8 | 26.2 |
| 2 | -HP-N32 | 50.8 | 69.9 | 26.2 |

ISO parallel male thread

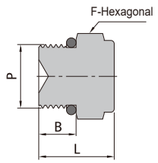
| P-RS Size | Basic order number | Size,mm | | | |
|---|---|---|---|---|---|
| | | L | F | B | D |
| 1/8 | -HP-BS2 | 14.0 | 14.3 | 7.1 | 13.7 |
| 1/4 | -HP-BS4 | 19.8 | 19.1 | 11.2 | 18.0 |
| 3/8 | -HP-BS6 | 19.8 | 22.2 | 11.2 | 21.8 |
| 1/2 | -HP-BS8 | 25.1 | 27.0 | 14.0 | 25.9 |
| 3/4 | -HP-BS12 | 28.7 | 33.3 | 15.7 | 32.0 |
| 1 | -HP-BS16 | 30.7 | 41.3 | 18.0 | 39.1 |

ISO tapered male thread

| P-RT Size | Basic order number | Size,mm | | |
|---|---|---|---|---|
| | | L | F | B |
| 1/16 | -HP-RT1 | 14.2 | 7.9 | 9.7 |
| 1/8 | -HP-RT2 | 14.2 | 11.1 | 9.7 |
| 1/4 | -HP-RT4 | 19.1 | 14.3 | 14.2 |
| 3/8 | -HP-RT6 | 19.8 | 17.5 | 14.2 |
| 1/2 | -HP-RT8 | 24.6 | 22.2 | 19.1 |
| 3/4 | -HP-RT12 | 30.7 | 27.0 | 19.1 |
| 1 | -HP-RT16 | 38.1 | 34.9 | 23.9 |
| 1 1/4 | -HP-RT20 | 38.4 | 44.5 | 23.9 |
| 1 1/2 | -HP-RT24 | 43.7 | 50.8 | 26.2 |
| 2 | -HP-RT32 | 50.8 | 69.9 | 26.2 |

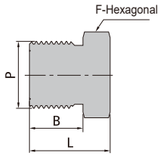
Metric Male Thread

| P - Metric thread size | Basic order number | Size,mm | | | |
|---|---|---|---|---|---|
| | | L | F | B | D |
| M14 x 1.5 | -HP-MR14 | 21 | 20.6 | 12 | 18.8 |
| M16 x 1.5 | -HP-MR16 | 23 | 22.2 | 12 | 20.8 |
| M18 x 1.5 | -HP-MR18 | 25 | 23.8 | 12 | 22.8 |
| M20 x 1.5 | -HP-MR20 | 26.5 | 25.4 | 14 | 24.8 |
| M22 x 1.5 | -HP-MR22 | 28.5 | 28.6 | 14 | 26.8 |
| M24 x 1.5 | -HP-MR24 | 29 | 35.0 | 14 | 28.8 |
| M27 x 2 | -HP-MR27 | 30 | 36.5 | 16 | 31.8 |



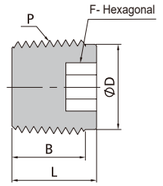

SAE/MS Male Thread

| Basic order number | | Size,mm | | |
|---|---|---|---|---|
| | | L | F | B |
| 7/16-20 | -HP-ST7 | 19.3 | 14.3 | 9.1 |
| 9/16-18 | -HP-ST9 | 20.8 | 17.5 | 9.9 |
| 3/4-16 | -HP-ST12 | 22.6 | 22.2 | 11.2 |
| 1 1/16-12 | -HP-ST17 | 28.4 | 31.8 | 15.0 |
| 1 5/16-12 | -HP-ST21 | 30.0 | 38.1 | 15.0 |



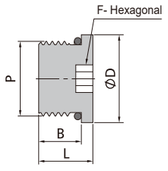

Metric Male Thread

| P - Metric thread size | Basic order number | Size,mm | | |
|---|---|---|---|---|
| | | L | F | B |
| M14 x 1.5 | -HP-MS14 | 18 | 16 | 13 |
| M16 x 1.5 | -HP-MS16 | 20 | 18 | 14 |
| M18 x 1.5 | -HP-MS18 | 22 | 19 | 15 |
| M20 x 1.5 | -HP-MS20 | 24 | 22 | 16 |
| M22 x 1.5 | -HP-MS22 | 26 | 24 | 17 |
| M24 x 1.5 | -HP-MS24 | 26 | 27 | 17 |
| M27 x 2 | -HP-MS27 | 27 | 30 | 18 |
| M30 x 2 | -HP-MS30 | 32 | 32 | 20 |




ISO tapered male thread

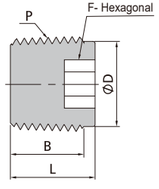
| P-RT Size | Basic order number | Size,mm | | | |
|---|---|---|---|---|---|
| | | L | F | B | D |
| 1/16 | -DP-RT1 | 7.6 | 4.0 | 7.4 | 7.4 |
| 1/8 | -DP-RT2 | 10.4 | 4.8 | 7.4 | 9.4 |
| 1/4 | -DP-RT4 | 15.5 | 6.4 | 12.4 | 12.1 |
| 3/8 | -DP-RT6 | 15.5 | 7.9 | 12.4 | 15.7 |
| 1/2 | -DP-RT8 | 19.3 | 9.5 | 16.2 | 19.3 |
| 3/4 | -DP-RT12 | 19.8 | 14.3 | 16.7 | 25.7 |
| 1 | -DP-RT16 | 20.8 | 15.9 | 17.7 | 31.8 |




SAE/MS Male Thread

| P-SAE/MS thread size | Basic order number | Size,mm | | | |
|---|---|---|---|---|---|
| | | L | F | B | D |
| 7/16-20 | -DP-ST7 | 11.4 | 4.8 | 9.1 | 14.2 |
| 9/16-18 | -DP-ST9 | 12.2 | 6.4 | 9.9 | 17.5 |
| 3/4-16 | -DP-ST12 | 14.2 | 7.9 | 11.2 | 22.4 |
| 1 1/16-12 | -DP-ST17 | 19.1 | 14.3 | 15.0 | 31.8 |
| 1 5/16-12 | -DP-ST21 | 19.1 | 15.9 | 15.0 | 38.1 |

## Hexagon socket thread plug




NPT Male Thread

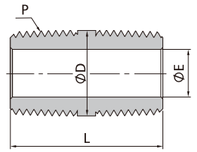
| P-NPT Size | Basic order number | Size,mm | | | |
|---|---|---|---|---|---|
| | | L | F | B | D |
| 1/16 | -DP-N1 | 7.6 | 4.0 | 7.4 | 7.4 |
| 1/8 | -DP-N2 | 10.4 | 4.8 | 7.4 | 9.4 |
| 1/4 | -DP-N4 | 15.5 | 6.4 | 12.4 | 12.1 |
| 3/8 | -DP-N6 | 15.0 | 7.9 | 11.9 | 15.7 |
| 1/2 | -DP-N8 | 19.3 | 9.5 | 16.2 | 19.3 |
| 3/4 | -DP-N12 | 19.8 | 14.3 | 16.7 | 25.7 |
| 1 | -DP-N16 | 20.8 | 15.9 | 17.7 | 31.8 |







## Short pipe thread connector



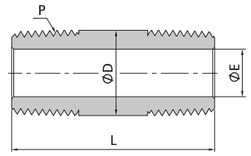

NPT Male Thread

| P-NPT Size | Basic order number | Size,mm | | | Pressure Rating psig(bar) | |
|---|---|---|---|---|---|---|
| | | L | D | E | 316 stainless steel, carbon steel | Brass |
| 1/16 | -DS-N1 | 19.1 | 7.9 | 3.0 | 11000 (757) | 5500 (378) |
| 1/8 | -DS-N2 | 19.1 | 10.3 | 4.8 | 10000 (689) | 5000 (344) |
| 1/4 | -DS-N4 | 28.4 | 13.7 | 7.1 | 8000 (551) | 4000 (275) |
| 3/8 | -DS-N6 | 28.4 | 17.1 | 9.6 | 7800 (537) | 3900 (268) |
| 1/2 | -DS-N8 | 38.1 | 21.3 | 11.9 | 7700 (530) | 3800 (261) |
| 3/4 | -DS-N12 | 38.1 | 26.7 | 15.7 | 7300 (502) | 3600 (248) |
| 1 | -DS-N16 | 47.8 | 33.4 | 22.4 | 5300 (365) | 2600 (179) |

ISO tapered male thread

| P-RT Size | Basic order number | Size,mm | | | Pressure Rating psig(bar) | |
|---|---|---|---|---|---|---|
| | | L | D | E | 316 stainless steel, carbon steel | Brass |
| 1/16 | -DS-RT1 | 19.1 | 7.9 | 3.0 | 11000 (757) | 5500 (378) |
| 1/8 | -DS-RT2 | 19.1 | 10.3 | 4.8 | 10000 (689) | 5000 (344) |
| 1/4 | -DS-RT4 | 28.4 | 13.7 | 7.1 | 8000 (551) | 4000 (275) |
| 3/8 | -DS-RT6 | 28.4 | 17.1 | 9.7 | 7800 (537) | 3900 (268) |
| 1/2 | -DS-RT8 | 38.1 | 21.3 | 11.9 | 7700 (530) | 3800 (261) |
| 3/4 | -DS-RT12 | 38.1 | 26.7 | 15.7 | 7300 (502) | 3600 (248) |
| 1 | -DS-RT16 | 47.8 | 33.4 | 22.4 | 5300 (365) | 2600 (179) |

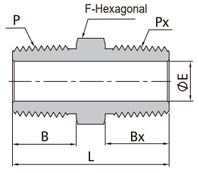
## Long pipe threaded connector




NPT Male Thread

| P-NPT Size | Basic order number | Size,mm | | | Pressure Rating psig(bar) | |
|---|---|---|---|---|---|---|
| | | L | D | E | 316 stainless steel, carbon steel | Brass |
| 1/8 | -DS-N2-38.1 | 38.1 | 10.3 | 4.8 | 10000 (689) | 5000 (344) |
| 1/8 | -DS-N2-50.8 | 50.8 | 10.3 | 4.8 | 10000 (689) | 5000 (344) |
| 1/8 | -DS-N2-63.5 | 63.5 | 10.3 | 4.8 | 10000 (689) | 5000 (344) |
| 1/8 | -DS-N2-76.2 | 76.2 | 10.3 | 4.8 | 10000 (689) | 5000 (344) |
| 1/4 | -DS-N4-38.1 | 38.1 | 13.7 | 7.1 | 8000 (551) | 4000 (275) |
| 1/4 | -DS-N4-50.8 | 50.8 | 13.7 | 7.1 | 8000 (551) | 4000 (275) |
| 1/4 | -DS-N4-63.5 | 63.5 | 13.7 | 7.1 | 8000 (551) | 4000 (275) |
| 1/4 | -DS-N4-76.2 | 76.2 | 13.7 | 7.1 | 8000 (551) | 4000 (275) |
| 1/4 | -DS-N4-101.6 | 101.6 | 13.7 | 7.1 | 8000 (551) | 4000 (275) |
| 3/8 | -DS-N6-38.1 | 38.1 | 17.1 | 9.7 | 7800 (537) | 3900 (268) |
| 3/8 | -DS-N6-50.8 | 50.8 | 17.1 | 9.7 | 7800 (537) | 3900 (268) |
| 3/8 | -DS-N6-63.5 | 63.5 | 17.1 | 9.7 | 7800 (537) | 3900 (268) |
| 3/8 | -DS-N6-76.2 | 76.2 | 17.1 | 9.7 | 7800 (537) | 3900 (268) |
| 3/8 | -DS-N6-101.6 | 101.6 | 17.1 | 9.7 | 7800 (537) | 3900 (268) |
| 1/2 | -DS-N8-50.8 | 50.8 | 21.3 | 11.9 | 7700 (530) | 3800 (261) |
| 1/2 | -DS-N8-76.2 | 76.2 | 21.3 | 11.9 | 7700 (530) | 3800 (261) |
| 1/2 | -DS-N8-101.6 | 101.6 | 21.3 | 11.9 | 7700 (530) | 3800 (261) |
| 1/2 | -DS-N8-152.4 | 152.4 | 21.3 | 11.9 | 7700 (530) | 3800 (261) |
| 3/4 | -DS-N12-50.8 | 50.8 | 26.7 | 15.7 | 7300 (502) | 3600 (248) |
| 3/4 | -DS-N12-76.2 | 76.2 | 26.7 | 15.7 | 7300 (502) | 3600 (248) |
| 3/4 | -DS-N12-101.6 | 101.6 | 26.7 | 15.7 | 7300 (502) | 3600 (248) |
| 1 | -DS-N16-76.2 | 76.2 | 33.4 | 22.4 | 5300 (365) | 2600 (179) |
| 1 | -DS-N16-101.6 | 101.6 | 33.4 | 22.4 | 5300 (365) | 2600 (179) |

## Hexagonal male thread connector




NPT Male Thread

| P-NPT Size | Px-NPT Size | Basic order number | Size,mm | | | | | Pressure Rating psig(bar) | |
|---|---|---|---|---|---|---|---|---|---|
| | | | L | F | B | Bx | E | 316 stainless steel, carbon steel | Brass |
| 1/16 | 1/16 | -S-N1 | 25.6 | 7.9 | 9.7 | 9.7 | 3.0 | 11000 (757) | 5500 (378) |
| 1/8 | 1/16 | -S-N2N1 | 25.6 | 11.1 | 9.7 | 9.7 | 3.0 | 11000 (757) | 5500 (378) |
| 1/8 | 1/8 | -S-N2 | 25.6 | 11.1 | 9.7 | 9.7 | 4.8 | 10000 (689) | 5000 (344) |
| 1/4 | 1/16 | -S-N4N1 | 31.0 | 14.3 | 14.2 | 9.7 | 3.0 | 11000 (757) | 5500 (378) |
| 1/4 | 1/8 | -S-N4N2 | 31.0 | 14.3 | 14.2 | 9.7 | 4.8 | 10000 (689) | 5000 (344) |
| 1/4 | 1/4 | -S-N4 | 35.6 | 14.3 | 14.2 | 14.2 | 7.1 | 8000 (551) | 4000 (275) |
| 3/8 | 1/16 | -S-N6N1 | 31.8 | 17.5 | 14.2 | 9.7 | 3.0 | 11000 (757) | 5500 (378) |
| 3/8 | 1/8 | -S-N6N2 | 31.8 | 17.5 | 14.2 | 9.7 | 4.8 | 10000 (689) | 5000 (344) |
| 3/8 | 1/4 | -S-N6N4 | 36.3 | 17.5 | 14.2 | 14.2 | 7.1 | 8000 (551) | 4000 (275) |
| 3/8 | 3/8 | -S-N6 | 36.3 | 17.5 | 14.2 | 14.2 | 9.7 | 7800 (537) | 3900 (268) |
| 1/2 | 1/8 | -S-N8N2 | 37.3 | 22.2 | 19.1 | 9.7 | 4.8 | 7700 (530) | 3800 (261) |
| 1/2 | 1/4 | -S-N8N4 | 41.9 | 22.2 | 19.1 | 14.2 | 7.1 | 8000 (551) | 4000 (275) |
| 1/2 | 3/8 | -S-N8N6 | 41.9 | 22.2 | 19.1 | 14.2 | 9.7 | 7800 (537) | 3900 (268) |
| 1/2 | 1/2 | -S-N8 | 46.7 | 22.2 | 19.1 | 19.1 | 11.9 | 7700 (530) | 3800 (261) |
| 3/4 | 1/8 | -S-N12N2 | 40.4 | 27.0 | 19.1 | 9.7 | 4.8 | 10000 (689) | 5000 (344) |
| 3/4 | 1/4 | -S-N12N4 | 41.9 | 27.0 | 19.1 | 14.2 | 7.1 | 8000 (551) | 4000 (275) |
| 3/4 | 3/8 | -S-N12N6 | 45.2 | 27.0 | 19.1 | 14.2 | 9.7 | 7800 (537) | 3900 (268) |
| 3/4 | 1/2 | -S-N12N8 | 46.7 | 27.0 | 19.1 | 19.1 | 11.9 | 7700 (530) | 3800 (261) |
| 3/4 | 3/4 | -S-N12 | 46.7 | 27.0 | 19.1 | 19.1 | 15.7 | 7300 (502) | 3600 (248) |
| 1 | 1/8 | -S-N16N2 | 45.2 | 34.9 | 23.9 | 9.7 | 4.8 | 10000 (689) | 5000 (344) |
| 1 | 1/4 | -S-N16N4 | 49.3 | 34.9 | 23.9 | 14.2 | 7.1 | 5300 (365) | 2600 (179) |
| 1 | 3/8 | -S-N16N6 | 50.0 | 34.9 | 23.9 | 14.2 | 9.7 | 7800 (537) | 3900 (268) |
| 1 | 1/2 | -S-N16N8 | 54.1 | 34.9 | 23.9 | 19.1 | 11.9 | 7700 (530) | 3800 (261) |
| 1 | 3/4 | -S-N16N12 | 54.1 | 34.9 | 23.9 | 19.1 | 15.7 | 7300 (502) | 3600 (248) |
| 1 | 1 | -S-N16 | 58.9 | 34.9 | 23.9 | 23.9 | 22.4 | 5300 (365) | 2600 (179) |
| 1 1/4 | 1 | -S-N20N16 | 62.2 | 44.5 | 23.9 | 23.9 | 22.4 | 5300 (365) | 2600 (179) |
| 1 1/4 | 1 1/4 | -S-N20 | 62.9 | 44.5 | 23.9 | 23.9 | 28.6 | 6000 (410) | 3000 (200) |
| 1 1/2 | 1 1/2 | -S-N24 | 66.3 | 50.8 | 26.2 | 26.2 | 34.0 | 5000 (344) | 2500 (172) |
| 2 | 2 | -S-N32 | 77.7 | 69.9 | 26.2 | 26.2 | 45.0 | 3900 (268) | 1900 (130) |
| Thick wall NPT male thread | | | | | | | | | |
| 1/4 | 1/4 | -S-N4-10K | 35.6 | 14.3 | 14.2 | 14.2 | 5.8 | 10000 (689) | / |
| 1/2 | 1/4 | -S-N8N4-10K | 41.9 | 22.2 | 19.1 | 14.2 | 5.8 | 10000 (689) | / |
| 1/2 | 1/2 | -S-N8-10K | 46.7 | 22.2 | 19.1 | 19.1 | 9.9 | 10000 (689) | / |

ISO tapered male thread

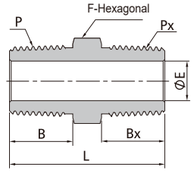
| P-RT Size | Px-RT Size | Basic order number | Size,mm | | | | | Pressure Rating psig(bar) | |
|---|---|---|---|---|---|---|---|---|---|
| | | | L | F | B | Bx | E | 316 stainless steel, carbon steel | Brass |
| 1/8 | 1/8 | -S-RT2 | 25.6 | 11.1 | 9.7 | 9.7 | 4.8 | 10000 (689) | 5000 (344) |
| 1/4 | 1/4 | -S-RT4 | 35.6 | 14.3 | 14.2 | 14.2 | 7.1 | 8000 (551) | 4000 (275) |
| 3/8 | 3/8 | -S-RT6 | 36.3 | 17.5 | 14.2 | 14.2 | 9.7 | 7800 (537) | 3900 (268) |
| 1/2 | 1/2 | -S-RT8 | 46.7 | 22.2 | 19.1 | 19.1 | 11.9 | 7700 (530) | 3800 (261) |
| 3/4 | 3/4 | -S-RT12 | 46.7 | 27.0 | 19.1 | 19.1 | 15.7 | 7300 (502) | 3600 (248) |
| 1 | 1 | -S-RT16 | 58.9 | 34.9 | 23.9 | 23.9 | 22.4 | 5300 (365) | 2600 (179) |





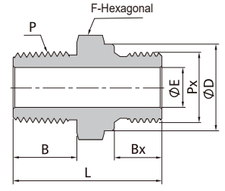


## Hexagonal male thread connector



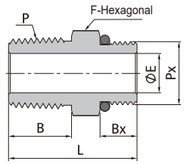

NPT Male Thread — ISO tapered male thread

| P-NPT Size | Px-RT Size | Basic order number | Size,mm | | | | | Pressure Rating psig(bar) | |
|---|---|---|---|---|---|---|---|---|---|
| | | | L | F | B | Bx | E | 316 stainless steel, carbon steel | Brass |
| 1/8 | 1/8 | -S-N2RT2 | 25.6 | 11.1 | 9.7 | 9.7 | 4.8 | 10000 (689) | 5000 (344) |
| 1/4 | 1/4 | -S-N4RT4 | 35.6 | 14.3 | 14.2 | 14.2 | 7.1 | 8000 (551) | 4000 (275) |
| 3/8 | 3/8 | -S-N6RT6 | 36.3 | 17.5 | 14.2 | 14.2 | 9.7 | 7800 (537) | 3900 (268) |
| 1/2 | 1/2 | -S-N8RT8 | 46.7 | 22.2 | 19.1 | 19.1 | 11.9 | 7700 (530) | 3800 (261) |
| 3/4 | 3/4 | -S-N12RT12 | 46.7 | 27.0 | 19.1 | 19.1 | 15.7 | 7300 (502) | 3600 (248) |
| 1 | 1 | -S-N16RT16 | 58.9 | 34.9 | 23.9 | 23.9 | 22.4 | 5300 (365) | 2600 (179) |




NPT Male Thread — ISO parallel male thread

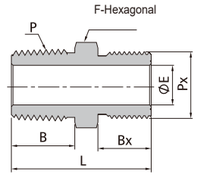
| P-NPT Size | Px-RS Size | Basic order number | Size,mm | | | | | | Pressure Rating psig(bar) | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | L | F | B | Bx | E | D | 316 stainless steel, carbon steel | Brass |
| 1/8 | 1/8 | -S-N2BS2 | 27.7 | 14.3 | 9.7 | 7.1 | 4.1 | 13.7 | 11400 (785) | 5700 (392) |
| 1/4 | 1/4 | -S-N4BS4 | 36.8 | 19.1 | 14.2 | 11.2 | 5.8 | 18.0 | 10300 (709) | 5100 (351) |
| 3/8 | 3/8 | -S-N6BS6 | 37.6 | 22.2 | 14.2 | 11.2 | 7.9 | 21.6 | 10300 (709) | 5100 (351) |
| 1/2 | 1/2 | -S-N8BS8 | 44.4 | 27.0 | 19.1 | 14.2 | 11.9 | 25.9 | 7600 (523) | 3800 (261) |
| 3/4 | 3/4 | -S-N12BS12 | 49.0 | 33.3 | 19.1 | 15.7 | 15.7 | 32.0 | 7300 (502) | 3600 (248) |
| 1 | 1 | -S-N16BS16 | 56.6 | 41.3 | 23.9 | 18.3 | 19.8 | 38.9 | 7400 (509) | 3700 (254) |




NPT Male Thread — SAE/MS Male Thread

| P-NPT Size | Px-SAE/MS thread size | Basic order number | Size,mm | | | | | Pressure Rating psig(bar) |
|---|---|---|---|---|---|---|---|---|
| | | | L | F | B | Bx | E | 316 stainless steel, carbon steel |
| 1/4 | 7/16-20 | -S-N4ST7 | 30.5 | 14.3 | 14.2 | 9.1 | 5.1 | 4500 (310) |
| 3/8 | 9/16-18 | -S-N6ST9 | 32.0 | 17.5 | 14.2 | 9.1 | 7.1 | 4500 (310) |
| 1/2 | 3/4-16 | -S-N8ST12 | 38.9 | 22.2 | 19.1 | 11.2 | 10.7 | 4500 (310) |
| 3/4 | 1 1/16-12 | -S-N12ST17 | 44.4 | 31.8 | 19.1 | 15.0 | 15.7 | 3600 (248) |
| 1 | 1 5/16-12 | -S-N16ST21 | 50.8 | 38.1 | 23.9 | 15.0 | 22.4 | 2900 (199) |

## Hexagonal male thread connector

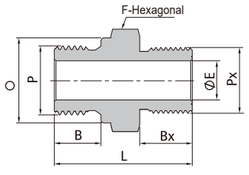



NPT Male Thread — Metric Male Thread

| P-NPT Size | Px - Metric thread size | Basic order number | Size,mm | | | | | Pressure Rating psig(bar) |
|---|---|---|---|---|---|---|---|---|
| | | | L | F | B | Bx | E | 316 stainless steel, carbon steel |
| 1/8 | M20 x 1.5 | -S-N2MS20 | 32.7 | 22.2 | 9.7 | 16 | 5.0 | 7700 (530) |
| 1/4 | M8 x 1 | -S-N4MS8 | 29.0 | 14.3 | 14.2 | 9 | 3.2 | 8000 (551) |
| 1/4 | M14 x 1.5 | -S-N4MS14 | 34.2 | 15.9 | 14.2 | 13 | 7.0 | 8000 (551) |
| 1/4 | M16 x 1.5 | -S-N4MS16 | 35.2 | 17.5 | 14.2 | 14 | 7.1 | 7800 (537) |
| 1/4 | M20 x 1.5 | -S-N4MS20 | 37.2 | 22.2 | 14.2 | 16 | 7.0 | 7700 (530) |
| 3/8 | M14 x 1.5 | -S-N6MS14 | 34.2 | 17.5 | 14.2 | 13 | 7.0 | 7800 (537) |
| 3/8 | M20 x 1.5 | -S-N6MS20 | 37.2 | 22.2 | 14.2 | 16 | 9.5 | 7700 (530) |
| 3/8 | M24 x 1.5 | -S-N6MS24 | 38.2 | 27 | 14.2 | 17 | 9.5 | 7400 (509) |
| 1/2 | M14 x 1.5 | -S-N8MS14 | 39.1 | 22.2 | 19.1 | 13 | 7.0 | 7700 (530) |
| 1/2 | M20 x 1.5 | -S-N8MS20 | 42.0 | 22.2 | 19.1 | 16 | 10.0 | 7700 (530) |
| 1/2 | M24 x 1.5 | -S-N8MS24 | 43.5 | 27 | 19.1 | 17 | 11.9 | 7400 (509) |
| 3/4 | M20 x 1.5 | -S-N12MS20 | 42.1 | 27 | 19.1 | 16 | 10.0 | 7300 (502) |
| 3/4 | M27 x 2 | -S-N12MS27 | 46.7 | 31.8 | 19.1 | 18 | 15.8 | 6100 (420) |
| 1 | M30 x 2 | -S-N16MS30 | 55.0 | 34.9 | 23.9 | 20 | 11.9 | 6100 (420) |

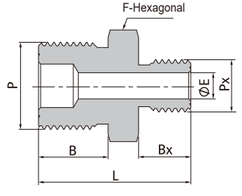
ISO tapered male thread — Metric Male Thread

| P-NPT Size | Px - Metric thread size | Basic order number | Size,mm | | | | | Pressure Rating psig(bar) |
|---|---|---|---|---|---|---|---|---|
| | | | L | F | B | Bx | E | 316 stainless steel, carbon steel |
| 1/8 | M20 x 1.5 | -S-RT2MS20 | 32.7 | 22.2 | 9.7 | 16 | 5.0 | 7700 (530) |
| 1/4 | M12 x 1.5 | -S-RT4MS12 | 33.4 | 14.3 | 14.2 | 15 | 5.0 | 8000 (551) |
| 1/4 | M20 x 1.5 | -S-RT4MS20 | 37.2 | 22.2 | 14.2 | 16 | 7.0 | 7700 (530) |
| 3/8 | M20 x 1.5 | -S-RT6MS20 | 37.2 | 22.2 | 14.2 | 16 | 9.5 | 7700 (530) |
| 1/2 | M20 x 1.5 | -S-RT8MS20 | 42.0 | 22.2 | 19.1 | 16 | 10.0 | 7700 (530) |




ISO parallel male thread — Metric Male Thread

| P-NPT Size | Px - Metric thread size | Basic order number | Size,mm | | | | | | Pressure Rating psig(bar) |
|---|---|---|---|---|---|---|---|---|---|
| | | | L | F | B | Bx | E | D | 316 stainless steel, carbon steel |
| 1/8 | M20 x 1.5 | -S-BS2MS20 | 30.1 | 22.2 | 7.1 | 16 | 4.0 | 13.7 | 7700 (530) |
| 1/4 | M18 x 1.5 | -S-BS4MS18 | 34.2 | 20.6 | 11.2 | 15 | 5.9 | 18.0 | 7800 (537) |
| 1/4 | M20 x 1.5 | -S-BS4MS20 | 36.2 | 22.2 | 11.2 | 16 | 5.9 | 18.0 | 7700 (530) |
| 3/8 | M20 x 1.5 | -S-BS6MS20 | 36.2 | 22.2 | 11.2 | 16 | 7.9 | 21.6 | 7700 (530) |
| 1/2 | M20 x 1.5 | -S-BS8MS20 | 40.2 | 22.2 | 14.0 | 16 | 11.9 | 25.9 | 7700 (530) |




Metric Male Thread

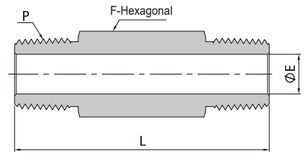
| P - Metric thread size | Px - Metric thread size | Basic order number | Size,mm | | | | | Pressure Rating psig(bar) |
|---|---|---|---|---|---|---|---|---|
| | | | L | F | B | Bx | E | 316 stainless steel, carbon steel |
| M20 x 1.5 | M10 x 1 | -S-MS20MS10 | 34 | 22.2 | 16 | 11 | 4.0 | 10000 (689) |
| M20 x 1.5 | M12 x 1.5 | -S-MS20MS12 | 35 | 22.2 | 16 | 12 | 6.0 | 9000 (620) |
| M20 x 1.5 | M14 x 1.5 | -S-MS20MS14 | 36 | 22.2 | 16 | 13 | 8.0 | 8000 (551) |
| M20 x 1.5 | M16 x 1.5 | -S-MS20MS16 | 37 | 22.2 | 16 | 14 | 9.0 | 7800 (537) |
| M20 x 1.5 | M20 x 1.5 | -S-MS20 | 39 | 22.2 | 16 | 16 | 10.0 | 7700 (530) |
| M27 x 2 | M27 x 2 | -S-MS27 | 44.5 | 30.1 | 18 | 18 | 14.0 | 7300 (502) |





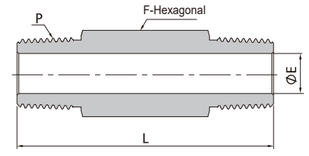


## Extended hexagonal male thread connector




NPT Male Thread

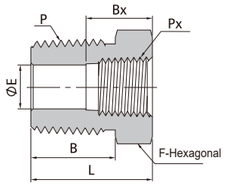
| P-NPT Size | Basic order number | Size,mm | | | Pressure Rating psig(bar) | |
|---|---|---|---|---|---|---|
| | | L | F | E | 316 stainless steel, carbon steel | Brass |
| 1/8 | -S-N2-38.1 | 38.1 | 11.1 | 4.8 | 10000 (689) | 5000 (344) |
| 1/8 | -S-N2-50.8 | 50.8 | 11.1 | 4.8 | 10000 (689) | 5000 (344) |
| 1/8 | -S-N2-63.5 | 63.5 | 11.1 | 4.8 | 10000 (689) | 5000 (344) |
| 1/8 | -S-N2-76.2 | 76.2 | 11.1 | 4.8 | 10000 (689) | 5000 (344) |
| 1/4 | -S-N4-38.1 | 38.1 | 14.3 | 7.1 | 8000 (551) | 4000 (275) |
| 1/4 | -S-N4-50.8 | 50.8 | 14.3 | 7.1 | 8000 (551) | 4000 (275) |
| 1/4 | -S-N4-63.5 | 63.5 | 14.3 | 7.1 | 8000 (551) | 4000 (275) |
| 1/4 | -S-N4-76.2 | 76.2 | 14.3 | 7.1 | 8000 (551) | 4000 (275) |
| 1/4 | -S-N4-101.6 | 101.6 | 14.3 | 7.1 | 8000 (551) | 4000 (275) |
| 3/8 | -S-N6-38.1 | 38.1 | 17.5 | 9.7 | 7800 (537) | 3900 (268) |
| 3/8 | -S-N6-50.8 | 50.8 | 17.5 | 9.7 | 7800 (537) | 3900 (268) |
| 3/8 | -S-N6-63.5 | 63.5 | 17.5 | 9.7 | 7800 (537) | 3900 (268) |
| 3/8 | -S-N6-76.2 | 76.2 | 17.5 | 9.7 | 7800 (537) | 3900 (268) |
| 3/8 | -S-N6-101.6 | 101.6 | 17.5 | 9.7 | 7800 (537) | 3900 (268) |
| 1/2 | -S-N8-50.8 | 50.8 | 22.2 | 11.9 | 7700 (530) | 3800 (261) |
| 1/2 | -S-N8-76.2 | 76.2 | 22.2 | 11.9 | 7700 (530) | 3800 (261) |
| 1/2 | -S-N8-101.6 | 101.6 | 22.2 | 11.9 | 7700 (530) | 3800 (261) |
| 1/2 | -S-N8-152.4 | 152.4 | 22.2 | 11.9 | 7700 (530) | 3800 (261) |
| 3/4 | -S-N12-50.8 | 50.8 | 27.0 | 15.7 | 7300 (502) | 3600 (248) |
| 3/4 | -S-N12-76.2 | 76.2 | 27.0 | 15.7 | 7300 (502) | 3600 (248) |
| 3/4 | -S-N12-101.6 | 101.6 | 27.0 | 15.7 | 7300 (502) | 3600 (248) |
| 1 | -S-N16-76.2 | 76.2 | 34.9 | 22.4 | 5300 (365) | 2600 (179) |
| 1 | -S-N16-101.6 | 101.6 | 34.9 | 22.4 | 5300 (365) | 2600 (179) |




ISO tapered male thread

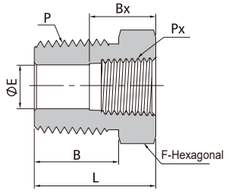
| P-RT Size | Basic order number | Size,mm | | | Pressure Rating psig(bar) | |
|---|---|---|---|---|---|---|
| | | L | F | E | 316 stainless steel, carbon steel | Brass |
| 1/8 | -S-RT2-38.1 | 38.1 | 11.1 | 4.8 | 10000 (689) | 5000 (344) |
| 1/8 | -S-RT2-50.8 | 50.8 | 11.1 | 4.8 | 10000 (689) | 5000 (344) |
| 1/8 | -S-RT2-63.5 | 63.5 | 11.1 | 4.8 | 10000 (689) | 5000 (344) |
| 1/8 | -S-RT2-76.2 | 76.2 | 11.1 | 4.8 | 10000 (689) | 5000 (344) |
| 1/4 | -S-RT4-38.1 | 38.1 | 14.3 | 7.1 | 8000 (551) | 4000 (275) |
| 1/4 | -S-RT4-50.8 | 50.8 | 14.3 | 7.1 | 8000 (551) | 4000 (275) |
| 1/4 | -S-RT4-63.5 | 63.5 | 14.3 | 7.1 | 8000 (551) | 4000 (275) |
| 1/4 | -S-RT4-76.2 | 76.2 | 14.3 | 7.1 | 8000 (551) | 4000 (275) |
| 1/4 | -S-RT4-101.6 | 101.6 | 14.3 | 7.1 | 8000 (551) | 4000 (275) |
| 3/8 | -S-RT6-38.1 | 38.1 | 17.5 | 9.7 | 7800 (537) | 3900 (268) |
| 3/8 | -S-RT6-50.8 | 50.8 | 17.5 | 9.7 | 7800 (537) | 3900 (268) |
| 3/8 | -S-RT6-63.5 | 63.5 | 17.5 | 9.7 | 7800 (537) | 3900 (268) |
| 3/8 | -S-RT6-76.2 | 76.2 | 17.5 | 9.7 | 7800 (537) | 3900 (268) |
| 3/8 | -S-RT6-101.6 | 101.6 | 17.5 | 9.7 | 7800 (537) | 3900 (268) |
| 1/2 | -S-RT8-50.8 | 50.8 | 22.2 | 11.9 | 7700 (530) | 3800 (261) |
| 1/2 | -S-RT8-76.2 | 76.2 | 22.2 | 11.9 | 7700 (530) | 3800 (261) |
| 1/2 | -S-RT8-101.6 | 101.6 | 22.2 | 11.9 | 7700 (530) | 3800 (261) |
| 1/2 | -S-RT8-152.4 | 152.4 | 22.2 | 11.9 | 7700 (530) | 3800 (261) |
| 3/4 | -S-RT12-50.8 | 50.8 | 27.0 | 15.7 | 7300 (502) | 3600 (248) |
| 3/4 | -S-RT12-76.2 | 76.2 | 27.0 | 15.7 | 7300 (502) | 3600 (248) |
| 3/4 | -S-RT12-101.6 | 101.6 | 27.0 | 15.7 | 7300 (502) | 3600 (248) |
| 1 | -S-RT16-76.2 | 76.2 | 34.9 | 22.4 | 5300 (365) | 2600 (179) |
| 1 | -S-RT16-101.6 | 101.6 | 34.9 | 22.4 | 5300 (365) | 2600 (179) |

## Large Yang Small Female Threaded Connector




NPT Male Thread — NPT Female Thread

| P-NPT Size | Px-NPT Size | Basic order number | Size,mm | | | | | Pressure Rating psig(bar) | |
|---|---|---|---|---|---|---|---|---|---|
| | | | L | F | B | Bx | E | 316 stainless steel, carbon steel | Brass |
| 1/8 | 1/16 | -S-N2FN1 | 26.2 | 11.1 | 9.7 | 9.9 | 4.8 | 6500 (447) | 3200 (220) |
| 1/4 | 1/16 | -S-N4FN1 | 21.8 | 14.3 | 14.2 | 9.9 | 4.8 | 8000 (551) | 4000 (275) |
| 1/4 | 1/8 | -S-N4FN2 | 26.9 | 14.3 | 14.2 | 10.4 | 7.1 | 6500 (447) | 3300 (227) |
| 3/8 | 1/16 | -S-N6FN1 | 21.8 | 17.5 | 14.2 | 9.9 | 4.8 | 13300 (971) | 6600 (454) |
| 3/8 | 1/8 | -S-N6FN2 | 21.8 | 17.5 | 14.2 | 10.4 | 8.6 | 9200 (633) | 4700 (323) |
| 3/8 | 1/4 | -S-N6FN4 | 30.2 | 19.1 | 14.2 | 15.0 | 9.6 | 6600 (454) | 3300 (227) |
| 1/2 | 1/8 | -S-N8FN2 | 27.4 | 22.2 | 19.1 | 10.4 | 8.6 | 12200 (840) | 6200 (427) |
| 1/2 | 1/4 | -S-N8FN4 | 27.4 | 22.2 | 19.1 | 15.0 | 11.4 | 8300 (571) | 4400 (303) |
| 1/2 | 3/8 | -S-N8FN6 | 35.8 | 22.2 | 19.1 | 15.0 | 11.9 | 5300 (365) | 2600 (179) |
| 3/4 | 1/8 | -S-N12FN2 | 27.4 | 27.0 | 19.1 | 10.4 | 7.1 | 20000(1378) | 10000(689) |
| 3/4 | 1/4 | -S-N12FN4 | 27.4 | 27.0 | 19.1 | 15.0 | 11.4 | 12000 (826) | 6000 (410) |
| 3/4 | 3/8 | -S-N12FN6 | 27.4 | 27.0 | 19.1 | 15.0 | 15.0 | 8200 (564) | 4300 (296) |
| 3/4 | 1/2 | -S-N12FN8 | 41.4 | 27.0 | 19.1 | 19.8 | 15.7 | 4900 (337) | 2400 (165) |
| 1 | 1/8 | -S-N16FN2 | 34.5 | 34.9 | 23.9 | 10.4 | 7.1 | 20000(1378) | 10000(689) |
| 1 | 1/4 | -S-N16FN4 | 34.8 | 34.9 | 23.9 | 15.0 | 11.4 | 14500 (999) | 7400 (509) |
| 1 | 3/8 | -S-N16FN6 | 34.8 | 34.9 | 23.9 | 15.0 | 15.0 | 11600 (799) | 5900 (406) |
| 1 | 1/2 | -S-N16FN8 | 34.8 | 34.9 | 23.9 | 19.8 | 18.5 | 8600 (592) | 4300 (296) |
| 1 | 3/4 | -S-N16FN12 | 47.0 | 34.9 | 23.9 | 20.6 | 22.4 | 5300 (365) | 2600 (179) |
| 1 1/4 | 3/4 | -S-N20FN12 | 37.3 | 44.5 | 23.9 | 20.6 | 22.4 | 7800 (537) | 3900 (268) |
| 1 1/4 | 1 | -S-N20FN16 | 37.3 | 44.5 | 23.9 | 25.4 | 22.4 | 3500 (241) | 1750 (120) |
| 1 1/2 | 1 | -S-N24FN16 | 40.1 | 50.8 | 26.2 | 25.4 | 22.4 | 6600 (454) | 3300 (227) |
| 1 1/2 | 1 1/4 | -S-N24FN20 | 56.0 | 54.0 | 26.2 | 25.4 | 34.0 | 5000 (344) | 2500 (172) |




NPT Male Thread — ISO tapered female thread

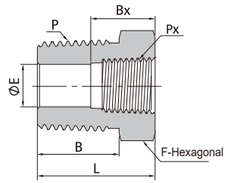
| P-NPT Size | Px-RT Size | Basic order number | Size,mm | | | | | Pressure Rating psig(bar) | |
|---|---|---|---|---|---|---|---|---|---|
| | | | L | F | B | Bx | E | 316 stainless steel, carbon steel | Brass |
| 1/8 | 1/16 | -S-N2FRT1 | 26.2 | 11.1 | 9.7 | 9.9 | 4.8 | 6500 (447) | 3200 (220) |
| 1/4 | 1/16 | -S-N4FRT1 | 21.8 | 14.3 | 14.2 | 9.9 | 4.8 | 8000 (551) | 4000 (275) |
| 1/4 | 1/8 | -S-N4FRT2 | 26.9 | 14.3 | 14.2 | 10.4 | 7.1 | 6500 (447) | 3300 (227) |
| 3/8 | 1/16 | -S-N6FRT1 | 21.8 | 17.5 | 14.2 | 9.9 | 4.8 | 13300 (917) | 6600 (454) |
| 3/8 | 1/8 | -S-N6FRT2 | 21.8 | 17.5 | 14.2 | 10.4 | 7.1 | 9200 (633) | 4700 (323) |
| 3/8 | 1/4 | -S-N6FRT4 | 30.2 | 19.1 | 14.2 | 15.0 | 9.7 | 6600 (454) | 3300 (227) |
| 1/2 | 1/8 | -S-N8FRT2 | 27.4 | 22.2 | 19.1 | 10.4 | 7.1 | 12200 (840) | 6200 (427) |
| 1/2 | 1/4 | -S-N8FRT4 | 27.4 | 22.2 | 19.1 | 15.0 | 10.4 | 8300 (571) | 4400 (303) |
| 1/2 | 3/8 | -S-N8FRT6 | 35.8 | 22.2 | 19.1 | 15.0 | 11.9 | 5300 (365) | 2600 (179) |
| 3/4 | 1/8 | -S-N12FRT2 | 27.4 | 27.0 | 19.1 | 10.4 | 7.1 | 20000 (1378) | 10000 (689) |
| 3/4 | 1/4 | -S-N12FRT4 | 27.4 | 27.0 | 19.1 | 15.0 | 10.4 | 12000 (826) | 6000 (410) |
| 3/4 | 3/8 | -S-N12FRT6 | 27.4 | 27.0 | 19.1 | 15.0 | 12.7 | 8200 (564) | 4300 (296) |
| 3/4 | 1/2 | -S-N12FRT8 | 41.4 | 27.0 | 19.1 | 19.8 | 15.7 | 4900 (337) | 2400 (165) |
| 1 | 1/8 | -S-N16FRT2 | 34.5 | 34.9 | 23.9 | 10.4 | 7.1 | 20000 (1378) | 10000 (689) |
| 1 | 1/4 | -S-N16FRT4 | 34.8 | 34.9 | 23.9 | 15.0 | 10.4 | 14500 (999) | 7400 (509) |
| 1 | 3/8 | -S-N16FRT6 | 34.8 | 34.9 | 23.9 | 15.0 | 12.7 | 11600 (799) | 5900 (406) |
| 1 | 1/2 | -S-N16FRT8 | 34.8 | 34.9 | 23.9 | 19.8 | 15.7 | 8600 (592) | 4300 (296) |
| 1 | 3/4 | -S-N16FRT12 | 47.0 | 34.9 | 23.9 | 20.6 | 22.4 | 5300 (365) | 2600 (179) |
| 1 1/4 | 3/4 | -S-N20FRT12 | 37.3 | 44.5 | 23.9 | 20.6 | 22.4 | 7800 (537) | 3900 (268) |
| 1 1/4 | 1 | -S-N20FRT16 | 37.3 | 44.5 | 23.9 | 25.4 | 22.4 | 3500 (241) | 1750 (120) |
| 1 1/2 | 1 | -S-N24FRT16 | 40.1 | 50.8 | 26.2 | 25.4 | 22.4 | 6600 (454) | 3300 (227) |
| 1 1/2 | 1 1/4 | -S-N24FRT20 | 56.0 | 54.0 | 26.2 | 25.4 | 34.0 | 5000 (344) | 2500 (172) |





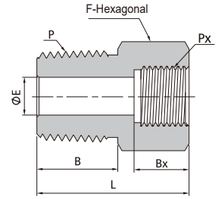


## Large Yang Small Female Threaded Connector



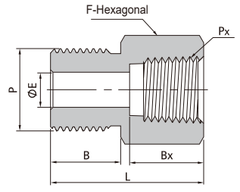

ISO tapered male thread — ISO tapered male thread

| P-RT Size | Px-RT Size | Basic order number | Size,mm | | | | | Pressure Rating psig(bar) | |
|---|---|---|---|---|---|---|---|---|---|
| | | | L | F | B | Bx | E | 316 stainless steel, carbon steel | Brass |
| 1/4 | 1/8 | -S-RT4FRT2 | 26.9 | 14.3 | 14.2 | 10.4 | 7.1 | 6500 (447) | 3200 (220) |
| 3/8 | 1/4 | -S-RT6FRT4 | 30.2 | 19.1 | 14.2 | 15.0 | 9.6 | 6600 (454) | 3300 (227) |
| 1/2 | 1/4 | -S-RT8FRT4 | 27.4 | 22.2 | 19.1 | 15.0 | 11.2 | 8300 (571) | 4400 (303) |
| 1/2 | 3/8 | -S-RT8FRT6 | 35.8 | 22.2 | 19.1 | 15.0 | 11.9 | 5300 (365) | 2600 (179) |



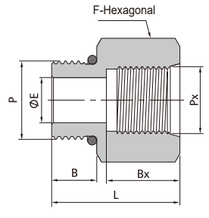

NPT Male Thread — ISO parallel female thread

| P-NPT Size | Px-RG Size | Basic order number | Size,mm | | | | | Pressure Rating psig(bar) |
|---|---|---|---|---|---|---|---|---|
| | | | L | F | B | Bx | E | 316 stainless steel, carbon steel |
| 3/8 | 1/4 | -S-N6FG4 | 30.2 | 19.1 | 14.2 | 12.9 | 5.6 | 5700 (392) |
| 1/2 | 3/8 | -S-N8FG6 | 35.8 | 22.2 | 19.1 | 14.2 | 6.6 | 5700 (392) |
| 3/4 | 1/2 | -S-N12FG8 | 41.4 | 27.0 | 19.1 | 18.8 | 7.1 | 3900 (268) |




ISO parallel male thread — NPT Female Thread

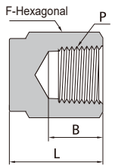
| P-BP Size | Px-NPT Size | Basic order number | Size,mm | | | | | Pressure Rating psig(bar) | |
|---|---|---|---|---|---|---|---|---|---|
| | | | L | F | B | Bx | E | 316 stainless steel, carbon steel | Brass |
| 1/4 | 1/8 | -S-BP4FN2 | 26.9 | 14.3 | 12.9 | 10.4 | 4.5 | 6500 (447) | 3200 (220) |
| 3/8 | 1/4 | -S-BP6FN4 | 31.0 | 19.1 | 14.2 | 15 | 7.1 | 6600 (454) | 3300 (227) |
| 1/2 | 3/8 | -S-BP8FN6 | 35.8 | 22.2 | 18.8 | 15 | 6.6 | 5300 (365) | 2600 (179) |




SAE Male Thread — MS Female Thread

| P-SAE/MS thread size | Px-SAE/MS thread size | Basic order number | Size,mm | | | | | Pressure Rating psig(bar) |
|---|---|---|---|---|---|---|---|---|
| | | | L | F | B | Bx | E | 316 stainless steel, carbon steel |
| 9/16-18 | 7/16-20 | -S-ST9FST7 | 28.4 | 20.6 | 9.9 | 14.0 | 7.1 | 4500 (310) |
| 3/4-16 | 7/16-20 | -S-ST12FST7 | 24.9 | 22.2 | 11.2 | 14.0 | 9.9 | 4500 (310) |
| 3/4-16 | 9/16-18 | -S-ST12FST9 | 30.2 | 25.4 | 11.2 | 16.0 | 10.7 | 4500 (310) |
| 7/8-14 | 9/16-18 | -S-ST14FST9 | 27.9 | 25.4 | 12.7 | 16.0 | 12.7 | 3600 (248) |
| 7/8-14 | 3/4-16 | -S-ST14FST12 | 36.1 | 30.2 | 12.7 | 18.0 | 12.7 | 3600 (248) |
| 1 1/16-12 | 3/4-16 | -S-ST17FST12 | 32.3 | 31.8 | 15.0 | 18.0 | 16.5 | 3600 (248) |
| 1 5/16-12 | 1 1/16-12 | -S-ST21FST17 | 40.9 | 41.3 | 15.0 | 24.0 | 22.1 | 2900 (199) |
| 1 5/8-12 | 1 5/16-12 | -S-ST26FST21 | 50.3 | 54.0 | 15.0 | 24.0 | 27.7 | 2300 (158) |
| 1 7/8-12 | 1 5/16-12 | -S-ST30FST21 | 50.3 | 54.0 | 15.0 | 24.0 | 31.2 | 2300 (158) |

## Threaded pipe cap




NPT Female Thread

| P-NPT Size | Basic order number | Size,mm L | F | B | Pressure Rating psig(bar) 316 stainless steel, carbon steel | Brass |
|---|---|---|---|---|---|---|
| 1/16 | -CP-FN1 | 12.7 | 11.1 | 9.9 | 6700 (460) | 3300 (227) |
| 1/8 | -CP-FN2 | 19.1 | 14.3 | 10.4 | 6500 (447) | 3200 (220) |
| 1/4 | -CP-FN4 | 23.1 | 19.1 | 15.0 | 6600 (454) | 3300 (277) |
| 3/8 | -CP-FN6 | 26.2 | 22.2 | 15.0 | 5300 (365) | 2600 (179) |
| 1/2 | -CP-FN8 | 34.0 | 27.0 | 19.8 | 4900 (337) | 2400 (165) |
| 3/4 | -CP-FN12 | 36.6 | 33.3 | 20.6 | 4600 (316) | 2300 (158) |
| 1 | -CP-FN16 | 41.1 | 41.3 | 25.4 | 4400 (303) | 2200 (151) |
| Heavy Wall NPT Female Thread | | | | | | |
| 1/4 | -CP-FN4-10K | 28.2 | 25.4 | 15.0 | 10000 (689) | / |
| 1/2 | -CP-FN8-10K | 40.1 | 38.1 | 19.8 | 10000 (689) | / |

ISO tapered female thread

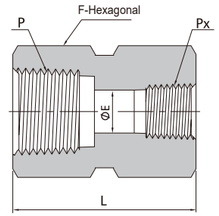
| P-RT Size | Basic order number | Size,mm L | F | B | Pressure Rating psig(bar) 316 stainless steel, carbon steel | Brass |
|---|---|---|---|---|---|---|
| 1/16 | -CP-FRT1 | 12.7 | 11.1 | 9.9 | 6700 (460) | 3300 (227) |
| 1/8 | -CP-FRT2 | 19.1 | 14.3 | 10.4 | 6500 (447) | 3200 (220) |
| 1/4 | -CP-FRT4 | 23.1 | 19.1 | 15.0 | 6600 (454) | 3300 (277) |
| 3/8 | -CP-FRT6 | 26.2 | 22.2 | 15.0 | 5300 (365) | 2600 (179) |
| 1/2 | -CP-FRT8 | 34.0 | 27.0 | 19.8 | 4900 (337) | 2400 (165) |
| 3/4 | -CP-FRT12 | 36.6 | 33.3 | 20.6 | 4600 (316) | 2300 (158) |
| 1 | -CP-FRT16 | 41.1 | 41.3 | 25.4 | 4400 (303) | 2200 (151) |







## Hexagonal female thread connector



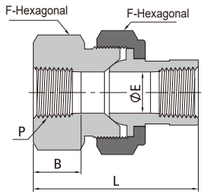

NPT Female Thread

| P-NPT Size | Px-NPT Size | Basic order number | Size,mm L | F | E | Pressure Rating psig(bar) 316 stainless steel, carbon steel | Brass |
|---|---|---|---|---|---|---|---|
| 1/16 | 1/16 | -S-FN1 | 19.8 | 11.1 | 4.8 | 6700 (460) | 3300 (227) |
| 1/8 | 1/8 | -S-FN2 | 20.6 | 14.3 | 8.6 | 6500 (447) | 3200 (220) |
| 1/4 | 1/8 | -S-FN4FN2 | 31.0 | 19.1 | 8.6 | 6600 (454) | 3300 (227) |
| 1/4 | 1/4 | -S-FN4 | 30.2 | 19.1 | 11.4 | 6600 (454) | 3300 (227) |
| 3/8 | 1/4 | -S-FN6FN4 | 35.1 | 22.2 | 11.4 | 5300 (365) | 2600 (179) |
| 3/8 | 3/8 | -S-FN6 | 33.3 | 22.2 | 15.0 | 5300 (365) | 2600 (179) |
| 1/2 | 1/8 | -S-FN8FN2 | 39.6 | 27.0 | 8.6 | 4900 (337) | 2400 (165) |
| 1/2 | 1/4 | -S-FN8FN4 | 44.4 | 27.0 | 11.4 | 4900 (337) | 2400 (165) |
| 1/2 | 3/8 | -S-FN8FN6 | 45.2 | 27.0 | 15.0 | 4900 (337) | 2400 (165) |
| 1/2 | 1/2 | -S-FN8 | 39.6 | 27.0 | 18.5 | 4900 (337) | 2400 (165) |
| 3/4 | 1/4 | -S-FN12FN4 | 46.0 | 33.3 | 11.4 | 4600 (316) | 2300 (158) |
| 3/4 | 1/2 | -S-FN12FN8 | 52.3 | 33.3 | 18.5 | 4600 (316) | 2300 (158) |
| 3/4 | 3/4 | -S-FN12 | 41.1 | 33.3 | 23.9 | 4600 (316) | 2300 (158) |
| 1 | 1/2 | -S-FN16FN8 | 55.6 | 41.3 | 18.5 | 4400 (303) | 2200 (151) |
| 1 | 3/4 | -S-FN16FN12 | 57.2 | 41.3 | 23.9 | 4400 (303) | 2200 (151) |
| 1 | 1 | -S-FN16 | 50.8 | 41.3 | 29.7 | 4400 (303) | 2200 (151) |
| Heavy Wall NPT Female Thread | | | | | | | |
| 1/4 | 1/4 | -S-FN4-10K | 30.2 | 25.4 | 11.4 | 10000 (689) | / |
| 1/2 | 1/2 | -S-FN8-10K | 39.6 | 38.1 | 18.5 | 10000 (689) | / |
| 1/2 | 1/4 | -S-FN8FN4-10K | 44.4 | 38.1 | 11.4 | 10000 (689) | / |

ISO tapered female thread

| P-RT Size | Px-RT Size | Basic order number | Size,mm L | F | E | Pressure Rating psig(bar) 316 stainless steel, carbon steel | Brass |
|---|---|---|---|---|---|---|---|
| 1/8 | 1/8 | -S-FRT2 | 20.6 | 14.3 | 8.4 | 6500 (447) | 3200 (220) |
| 1/4 | 1/4 | -S-FRT4 | 30.2 | 19.1 | 11.2 | 6600 (454) | 3300 (227) |
| 3/8 | 1/4 | -S-FR6FRT4 | 35.1 | 22.2 | 11.2 | 5300 (365) | 2600 (179) |
| 3/8 | 3/8 | -S-FRT6 | 33.3 | 22.2 | 14.7 | 5300 (365) | 2600 (179) |
| 1/2 | 1/4 | -S-FR8FRT4 | 44.4 | 27.0 | 11.2 | 4900 (337) | 2400 (165) |
| 1/2 | 3/8 | -S-FR8FRT6 | 45.2 | 27.0 | 14.7 | 4900 (337) | 2400 (165) |
| 1/2 | 1/2 | -S-FRT8 | 39.6 | 27.0 | 18.3 | 4900 (337) | 2400 (165) |

## Female threaded union




NPT Female Thread

| P-NPT Size | Basic order number | Size,mm | | | | | Pressure Rating psig(bar) 316 stainless steel, carbon steel |
|---|---|---|---|---|---|---|---|
| | | L | F | Fx | B | E | |
| 1/8 | -UBJ-FN2 | 46.0 | 23.8 | 28.6 | 10.4 | 6.8 | 8400 (578) |
| 1/4 | -UBJ-FN4 | 59.4 | 30.2 | 34.9 | 15.0 | 9.1 | 6600 (454) |
| 3/8 | -UBJ-FN6 | 63.5 | 33.3 | 38.1 | 15.0 | 13.2 | 5300 (365) |
| 1/2 | -UBJ-FN8 | 68.3 | 41.3 | 44.5 | 19.8 | 15.7 | 6000 (410) |
| 3/4 | -UBJ-FN12 | 79.2 | 47.6 | 54.0 | 20.6 | 22.4 | 4600 (316) |
| 1 | -UBJ-FN16 | 90.4 | 60.3 | 63.5 | 25.4 | 26.2 | 6800 (468) |

ISO tapered female thread

| P-RT Size | Basic order number | Size,mm | | | | | Pressure Rating psig(bar) 316 stainless steel, carbon steel |
|---|---|---|---|---|---|---|---|
| | | L | F | Fx | B | E | |
| 1/8 | -UBJ-FRT2 | 46.0 | 23.8 | 28.6 | 10.4 | 6.8 | 8400 (578) |
| 1/4 | -UBJ-FRT4 | 59.4 | 30.2 | 34.9 | 15.0 | 9.1 | 6600 (454) |
| 3/8 | -UBJ-FRT6 | 63.5 | 33.3 | 38.1 | 15.0 | 13.2 | 5300 (365) |
| 1/2 | -UBJ-FRT8 | 68.3 | 41.3 | 44.5 | 19.8 | 15.7 | 6000 (410) |
| 3/4 | -UBJ-FRT12 | 79.2 | 47.6 | 54.0 | 20.6 | 22.4 | 4600 (316) |
| 1 | -UBJ-FRT16 | 90.4 | 60.3 | 63.5 | 25.4 | 26.2 | 6800 (468) |

## Large Yin Small Yang Threaded Connector




NPT Female Thread — NPT Male Thread

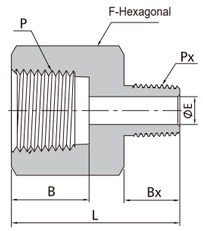
| P-NPT Size | Px-NPT Size | Basic order number | Size,mm | | | | | Pressure Rating psig(bar) 316 stainless steel, carbon steel | Brass |
|---|---|---|---|---|---|---|---|---|---|
| | | | L | F | B | Bx | E | | |
| 1/8 | 1/16 | -S-FN2N1 | 27.7 | 14.3 | 10.4 | 9.7 | 3.0 | 6500 (447) | 3200 (220) |
| 1/8 | 1/8 | -S-FN2N2 | 27.9 | 14.3 | 10.4 | 9.7 | 4.8 | 6500 (447) | 3200 (220) |
| 1/4 | 1/16 | -S-FN4N1 | 30.5 | 19.1 | 15.0 | 9.7 | 3.0 | 6600 (454) | 3300 (227) |
| 1/4 | 1/8 | -S-FN4N2 | 32.0 | 19.1 | 15.0 | 9.7 | 4.8 | 6600 (454) | 3300 (227) |
| 1/4 | 1/4 | -S-FN4N4 | 35.6 | 19.1 | 15.0 | 14.2 | 7.1 | 6600 (454) | 3300 (227) |
| 3/8 | 1/16 | -S-FN6N1 | 31.8 | 22.2 | 15.0 | 9.7 | 3.0 | 5300 (365) | 2600 (179) |
| 3/8 | 1/8 | -S-FN6N2 | 33.8 | 22.2 | 15.0 | 9.7 | 4.8 | 5300 (365) | 2600 (179) |
| 3/8 | 1/4 | -S-FN6N4 | 38.1 | 22.2 | 15.0 | 14.2 | 7.1 | 5300 (365) | 2600 (179) |
| 3/8 | 3/8 | -S-FN6N6 | 38.4 | 22.2 | 15.0 | 14.2 | 9.7 | 5300 (365) | 2600 (179) |
| 1/2 | 1/8 | -S-FN8N2 | 40.1 | 27.0 | 19.8 | 9.7 | 4.8 | 4900 (337) | 2400 (165) |
| 1/2 | 1/4 | -S-FN8N4 | 44.7 | 27.0 | 19.8 | 14.2 | 7.1 | 4900 (337) | 2400 (165) |
| 1/2 | 3/8 | -S-FN8N6 | 44.4 | 27.0 | 19.8 | 14.2 | 9.6 | 4900 (337) | 2400 (165) |
| 1/2 | 1/2 | -S-FN8N8 | 49.3 | 27.0 | 19.8 | 19.1 | 11.9 | 4900 (337) | 2400 (165) |
| 3/4 | 1/8 | -S-FN12N2 | 39.6 | 33.3 | 20.6 | 9.7 | 4.8 | 4600 (316) | 2300 (158) |
| 3/4 | 1/4 | -S-FN12N4 | 47.0 | 33.3 | 20.6 | 14.2 | 7.1 | 4600 (316) | 2300 (158) |
| 3/4 | 3/8 | -S-FN12N6 | 46.2 | 33.3 | 20.6 | 14.2 | 9.7 | 4600 (316) | 2300 (158) |
| 3/4 | 1/2 | -S-FN12N8 | 51.3 | 33.3 | 20.6 | 19.1 | 11.9 | 4600 (316) | 2300 (158) |
| 3/4 | 3/4 | -S-FN12N12 | 51.3 | 33.3 | 20.6 | 19.1 | 15.7 | 4600 (316) | 2300 (158) |
| 1 | 1/8 | -S-FN16N2 | 46.0 | 41.3 | 25.4 | 9.7 | 4.8 | 4400 (303) | 2200 (151) |
| 1 | 1/4 | -S-FN16N4 | 49.8 | 41.3 | 25.4 | 14.2 | 7.1 | 4400 (303) | 2200 (151) |
| 1 | 3/8 | -S-FN16N6 | 50.8 | 41.3 | 25.4 | 14.2 | 9.7 | 4400 (303) | 2200 (151) |
| 1 | 1/2 | -S-FN16N8 | 54.9 | 41.3 | 25.4 | 19.1 | 11.9 | 4400 (303) | 2200 (151) |
| 1 | 3/4 | -S-FN16N12 | 55.1 | 41.3 | 25.4 | 19.1 | 15.7 | 4400 (303) | 2200 (151) |
| 1 | 1 | -S-FN16N16 | 57.9 | 41.3 | 25.4 | 23.9 | 22.4 | 4400 (303) | 2200 (151) |
| 1 1/4 | 1 | -S-FN20N16 | 62.7 | 54.0 | 25.4 | 23.9 | 22.4 | 5000 (344) | 2500 (172) |
| Heavy Wall Female NPT to Male NPT | | | | | | | | | |
| 1/4 | 1/4 | -S-FN4N4-10K | 36.3 | 25.4 | 15.0 | 14.2 | 5.8 | 10000 (689) | / |
| 1/2 | 1/2 | -S-FN8N8-10K | 51.3 | 38.1 | 19.8 | 19.1 | 9.9 | 10000 (689) | / |
| 1/2 | 1/4 | -S-FN8N4-10K | 46.0 | 38.1 | 19.8 | 14.2 | 5.8 | 10000 (689) | / |





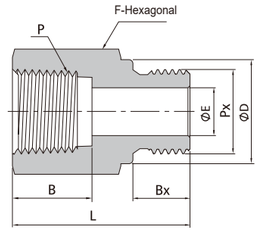


## Large Yin Small Yang Threaded Connector



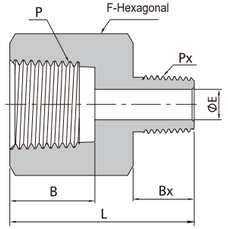

NPT Female Thread — ISO tapered male thread

| P-NPT Size | Px-RT Size | Basic order number | Size,mm | | | | | Pressure Rating psig(bar) 316 stainless steel, carbon steel | Brass |
|---|---|---|---|---|---|---|---|---|---|
| | | | L | F | B | Bx | E | | |
| 1/8 | 1/8 | -S-FN2RT2 | 27.7 | 14.3 | 10.4 | 9.7 | 4.8 | 6500 (447) | 3200 (220) |
| 1/4 | 1/4 | -S-FN4RT4 | 36.1 | 19.1 | 15.0 | 14.2 | 7.1 | 6600 (454) | 3300 (227) |
| 3/8 | 3/8 | -S-FN6RT6 | 38.1 | 22.2 | 15.0 | 14.2 | 9.7 | 5300 (365) | 2600 (179) |
| 1/2 | 1/2 | -S-FN8RT8 | 49.3 | 27.0 | 19.8 | 19.1 | 11.9 | 4900 (337) | 2400 (165) |
| 3/4 | 3/4 | -S-FN12RT12 | 51.3 | 33.3 | 20.6 | 19.1 | 15.7 | 4600 (316) | 2300 (158) |
| 1 | 1 | -S-FN16RT16 | 58.4 | 41.3 | 25.4 | 23.9 | 22.4 | 4400 (303) | 2200 (151) |



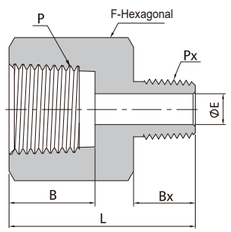

NPT Female Thread — ISO parallel male thread

| P-NPT Size | Px-RS Size | Basic order number | Size,mm | | | | | | Pressure Rating psig(bar) 316 stainless steel, carbon steel | Brass |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | L | F | B | Bx | D | E | | |
| 1/8 | 1/8 | -S-FN2BS2 | 25.1 | 14.3 | 9.9 | 7.1 | 13.7 | 4.1 | 6500 (447) | 3200 (220) |
| 1/4 | 1/4 | -S-FN4BS4 | 33.5 | 19.1 | 10.4 | 11.2 | 18.0 | 5.8 | 6600 (454) | 3300 (227) |
| 3/8 | 3/8 | -S-FN6BS6 | 35.8 | 22.2 | 15.0 | 11.2 | 21.6 | 7.9 | 5300 (365) | 2600 (179) |
| 1/2 | 1/2 | -S-FN8BS8 | 44.2 | 27.0 | 15.0 | 14.2 | 25.9 | 11.9 | 4900 (337) | 2400 (165) |
| 3/4 | 3/4 | -S-FN12BS12 | 48.0 | 33.3 | 20.6 | 15.7 | 32.0 | 15.7 | 4600 (316) | 2300 (158) |
| 1 | 1 | -S-FN16BS16 | 53.3 | 41.3 | 25.4 | 18.3 | 38.9 | 19.8 | 4400 (303) | 2200 (151) |




ISO tapered female thread — ISO tapered male thread

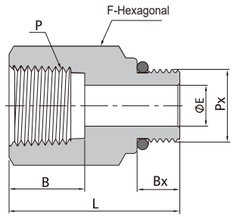
| P-RT Size | Px-RT Size | Basic order number | Size,mm | | | | | Pressure Rating psig(bar) 316 stainless steel, carbon steel | Brass |
|---|---|---|---|---|---|---|---|---|---|
| | | | L | F | B | Bx | E | | |
| 1/8 | 1/8 | -S-FRT2RT2 | 27.7 | 14.3 | 10.4 | 9.7 | 4.8 | 6500 (447) | 3200 (220) |
| 1/4 | 1/8 | -S-FRT4RT2 | 32.0 | 19.1 | 15.0 | 9.7 | 4.8 | 6600 (454) | 3300 (227) |
| 1/4 | 1/4 | -S-FRT4RT4 | 36.1 | 19.1 | 15.0 | 14.2 | 7.1 | 6600 (454) | 3300 (227) |
| 3/8 | 1/4 | -S-FRT6RT4 | 38.1 | 22.2 | 15.0 | 14.2 | 7.1 | 5300 (365) | 2600 (179) |
| 3/8 | 3/8 | -S-FRT6RT6 | 38.1 | 22.2 | 15.0 | 14.2 | 9.7 | 5300 (365) | 2600 (179) |
| 1/2 | 1/4 | -S-FRT8RT4 | 44.7 | 27.0 | 19.8 | 14.2 | 7.1 | 4900 (337) | 2400 (165) |
| 1/2 | 3/8 | -S-FRT8RT6 | 44.4 | 27.0 | 19.8 | 14.2 | 9.7 | 4900 (337) | 2400 (165) |
| 1/2 | 1/2 | -S-FRT8RT8 | 49.5 | 27.0 | 19.8 | 19.1 | 11.9 | 4900 (337) | 2400 (165) |
| 3/4 | 3/4 | -S-FRT12RT12 | 51.3 | 33.3 | 20.6 | 19.1 | 15.7 | 4600 (316) | 2300 (158) |
| 1 | 1 | -S-FRT16RT16 | 58.4 | 41.3 | 25.4 | 23.9 | 22.4 | 4400 (303) | 2200 (151) |




ISO tapered female thread — NPT Male Thread

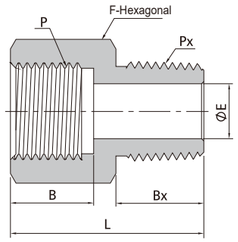
| P-RT Size | Px-NPT Size | Basic order number | Size,mm | | | | | Pressure Rating psig(bar) 316 stainless steel, carbon steel | Brass |
|---|---|---|---|---|---|---|---|---|---|
| | | | L | F | B | Bx | E | | |
| 1/8 | 1/8 | -S-FRT2N2 | 27.7 | 14.3 | 10.4 | 9.7 | 4.8 | 6500 (447) | 3200 (220) |
| 1/4 | 1/4 | -S-FRT4N4 | 36.3 | 19.1 | 15.0 | 14.2 | 7.1 | 6600 (454) | 3300 (227) |
| 3/8 | 3/8 | -S-FRT6N6 | 38.4 | 22.2 | 15.0 | 14.2 | 9.6 | 5300 (365) | 2600 (179) |
| 1/2 | 1/2 | -S-FRT8N8 | 49.8 | 27.0 | 19.8 | 19.1 | 11.9 | 4900 (337) | 2400 (165) |
| 3/4 | 3/4 | -S-FRT12N12 | 51.3 | 33.3 | 20.6 | 19.1 | 15.7 | 4600 (316) | 2300 (158) |
| 1 | 1 | -S-FRT16N16 | 58.4 | 41.3 | 25.4 | 23.9 | 22.4 | 4400 (303) | 2200 (151) |

## Large Yin Small Yang Threaded Connector




NPT Female Thread — SAE/MS Male Thread

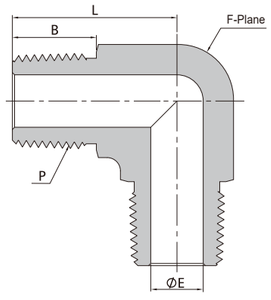
| P-NPT Size | Px-SAE/MS Size | Basic order number | Size,mm | | | | | Pressure Rating psig(bar) 316 stainless steel, carbon steel |
|---|---|---|---|---|---|---|---|---|
| | | | L | F | B | Bx | E | |
| 1/4 | 7/16-20 | -S-FN4ST7 | 33.5 | 19.1 | 15.0 | 9.1 | 5.1 | 4500 (310) |
| 3/8 | 9/16-18 | -S-FN6ST9 | 35.3 | 23.8 | 15.0 | 9.9 | 7.1 | 4500 (310) |
| 1/2 | 3/4-16 | -S-FN8ST12 | 44.7 | 27.0 | 19.8 | 11.2 | 10.7 | 4500 (310) |
| 3/4 | 1 1/16-12 | -S-FN12ST17 | 50.5 | 34.9 | 20.6 | 15.0 | 16.7 | 3600 (248) |
| 1 | 1 5/16-12 | -S-FN16ST21 | 53.8 | 41.3 | 25.4 | 15.0 | 22.4 | 2900 (199) |




ISO parallel female thread — NPT Male Thread

| P-RG Size | Px-NPT Size | Basic order number | Size,mm | | | | | Pressure Rating psig(bar) 316 stainless steel, carbon steel |
|---|---|---|---|---|---|---|---|---|
| | | | L | F | B | Bx | E | |
| 1/8 | 1/8 | -S-FG2N2 | 21.8 | 14.3 | 6.5 | 9.7 | 4.8 | 6100 (420) |
| 1/4 | 1/4 | -S-FG4N4 | 30.2 | 19.1 | 12.9 | 14.2 | 5.6 | 5700 (392) |
| 3/8 | 3/8 | -S-FG6N6 | 32.2 | 23.8 | 14.2 | 14.2 | 6.6 | 5700 (392) |
| 1/2 | 1/2 | -S-FG8N8 | 42.7 | 27.0 | 18.8 | 19.1 | 7.1 | 3900 (268) |

## Male thread elbow




NPT Male Thread

| P-NPT Size | Basic order number | Size,mm | | | | Pressure Rating psig(bar) | |
|---|---|---|---|---|---|---|---|
| | | L | F | B | E | 316 stainless steel, carbon steel | Brass |
| 1/16 | -L-N1 | 18.3 | 9.5 | 9.7 | 3.0 | 11000 (757) | 5500 (378) |
| 1/8 | -L-N2 | 22.4 | 11.1 | 9.7 | 4.8 | 10000 (689) | 5000 (344) |
| 1/4 | -L-N4 | 26.7 | 12.7 | 14.2 | 7.1 | 8000 (551) | 4000 (275) |
| 3/8 | -L-N6 | 29.7 | 17.5 | 14.2 | 9.6 | 7800 (537) | 3900 (268) |
| 1/2 | -L-N8 | 36.8 | 20.6 | 19.1 | 11.9 | 7700 (530) | 3800 (261) |
| 3/4 | -L-N12 | 40.4 | 27.0 | 19.1 | 15.7 | 7300 (502) | 3600 (248) |
| 1 | -L-N16 | 50.0 | 34.9 | 23.9 | 22.4 | 5300 (365) | 2600 (179) |

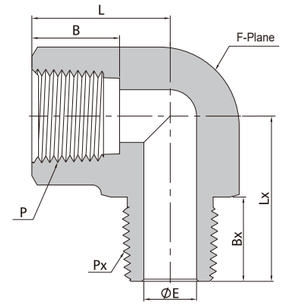
ISO tapered male thread

| P-RT Size | Basic order number | Size,mm | | | | Pressure Rating psig(bar) | |
|---|---|---|---|---|---|---|---|
| | | L | F | B | E | 316 stainless steel, carbon steel | Brass |
| 1/16 | -L-RT1 | 18.3 | 9.5 | 9.7 | 3.0 | 11000 (757) | 5500 (378) |
| 1/8 | -L-RT2 | 22.4 | 11.1 | 9.7 | 4.8 | 10000 (689) | 5000 (344) |
| 1/4 | -L-RT4 | 26.7 | 12.7 | 14.2 | 7.1 | 8000 (551) | 4000 (275) |
| 3/8 | -L-RT6 | 29.7 | 17.5 | 14.2 | 9.7 | 7800 (537) | 3900 (268) |
| 1/2 | -L-RT8 | 36.8 | 20.6 | 19.1 | 11.9 | 7700 (530) | 3800 (261) |
| 3/4 | -L-RT12 | 40.4 | 27.0 | 19.1 | 15.7 | 7300 (502) | 3600 (248) |
| 1 | -L-RT16 | 50.0 | 34.9 | 23.9 | 22.4 | 5300 (365) | 2600 (179) |





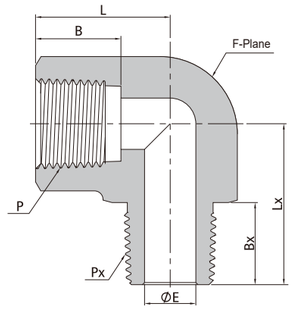
## Large Yin Small Yang Threaded Connector




NPT Female Thread — NPT Male Thread

| P-NPT Size | Px-NPT Size | Basic order number | Size,mm | | | | | | Pressure Rating psig(bar) | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | L | F | B | E | Lx | Bx | 316 stainless steel, carbon steel | Brass |
| 1/16 | 1/16 | -L-FN1N1 | 21.8 | 11.1 | 9.9 | 3.0 | 22.4 | 9.7 | 9200 (633) | 4600 (316) |
| 1/16 | 1/8 | -L-FN1N2 | 21.8 | 11.1 | 9.9 | 4.8 | 22.4 | 9.7 | 9200 (633) | 4600 (316) |
| 1/16 | 1/4 | -L-FN1N4 | 22.4 | 14.3 | 9.9 | 4.8 | 27.7 | 14.2 | 8000 (551) | 4000 (275) |
| 1/16 | 3/8 | -L-FN1N6 | 22.4 | 17.5 | 9.9 | 4.8 | 29.7 | 14.2 | 7800 (537) | 3900 (268) |
| 1/8 | 1/16 | -L-FN2N1 | 26.4 | 12.7 | 10.4 | 3.0 | 22.1 | 9.7 | 6200 (426) | 3100 (213) |
| 1/8 | 1/8 | -L-FN2N2 | 26.4 | 12.7 | 10.4 | 4.8 | 22.1 | 9.7 | 6200 (426) | 3100 (213) |
| 1/8 | 1/4 | -L-FN2N4 | 22.4 | 14.3 | 10.4 | 7.1 | 27.7 | 14.2 | 6500 (447) | 3200 (220) |
| 1/8 | 3/8 | -L-FN2N6 | 22.4 | 17.5 | 10.4 | 7.1 | 29.7 | 14.2 | 7800 (537) | 3900 (268) |
| 1/8 | 1/2 | -L-FN2N8 | 24.1 | 20.6 | 10.4 | 7.1 | 36.8 | 19.1 | 7700 (530) | 3800 (261) |
| 1/8 | 3/4 | -L-FN2N12 | 25.4 | 27.0 | 10.4 | 7.1 | 40.4 | 19.1 | 7300 (502) | 3600 (248) |
| 1/8 | 1 | -L-FN2N16 | 26.4 | 34.9 | 10.4 | 7.1 | 50.0 | 23.9 | 5300 (365) | 2600 (179) |
| 1/4 | 1/8 | -L-FN4N2 | 29.7 | 17.5 | 15.0 | 4.8 | 25.4 | 9.7 | 7200 (496) | 3600 (248) |
| 1/4 | 1/4 | -L-FN4N4 | 29.7 | 17.5 | 15.0 | 7.1 | 29.7 | 14.2 | 7200 (496) | 3600 (248) |
| 1/4 | 3/8 | -L-FN4N6 | 29.7 | 17.5 | 15.0 | 8.6 | 29.7 | 14.2 | 7200 (496) | 3600 (248) |
| 1/4 | 1/2 | -L-FN4N8 | 25.4 | 20.6 | 15.0 | 8.6 | 36.8 | 19.1 | 7200 (496) | 3600 (248) |
| 1/4 | 3/4 | -L-FN4N12 | 25.4 | 27.0 | 15.0 | 8.6 | 40.4 | 19.1 | 7300 (502) | 3600 (248) |
| 1/4 | 1 | -L-FN4N16 | 41.4 | 34.9 | 15.0 | 8.6 | 50.0 | 23.9 | 5300 (365) | 2600 (179) |
| 3/8 | 1/4 | -L-FN6N4 | 36.1 | 20.6 | 15.0 | 7.1 | 32.0 | 14.2 | 5600 (385) | 2800 (192) |
| 3/8 | 3/8 | -L-FN6N6 | 36.1 | 20.6 | 15.0 | 9.6 | 32.0 | 14.2 | 5600 (385) | 2800 (192) |
| 3/8 | 1/2 | -L-FN6N8 | 36.1 | 20.6 | 15.0 | 11.9 | 36.8 | 19.1 | 5600 (385) | 2800 (192) |
| 3/8 | 3/4 | -L-FN6N12 | 31.2 | 27.0 | 15.0 | 11.9 | 40.4 | 19.1 | 7300 (502) | 3600 (248) |
| 3/8 | 1 | -L-FN6N16 | 41.4 | 34.9 | 15.0 | 11.9 | 50.0 | 23.9 | 5300 (365) | 2600 (179) |
| 1/2 | 1/4 | -L-FN8N4 | 39.6 | 25.4 | 19.8 | 7.1 | 35.1 | 14.2 | 5600 (385) | 2800 (192) |
| 1/2 | 3/8 | -L-FN8N6 | 39.6 | 25.4 | 19.8 | 9.6 | 35.1 | 14.2 | 5600 (385) | 2800 (192) |
| 1/2 | 1/2 | -L-FN8N8 | 39.6 | 25.4 | 19.8 | 11.9 | 39.6 | 19.1 | 5600 (385) | 2800 (192) |
| 1/2 | 3/4 | -L-FN8N12 | 31.2 | 27.0 | 19.8 | 15.7 | 40.4 | 19.1 | 5600 (385) | 2800 (192) |
| 1/2 | 1 | -L-FN8N16 | 41.4 | 34.9 | 19.8 | 15.7 | 50.0 | 23.9 | 5300 (365) | 2600 (179) |
| 3/4 | 3/4 | -L-FN12N12 | 48.8 | 31.8 | 20.6 | 15.7 | 42.4 | 19.1 | 5100 (351) | 2500 (172) |
| 3/4 | 1 | -L-FN12N16 | 41.4 | 34.9 | 20.6 | 22.4 | 50.0 | 23.9 | 5100 (351) | 2500 (172) |
| 1 | 1 | -L-FN16N16 | 48.5 | 42.9 | 25.4 | 22.4 | 49.3 | 23.9 | 5300 (365) | 2600 (179) |
| 1 1/4 | 1 1/4 | -L-FN20N20 | 60.5 | 50.8 | 25.4 | 31.8 | 60.5 | 23.9 | 3100 (213) | 1600 (110) |

## Large Yin Small Yang
## Threaded Connector




ISO tapered female thread

ISO tapered male thread

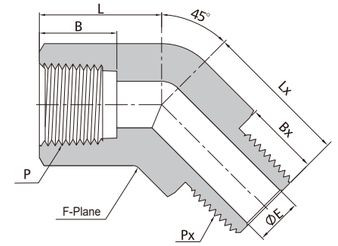
| P-RT Size | Px-RT Size | Basic order number | Size,mm | | | | | | Pressure Rating psig(bar) | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | L | F | B | E | Lx | Bx | 316 stainless steel, carbon steel | Brass |
| 1/16 | 1/16 | -L-FRT1RT1 | 21.8 | 11.1 | 9.9 | 3.0 | 22.4 | 9.7 | 9200 (633) | 4600 (316) |
| 1/16 | 1/8 | -L-FRT1RT2 | 21.8 | 11.1 | 9.9 | 4.8 | 22.4 | 9.7 | 9200 (633) | 4600 (316) |
| 1/16 | 1/4 | -L-FRT1RT4 | 22.4 | 14.3 | 9.9 | 4.8 | 27.7 | 14.2 | 8000 (551) | 4000 (275) |
| 1/16 | 3/8 | -L-FRT1RT6 | 22.4 | 17.5 | 9.9 | 4.8 | 29.7 | 14.2 | 7800 (537) | 3900 (268) |
| 1/8 | 1/16 | -L-FRT2RT1 | 26.4 | 12.7 | 10.4 | 3.0 | 22.1 | 9.7 | 6200 (426) | 3100 (213) |
| 1/8 | 1/8 | -L-FRT2RT2 | 26.4 | 12.7 | 10.4 | 4.8 | 22.1 | 9.7 | 6200 (426) | 3100 (213) |
| 1/8 | 1/4 | -L-FRT2RT4 | 22.4 | 14.3 | 10.4 | 7.1 | 27.7 | 14.2 | 6500 (447) | 3200 (220) |
| 1/8 | 3/8 | -L-FRT2RT6 | 22.4 | 17.5 | 10.4 | 7.1 | 29.7 | 14.2 | 7800 (537) | 3900 (268) |
| 1/8 | 1/2 | -L-FRT2RT8 | 24.1 | 20.6 | 10.4 | 7.1 | 36.8 | 19.1 | 7700 (530) | 3800 (261) |
| 1/8 | 3/4 | -L-FRT2RT12 | 25.4 | 27.0 | 10.4 | 7.1 | 40.4 | 19.1 | 7300 (502) | 3600 (248) |
| 1/8 | 1 | -L-FRT2RT16 | 26.4 | 34.9 | 10.4 | 7.1 | 50.0 | 23.9 | 5300 (365) | 2600 (179) |
| 1/4 | 1/8 | -L-FRT4RT2 | 29.7 | 17.5 | 15.0 | 4.8 | 25.4 | 9.7 | 7200 (496) | 3600 (248) |
| 1/4 | 1/4 | -L-FRT4RT4 | 29.7 | 17.5 | 15.0 | 7.1 | 29.7 | 14.2 | 7200 (496) | 3600 (248) |
| 1/4 | 3/8 | -L-FRT4RT6 | 29.7 | 17.5 | 15.0 | 8.6 | 29.7 | 14.2 | 7200 (496) | 3600 (248) |
| 1/4 | 1/2 | -L-FRT4RT8 | 25.4 | 20.6 | 15.0 | 8.6 | 36.8 | 19.1 | 7200 (496) | 3600 (248) |
| 1/4 | 3/4 | -L-FRT4RT12 | 25.4 | 27.0 | 15.0 | 8.6 | 40.4 | 19.1 | 7300 (502) | 3600 (248) |
| 1/4 | 1 | -L-FRT4RT16 | 41.4 | 34.9 | 15.0 | 8.6 | 50.0 | 23.9 | 5300 (365) | 2600 (179) |
| 3/8 | 1/4 | -L-FRT6RT4 | 36.1 | 20.6 | 15.0 | 7.1 | 32.0 | 14.2 | 5600 (385) | 2800 (192) |
| 3/8 | 3/8 | -L-FRT6RT6 | 36.1 | 20.6 | 15.0 | 9.7 | 32.0 | 14.2 | 5600 (385) | 2800 (192) |
| 3/8 | 1/2 | -L-FRT6RT8 | 36.1 | 20.6 | 15.0 | 11.9 | 36.8 | 19.1 | 5600 (385) | 2800 (192) |
| 3/8 | 3/4 | -L-FRT6RT12 | 31.2 | 27.0 | 15.0 | 11.9 | 40.4 | 19.1 | 7300 (502) | 3600 (248) |
| 3/8 | 1 | -L-FRT6RT16 | 41.4 | 34.9 | 15.0 | 11.9 | 50.0 | 23.9 | 5300 (365) | 2600 (179) |
| 1/2 | 1/4 | -L-FRT8RT4 | 39.6 | 25.4 | 19.8 | 7.1 | 35.1 | 14.2 | 5600 (385) | 2800 (192) |
| 1/2 | 3/8 | -L-FRT8RT6 | 39.6 | 25.4 | 19.8 | 9.7 | 35.1 | 14.2 | 5600 (385) | 2800 (192) |
| 1/2 | 1/2 | -L-FRT8RT8 | 39.6 | 25.4 | 19.8 | 11.9 | 39.6 | 19.1 | 5600 (385) | 2800 (192) |
| 1/2 | 3/4 | -L-FRT8RT12 | 31.2 | 27.0 | 19.8 | 15.7 | 40.4 | 19.1 | 5600 (385) | 2800 (192) |
| 1/2 | 1 | -L-FRT8RT16 | 41.4 | 34.9 | 19.8 | 15.7 | 50.0 | 23.9 | 5300 (365) | 2600 (179) |
| 3/4 | 3/4 | -L-FRT12RT12 | 48.8 | 31.8 | 20.6 | 15.7 | 42.4 | 19.1 | 5100 (351) | 2500 (172) |
| 3/4 | 1 | -L-FRT12RT16 | 41.4 | 34.9 | 20.6 | 22.4 | 50.0 | 23.9 | 5100 (351) | 2500 (172) |
| 1 | 1 | -L-FRT16RT16 | 48.5 | 42.9 | 25.4 | 22.4 | 49.3 | 23.9 | 5300 (365) | 2600 (179) |
| 1 1/4 | 1 1/4 | -L-FRT20RT20 | 60.5 | 50.8 | 25.4 | 31.8 | 60.5 | 23.9 | 3100 (213) | 1600 (110) |







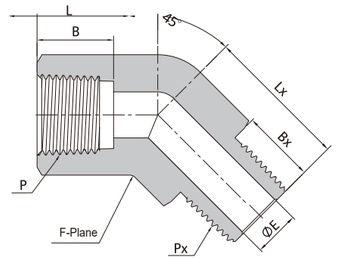
## Male and female thread
## 45° elbow




NPT Female Thread

NPT Male Thread

| P-NPT Size | Px-NPT Size | Basic order number | Size,mm | | | | | | Pressure Rating psig(bar) | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | L | F | B | E | Lx | Bx | 316 stainless steel, carbon steel | Brass |
| 1/16 | 1/16 | -R-FN1N1 | 16.8 | 11.1 | 9.9 | 3.0 | 16.8 | 9.7 | 9200 (633) | 4600 (316) |
| 1/16 | 1/8 | -R-FN1N2 | 16.8 | 11.1 | 9.9 | 4.8 | 16.8 | 9.7 | 9200 (633) | 4600 (316) |
| 1/16 | 1/4 | -R-FN1N4 | 16.8 | 14.3 | 9.9 | 4.8 | 21.8 | 14.2 | 8000 (551) | 4000 (275) |
| 1/16 | 3/8 | -R-FN1N6 | 22.4 | 17.5 | 9.9 | 4.8 | 23.8 | 14.2 | 7800 (537) | 3900 (268) |
| 1/8 | 1/16 | -R-FN2N1 | 20.2 | 12.7 | 10.4 | 3.0 | 17.2 | 9.7 | 6200 (426) | 3100 (213) |
| 1/8 | 1/8 | -R-FN2N2 | 20.2 | 12.7 | 10.4 | 4.8 | 17.2 | 9.7 | 6200 (426) | 3100 (213) |
| 1/8 | 1/4 | -R-FN2N4 | 16.8 | 14.3 | 10.4 | 7.1 | 21.8 | 14.2 | 6500 (447) | 3200 (220) |
| 1/8 | 3/8 | -R-FN2N6 | 22.4 | 17.5 | 10.4 | 7.1 | 23.8 | 14.2 | 7800 (537) | 3900 (268) |
| 1/8 | 1/2 | -R-FN2N8 | 22.2 | 20.6 | 10.4 | 7.1 | 29.0 | 19.1 | 7700 (530) | 3800 (261) |
| 1/8 | 3/4 | -R-FN2N12 | 25.4 | 27.0 | 10.4 | 7.1 | 30.5 | 19.1 | 7300 (502) | 3600 (248) |
| 1/8 | 1 | -R-FN2N16 | 26.4 | 34.9 | 10.4 | 7.1 | 49.3 | 23.9 | 5300 (365) | 2600 (179) |
| 1/4 | 1/8 | -R-FN4N2 | 25.4 | 17.5 | 15.0 | 4.8 | 19.3 | 9.7 | 7200 (496) | 3600 (248) |
| 1/4 | 1/4 | -R-FN4N4 | 25.4 | 17.5 | 15.0 | 7.1 | 19.3 | 14.2 | 7200 (496) | 3600 (248) |
| 1/4 | 3/8 | -R-FN4N6 | 25.4 | 17.5 | 15.0 | 8.6 | 23.8 | 14.2 | 7200 (496) | 3600 (248) |
| 1/4 | 1/2 | -R-FN4N8 | 22.2 | 20.6 | 15.0 | 8.6 | 29.0 | 19.1 | 7200 (496) | 3600 (248) |
| 1/4 | 3/4 | -R-FN4N12 | 25.4 | 27.0 | 15.0 | 8.6 | 30.5 | 19.1 | 7300 (502) | 3600 (248) |
| 1/4 | 1 | -R-FN4N16 | 32.0 | 34.9 | 15.0 | 8.6 | 37.6 | 23.9 | 5300 (365) | 2600 (179) |
| 3/8 | 1/4 | -R-FN6N4 | 27.0 | 20.6 | 15.0 | 7.1 | 24.2 | 14.2 | 5600 (385) | 2800 (192) |
| 3/8 | 3/8 | -R-FN6N6 | 27.0 | 20.6 | 15.0 | 9.7 | 24.2 | 14.2 | 5600 (385) | 2800 (192) |
| 3/8 | 1/2 | -R-FN6N8 | 27.0 | 20.6 | 15.0 | 11.9 | 29.0 | 19.1 | 5600 (385) | 2800 (192) |
| 3/8 | 3/4 | -R-FN6N12 | 27.0 | 27.0 | 15.0 | 11.9 | 30.5 | 19.1 | 7300 (502) | 3600 (248) |
| 3/8 | 1 | -R-FN6N16 | 32.0 | 34.9 | 15.0 | 11.9 | 37.6 | 23.9 | 5300 (365) | 2600 (179) |
| 1/2 | 1/4 | -R-FN8N4 | 32.0 | 25.4 | 19.8 | 7.1 | 25.2 | 14.2 | 5600 (385) | 2800 (192) |
| 1/2 | 3/8 | -R-FN8N6 | 32.0 | 25.4 | 19.8 | 9.7 | 25.2 | 14.2 | 5600 (385) | 2800 (192) |
| 1/2 | 1/2 | -R-FN8N8 | 32.0 | 25.4 | 19.8 | 11.9 | 32.0 | 19.1 | 5600 (385) | 2800 (192) |
| 1/2 | 3/4 | -R-FN8N12 | 32.5 | 27.0 | 19.8 | 15.7 | 30.5 | 19.1 | 5600 (385) | 2800 (192) |
| 1/2 | 1 | -R-FN8N16 | 37.6 | 34.9 | 19.8 | 15.7 | 37.6 | 23.9 | 5300 (365) | 2600 (179) |
| 3/4 | 3/4 | -R-FN12N12 | 34.5 | 31.8 | 20.6 | 15.7 | 34.5 | 19.1 | 5100 (351) | 2500 (172) |
| 3/4 | 1 | -R-FN12N16 | 37.6 | 34.9 | 20.6 | 22.4 | 37.6 | 23.9 | 5100 (351) | 2500 (172) |
| 1 | 1 | -R-FN16N16 | 46.0 | 42.9 | 25.4 | 22.4 | 46.0 | 23.9 | 5300 (365) | 2600 (179) |
| 1 1/4 | 1 1/4 | -R-FN20N20 | 50.8 | 50.8 | 25.4 | 31.8 | 50.8 | 23.9 | 3100 (213) | 1600 (110) |




ISO tapered female thread

ISO tapered male thread

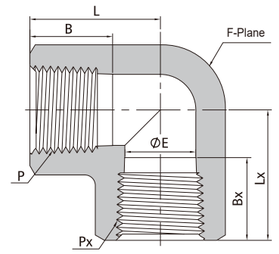
| P-RT Size | Px-RT Size | Basic order number | Size,mm | | | | | | Pressure Rating psig(bar) | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | L | F | B | E | Lx | Bx | 316 stainless steel, carbon steel | Brass |
| 1/16 | 1/16 | -R-FRT1RT1 | 16.8 | 11.1 | 9.9 | 3.0 | 16.8 | 9.7 | 9200 (633) | 4600 (316) |
| 1/16 | 1/8 | -R-FRT1RT2 | 16.8 | 11.1 | 9.9 | 4.8 | 16.8 | 9.7 | 9200 (633) | 4600 (316) |
| 1/16 | 1/4 | -R-FRT1RT4 | 16.8 | 14.3 | 9.9 | 4.8 | 21.8 | 14.2 | 8000 (551) | 4000 (275) |
| 1/16 | 3/8 | -R-FRT1RT6 | 22.4 | 17.5 | 9.9 | 4.8 | 23.8 | 14.2 | 7800 (537) | 3900 (268) |
| 1/8 | 1/16 | -R-FRT2RT1 | 20.2 | 12.7 | 10.4 | 3.0 | 17.2 | 9.7 | 6200 (426) | 3100 (213) |
| 1/8 | 1/8 | -R-FRT2RT2 | 20.2 | 12.7 | 10.4 | 4.8 | 17.2 | 9.7 | 6200 (426) | 3100 (213) |
| 1/8 | 1/4 | -R-FRT2RT4 | 16.8 | 14.3 | 10.4 | 7.1 | 21.8 | 14.2 | 6500 (447) | 3200 (220) |
| 1/8 | 3/8 | -R-FRT2RT6 | 22.4 | 17.5 | 10.4 | 7.1 | 23.8 | 14.2 | 7800 (537) | 3900 (268) |
| 1/8 | 1/2 | -R-FRT2RT8 | 22.2 | 20.6 | 10.4 | 7.1 | 29.0 | 19.1 | 7700 (530) | 3800 (261) |
| 1/8 | 3/4 | -R-FRT2RT12 | 25.4 | 27.0 | 10.4 | 7.1 | 30.5 | 19.1 | 7300 (502) | 3600 (248) |
| 1/8 | 1 | -R-FRT2RT16 | 26.4 | 34.9 | 10.4 | 7.1 | 49.3 | 23.9 | 5300 (365) | 2600 (179) |
| 1/4 | 1/8 | -R-FRT4RT2 | 25.4 | 17.5 | 15.0 | 4.8 | 19.3 | 9.7 | 7200 (496) | 3600 (248) |
| 1/4 | 1/4 | -R-FRT4RT4 | 25.4 | 17.5 | 15.0 | 7.1 | 19.3 | 14.2 | 7200 (496) | 3600 (248) |
| 1/4 | 3/8 | -R-FRT4RT6 | 25.4 | 17.5 | 15.0 | 8.6 | 23.8 | 14.2 | 7200 (496) | 3600 (248) |
| 1/4 | 1/2 | -R-FRT4RT8 | 22.2 | 20.6 | 15.0 | 8.6 | 29.0 | 19.1 | 7200 (496) | 3600 (248) |
| 1/4 | 3/4 | -R-FRT4RT12 | 25.4 | 27.0 | 15.0 | 8.6 | 30.5 | 19.1 | 7300 (502) | 3600 (248) |
| 1/4 | 1 | -R-FRT4RT16 | 32.0 | 34.9 | 15.0 | 8.6 | 37.6 | 23.9 | 5300 (365) | 2600 (179) |
| 3/8 | 1/4 | -R-FRT6RT4 | 27.0 | 20.6 | 15.0 | 7.1 | 24.2 | 14.2 | 5600 (385) | 2800 (192) |
| 3/8 | 3/8 | -R-FRT6RT6 | 27.0 | 20.6 | 15.0 | 9.7 | 24.2 | 14.2 | 5600 (385) | 2800 (192) |
| 3/8 | 1/2 | -R-FRT6RT8 | 27.0 | 20.6 | 15.0 | 11.9 | 29.0 | 19.1 | 5600 (385) | 2800 (192) |
| 3/8 | 3/4 | -R-FRT6RT12 | 27.0 | 27.0 | 15.0 | 11.9 | 30.5 | 19.1 | 7300 (502) | 3600 (248) |
| 3/8 | 1 | -R-FRT6RT16 | 32.0 | 34.9 | 15.0 | 11.9 | 37.6 | 23.9 | 5300 (365) | 2600 (179) |
| 1/2 | 1/4 | -R-FRT8RT4 | 32.0 | 25.4 | 19.8 | 7.1 | 25.2 | 14.2 | 5600 (385) | 2800 (192) |
| 1/2 | 3/8 | -R-FRT8RT6 | 32.0 | 25.4 | 19.8 | 9.7 | 25.2 | 14.2 | 5600 (385) | 2800 (192) |
| 1/2 | 1/2 | -R-FRT8RT8 | 32.0 | 25.4 | 19.8 | 11.9 | 32.0 | 19.1 | 5600 (385) | 2800 (192) |
| 1/2 | 3/4 | -R-FRT8RT12 | 32.5 | 27.0 | 19.8 | 15.7 | 30.5 | 19.1 | 5600 (385) | 2800 (192) |
| 1/2 | 1 | -R-FRT8RT16 | 37.6 | 34.9 | 19.8 | 15.7 | 37.6 | 23.9 | 5300 (365) | 2600 (179) |
| 3/4 | 3/4 | -R-FRT12RT12 | 34.5 | 31.8 | 20.6 | 15.7 | 34.5 | 19.1 | 5100 (351) | 2500 (172) |
| 3/4 | 1 | -R-FRT12RT16 | 37.6 | 34.9 | 20.6 | 22.4 | 37.6 | 23.9 | 5100 (351) | 2500 (172) |
| 1 | 1 | -R-FRT16RT16 | 46.0 | 42.9 | 25.4 | 22.4 | 46.0 | 23.9 | 5300 (365) | 2600 (179) |
| 1 1/4 | 1 1/4 | -R-FRT20RT20 | 50.8 | 50.8 | 25.4 | 31.8 | 50.8 | 23.9 | 3100 (213) | 1600 (110) |







Female thread elbow



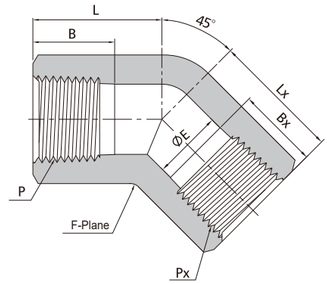

NPT Female Thread

| P-NPT Size | Px-NPT Size | Basic order number | Size,mm | | | | | | Pressure Rating psig(bar) | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | L | F | B | E | Lx | Bx | 316 stainless steel, carbon steel | Brass |
| 1/16 | 1/16 | -L-FN1 | 21.8 | 11.1 | 9.9 | 4.8 | 21.8 | 9.9 | 6700 (460) | 3300 (227) |
| 1/8 | 1/16 | -L-FN2FN1 | 26.4 | 12.7 | 10.4 | 4.8 | 26.4 | 9.9 | 6200 (427) | 3100 (213) |
| 1/8 | 1/8 | -L-FN2 | 26.4 | 12.7 | 10.4 | 8.6 | 26.4 | 10.4 | 6200 (427) | 3100 (213) |
| 1/4 | 1/8 | -L-FN4FN2 | 29.7 | 17.5 | 15.0 | 7.1 | 29.7 | 10.4 | 7200 (496) | 3600 (248) |
| 1/4 | 1/4 | -L-FN4 | 29.7 | 17.5 | 15.0 | 11.4 | 29.7 | 15.0 | 7200 (496) | 3600 (248) |
| 3/8 | 3/8 | -L-FN6 | 36.1 | 20.6 | 15.0 | 15.0 | 36.1 | 15.0 | 5600 (385) | 2800 (192) |
| 1/2 | 1/2 | -L-FN8 | 39.6 | 25.4 | 19.8 | 18.5 | 39.6 | 19.8 | 5600 (385) | 2800 (192) |
| 3/4 | 3/4 | -L-FN12 | 48.8 | 31.8 | 20.6 | 23.9 | 48.8 | 20.6 | 5100 (351) | 2500 (172) |
| 1 | 1 | -L-FN16 | 48.5 | 42.9 | 25.4 | 29.7 | 48.5 | 25.4 | 6400 (440) | 3200 (220) |
| 1 1/4 | 1 1/4 | -L-FN20 | 59.8 | 50.8 | 25.4 | 27.7 | 50.8 | 25.4 | 3100 (213) | 1600 (110) |
| 1 1/2 | 1 1/2 | -L-FN24 | 65.0 | 63.5 | 27.7 | 34.0 | 52.8 | 27.7 | 5100 (351) | 2500 (172) |
| Heavy Wall NPT Female Thread | | | | | | | | | | |
| 1/4 | 1/4 | -L-FN4-10K | 39.6 | 25.4 | 15.0 | 11.4 | 29.7 | 15.0 | 10000 (689) | / |
| 1/2 | 1/2 | -L-FN8-10K | 50.0 | 42.9 | 19.8 | 18.5 | 39.6 | 19.8 | 10000 (689) | / |

ISO tapered female thread

| P-RT Size | Px-RT Size | Basic order number | Size,mm | | | | | | Pressure Rating psig(bar) | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | L | F | B | E | Lx | Bx | 316 stainless steel, carbon steel | Brass |
| 1/16 | 1/16 | -L-FRT1 | 21.8 | 11.1 | 9.9 | 4.8 | 21.6 | 9.9 | 6700 (460) | 3300 (227) |
| 1/8 | 1/16 | -L-FRT2FRT1 | 16.8 | 12.7 | 10.4 | 4.8 | 16.8 | 9.9 | 6200 (427) | 3100 (213) |
| 1/8 | 1/8 | -L-FRT2 | 26.4 | 12.7 | 10.4 | 7.1 | 26.4 | 10.4 | 6200 (427) | 3100 (213) |
| 1/4 | 1/8 | -L-FRT4FRT2 | 29.7 | 17.5 | 15.0 | 7.1 | 29.7 | 10.4 | 7200 (496) | 3600 (248) |
| 1/4 | 1/4 | -L-FRT4 | 29.7 | 17.5 | 15.0 | 10.4 | 29.7 | 15.0 | 7200 (496) | 3600 (248) |
| 3/8 | 3/8 | -L-FRT6 | 36.1 | 20.6 | 15.0 | 12.7 | 36.1 | 15.0 | 5600 (385) | 2800 (192) |
| 1/2 | 1/2 | -L-FRT8 | 39.6 | 25.4 | 19.8 | 15.7 | 39.6 | 19.8 | 5600 (385) | 2800 (192) |
| 3/4 | 3/4 | -L-FRT12 | 48.8 | 31.8 | 20.6 | 22.4 | 48.8 | 20.6 | 5100 (351) | 2500 (172) |
| 1 | 1 | -L-FRT16 | 48.5 | 42.9 | 25.4 | 22.4 | 48.5 | 25.4 | 6400 (440) | 3200 (220) |
| 1 1/4 | 1 1/4 | -L-FRT20 | 59.8 | 50.8 | 25.4 | 27.7 | 50.8 | 25.4 | 3100 (213) | 1600 (110) |
| 1 1/2 | 1 1/2 | -L-FRT24 | 65.0 | 63.5 | 27.7 | 34.0 | 52.8 | 27.7 | 5100 (351) | 2500 (172) |

## Female thread 45° elbow




NPT Female Thread

| P-NPT Size | Px-NPT Size | Basic order number | Size,mm | | | | | | Pressure Rating psig(bar) | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | L | F | B | E | Lx | Bx | 316 stainless steel, carbon steel | Brass |
| 1/16 | 1/16 | -R-FN1 | 16.8 | 11.1 | 9.9 | 4.8 | 16.8 | 9.9 | 6700 (460) | 3300 (227) |
| 1/8 | 1/16 | -R-FN2FN1 | 20.2 | 12.7 | 10.4 | 4.8 | 20.2 | 9.9 | 6200 (427) | 3100 (213) |
| 1/8 | 1/8 | -R-FN2 | 20.2 | 12.7 | 10.4 | 7.1 | 20.2 | 10.4 | 6200 (427) | 3100 (213) |
| 1/4 | 1/8 | -R-FN4FN2 | 25.4 | 17.5 | 15.0 | 7.1 | 25.4 | 10.4 | 7200 (496) | 3600 (248) |
| 1/4 | 1/4 | -R-FN4 | 25.4 | 17.5 | 15.0 | 10.4 | 25.4 | 15.0 | 7200 (496) | 3600 (248) |
| 3/8 | 3/8 | -R-FN6 | 27.0 | 20.6 | 15.0 | 12.7 | 27.0 | 15.0 | 5600 (385) | 2800 (192) |
| 1/2 | 1/2 | -R-FN8 | 32.0 | 25.4 | 19.8 | 15.7 | 32.0 | 19.8 | 5600 (385) | 2800 (192) |
| 3/4 | 3/4 | -R-FN12 | 34.5 | 31.8 | 20.6 | 22.4 | 34.5 | 20.6 | 5100 (351) | 2500 (172) |
| 1 | 1 | -R-FN16 | 46.0 | 42.9 | 25.4 | 22.4 | 46.0 | 25.4 | 6400 (440) | 3200 (220) |
| 1 1/4 | 1 1/4 | -R-FN20 | 43.2 | 50.8 | 25.4 | 27.7 | 43.2 | 25.4 | 3100 (213) | 1600 (110) |
| 1 1/2 | 1 1/2 | -R-FN24 | 46.0 | 63.5 | 27.7 | 34.0 | 46.0 | 27.7 | 5100 (351) | 2500 (172) |

ISO tapered female thread

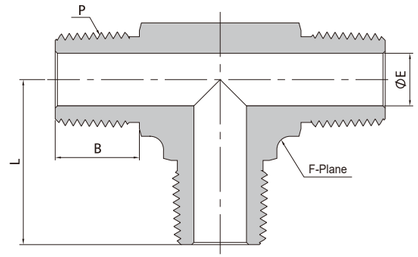
| P-RT Size | Px-RT Size | Basic order number | Size,mm | | | | | | Pressure Rating psig(bar) | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | L | F | B | E | Lx | Bx | 316 stainless steel, carbon steel | Brass |
| 1/16 | 1/16 | -R-FRT1 | 16.8 | 11.1 | 9.9 | 4.8 | 16.8 | 9.9 | 6700 (460) | 3300 (227) |
| 1/8 | 1/16 | -R-FRT2FRT1 | 20.2 | 12.7 | 10.4 | 4.8 | 20.2 | 9.9 | 6200 (427) | 3100 (213) |
| 1/8 | 1/8 | -R-FRT2 | 20.2 | 12.7 | 10.4 | 7.1 | 20.2 | 10.4 | 6200 (427) | 3100 (213) |
| 1/4 | 1/8 | -R-FRT4FRT2 | 25.4 | 17.5 | 15.0 | 7.1 | 25.4 | 10.4 | 7200 (496) | 3600 (248) |
| 1/4 | 1/4 | -R-FRT4 | 25.4 | 17.5 | 15.0 | 10.4 | 25.4 | 15.0 | 7200 (496) | 3600 (248) |
| 3/8 | 3/8 | -R-FRT6 | 27.0 | 20.6 | 15.0 | 12.7 | 27.0 | 15.0 | 5600 (385) | 2800 (192) |
| 1/2 | 1/2 | -R-FRT8 | 32.0 | 25.4 | 19.8 | 15.7 | 32.0 | 19.8 | 5600 (385) | 2800 (192) |
| 3/4 | 3/4 | -R-FRT12 | 34.5 | 31.8 | 20.6 | 22.4 | 34.5 | 20.6 | 5100 (351) | 2500 (172) |
| 1 | 1 | -R-FRT16 | 46.0 | 42.9 | 25.4 | 22.4 | 46.0 | 25.4 | 6400 (440) | 3200 (220) |
| 1 1/4 | 1 1/4 | -R-FRT20 | 43.2 | 50.8 | 25.4 | 27.7 | 43.2 | 25.4 | 3100 (213) | 1600 (110) |
| 1 1/2 | 1 1/2 | -R-FRT24 | 46.0 | 63.5 | 27.7 | 34.0 | 46.0 | 27.7 | 5100 (351) | 2500 (172) |







## Male thread tee



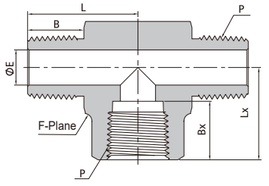

NPT Male Thread

| P-NPT Size | Basic order number | Size,mm | | | | Pressure Rating psig(bar) | |
|---|---|---|---|---|---|---|---|
| | | L | F | B | E | 316 stainless steel, carbon steel | Brass |
| 1/16 | -T-N1 | 18.3 | 9.5 | 9.7 | 3.0 | 11000 (757) | 5500 (378) |
| 1/8 | -T-N2 | 22.4 | 11.1 | 9.7 | 4.8 | 10000 (689) | 5000 (344) |
| 1/4 | -T-N4 | 26.7 | 12.7 | 14.2 | 7.1 | 8000 (551) | 4000 (275) |
| 3/8 | -T-N6 | 29.7 | 17.5 | 14.2 | 9.6 | 7800 (537) | 3900 (268) |
| 1/2 | -T-N8 | 36.8 | 20.6 | 19.1 | 11.9 | 7700 (530) | 3800 (261) |
| 3/4 | -T-N12 | 42.4 | 27.0 | 19.1 | 15.7 | 7300 (502) | 3600 (248) |
| 1 | -T-N16 | 49.3 | 34.9 | 23.9 | 22.4 | 5300 (365) | 2600 (179) |
| 1 1/4 | -T-N20 | 56.4 | 42.9 | 23.9 | 27.7 | 6000 (410) | 3000 (200) |
| 1 1/2 | -T-N24 | 67.1 | 47.6 | 26.2 | 34.0 | 5000 (344) | 2500 (172) |

ISO tapered male thread

| P-RT Size | Basic order number | Size,mm | | | | Pressure Rating psig(bar) | |
|---|---|---|---|---|---|---|---|
| | | L | F | B | E | 316 stainless steel, carbon steel | Brass |
| 1/16 | -T-RT1 | 18.3 | 9.5 | 9.7 | 3.0 | 11000 (757) | 5500 (378) |
| 1/8 | -T-RT2 | 22.4 | 11.1 | 9.7 | 4.8 | 10000 (689) | 5000 (344) |
| 1/4 | -T-RT4 | 26.7 | 12.7 | 14.2 | 7.1 | 8000 (551) | 4000 (275) |
| 3/8 | -T-RT6 | 29.7 | 17.5 | 14.2 | 9.7 | 7800 (537) | 3900 (268) |
| 1/2 | -T-RT8 | 36.8 | 20.6 | 19.1 | 11.9 | 7700 (530) | 3800 (261) |
| 3/4 | -T-RT12 | 42.4 | 27.0 | 19.1 | 15.7 | 7300 (502) | 3600 (248) |
| 1 | -T-RT16 | 49.3 | 34.9 | 23.9 | 22.4 | 5300 (365) | 2600 (179) |
| 1 1/4 | -T-RT20 | 56.4 | 42.9 | 23.9 | 27.7 | 6000 (410) | 3000 (200) |
| 1 1/2 | -T-RT24 | 67.1 | 47.6 | 26.2 | 34.0 | 5000 (344) | 2500 (172) |

## Branch pipe female thread tee



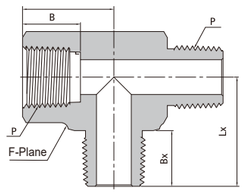

NPT Thread

| P-NPT Size | Basic order number | Size,mm | | | | | | Pressure Rating psig(bar) | |
|---|---|---|---|---|---|---|---|---|---|
| | | L | F | E | B | Lx | Bx | 316 stainless steel, carbon steel | Brass |
| 1/16 | -T-N1N1FN1 | 18.3 | 11.1 | 3.0 | 9.7 | 21.8 | 9.9 | 9200 (633) | 4600 (316) |
| 1/8 | -T-N2N2FN2 | 22.1 | 12.7 | 4.8 | 9.7 | 26.4 | 10.4 | 6200 (427) | 3100 (213) |
| 1/4 | -T-N4N4FN4 | 29.7 | 17.5 | 7.1 | 14.2 | 29.7 | 15.0 | 7200 (496) | 3600 (248) |
| 3/8 | -T-N6N6FN6 | 32.0 | 20.6 | 9.7 | 14.2 | 36.1 | 15.0 | 5600 (385) | 2800 (192) |
| 1/2 | -T-N8N8FN8 | 39.6 | 25.4 | 11.9 | 19.1 | 39.6 | 19.8 | 5600 (385) | 2800 (192) |
| 3/4 | -T-N12N12FN12 | 42.4 | 31.8 | 15.7 | 19.1 | 48.8 | 20.6 | 5100 (351) | 2500 (172) |
| 1 | -T-N16N16FN16 | 49.3 | 42.9 | 22.4 | 23.9 | 48.5 | 25.4 | 5300 (365) | 2600 (179) |

ISO tapered thread

| P-RT Size | Basic order number | Size,mm | | | | | | Pressure Rating psig(bar) | |
|---|---|---|---|---|---|---|---|---|---|
| | | L | F | E | B | Lx | Bx | 316 stainless steel, carbon steel | Brass |
| 1/16 | -T-RT1RT1FRT1 | 18.3 | 11.1 | 3.0 | 9.7 | 21.8 | 9.9 | 9200 (633) | 4600 (316) |
| 1/8 | -T-RT2RT2FRT2 | 22.1 | 12.7 | 4.8 | 9.7 | 26.4 | 10.4 | 6200 (427) | 3100 (213) |
| 1/4 | -T-RT4RT4FRT4 | 29.7 | 17.5 | 7.1 | 14.2 | 29.7 | 15.0 | 7200 (496) | 3600 (248) |
| 3/8 | -T-RT6RT6FRT6 | 32.0 | 20.6 | 9.7 | 14.2 | 36.1 | 15.0 | 5600 (385) | 2800 (192) |
| 1/2 | -T-RT8RT8FRT8 | 39.6 | 25.4 | 11.9 | 19.1 | 39.6 | 19.8 | 5600 (385) | 2800 (192) |
| 3/4 | -T-RT12RT12FRT12 | 42.4 | 31.8 | 15.7 | 19.1 | 48.8 | 20.6 | 5100 (351) | 2500 (172) |
| 1 | -T-RT16RT16FRT16 | 49.3 | 42.9 | 22.4 | 23.9 | 48.5 | 25.4 | 5300 (365) | 2600 (179) |

## Main female thread tee



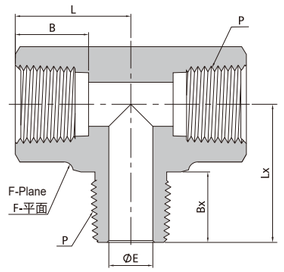

NPT Thread

| P-NPT Size | Basic order number | Size,mm | | | | | | Pressure Rating psig(bar) | |
|---|---|---|---|---|---|---|---|---|---|
| | | L | F | E | B | Lx | Bx | 316 stainless steel, carbon steel | Brass |
| 1/16 | -T-FN1N1FN1 | 21.8 | 11.1 | 3.0 | 9.9 | 18.3 | 9.7 | 9200 (633) | 4600 (316) |
| 1/8 | -T-FN2N2FN2 | 26.4 | 12.7 | 4.8 | 10.4 | 22.1 | 9.7 | 6200 (427) | 3100 (213) |
| 1/4 | -T-FN4N4FN4 | 29.7 | 17.5 | 7.1 | 15.0 | 29.7 | 14.2 | 7200 (496) | 3600 (248) |
| 3/8 | -T-FN6N6FN6 | 36.1 | 20.6 | 9.6 | 15.0 | 32.0 | 14.2 | 5600 (385) | 2800 (192) |
| 1/2 | -T-FN8N8FN8 | 39.6 | 25.4 | 11.9 | 19.8 | 39.6 | 19.1 | 5600 (385) | 2800 (192) |
| 3/4 | -T-FN12N12FN12 | 48.8 | 31.8 | 15.7 | 20.6 | 42.4 | 19.1 | 5100 (351) | 2500 (172) |
| 1 | -T-FN16N16FN16 | 48.5 | 42.9 | 22.4 | 25.4 | 49.3 | 23.9 | 5300 (365) | 2600 (179) |

ISO tapered thread

| P-RT Size | Basic order number | Size,mm | | | | | | Pressure Rating psig(bar) | |
|---|---|---|---|---|---|---|---|---|---|
| | | L | F | E | B | Lx | Bx | 316 stainless steel, carbon steel | Brass |
| 1/16 | -T-FRT1RT1FRT1 | 21.8 | 11.1 | 3.0 | 9.9 | 18.3 | 9.7 | 9200 (633) | 4600 (316) |
| 1/8 | -T-FRT2RT2FRT2 | 26.4 | 12.7 | 4.8 | 10.4 | 22.1 | 9.7 | 6200 (427) | 3100 (213) |
| 1/4 | -T-FRT4RT4FRT4 | 29.7 | 17.5 | 7.1 | 15.0 | 29.7 | 14.2 | 7200 (496) | 3600 (248) |
| 3/8 | -T-FRT6RT6FRT6 | 36.1 | 20.6 | 9.7 | 15.0 | 32.0 | 14.2 | 5600 (385) | 2800 (192) |
| 1/2 | -T-FRT8RT8FRT8 | 39.6 | 25.4 | 11.9 | 19.8 | 39.6 | 19.1 | 5600 (385) | 2800 (192) |
| 3/4 | -T-FRT12RT12FRT12 | 48.8 | 31.8 | 15.7 | 20.6 | 42.4 | 19.1 | 5100 (351) | 2500 (172) |
| 1 | -T-FRT16RT16FRT16 | 48.5 | 42.9 | 22.4 | 25.4 | 49.3 | 23.9 | 5300 (365) | 2600 (179) |

## Branch pipe male thread tee




NPT Thread

| P-NPT Size | Basic order number | Size,mm | | | | | | Pressure Rating psig(bar) | |
|---|---|---|---|---|---|---|---|---|---|
| | | L | F | E | B | Lx | Bx | 316 stainless steel, carbon steel | Brass |
| 1/16 | -T-FN1FN1N1 | 21.8 | 11.1 | 3.0 | 9.9 | 18.3 | 9.7 | 9200 (633) | 4600 (316) |
| 1/8 | -T-FN2FN2N2 | 26.4 | 12.7 | 4.8 | 10.4 | 22.1 | 9.7 | 6200 (427) | 3100 (213) |
| 1/4 | -T-FN4FN4N4 | 29.7 | 17.5 | 7.1 | 15.0 | 29.7 | 14.2 | 7200 (496) | 3600 (248) |
| 3/8 | -T-FN6FN6N6 | 36.1 | 20.6 | 9.6 | 15.0 | 32.0 | 14.2 | 5600 (385) | 2800 (192) |
| 1/2 | -T-FN8FN8N8 | 39.6 | 25.4 | 11.9 | 19.8 | 39.6 | 19.1 | 5600 (385) | 2800 (192) |
| 3/4 | -T-FN12FN12N12 | 48.8 | 31.8 | 15.7 | 20.6 | 42.4 | 19.1 | 5100 (351) | 2500 (172) |
| 1 | -T-FN16FN16N16 | 48.5 | 42.9 | 22.4 | 25.4 | 49.3 | 23.9 | 5300 (365) | 2600 (179) |

ISO tapered thread

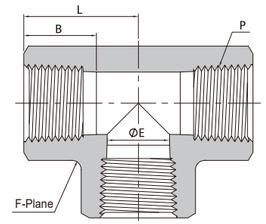
| P-RT Size | Basic order number | Size,mm | | | | | | Pressure Rating psig(bar) | |
|---|---|---|---|---|---|---|---|---|---|
| | | L | F | E | B | Lx | Bx | 316 stainless steel, carbon steel | Brass |
| 1/16 | -T-FRT1FRT1RT1 | 21.8 | 11.1 | 3.0 | 9.9 | 18.3 | 9.7 | 9200 (633) | 4600 (316) |
| 1/8 | -T-FRT2FRT2RT2 | 26.4 | 12.7 | 4.8 | 10.4 | 22.1 | 9.7 | 6200 (427) | 3100 (213) |
| 1/4 | -T-FRT4FRT4RT4 | 29.7 | 17.5 | 7.1 | 15.0 | 29.7 | 14.2 | 7200 (496) | 3600 (248) |
| 3/8 | -T-FRT6FRT6RT6 | 36.1 | 20.6 | 9.7 | 15.0 | 32.0 | 14.2 | 5600 (385) | 2800 (192) |
| 1/2 | -T-FRT8FRT8RT8 | 39.6 | 25.4 | 11.9 | 19.8 | 39.6 | 19.1 | 5600 (385) | 2800 (192) |
| 3/4 | -T-FRT12FRT12RT12 | 48.8 | 31.8 | 15.7 | 20.6 | 42.4 | 19.1 | 5100 (351) | 2500 (172) |
| 1 | -T-FRT16FRT16RT16 | 48.5 | 42.9 | 22.4 | 25.4 | 49.3 | 23.9 | 5300 (365) | 2600 (179) |







## Female thread tee



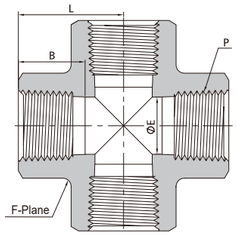

NPT Female Thread

| P-NPT Size | Basic order number | Size,mm | | | | Pressure Rating psig(bar) | |
|---|---|---|---|---|---|---|---|
| | | L | F | E | B | 316 stainless steel, carbon steel | Brass |
| 1/16 | -T-FN1 | 21.8 | 11.1 | 4.8 | 9.9 | 6700 (460) | 3300 (227) |
| 1/8 | -T-FN2 | 26.4 | 12.7 | 8.6 | 10.4 | 6200 (427) | 3100 (213) |
| 1/4 | -T-FN4 | 29.7 | 17.5 | 11.4 | 15.0 | 7200 (496) | 3600 (248) |
| 3/8 | -T-FN6 | 36.1 | 20.6 | 15.0 | 15.0 | 5600 (385) | 2800 (192) |
| 1/2 | -T-FN8 | 39.6 | 25.4 | 18.5 | 19.8 | 5600 (385) | 2800 (192) |
| 3/4 | -T-FN12 | 48.8 | 31.8 | 23.9 | 20.6 | 5100 (351) | 2500 (172) |
| 1 | -T-FN16 | 48.5 | 42.9 | 29.7 | 25.4 | 6400 (440) | 3200 (220) |
| 1 1/4 | -T-FN20 | 59.8 | 50.8 | 37.2 | 25.4 | 3100 (213) | 1600 (110) |
| 1 1/2 | -T-FN24 | 65.0 | 63.5 | 43.3 | 27.7 | 5100 (351) | 2500 (172) |
| | | Thick wall NPT female thread | | | | | |
| 1/4 | -T-FN4-10K | 39.6 | 25.4 | 11.4 | 15.0 | 10000 (689) | / |
| 1/2 | -T-FN8-10K | 50.0 | 27.0 | 18.5 | 19.8 | 10000 (689) | / |

ISO tapered female thread

| P-RT Size | Basic order number | Size,mm | | | | Pressure Rating psig(bar) | |
|---|---|---|---|---|---|---|---|
| | | L | F | E | B | 316 stainless steel, carbon steel | Brass |
| 1/16 | -T-FRT1 | 21.8 | 11.1 | 4.8 | 9.9 | 6700 (460) | 3300 (227) |
| 1/8 | -T-FRT2 | 26.4 | 12.7 | 8.6 | 10.4 | 6200 (427) | 3100 (213) |
| 1/4 | -T-FRT4 | 29.7 | 17.5 | 11.2 | 15.0 | 7200 (496) | 3600 (248) |
| 3/8 | -T-FRT6 | 36.1 | 20.6 | 14.7 | 15.0 | 5600 (385) | 2800 (192) |
| 1/2 | -T-FRT8 | 39.6 | 25.4 | 18.3 | 19.8 | 5600 (385) | 2800 (192) |
| 3/4 | -T-FRT12 | 48.8 | 31.8 | 23.9 | 20.6 | 5100 (351) | 2500 (172) |
| 1 | -T-FRT16 | 48.5 | 42.9 | 29.7 | 25.4 | 6400 (440) | 3200 (220) |
| 1 1/4 | -T-FRT20 | 59.8 | 50.8 | 37.2 | 25.4 | 3100 (213) | 1600 (110) |
| 1 1/2 | -T-FRT24 | 65.0 | 63.5 | 43.3 | 27.7 | 5100 (351) | 2500 (172) |

## Female thread cross




NPT Female Thread

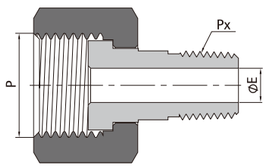
| P-NPT Size | Basic order number | Size,mm | | | | Pressure Rating psig(bar) | |
|---|---|---|---|---|---|---|---|
| | | L | F | E | B | 316 stainless steel, carbon steel | Brass |
| 1/16 | -C-FN1 | 21.8 | 11.1 | 4.8 | 9.9 | 6700 (460) | 3300 (227) |
| 1/8 | -C-FN2 | 26.4 | 12.7 | 8.6 | 10.4 | 6200 (427) | 3100 (213) |
| 1/4 | -C-FN4 | 29.7 | 17.5 | 11.4 | 15.0 | 7200 (496) | 3600 (248) |
| 3/8 | -C-FN6 | 36.1 | 20.6 | 15.0 | 15.0 | 5600 (385) | 2800 (192) |
| 1/2 | -C-FN8 | 39.6 | 25.4 | 18.5 | 19.8 | 5600 (385) | 2800 (192) |
| 3/4 | -C-FN12 | 48.8 | 31.8 | 23.9 | 20.6 | 5100 (351) | 2500 (172) |
| 1 | -C-FN16 | 48.5 | 42.9 | 29.7 | 25.4 | 6400 (440) | 3200 (220) |

ISO tapered female thread

| P-RT Size | Basic order number | Size,mm | | | | Pressure Rating psig(bar) | |
|---|---|---|---|---|---|---|---|
| | | L | F | E | B | 316 stainless steel, carbon steel | Brass |
| 1/16 | -C-FRT1 | 21.8 | 11.1 | 4.8 | 9.9 | 6700 (460) | 3300 (227) |
| 1/8 | -C-FRT2 | 26.4 | 12.7 | 8.6 | 10.4 | 6200 (427) | 3100 (213) |
| 1/4 | -C-FRT4 | 29.7 | 17.5 | 11.4 | 15.0 | 7200 (496) | 3600 (248) |
| 3/8 | -C-FRT6 | 36.1 | 20.6 | 15.0 | 15.0 | 5600 (385) | 2800 (192) |
| 1/2 | -C-FRT8 | 39.6 | 25.4 | 18.5 | 19.8 | 5600 (385) | 2800 (192) |
| 3/4 | -C-FRT12 | 48.8 | 31.8 | 23.9 | 20.6 | 5100 (351) | 2500 (172) |
| 1 | -C-FRT16 | 48.5 | 42.9 | 29.7 | 25.4 | 6400 (440) | 3200 (220) |



## Male and female threaded joint




Metric female thread — NPT Male Thread

| P - Metric thread size | Px- NPT size | Basic order number | Size,mm | Pressure Rating psig(bar) |
|---|---|---|---|---|
| | | | E | 316 stainless steel, carbon steel |
| M20 x 1.5 | 1/8 | -PUP-FM20N2 | 4.8 | 4500 (310) |
| M20 x 1.5 | 1/4 | -PUP-FM20N4 | 7.1 | 4500 (310) |

Metric female thread — ISO tapered male thread

| P - Metric thread size | Px- RT size | Basic order number | Size,mm | Pressure Rating psig(bar) |
|---|---|---|---|---|
| | | | E | 316 stainless steel, carbon steel |
| M20 x 1.5 | 1/8 | -PUP-FM20RT2 | 4.8 | 4500 (310) |
| M20 x 1.5 | 1/4 | -PUP-FM20RT4 | 7.1 | 4500 (310) |

ISO parallel female thread — NPT Female Thread

| P-parallel thread size | Px- NPT size | Basic order number | Size,mm | Pressure Rating psig(bar) |
|---|---|---|---|---|
| | | | E | 316 stainless steel, carbon steel |
| 1/2 | 1/8 | -PUP-BP8N2 | 4.8 | |
| 1/2 | 1/4 | -PUP-BP8N4 | 7.1 | |





# Welded joints

## Feature

- Standard material is 316 stainless steel, other materials are available on request.
- Straight connectors are machined from high quality bar stock, other shapes are made from forgings.
- All interfaces are machined to ensure proper connection.
- Elbow channel arc connection ensures smooth flow of fluid.
- Each connector is deburred and degreased.
- Each connector is engraved with the size, material and material heat number.

## Technical Data

- Sizes range from 1/8" to 1" and 6mm to 38 mm.
- Operating Temperature:

| Material | Minimum temperature | Maximum temperature |
|---|---|---|
| 316 Stainless Steel | -325°F (-198°C) | 1000°F (538°C) |
| 316L Stainless Steel | -325°F (-198°C) | 850°F (454°C) |

- Working pressure:
  1.The working pressure values shown in the catalog are based on ANSI/ASME B31.3 at room temperature. When determining the working pressure according to ANSI/ASME B31.1 standard, multiply the working pressure shown in the catalog by 0.94.
  2.To obtain the allowable working pressure at higher temperatures, multiply the allowable working pressure at ambient temperature by the temperature rise factor. For temperature rise factors, refer to the E-JOE Series Dual Ferrule Fittings catalog.

## Material Standards

| Material | Bar | Forgings | Code |
|---|---|---|---|
| 316 Stainless Steel | ASTM A276, ASME SA479 | ASTM A182, ASME SA182 | SS |
| 316L Stainless Steel | | | 6L |

## Ordering Information

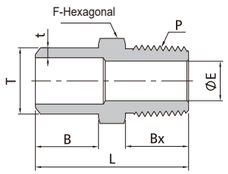
- Add the material code to the basic ordering number to complete the ordering number.
  Example: A 316 stainless steel tube butt weld-eye fitting with 1/4" inch tube butt weld and 1/4 NPT male threads would have a complete ordering number of: SS-S-TB4N4.

- When special cleaning and packaging of fittings is required, meeting ASTM G93 Grade C cleaning requirements, add "F2" to the end of the ordering number.
  Example: SS-S-TB4N4-F2.

- Using the same material ensures the same expansion coefficient and good welding performance.
- Tungsten inert gas welding (TIG) is recommended.

# Tube Butt Weld Fittings

## Tube Butt Weld-Male Thread Connector




Imperial Tube — NPT Thread

| T-Tube outer diameter (in.) | t-wall thickness (in.) | P-NPT Size | Basic order number | Size,mm | | | | | Pressure Rating psig(bar) |
|---|---|---|---|---|---|---|---|---|---|
| | | | | L | B | Bx | F | E | |
| 1/4 | 0.065 | 1/4 | -S-TB4N4 | 29.7 | 9.7 | 14.2 | 14.3 | 7.1 | 8000 (551) |
| 1/4 | 0.065 | 1/2 | -S-TB4N8 | 36.8 | 9.7 | 19.1 | 22.2 | 11.9 | 7700 (530) |
| 3/8 | 0.095 | 1/4 | -S-TB6N4 | 29.7 | 9.7 | 14.2 | 14.3 | 7.1 | 8000 (551) |
| 3/8 | 0.095 | 1/2 | -S-TB6N8 | 36.8 | 9.7 | 19.1 | 22.2 | 11.9 | 7700 (530) |
| 1/2 | 0.095 | 1/4 | -S-TB8N4 | 34.3 | 14.2 | 14.2 | 14.3 | 7.1 | 6780 (468) |
| 1/2 | 0.095 | 1/2 | -S-TB8N8 | 41.4 | 14.2 | 19.1 | 22.2 | 11.9 | 6780 (468) |
| 5/8 | 0.109 | 1/4 | -S-TB10N4 | 34.8 | 14.2 | 14.2 | 17.5 | 7.1 | 5760 (397) |
| 5/8 | 0.109 | 1/2 | -S-TB10N8 | 41.4 | 14.2 | 19.1 | 22.2 | 11.9 | 5760 (397) |
| 3/4 | 0.120 | 1/4 | -S-TB12N4 | 40.1 | 19.1 | 14.2 | 20.6 | 7.1 | 5530 (381) |
| 3/4 | 0.120 | 1/2 | -S-TB12N8 | 46.2 | 19.1 | 19.1 | 22.2 | 11.9 | 5530 (381) |
| 1 | 0.134 | 1/4 | -S-TB16N4 | 42.9 | 19.1 | 14.2 | 27.0 | 7.1 | 4480 (309) |
| 1 | 0.134 | 1/2 | -S-TB16N8 | 47.8 | 19.1 | 19.1 | 27.0 | 11.9 | 4480 (309) |

Metric Tube — NPT Thread

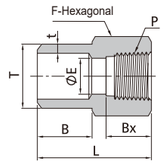
| T-Tube outer diameter (in.) | t-wall thickness (in.) | P-NPT Size | Basic order number | Size,mm | | | | | Pressure Rating psig(bar) |
|---|---|---|---|---|---|---|---|---|---|
| | | | | L | B | Bx | F | E | |
| 12 | 2.2 | 1/4 | -S-MTB12N4 | 34.3 | 14.2 | 14.2 | 14 | 7.1 | 6470 (446) |
| 12 | 2.2 | 1/2 | -S-MTB12N8 | 41.1 | 14.2 | 19.1 | 22 | 11.9 | 6470 (446) |
| 14 | 2.5 | 1/4 | -S-MTB14N4 | 34.3 | 14.2 | 14.2 | 15 | 7.1 | 6280 (433) |
| 14 | 2.5 | 1/2 | -S-MTB14N8 | 41.4 | 14.2 | 19.1 | 22 | 11.9 | 6280 (433) |
| 15 | 2.5 | 1/4 | -S-MTB15N4 | 34.8 | 14.2 | 14.2 | 16 | 7.1 | 5770 (398) |
| 16 | 2.8 | 1/4 | -S-MTB16N4 | 35.6 | 14.2 | 14.2 | 18 | 7.1 | 6140 (423) |
| 16 | 2.8 | 1/2 | -S-MTB16N8 | 41.1 | 14.2 | 19.1 | 22 | 11.9 | 6140 (423) |
| 20 | 3.0 | 1/2 | -S-MTB20N8 | 46.2 | 19.1 | 19.1 | 22 | 11.9 | 5110 (352) |
| 22 | 3.0 | 1/4 | -S-MTB22N4 | 41.2 | 19.1 | 14.2 | 24 | 7.1 | 4620 (319) |
| 22 | 3.0 | 1/2 | -S-MTB22N8 | 46.1 | 19.1 | 19.1 | 24 | 11.9 | 4620 (319) |
| 25 | 3.5 | 3/4 | -S-MTB25N12 | 47.8 | 19.1 | 19.1 | 27 | 15.7 | 4730 (326) |
| 25 | 3.5 | 1 | -S-MTB25N16 | 54.9 | 19.1 | 23.9 | 35 | 22.4 | 4730 (326) |
| 28 | 4.0 | 1/2 | -S-MTB28N8 | 54.2 | 21.4 | 19.1 | 30 | 11.9 | 4850 (335) |







## Tube Butt Weld-Female Thread Connector



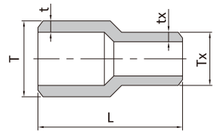

Imperial Tube — NPT Thread

| T-Tube outer diameter (in.) | t-wall thickness (in.) | P-NPT Size | Basic order number | Size,mm | | | | | Pressure Rating psig(bar) |
|---|---|---|---|---|---|---|---|---|---|
| | | | | L | B | Bx | F | E | |
| 1/4 | 0.065 | 1/4 | -S-TB4FN4 | 27.9 | 9.7 | 15.0 | 19.1 | 3.0 | 6600 (454) |
| 1/4 | 0.065 | 3/8 | -S-TB4FN6 | 29.5 | 9.7 | 15.0 | 22.2 | 3.0 | 5300 (365) |
| 3/8 | 0.095 | 1/4 | -S-TB6FN4 | 27.9 | 9.7 | 15.0 | 19.1 | 4.7 | 6600 (454) |
| 3/8 | 0.095 | 3/8 | -S-TB6FN6 | 29.5 | 9.7 | 15.0 | 22.2 | 4.7 | 5300 (365) |
| 1/2 | 0.095 | 1/4 | -S-TB8FN4 | 26.7 | 14.2 | 15.0 | 19.1 | 7.9 | 6600 (454) |
| 1/2 | 0.095 | 3/8 | -S-TB8FN6 | 34.0 | 14.2 | 15.0 | 22.2 | 7.9 | 5300 (365) |
| 1/2 | 0.095 | 1/2 | -S-TB8FN8 | 38.9 | 14.2 | 19.8 | 27.0 | 7.9 | 4900 (337) |

Metric Tube

| T-Tube outer diameter (in.) | t-wall thickness (in.) | P-NPT Size | Basic order number | Size,mm | | | | | Pressure Rating psig(bar) |
|---|---|---|---|---|---|---|---|---|---|
| | | | | L | B | Bx | F | E | |
| 14 | 2.5 | 1/4 | -S-MTB14FN4 | 33.0 | 14.2 | 15.0 | 19 | 9.0 | 6280 (433) |
| 14 | 2.5 | 1/2 | -S-MTB14FN8 | 38.9 | 14.2 | 19.8 | 27 | 9.0 | 4900 (337) |
| 20 | 3.0 | 1/2 | -S-MTB20FN8 | 43.7 | 19.1 | 19.8 | 27 | 14.0 | 4900 (337) |
| 28 | 4.0 | 1/2 | -S-MTB28FN8 | 49.8 | 23.9 | 19.8 | 30 | 15.7 | 4850 (335) |

## Tube Butt Weld Reducer Straight Fittings



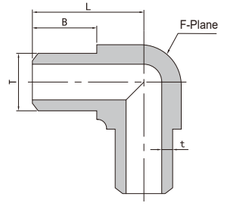

Imperial Tube — Imperial Tube

| T-Tube outer diameter (in.) | t-wall thickness (in.) | Tx-Tube outer diameter (in.) | tx-wall thickness (in.) | Basic order number | L (mm) | Working Pressure psig (bar) |
|---|---|---|---|---|---|---|
| 3/8 | 0.095 | 1/4 | 0.065 | -S-TB6TB4 | 38.1 | 9930 (685) |
| 1/2 | 0.095 | 1/4 | 0.065 | -S-TB8TB4 | 38.1 | 6780 (468) |
| 1/2 | 0.095 | 3/8 | 0.095 | -S-TB8TB6 | 38.1 | 6780 (468) |
| 3/4 | 0.120 | 1/2 | 0.095 | -S-TB12TB8 | 38.1 | 5530 (381) |
| 1 | 0.134 | 3/4 | 0.120 | -S-TB16TB12 | 38.1 | 4480 (309) |

Metric Tube — Metric Tube

| T-Tube outer diameter (in.) | t-wall thickness (in.) | Tx-Tube outer diameter (in.) | tx-wall thickness (in.) | Basic order number | L (mm) | Pressure Rating psig(bar) |
|---|---|---|---|---|---|---|
| 20 | 3.0 | 14 | 2.5 | -S-MTB20MTB14 | 38.1 | 6470 (445) |
| 22 | 3.0 | 14 | 2.5 | -S-MTB22MTB14 | 38.1 | 5780 (395) |
| 22 | 3.0 | 18 | 2.8 | -S-MTB22MTB18 | 38.1 | 5780 (395) |
| 25 | 3.5 | 22 | 3.0 | -S-MTB25MTB22 | 38.1 | 5780 (395) |
| 38 | 5.0 | 25 | 3.5 | -S-MTB38MTB25 | 38.1 | 5540 (380) |

## Tube Butt Weld Elbow



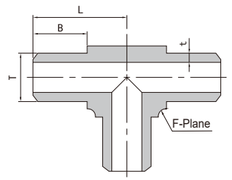

Imperial Tube

| T-Tube outer diameter (in.) | t-wall thickness (in.) | Basic ordering number | Size,mm | | | Pressure Rating psig(bar) |
|---|---|---|---|---|---|---|
| | | | L | B | F | |
| 1/4 | 0. 065 | -L-TB4 | 16. 3 | 9. 7 | 9. 5 | 10320 (712) |
| 3/8 | 0. 095 | -L-TB6 | 18. 0 | 9. 7 | 11. 1 | 9930 (685) |
| 1/2 | 0. 095 | -L-TB8 | 24. 4 | 14. 2 | 14. 3 | 6780 (468) |
| 3/4 | 0. 120 | -L-TB12 | 33. 3 | 19. 1 | 20. 6 | 5530 (381) |
| 1 | 0. 134 | -L-TB16 | 37. 1 | 19. 1 | 27. 0 | 4480 (309) |

Metric Tube

| T-Tube outer diameter (mm) | t-wall thickness (mm) | Basic ordering number | Size,mm | | | Pressure Rating psig(bar) |
|---|---|---|---|---|---|---|
| | | | L | B | F | |
| 10 | 2. 2 | -L-MTB10 | 18. 0 | 9. 7 | 11. 1 | 8160 (563) |
| 14 | 2. 5 | -L-MTB14 | 25. 4 | 14. 2 | 15. 9 | 6280 (433) |
| 16 | 2. 8 | -L-MTB16 | 26. 2 | 14. 2 | 17. 5 | 6140 (423) |
| 20 | 3. 0 | -L-MTB20 | 33. 3 | 19. 1 | 20. 6 | 5110 (352) |
| 22 | 3. 0 | -L-MTB22 | 35. 3 | 19. 1 | 23. 8 | 4620 (319) |
| 25 | 3. 5 | -L-MTB25 | 37. 1 | 19. 1 | 27. 0 | 4730 (326) |

## Tube pipe butt welding tee




Imperial Tube

| T-Tube outer diameter (in.) | t-wall thickness (in.) | Basic ordering number | Size,mm | | | Pressure Rating psig(bar) |
|---|---|---|---|---|---|---|
| | | | L | B | F | |
| 1/4 | 0. 065 | -T-TB4 | 16. 3 | 9. 7 | 9. 5 | 10320 (712) |
| 3/8 | 0. 095 | -T-TB6 | 18. 0 | 9. 7 | 11. 1 | 9930 (685) |
| 1/2 | 0. 095 | -T-TB8 | 24. 4 | 14. 2 | 14. 3 | 6780 (468) |
| 3/4 | 0. 120 | -T-TB12 | 33. 3 | 19. 1 | 20. 6 | 5530 (381) |
| 1 | 0. 134 | -T-TB16 | 37. 1 | 19. 1 | 27. 0 | 4480 (309) |

Metric Tube

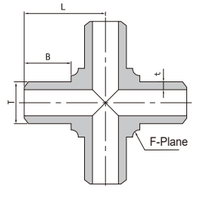
| T-Tube outer diameter (mm) | t-wall thickness (mm) | Basic ordering number | Size,mm | | | Pressure Rating psig(bar) |
|---|---|---|---|---|---|---|
| | | | L | B | F | |
| 6 | 1. 8 | -T-MTB6 | 16. 3 | 9. 7 | 9. 5 | 12660 (873) |
| 8 | 1. 8 | -T-MTB8 | 16. 3 | 9. 7 | 9. 5 | 8320 (574) |
| 10 | 2. 2 | -T-MTB10 | 18. 0 | 9. 7 | 11. 1 | 8160 (563) |
| 12 | 2. 2 | -T-MTB12 | 24. 4 | 14. 2 | 14. 3 | 6470 (446) |
| 14 | 2. 5 | -T-MTB14 | 25. 4 | 14. 2 | 15. 9 | 6280 (433) |
| 16 | 2. 8 | -T-MTB16 | 26. 2 | 14. 2 | 17. 5 | 6140 (423) |
| 20 | 3. 0 | -T-MTB20 | 33. 3 | 19. 1 | 20. 6 | 5110 (352) |
| 22 | 3. 0 | -T-MTB22 | 35. 3 | 19. 1 | 23. 8 | 4620 (319) |
| 25 | 3. 5 | -T-MTB25 | 37. 1 | 19. 1 | 27. 0 | 4730 (326) |
| 32 | 4. 5 | -T-MTB32 | 49. 3 | 23. 9 | 34. 9 | 4730 (326) |







## Tube tube butt welding cross




Imperial Tube

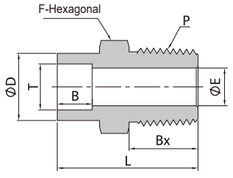
| T-Tube outer diameter (in.) | t-wall thickness (in.) | Basic ordering number | Size,mm | | | Pressure Rating psig(bar) |
|---|---|---|---|---|---|---|
| | | | L | B | F | |
| 1/4 | 0. 065 | -C-TB4 | 16. 3 | 9. 7 | 9. 5 | 10320 (712) |
| 3/8 | 0. 095 | -C-TB6 | 18. 0 | 9. 7 | 11. 1 | 9930 (685) |
| 1/2 | 0. 095 | -C-TB8 | 24. 4 | 14. 2 | 14. 3 | 6780 (468) |
| 3/4 | 0. 120 | -C-TB12 | 33. 3 | 19. 1 | 20. 6 | 5530 (381) |
| 1 | 0. 134 | -C-TB16 | 37. 1 | 19. 1 | 27. 0 | 4480 (309) |

Metric Tube

| T-Tube outer diameter (mm) | t-wall thickness (mm) | Basic ordering number | Size,mm | | | Pressure Rating psig(bar) |
|---|---|---|---|---|---|---|
| | | | L | B | F | |
| 6 | 1. 8 | -C-MTB6 | 16. 3 | 9. 7 | 9. 5 | 12660 (873) |
| 8 | 1. 8 | -C-MTB8 | 16. 3 | 9. 7 | 9. 5 | 8320 (574) |
| 10 | 2. 2 | -C-MTB10 | 18. 0 | 9. 7 | 11. 1 | 8160 (563) |

# Tube Pipe Welding Fittings

## Tube Pipe Plug Weld-Male Thread Connector



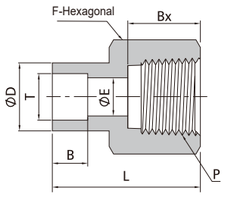

Imperial Tube — NPT Thread

| T-Tube size (in.) | P-NPT Size | Basic ordering number | Size,mm | | | | | | Pressure Rating psig(bar) |
|---|---|---|---|---|---|---|---|---|---|
| | | | L | D | B | Bx | F | E | |
| 1/4 | 1/4 | -S-TS4N4 | 29.2 | 12.2 | 7.1 | 14.2 | 14.3 | 4.8 | 8000 (551) |
| 3/8 | 1/4 | -S-TS6N4 | 31.8 | 15.2 | 7.9 | 14.2 | 15.9 | 7.1 | 8000 (551) |
| 3/8 | 3/8 | -S-TS6N6 | 31.8 | 15.2 | 7.9 | 14.2 | 17.5 | 7.1 | 7800 (537) |
| 3/8 | 1/2 | -S-TS6N8 | 37.3 | 15.2 | 7.9 | 19.1 | 22.2 | 7.1 | 7700 (530) |
| 1/2 | 1/4 | -S-TS8N4 | 33.3 | 18.5 | 9.7 | 14.2 | 19.1 | 7.1 | 6600 (454) |
| 1/2 | 3/8 | -S-TS8N6 | 33.3 | 18.5 | 9.7 | 14.2 | 19.1 | 9.6 | 6600 (454) |
| 1/2 | 1/2 | -S-TS8N8 | 38.9 | 18.5 | 9.7 | 19.1 | 22.2 | 10.4 | 6600 (454) |
| 3/4 | 3/4 | -S-TS12N12 | 45.1 | 26.4 | 11.2 | 19.1 | 27.0 | 15.7 | 5900 (406) |
| 1 | 1 | -S-TS16N16 | 53.6 | 34.5 | 15.7 | 23.9 | 34.9 | 22.4 | 5300 (365) |

Metric Tube — NPT Thread

| T-Tube size (mm) | P-NPT Size | Basic ordering number | Size,mm | | | | | | Pressure Rating psig(bar) |
|---|---|---|---|---|---|---|---|---|---|
| | | | L | D | B | Bx | F | E | |
| 6 | 1/4 | -S-MTS6N4 | 29.2 | 12.0 | 7.1 | 14.2 | 14 | 4.8 | 8000 (551) |
| 12 | 1/2 | -S-MTS12N8 | 38.9 | 17.6 | 9.7 | 19.1 | 22 | 9.5 | 6820 (470) |
| 14 | 1/4 | -S-MTS14N4 | 33.3 | 21.3 | 10.4 | 14.2 | 15 | 7.1 | 6930 (478) |
| 14 | 3/8 | -S-MTS14N6 | 35.0 | 21.6 | 10.4 | 14.2 | 18 | 9.6 | 6930 (478) |
| 14 | 1/2 | -S-MTS14N8 | 40.0 | 21.3 | 10.4 | 19.1 | 22 | 10.4 | 6930 (478) |
| 16 | 1/4 | -S-MTS16N4 | 35.0 | 23.3 | 10.4 | 14.2 | 18 | 7.1 | 6190 (426) |
| 16 | 1/2 | -S-MTS16N8 | 40.0 | 23.3 | 10.4 | 19.1 | 22 | 11.9 | 6190 (426) |
| 18 | 1/4 | -S-MTS18N4 | 40.4 | 26.0 | 11.2 | 14.2 | 19 | 7.1 | 6050 (417) |
| 28 | 3/4 | -S-MTS28N12 | 55.5 | 40.5 | 18.4 | 19.1 | 30 | 15.7 | 5040 (348) |
| 38 | 1 1/4 | -S-MTS38N20 | 68.3 | 52.5 | 26.9 | 23.9 | 46 | 28.6 | 5000 (344) |

## Tube Socket Weld-Female Thread Connector




Imperial Tube — NPT Thread

| T-Tube size (in.) | P-NPT Size | Basic ordering number | Size,mm | | | | | | Pressure Rating psig(bar) |
|---|---|---|---|---|---|---|---|---|---|
| | | | L | D | B | Bx | F | E | |
| 1/8 | 1/8 | -S-TS2FN2 | 21.1 | 7.4 | 2.5 | 10.4 | 14.3 | 2.3 | 6500 (447) |
| 1/4 | 1/8 | -S-TS4FN2 | 26.7 | 12.2 | 7.1 | 10.4 | 14.3 | 4.8 | 6500 (447) |
| 1/4 | 1/4 | -S-TS4FN4 | 30.0 | 12.2 | 7.1 | 15.0 | 19.1 | 4.8 | 6600 (454) |
| 3/8 | 1/4 | -S-TS6FN4 | 31.5 | 15.2 | 7.9 | 15.0 | 19.1 | 7.1 | 6600 (454) |
| 1/2 | 3/8 | -S-TS8FN6 | 34.5 | 18.5 | 9.7 | 15.0 | 22.2 | 10.4 | 5300 (365) |
| 1/2 | 1/2 | -S-TS8FN8 | 40.4 | 18.5 | 9.7 | 19.8 | 27.0 | 10.4 | 4900 (337) |
| 3/4 | 3/4 | -S-TS12FN12 | 43.9 | 26.4 | 11.2 | 20.6 | 33.3 | 16.0 | 4600 (316) |
| 1 | 1 | -S-TS16FN16 | 54.1 | 34.5 | 15.7 | 25.4 | 41.3 | 22.4 | 4400 (303) |

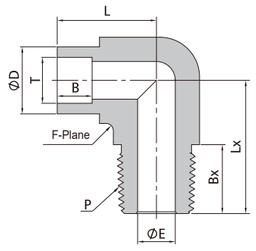
Metric Tube — NPT Thread

| T-Tube size (mm) | P-NPT Size | Basic ordering number | Size,mm | | | | | | Pressure Rating psig(bar) |
|---|---|---|---|---|---|---|---|---|---|
| | | | L | D | B | Bx | F | E | |
| 8 | 1/4 | -S-MTS8FN4 | 27.0 | 13.7 | 7.5 | 15.0 | 19 | 4.8 | 6600 (454) |
| 10 | 1/4 | -S-MTS10FN4 | 29.0 | 19.5 | 9.5 | 15.0 | 19 | 7.1 | 6600 (454) |
| 14 | 1/4 | -S-MTS14FN4 | 32.0 | 22.1 | 10.4 | 15.0 | 22 | 9.5 | 6930 (478) |
| 28 | 3/4 | -S-MTS28FN12 | 54.1 | 40.5 | 18.4 | 20.6 | 35 | 19.8 | 4600 (316) |





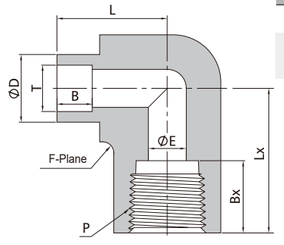
## Tube Pipe Plug Welding-Male Thread Elbow




Imperial Tube — NPT Thread

| T-Tube size (in.) | P-NPT Size | Basic ordering number | Size,mm | | | | | | | Pressure Rating psig(bar) |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | L | Lx | D | B | Bx | F | E | |
| 1/4 | 1/4 | -L-TS4N4 | 20.1 | 26.7 | 14.7 | 7.1 | 14.2 | 12.7 | 4.8 | 8000 (551) |
| 3/8 | 1/4 | -L-TS6N4 | 26.4 | 26.7 | 14.7 | 7.9 | 14.2 | 12.7 | 7.1 | 8000 (551) |
| 3/8 | 3/8 | -L-TS6N6 | 24.6 | 29.7 | 20.2 | 7.9 | 14.2 | 17.5 | 7.1 | 7800 (537) |
| 3/8 | 1/2 | -L-TS6N8 | 25.9 | 36.8 | 23.8 | 7.9 | 19.1 | 20.6 | 7.1 | 7700 (530) |
| 1/2 | 1/2 | -L-TS8N8 | 27.4 | 36.8 | 23.8 | 9.7 | 19.1 | 20.6 | 10.4 | 6600 (454) |
| 3/4 | 3/4 | -L-TS12N12 | 38.9 | 39.6 | 26.4 | 11.2 | 19.1 | 27.0 | 15.7 | 5900 (406) |

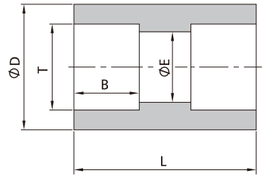
## Tube Socket Weld-Female Thread Elbow




Imperial Tube — NPT Thread

| T-Tube size (in.) | P-NPT Size | Basic ordering number | Size,mm | | | | | | | Pressure Rating psig(bar) |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | L | Lx | D | B | Bx | F | E | |
| 1/4 | 1/4 | -L-TS4FN4 | 22.9 | 29.7 | 20.2 | 7.1 | 15.0 | 17.5 | 4.8 | 7400 (509) |
| 3/8 | 1/4 | -L-TS6FN4 | 25.1 | 29.7 | 20.2 | 7.9 | 15.0 | 17.5 | 7.1 | 7400 (509) |
| 3/8 | 1/2 | -L-TS6FN8 | 28.7 | 39.6 | 29.3 | 7.9 | 19.8 | 25.4 | 7.1 | 5700 (392) |
| 1/2 | 1/2 | -L-TS8FN8 | 30.2 | 39.6 | 29.3 | 9.7 | 19.8 | 25.4 | 10.4 | 5700 (392) |

## Tube Pipe Welding Straight Connector



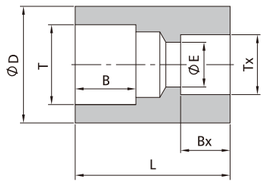

Imperial Tube

| T-Tube size (in.) | Basic ordering number | Size,mm | | | | Pressure Rating psig(bar) |
|---|---|---|---|---|---|---|
| | | L | D | B | E | |
| 1/4 | -S-TS4 | 19.1 | 12.2 | 7.1 | 4.8 | 10700 (737) |
| 3/8 | -S-TS6 | 22.4 | 15.2 | 7.9 | 7.1 | 8100 (558) |
| 1/2 | -S-TS8 | 26.9 | 18.5 | 9.7 | 10.4 | 6600 (454) |
| 5/8 | -S-TS10 | 30.2 | 23.4 | 10.4 | 12.7 | 6200 (427) |
| 3/4 | -S-TS12 | 33.3 | 26.4 | 11.2 | 16.0 | 5900 (406) |
| 7/8 | -S-TS14 | 35.5 | 31.5 | 12.7 | 18.8 | 5730 (395) |
| 1 | -S-TS16 | 36.6 | 34.5 | 15.7 | 22.4 | 5600 (385) |

Metric Tube

| T-Tube size (mm) | Basic ordering number | Size,mm | | | | Pressure Rating psig(bar) |
|---|---|---|---|---|---|---|
| | | L | D | B | E | |
| 8 | -S-MTS8 | 22.4 | 14.3 | 7.9 | 6.4 | 9790 (675) |
| 10 | -S-MTS10 | 23.6 | 16.5 | 7.9 | 7.4 | 8100 (558) |
| 12 | -S-MTS12 | 26.9 | 20.2 | 9.7 | 9.5 | 6820 (470) |
| 14 | -S-MTS14 | 28.0 | 23.8 | 10.0 | 10.4 | 6930 (478) |
| 16 | -S-MTS16 | 30.2 | 23.8 | 10.4 | 12.7 | 6190 (426) |
| 20 | -S-MTS20 | 28.0 | 27.0 | 11.2 | 17.0 | 5510 (380) |

## Tube pipe welding reducer straight joint




Imperial Tube — British Tube

| T-Tube size (in.) | Tx-Tube size (in.) | Basic ordering number | Size,mm | | | | | Pressure Rating psig(bar) |
|---|---|---|---|---|---|---|---|---|
| | | | L | D | B | E | Bx | |
| 3/8 | 1/4 | -S-TS6TS4 | 22.4 | 15.2 | 7.9 | 4.8 | 7.1 | 8100 (558) |
| 1/2 | 1/4 | -S-TS8TS4 | 24.3 | 18.5 | 9.7 | 4.8 | 7.1 | 6600 (454) |
| 1/2 | 3/8 | -S-TS8TS6 | 26.1 | 18.5 | 9.7 | 7.1 | 7.9 | 6600 (454) |
| 3/4 | 3/8 | -S-TS12TS6 | 29.8 | 26.4 | 11.2 | 7.1 | 7.9 | 5900 (406) |
| 3/4 | 1/2 | -S-TS12TS8 | 31.6 | 26.4 | 11.2 | 10.4 | 9.7 | 5900 (406) |
| 1 | 3/4 | -S-TS16TS12 | 32.1 | 34.5 | 15.7 | 16.0 | 11.2 | 5600 (385) |

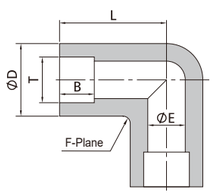
Metric Tube — Metric Tube

| T-Tube size (mm) | Tx-Tube size (mm) | Basic ordering number | Size,mm | | | | | |
|---|---|---|---|---|---|---|---|---|
| | | | L | D | B | E | Bx | |
| 14 | 10 | -S-MTS14MTS10 | 26.0 | 20.0 | 10.4 | 7.4 | 7.9 | 6930 (478) |
| 25 | 14 | -S-MTS25MTS14 | 30.0 | 35.0 | 15.7 | 10.4 | 10.0 | 5450 (376) |
| 25 | 22 | -S-MTS25MTS22 | 35.8 | 34.5 | 15.7 | 19.0 | 13.5 | 5450 (376) |

Metric Tube — British Tube

| T-Tube size (mm) | Tx-Tube size (in.) | Basic ordering number | Size,mm | | | | | |
|---|---|---|---|---|---|---|---|---|
| | | | L | D | B | E | Bx | |
| 20 | 3/4 | -S-MTS20TS12 | 28.0 | 27.0 | 11.2 | 15.7 | 11.2 | 5510 (380) |
| 28 | 3/4 | -S-MTS28TS12 | 36.8 | 40.0 | 20.0 | 15.7 | 11.2 | 5040 (348) |

## Tube Plug Weld Elbow




Imperial Tube

| T-Tube size (in.) | Basic ordering number | Size,mm | | | | | Pressure Rating psig(bar) |
|---|---|---|---|---|---|---|---|
| | | L | D | B | F | E | |
| 1/8 | -L-TS2 | 15.0 | 11.0 | 2.5 | 9.5 | 2.3 | 12600 (863) |
| 1/4 | -L-TS4 | 21.8 | 12.8 | 7.1 | 11.1 | 4.8 | 10700 (737) |
| 3/8 | -L-TS6 | 26.4 | 14.7 | 7.9 | 12.7 | 7.1 | 8100 (558) |
| 1/2 | -L-TS8 | 29.7 | 20.2 | 9.7 | 17.5 | 10.4 | 6600 (454) |
| 5/8 | -L-TS10 | 36.1 | 23.8 | 10.4 | 20.6 | 12.7 | 6200 (427) |
| 3/4 | -L-TS12 | 39.6 | 29.3 | 11.2 | 25.4 | 16.0 | 5900 (406) |
| 1 | -L-TS16 | 48.8 | 36.7 | 15.7 | 31.8 | 22.4 | 5600 (385) |

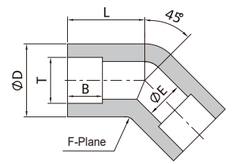
Metric Tube

| T-Tube size (mm) | Basic ordering number | Size,mm | | | | | Pressure Rating psig(bar) |
|---|---|---|---|---|---|---|---|
| | | L | D | B | F | E | |
| 10 | -L-MTS10 | 24.6 | 16.5 | 7.9 | 14.3 | 7.4 | 8100 (558) |
| 12 | -L-MTS12 | 29.7 | 20.2 | 9.7 | 17.5 | 9.5 | 6820 (470) |
| 14 | -L-MTS14 | 36.0 | 23.8 | 10.0 | 20.6 | 10.4 | 6930 (478) |
| 16 | -L-MTS16 | 36.0 | 23.8 | 10.4 | 20.6 | 12.7 | 6190 (426) |





## Tube 45° elbow



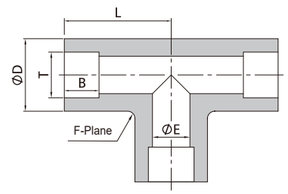

Imperial Tube

| T-Tube size (in.) | Basic ordering number | Size,mm | | | | | Pressure Rating psig(bar) |
|---|---|---|---|---|---|---|---|
| | | L | D | B | F | E | |
| 1/4 | -R-TS4 | 15.0 | 14.7 | 7.1 | 12.7 | 4.8 | 10700 (737) |
| 3/8 | -R-TS6 | 19.1 | 16.5 | 7.9 | 14.3 | 7.1 | 8100 (558) |
| 1/2 | -R-TS8 | 21.3 | 20.2 | 9.7 | 17.5 | 10.4 | 6600 (454) |
| 3/4 | -R-TS12 | 28.7 | 29.3 | 11.2 | 25.4 | 16.0 | 5900 (406) |
| 1 | -R-TS16 | 31.8 | 36.7 | 15.7 | 31.8 | 22.4 | 5600 (385) |

Metric Tube

| T-Tube size (mm) | Basic ordering number | Size,mm | | | | | Pressure Rating psig(bar) |
|---|---|---|---|---|---|---|---|
| | | L | D | B | F | E | |
| 8 | -R-MTS8 | 17.3 | 14.7 | 7.9 | 12.7 | 6.4 | 9790 (675) |
| 10 | -R-MTS10 | 19.1 | 16.5 | 7.9 | 14.3 | 7.4 | 8100 (558) |
| 12 | -R-MTS12 | 21.3 | 20.2 | 9.7 | 17.5 | 9.5 | 6820 (470) |
| 14 | -R-MTS14 | 26.4 | 23.8 | 10.0 | 20.6 | 10.4 | 6930 (478) |
| 16 | -R-MTS16 | 26.4 | 23.8 | 10.4 | 20.6 | 12.7 | 6190 (426) |
| 20 | -R-MTS20 | 28.7 | 29.3 | 11.2 | 27.0 | 16.0 | 5510 (380) |
| 22 | -R-MTS22 | 29.7 | 31.2 | 13.5 | 31.8 | 19.0 | 6850 (472) |
| 25 | -R-MTS25 | 31.8 | 36.7 | 15.7 | 31.8 | 22.0 | 5450 (376) |

## Tube Tube Plug Weld Tee



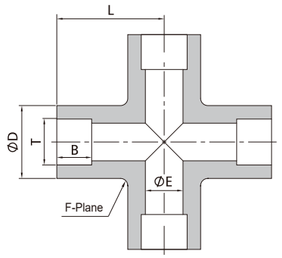

Imperial Tube

| T-Tube size (in.) | Basic ordering number | Size,mm | | | | | Pressure Rating psig(bar) |
|---|---|---|---|---|---|---|---|
| | | L | D | B | F | E | |
| 1/8 | -T-TS2 | 15.0 | 12.8 | 2.5 | 9.5 | 2.3 | 12600 (868) |
| 1/4 | -T-TS4 | 21.8 | 12.8 | 7.1 | 11.1 | 4.8 | 10700 (737) |
| 3/8 | -T-TS6 | 26.4 | 14.7 | 7.9 | 12.7 | 7.1 | 8100 (558) |
| 1/2 | -T-TS8 | 29.7 | 20.2 | 9.7 | 17.5 | 10.4 | 6600 (454) |
| 5/8 | -T-TS10 | 36.1 | 23.8 | 10.4 | 20.6 | 12.7 | 6200 (428) |
| 3/4 | -T-TS12 | 39.6 | 29.3 | 11.2 | 25.4 | 16.0 | 5900 (406) |
| 1 | -T-TS16 | 48.8 | 36.7 | 15.7 | 31.8 | 22.4 | 5600 (385) |

Metric Tube

| T-Tube size (mm) | Basic ordering number | Size,mm | | | | | Pressure Rating psig(bar) |
|---|---|---|---|---|---|---|---|
| | | L | D | B | F | E | |
| 8 | -T-MTS8 | 18.5 | 14.7 | 7.9 | 12.7 | 6.4 | 9790 (675) |
| 10 | -T-MTS10 | 24.6 | 16.5 | 7.9 | 14.3 | 7.4 | 8100 (558) |
| 12 | -T-MTS12 | 29.7 | 20.2 | 9.7 | 17.5 | 9.5 | 6820 (470) |
| 14 | -T-MTS14 | 36.0 | 23.8 | 10.0 | 20.6 | 10.4 | 6930 (478) |
| 16 | -T-MTS16 | 36.0 | 23.8 | 10.4 | 20.6 | 12.7 | 6190 (426) |
| 20 | -T-MTS20 | 39.6 | 29.3 | 11.2 | 25.4 | 17.0 | 5510 (380) |
| 22 | -T-MTS22 | 41.3 | 31.2 | 13.5 | 27.0 | 19.0 | 6850 (472) |
| 25 | -T-MTS25 | 48.8 | 36.7 | 15.7 | 31.8 | 22.0 | 5450 (376) |

## Tube Pipe Welding Cross




Imperial Tube

| T-Tube size (in.) | Basic ordering number | Size,mm | | | | | Pressure Rating psig(bar) |
|---|---|---|---|---|---|---|---|
| | | L | D | B | F | E | |
| 1/8 | -C-TS2 | 15.0 | 11.0 | 2.5 | 9.5 | 2.3 | 12600 (863) |
| 1/4 | -C-TS4 | 21.8 | 12.8 | 7.1 | 11.1 | 4.8 | 10700 (737) |
| 3/8 | -C-TS6 | 26.4 | 14.7 | 7.9 | 12.7 | 7.1 | 8100 (558) |
| 1/2 | -C-TS8 | 29.7 | 20.2 | 9.7 | 17.5 | 10.4 | 6600 (454) |
| 5/8 | -C-TS10 | 36.1 | 23.8 | 10.4 | 20.6 | 12.7 | 6200 (428) |
| 3/4 | -C-TS12 | 39.6 | 29.3 | 11.2 | 25.4 | 16.0 | 5900 (406) |
| 1 | -C-TS16 | 48.8 | 36.7 | 15.7 | 31.8 | 22.4 | 5600 (385) |

Metric Tube

| T-Tube size (mm) | Basic ordering number | Size,mm | | | | | Pressure Rating psig(bar) |
|---|---|---|---|---|---|---|---|
| | | L | D | B | F | E | |
| 8 | -C-MTS8 | 18.5 | 14.7 | 7.9 | 12.7 | 5.9 | 9790 (675) |
| 10 | -C-MTS10 | 24.6 | 16.5 | 7.9 | 14.3 | 7.1 | 8100 (558) |
| 12 | -C-MTS12 | 29.7 | 20.2 | 9.7 | 17.5 | 9.5 | 6820 (470) |
| 14 | -C-MTS14 | 36.0 | 23.8 | 9.7 | 20.6 | 10.4 | 6930 (478) |
| 16 | -C-MTS16 | 36.0 | 23.8 | 10.0 | 20.6 | 12.7 | 6190 (426) |
| 20 | -C-MTS20 | 39.6 | 29.3 | 11.2 | 25.4 | 17.0 | 5510 (380) |
| 22 | -C-MTS22 | 41.3 | 31.2 | 13.5 | 27.0 | 19.0 | 6850 (472) |
| 25 | -C-MTS25 | 48.8 | 36.7 | 15.7 | 31.8 | 22.0 | 5450 (376) |

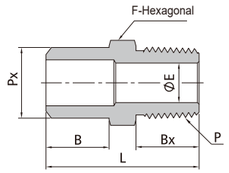






# Pipe Butt Weld Fittings

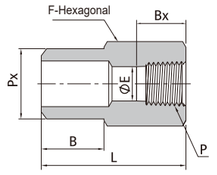
## Pipe Butt Weld-Male Thread Connector




Pipe — NPT Thread

| Px-Sch80 Pipe Size | P-NPT size | Basic ordering number | Size,mm | | | | | Pressure Rating psig(bar) |
|---|---|---|---|---|---|---|---|---|
| | | | L | B | Bx | F | E | |
| 1/4 | 1/4 | -S-PB4N4 | 34.3 | 14.2 | 14.2 | 14.3 | 7.1 | 8000 (551) |
| 1/4 | 1/2 | -S-PB4N8 | 41.3 | 14.2 | 19.1 | 22.2 | 7.7 | 7700 (537) |
| 3/8 | 1/4 | -S-PB6N4 | 34.8 | 14.2 | 14.2 | 17.5 | 7.1 | 6650 (459) |
| 3/8 | 1/2 | -S-PB6N8 | 41.3 | 14.2 | 19.1 | 22.2 | 10.7 | 6650 (459) |
| 1/2 | 1/4 | -S-PB8N4 | 41.3 | 19.1 | 14.2 | 22.2 | 7.1 | 6190 (427) |
| 1/2 | 1/2 | -S-PB8N8 | 46.2 | 19.1 | 19.1 | 22.2 | 11.9 | 6190 (427) |
| 3/4 | 1/4 | -S-PB12N4 | 42.9 | 19.1 | 14.2 | 27.0 | 7.1 | 5040 (348) |
| 3/4 | 1/2 | -S-PB12N8 | 47.8 | 19.1 | 19.1 | 27.0 | 11.9 | 5040 (348) |
| 1 | 1/4 | -S-PB16N4 | 50.0 | 23.9 | 14.2 | 34.9 | 7.1 | 4640 (320) |
| 1 | 1/2 | -S-PB16N8 | 54.9 | 23.9 | 19.1 | 34.9 | 11.9 | 4640 (320) |

## Pipe Butt Weld-Female Thread Connector

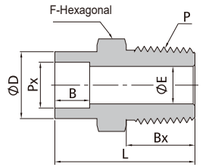



Pipe — NPT Thread

| Px-Sch80 Pipe Size | P-NPT size | Basic ordering number | Size,mm | | | | | Pressure Rating psig(bar) |
|---|---|---|---|---|---|---|---|---|
| | | | L | B | Bx | F | E | |
| 1/4 | 1/2 | -S-PB4FN8 | 38.9 | 14.2 | 19.8 | 27.0 | 7.6 | 4900 (337) |
| 3/8 | 1/2 | -S-PB6FN8 | 38.9 | 14.2 | 19.8 | 27.0 | 10.7 | 4900 (337) |
| 1/2 | 1/4 | -S-PB8FN4 | 37.3 | 19.1 | 15.0 | 22.2 | 10.4 | 7500 (516) |
| 1/2 | 1/2 | -S-PB8FN8 | 43.7 | 19.1 | 19.8 | 27.0 | 13.9 | 4900 (337) |

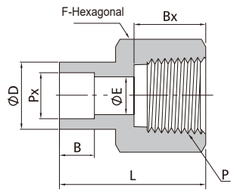
# Pipe welding joint

## Pipe plug welding -male thread joint



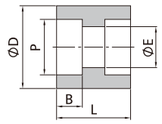

| Pipe | | | | | | | | NPT Thread |
|---|---|---|---|---|---|---|---|---|
| Px-Pipe Size | P-NPT size | Basic ordering number | Size,mm | | | | | Pressure Rating psig(bar) |
| | | | L | D | B | Bx | F | E | |
| 1/4 | 1/4 | -S-PS4N4 | 35.2 | 22.4 | 9.9 | 14.2 | 23.8 | 7.1 | 8000 (551) |
| 1/4 | 1/2 | -S-PS4N8 | 40.0 | 22.4 | 9.9 | 19.1 | 23.8 | 9.1 | 7700 (530) |
| 3/8 | 3/8 | -S-PS6N6 | 38.0 | 26.2 | 9.9 | 14.2 | 27.0 | 9.7 | 7100 (489) |
| 3/8 | 1/2 | -S-PS6N8 | 42.9 | 26.2 | 9.9 | 19.1 | 27.0 | 11.9 | 7100 (489) |
| 1/2 | 3/8 | -S-PS8N6 | 40.3 | 31.8 | 9.9 | 14.2 | 33.3 | 9.7 | 6800 (468) |
| 1/2 | 1/2 | -S-PS8N8 | 45.2 | 31.8 | 9.9 | 19.1 | 33.3 | 11.9 | 6800 (468) |
| 3/4 | 1/2 | -S-PS12N8 | 54.3 | 37.3 | 13.0 | 19.1 | 38.1 | 11.9 | 5800 (399) |
| 3/4 | 3/4 | -S-PS12N12 | 54.3 | 37.3 | 13.0 | 19.1 | 38.1 | 15.7 | 5800 (399) |
| 1 | 3/4 | -S-PS16N12 | 55.8 | 47.2 | 13.0 | 19.1 | 47.6 | 15.7 | 6100 (420) |
| 1 | 1 | -S-PS16N16 | 60.6 | 47.2 | 13.0 | 23.9 | 47.6 | 22.4 | 5300 (365) |

## Pipe socketwelding -female thread joint




| Pipe | | | | | | | | NPT Thread |
|---|---|---|---|---|---|---|---|---|
| Px-Pipe Size | P-NPT size | Basic ordering number | Size,mm | | | | | Pressure Rating psig(bar) |
| | | | L | D | B | Bx | F | E | |
| 1/4 | 1/4 | -S-PS4FN4 | 33.5 | 22.4 | 9.9 | 15.0 | 23.8 | 9.1 | 8000 (551) |
| 1/4 | 3/8 | -S-PS4FN6 | 33.5 | 22.4 | 9.9 | 15.0 | 23.8 | 9.1 | 6790 (463) |
| 3/8 | 3/8 | -S-PS6FN6 | 34.1 | 26.2 | 9.9 | 15.0 | 27.0 | 12.4 | 7100 (489) |
| 3/8 | 1/2 | -S-PS6FN8 | 39.1 | 26.2 | 9.9 | 19.8 | 27.0 | 12.4 | 4900 (337) |
| 1/2 | 1/2 | -S-PS8FN8 | 40.0 | 31.8 | 9.9 | 19.8 | 33.3 | 15.7 | 6800 (468) |
| 1/2 | 3/4 | -S-PS8FN12 | 40.6 | 31.8 | 9.9 | 20.6 | 33.3 | 15.7 | 4600 (316) |
| 3/4 | 3/4 | -S-PS12FN12 | 53.2 | 37.3 | 13.0 | 20.6 | 38.1 | 20.8 | 5800 (399) |
| 3/4 | 1 | -S-PS12FN16 | 58.1 | 37.3 | 13.0 | 25.4 | 41.3 | 20.8 | 4400 (303) |

## Pipe welding straight connector



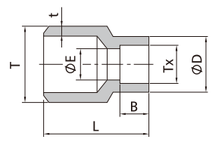

| Pipe | | | | | | |
|---|---|---|---|---|---|---|
| P-Pipe Size | Basic ordering number | Size,mm | | | | Pressure Rating psig(bar) |
| | | L | D | B | E | |
| 1/8 | -S-PS2 | 25.7 | 17.1 | 9.9 | 7.0 | 8230(568) |
| 1/4 | -S-PS4 | 26.9 | 22.4 | 9.9 | 9.1 | 8000(551) |
| 3/8 | -S-PS6 | 28.4 | 26.2 | 9.9 | 12.4 | 7100(489) |
| 1/2 | -S-PS8 | 28.4 | 31.8 | 9.9 | 15.7 | 6800(468) |
| 3/4 | -S-PS12 | 44.5 | 37.3 | 13.0 | 20.8 | 5800(399) |
| 1 | -S-PS16 | 44.5 | 47.2 | 13.0 | 26.7 | 6100(420) |





# Welding adapter

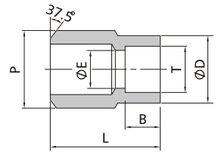
## Tube butt welding-Tube plug welding Straight joint




Imperial Tube

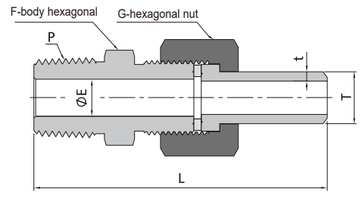
| T-Tube outer diameter (in.) | t-wall thickness (in.) | Tx-Tube Size (in.) | Basic ordering number | Size,mm | | | | Pressure Rating psig(bar) |
|---|---|---|---|---|---|---|---|---|
| | | | | L | B | D | E | |
| 1/4 | 0.083 | 1/8 | -S-TB4TS2 | 14.2 | 2.5 | 8.0 | 2.3 | 12600 (868) |
| 3/8 | 0.095 | 1/4 | -S-TB6TS4 | 19.1 | 7.1 | 12.2 | 4.8 | 8200 (564) |
| 1/2 | 0.095 | 1/4 | -S-TB8TS4 | 22.4 | 7.1 | 12.7 | 4.8 | 7500 (516) |
| 1/2 | 0.095 | 3/8 | -S-TB8TS6 | 22.4 | 7.9 | 15.2 | 8.3 | 7500 (516) |
| 3/4 | 0.120 | 1/2 | -S-TB12TS8 | 28.4 | 9.7 | 18.5 | 10.4 | 6300 (434) |
| 1 | 0.134 | 1/2 | -S-TB16TS8 | 35.1 | 9.7 | 18.5 | 10.4 | 5300 (365) |
| 1 | 0.134 | 3/4 | -S-TB16TS12 | 38.1 | 11.2 | 26.4 | 16.0 | 5300 (365) |

## Pipe butt welding-Tube plug welding Straight joint




| Pipe | | | | | | | | Imperial Tube |
|---|---|---|---|---|---|---|---|---|
| P-Sch80 Pipe Size | T-Tube Size (in.) | Basic ordering number | Size,mm | | | | | Pressure Rating psig(bar) |
| | | | L | B | D | E | | |
| 1/4 | 1/4 | -S-PB4TS4 | 22.4 | 7.1 | 12.2 | 4.8 | 10810 (744) |
| 3/8 | 1/4 | -S-PB6TS4 | 26.2 | 7.9 | 12.2 | 4.8 | 8500 (586) |
| 3/8 | 3/8 | -S-PB6TS6 | 26.2 | 7.9 | 15.2 | 7.1 | 8500 (586) |
| 3/8 | 1/2 | -S-PB6TS8 | 25.4 | 9.7 | 18.5 | 10.4 | 6930 (476) |
| 1/2 | 1/4 | -S-PB8TS4 | 28.4 | 7.1 | 12.2 | 4.8 | 8190 (563) |
| 1/2 | 3/8 | -S-PB8TS6 | 28.4 | 7.9 | 15.2 | 7.1 | 8190 (563) |
| 1/2 | 1/2 | -S-PB8TS8 | 30.2 | 9.7 | 18.5 | 10.4 | 6930 (476) |
| 3/4 | 1/4 | -S-PB12TS4 | 38.1 | 7.1 | 12.2 | 4.8 | 6930 (476) |
| 3/4 | 3/8 | -S-PB12TS6 | 38.1 | 7.9 | 15.2 | 7.1 | 6930 (476) |
| 3/4 | 1/2 | -S-PB12TS8 | 38.1 | 9.7 | 18.5 | 10.4 | 6930 (476) |
| 3/4 | 3/4 | -S-PB12TS12 | 38.1 | 11.2 | 26.4 | 16.0 | 6190 (483) |
| 1 | 3/8 | -S-PB16TS6 | 35.1 | 7.9 | 15.2 | 7.1 | 6300 (434) |
| 1 | 1/2 | -S-PB16TS8 | 39.6 | 11.2 | 18.5 | 10.4 | 6300 (434) |

## Male thread-welded union




NPT Thread — Metric Tube

| P-NPT size | T-Tube outer diameter (mm) | t-wall thickness (mm) | Basic ordering number | Size,mm | | | | Pressure Rating psig(bar) |
|---|---|---|---|---|---|---|---|---|
| | | | | L | F | G | E | |
| 1/8 | 14 | 2.5 | -MUW-N2MTB14 | 69 | 19 | 22 | 4.8 | 6280 (433) |
| 1/4 | 6 | 1.8 | -MUW-N4MTB6 | 60 | 14 | 14 | 3 | 8240 (566) |
| 1/4 | 8 | 1.8 | -MUW-N4MTB8 | 73.2 | 14 | 16 | 4 | 8240 (566) |
| 1/4 | 10 | 2.2 | -MUW-N4MTB10 | 73.2 | 15 | 18 | 6 | 8160 (563) |
| 1/4 | 12 | 2.2 | -MUW-N4MTB12 | 73.2 | 18 | 22 | 7 | 6470 (446) |
| 1/4 | 14 | 2.5 | -MUW-N4MTB14 | 73.2 | 19 | 22 | 7.1 | 6280 (433) |
| 1/4 | 16 | 2.8 | -MUW-N4MTB16 | 73.2 | 22 | 25 | 7.1 | 6140 (423) |
| 1/4 | 18 | 2.8 | -MUW-N4MTB18 | 74.2 | 24 | 27 | 7.1 | 5670 (392) |
| 3/8 | 14 | 2.5 | -MUW-N6MTB14 | 72.5 | 19 | 22 | 9.7 | 6280 (433) |
| 1/2 | 12 | 2.2 | -MUW-N8MTB12 | 78 | 18 | 22 | 7 | 6470 (446) |
| 1/2 | 14 | 2.5 | -MUW-N8MTB14 | 78 | 19 | 22 | 9 | 6280 (433) |
| 1/2 | 16 | 2.8 | -MUW-N8MTB16 | 78 | 22 | 25 | 10 | 6140 (423) |
| 1/2 | 22 | 3.0 | -MUW-N8MTB22 | 82 | 30 | 32 | 11.9 | 4620 (319) |
| 1/2 | 25 | 2.8 | -MUW-N8MTB25 | 86 | 32 | 35 | 11.9 | 4730 (326) |
| 1 | 25 | 3.5 | -MUW-N16MTB25 | 103 | 35 | 35 | 17 | 4730 (326) |

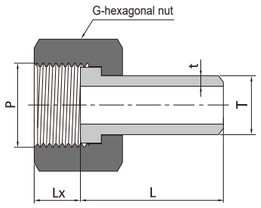


idealPower

idealPower

# Welding union joints

## Female thread-welding union




ISO parallel thread — Metric Tube

| P-ISO thread size | T-Tube outer diameter (mm) | t-wall thickness (mm) | Basic ordering number | Size,mm L | G | Lx | |
|---|---|---|---|---|---|---|---|
| 1/2 | 12 | 2.2 | -PUW-FG8MTB12 | 30 | 27.0 | 9.2 | 6470 (446) |
| 1/2 | 14 | 2.5 | -PUW-FG8MTB14 | 30 | 27.0 | 9.2 | 6280 (433) |
| 1/2 | 16 | 2.8 | -PUW-FG8MTB16 | 34 | 27.0 | 9.2 | 6140 (423) |

Metric thread — Metric Tube

| P - Metric thread size | T-Tube outer diameter (mm) | t-wall thickness (mm) | Basic ordering number | Size,mm L | G | Lx | Pressure Rating psig(bar) |
|---|---|---|---|---|---|---|---|
| M12 x 1.5 | 6 | 1.8 | -PUW-FM12MTB6 | 25 | 16 | 8 | 12660 (873) |
| M12 x 1.5 | 8 | 1.8 | -PUW-FM12MTB8 | 30 | 16 | 9 | 8320 (574) |
| M14 x 1.5 | 8 | 1.8 | -PUW-FM14MTB8 | 30 | 18 | 9 | 8320 (574) |
| M14 x 1.5 | 10 | 2.2 | -PUW-FM14MTB10 | 30 | 18 | 9 | 8160 (563) |
| M16 x 1.5 | 8 | 1.8 | -PUW-FM16MTB8 | 30 | 22 | 9 | 8320 (574) |
| M16 x 1.5 | 10 | 2.2 | -PUW-FM16MTB10 | 30 | 22 | 9 | 8160 (563) |
| M16 x 1.5 | 12 | 2.2 | -PUW-FM16MTB12 | 34 | 22 | 14 | 6470 (446) |
| M18 x 1.5 | 10 | 2.2 | -PUW-FM18MTB10 | 34 | 22 | 10 | 8160 (563) |
| M18 x 1.5 | 12 | 2.2 | -PUW-FM18MTB12 | 34 | 22 | 10 | 6470 (446) |
| M18 x 1.5 | 14 | 2.5 | -PUW-FM18MTB14 | 34 | 22 | 10 | 6280 (433) |
| M20 x 1.5 | 10 | 2.2 | -PUW-FM20MTB10 | 34 | 25 | 11 | 8160 (563) |
| M20 x 1.5 | 12 | 2.2 | -PUW-FM20MTB12 | 34 | 25 | 11 | 6470 (446) |
| M20 x 1.5 | 14 | 2.5 | -PUW-FM20MTB14 | 34 | 25 | 11 | 6280 (433) |
| M20 x 1.5 | 15 | 2.5 | -PUW-FM20MTB15 | 34 | 25 | 11 | 6160 (425) |
| M20 x 1.5 | 16 | 2.8 | -PUW-FM20MTB16 | 34 | 25 | 11 | 6140 (423) |
| M22 x 1.5 | 14 | 2.5 | -PUW-FM22MTB14 | 34 | 27 | 11 | 6280 (433) |
| M22 x 1.5 | 16 | 2.8 | -PUW-FM22MTB16 | 34 | 27 | 11 | 6140 (423) |
| M24 x 1.5 | 16 | 2.8 | -PUW-FM24MTB16 | 34 | 30 | 11 | 6140 (423) |
| M24 x 1.5 | 18 | 2.8 | -PUW-FM24MTB18 | 34 | 30 | 11 | 5670 (392) |
| M24 x 1.5 | 20 | 3.0 | -PUW-FM24MTB20 | 34 | 30 | 11 | 5110 (352) |
| M27 x 2 | 14 | 2.5 | -PUW-FM27MTB14 | 34 | 32 | 14 | 6280 (433) |
| M27 x 2 | 16 | 2.8 | -PUW-FM27MTB16 | 34 | 32 | 14 | 6140 (423) |
| M27 x 2 | 18 | 2.8 | -PUW-FM27MTB18 | 34 | 32 | 14 | 5670 (392) |
| M27 x 2 | 20 | 3.0 | -PUW-FM27MTB20 | 40 | 32 | 14 | 5110 (352) |
| M27 x 2 | 22 | 3.0 | -PUW-FM27MTB22 | 40 | 32 | 14 | 4620 (319) |
| M30 x 2 | 22 | 3.0 | -PUW-FM30MTB22 | 40 | 35 | 18 | 4620 (319) |
| M30 x 2 | 25 | 3.5 | -PUW-FM30MTB25 | 45 | 35 | 18 | 4730 (326) |
| M33 x 2 | 28 | 4.0 | -PUW-FM33MTB28 | 45 | 41 | 18 | 5160 (356) |
| M36 x 2 | 30 | 4.0 | -PUW-FM36MTB30 | 45 | 41 | 18 | 4760 (328) |







# 37° flared connector

## Feature

- The connector is designed and manufactured in accordance with standard SAE J514.
- The hardened and polished threads extend the life of the connector and avoid the bite of the male and female threads.
- The arc connection of the elbow channel ensures smooth flow of fluid.
- The threads of the stainless steel nut are silver-plated to reduce friction with the body threads.
- The size, material and heat number are engraved on each connector.
- The connector is easy to disassemble and re-tighten.
- All male threads are equipped with plastic protective caps.

## Technical Data

- Size range: 1/8" to 2" and 3 to 50 mm.
- Thread Standard:

| Thread | Reference Standards |
|---|---|
| NPT | ASME B1.20.1, SAE AS71051 |
| Unified thread (SAE) | ASME B1.1, SAE J475 |

- The operating temperature of E-JOE 37° flare fittings is the same as that of E-J0E series double ferrule fittings.
- Working pressure:

| SAE Nominal Size | T-Tube outer diameter (in.) | 37° flared end thread | Pipe thread size | SAE threaded and bulkhead connections (psig/bar) | Fittings with pipe threads (psig/bar) |
|---|---|---|---|---|---|
| 2 | 1/8 | 5/16-24 | 1/8 | 5000 (345) | 5000 (345) |
| 3 | 3/16 | 3/8-24 | 1/8 | 5000 (345) | 5000 (345) |
| 4 | 1/4 | 7/16-20 | 1/8 | 5000 (345) | 5000 (345) |
| 5 | 5/16 | 1/2-20 | 1/8 | 5000 (345) | 5000 (345) |
| 6 | 3/8 | 9/16-18 | 1/4 | 5000 (345) | 4000 (276) |
| 8 | 1/2 | 3/4-16 | 3/8 | 4500 (310) | 3000 (207) |
| 10 | 5/8 | 7/8-14 | 1/2 | 3500 (241) | 3000 (207) |
| 12 | 3/4 | 1 1/16-12 | 3/4 | 3500 (241) | 2500 (172) |
| 14 | 7/8 | 1 3/16-12 | 3/4 | 3000 (207) | 2500 (172) |
| 16 | 1 | 1 5/16-12 | 1 | 3000 (207) | 2000 (138) |
| 20 | 1 1/4 | 1 5/8-12 | 1 1/4 | 2500 (172) | 1150 (79) |
| 24 | 1 1/2 | 1 7/8-12 | 1 1/2 | 2000 (138) | 1000 (69) |
| 32 | 2 | 2 1/2-12 | 2 | 1500 (103) | 1000 (69) |

1. Working pressures are for carbon steel only. Contact an authorized representative or E-JOE for working pressures for other materials.
2. A four-fold safety factor applies to the above working pressures.

## Material

| Material | Bar | Forgings | Code |
|---|---|---|---|
| 316 Stainless Steel | ASTM A276, ASME SA479, EN 1.4401 | ASTM A182, ASME SA182, EN 1.4401 | SS |
| Aluminum | ASTM B211 | ASTM B247 | AL |
| Brass | ASTM B16/B453 | ASTM B283 | B |
| Carbon Steel | ASTM A108 | / | CS |

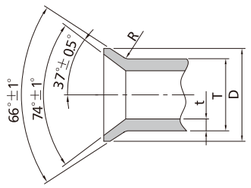
## Ordering Information

Complete the ordering number by adding the material code to the front of the basic ordering number.
Example:
1. 316 stainless steel flared male fitting with 1/4" tube OD and 1/4 NPT thread. The complete ordering number is: SS-S-AN4N4.
2. 316 stainless steel sleeve with 6mm tube OD. The complete ordering number is: SS-SL-6M.

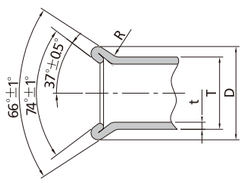
## Flaring operation

There are two different ways to expand the tube, single wall expansion for thick wall tubes and double wall expansion for thin wall tubes. See the table below:

Thick Wall Tube




Thin Wall Tube




Imperial Tube

| T-Tube outer diameter (in.) | Size | | |
|---|---|---|---|
| | D (mm) | t (in.) | R (mm) |
| 1/4 | 8.6-9.1 | 0.020-0.065 | 0.8 |
| 5/16 | 10.2-10.9 | 0.020-0.065 | 0.8 |
| 3/8 | 11.6-12.4 | 0.020-0.065 | 1.0 |
| 1/2 | 16.0-16.7 | 0.028-0.083 | 1.5 |
| 5/8 | 19.3-20.0 | 0.035-0.095 | 1.5 |
| 3/4 | 23.3-24.1 | 0.035-0.109 | 2.0 |
| 7/8 | 26.4-27.1 | 0.035-0.109 | 2.0 |
| 1 | 29.7-30.4 | 0.035-0.120 | 2.3 |
| 1 1/4 | 37.5-38.3 | 0.049-0.120 | 2.3 |
| 1 1/2 | 43.2-43.9 | 0.049-0.120 | 2.8 |
| 2 | 59.2-59.9 | 0.065-0.134 | 2.8 |

Metric Tube

| T-Tube outer diameter (mm) | Size | | |
|---|---|---|---|
| | D (mm) | t (mm) | R (mm) |
| 6 | 8.4-9.2 | 0.5-1.5 | 0.8 |
| 8 | 10.1-10.8 | 0.5-1.5 | 0.8 |
| 10 | 12.0-12.5 | 0.5-1.5 | 1.0 |
| 12 | 16.0-16.7 | 1.0-2.0 | 1.5 |
| 14 | 18.8-19.5 | 1.0-2.5 | 1.5 |
| 15 | 19.4-20.0 | 1.0-2.5 | 1.5 |
| 16 | 19.4-20.0 | 1.0-2.5 | 1.5 |
| 18 | 23.5-24.0 | 1.0-3.0 | 2.0 |
| 20 | 24.0-24.5 | 1.0-3.0 | 2.0 |
| 22 | 26.2-27.2 | 1.0-3.0 | 2.0 |
| 25 | 29.5-30.2 | 1.0-3.0 | 2.3 |
| 30 | 37.4-38.0 | 1.5-3.0 | 2.3 |
| 32 | 37.6-38.3 | 1.5-3.0 | 2.3 |
| 38 | 43.5-44.5 | 1.5-3.0 | 2.8 |
| 50 | 58.9-59.6 | 1.5-3.5 | 2.8 |

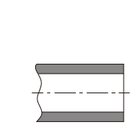




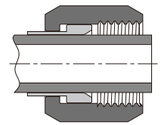


## Installation Instructions

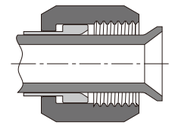
1. Cut the tube to the appropriate length.
2. Insert the tube into the nut and sleeve.
3. Expand the tube to 37° size, the size should comply with SAE J533. See expansion operation.
4. Tighten the nut by hand.
5. Firmly hold the fitting body and tighten the nut 1/4 turn with a wrench.



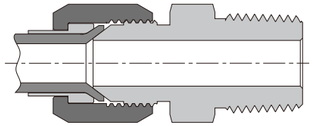
Step 1



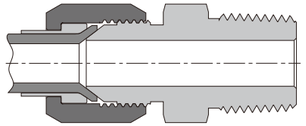
Step 2



Step 3



Step 4



Step 5

## Warn:

- Do not loosen and tighten fittings while the system is pressurized.
- Always use an appropriate thread sealant on tapered pipe threads.

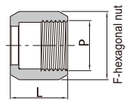
Casing




**SAE 070115**

| Tube outer diameter | | Basic order number | | L (mm) |
|---|---|---|---|---|
| in. | mm | in. | mm | |
| 1/8 | 3 | -SL-AN2 | -SL-AN3M | 8.6 |
| 3/16 | 4 | -SL-AN3 | -SL-AN4M | 8.6 |
| 1/4 | 6 | -SL-AN4 | -SL-AN6M | 10.4 |
| 5/16 | 8 | -SL-AN5 | -SL-AN8M | 11.2 |
| 3/8 | 10 | -SL-AN6 | -SL-AN10M | 12.7 |
| 1/2 | 12 | -SL-AN8 | -SL-AN12M | 14.2 |
| 5/8 | 16 | -SL-AN10 | -SL-AN16M | 16.8 |
| 3/4 | 18 | -SL-AN12 | -SL-AN18M | 17.3 |
| 7/8 | 22 | -SL-AN14 | -SL-AN22M | 19.3 |
| 1 | 25 | -SL-AN16 | -SL-AN25M | 19.8 |
| 1 1/4 | 32 | -SL-AN20 | -SL-AN32M | 23.1 |
| 1 1/2 | 38 | -SL-AN24 | -SL-AN38M | 28.4 |
| 2 | 50 | -SL-AN32 | -SL-AN50M | 30.2 |

Nuts



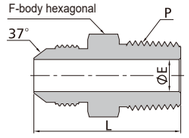

**SAE 070110**

| Tube outer diameter | | P-SAE/MS thread size | Basic order number | Size,mm | |
|---|---|---|---|---|---|
| in. | mm | | | L | G |
| 1/8 | 3 | 5/16-24 | -N-AN2 | 14.0 | 9.5 |
| 3/16 | 4 | 3/8-24 | -N-AN3 | 15.5 | 11.1 |
| 1/4 | 6 | 7/16-20 | -N-AN4 | 15.8 | 14.3 |
| 5/16 | 8 | 1/2-20 | -N-AN5 | 17.3 | 15.9 |
| 3/8 | 10 | 9/16-18 | -N-AN6 | 18.5 | 17.5 |
| 1/2 | 12 | 3/4-16 | -N-AN8 | 21.6 | 22.2 |
| 5/8 | 16 | 7/8-14 | -N-AN10 | 24.9 | 25.4 |
| 3/4 | 18 | 1 1/16-12 | -N-AN12 | 26.2 | 31.8 |
| 7/8 | 22 | 1 3/16-12 | -N-AN14 | 27.7 | 34.9 |
| 1 | 25 | 1 5/16-12 | -N-AN16 | 28.7 | 38.1 |
| 1 1/4 | 32 | 1 5/8-12 | -N-AN20 | 31.2 | 50.8 |
| 1 1/2 | 38 | 1 7/8-12 | -N-AN24 | 36.1 | 57.2 |
| 2 | 50 | 2 1/2-12 | -N-AN32 | 44.5 | 73.0 |

Dimensions are for reference only and are subject to change.



Flared male thread connector

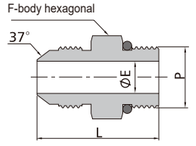



**SAE 070102**

| Tube outer diameter | | P-NPT Size | Basic order number | Size,mm | | |
|---|---|---|---|---|---|---|
| in. | mm | | | L | E | F |
| 1/8 | 3 | 1/8 | -S-AN2N2 | 28.2 | 1.6 | 11.1 |
| 3/16 | 4 | 1/8 | -S-AN3N2 | 29.0 | 3.2 | 11.1 |
| 1/4 | 6 | 1/8 | -S-AN4N2 | 31.0 | 4.4 | 12.7 |
| 1/4 | 6 | 1/4 | -S-AN4N4 | 36.0 | 4.4 | 14.3 |
| 1/4 | 6 | 1/2 | -S-AN4N8 | 42.7 | 4.4 | 22.2 |
| 5/16 | 8 | 1/8 | -S-AN5N2 | 31.0 | 4.8 | 14.3 |
| 5/16 | 8 | 1/4 | -S-AN5N4 | 36.1 | 6.0 | 14.3 |
| 3/8 | 10 | 1/8 | -S-AN6N2 | 31.8 | 4.8 | 15.9 |
| 3/8 | 10 | 1/4 | -S-AN6N4 | 36.3 | 7.1 | 15.9 |
| 3/8 | 10 | 3/8 | -S-AN6N6 | 36.3 | 7.5 | 19.1 |
| 3/8 | 10 | 1/2 | -S-AN6N8 | 42.5 | 7.5 | 22.2 |
| 1/2 | 12 | 1/4 | -S-AN8N4 | 38.9 | 7.1 | 20.6 |
| 1/2 | 12 | 3/8 | -S-AN8N6 | 38.9 | 9.9 | 20.6 |
| 1/2 | 12 | 1/2 | -S-AN8N8 | 45.5 | 9.9 | 22.2 |
| 1/2 | 12 | 3/4 | -S-AN8N12 | 47.0 | 9.9 | 28.6 |
| 5/8 | 16 | 3/8 | -S-AN10N6 | 43.1 | 9.9 | 23.8 |
| 5/8 | 16 | 1/2 | -S-AN10N8 | 48.0 | 12.3 | 23.8 |
| 5/8 | 16 | 3/4 | -S-AN10N12 | 49.5 | 12.3 | 28.6 |
| 3/4 | 18 | 3/4 | -S-AN12N12 | 52.3 | 15.5 | 28.6 |
| 3/4 | 18 | 1 | -S-AN12N6 | 57.1 | 15.5 | 34.9 |
| 7/8 | 22 | 3/4 | -S-AN14N12 | 53.1 | 18.3 | 31.8 |
| 1 | 25 | 3/4 | -S-AN16N12 | 53.5 | 18.3 | 34.9 |
| 1 | 25 | 1 | -S-AN16N16 | 58.4 | 21.5 | 34.9 |
| 1 1/4 | 32 | 1 | -S-AN20N16 | 61.5 | 23.8 | 42.9 |
| 1 1/4 | 32 | 1 1/4 | -S-AN20N20 | 62.2 | 27.5 | 42.9 |
| 1 1/2 | 38 | 1 1/4 | -S-AN24N20 | 68.1 | 31.7 | 50.8 |
| 1 1/2 | 38 | 1 1/2 | -S-AN24N24 | 68.1 | 33.0 | 50.8 |
| 2 | 50 | 2 | -S-AN32N32 | 79.0 | 45.0 | 66.7 |

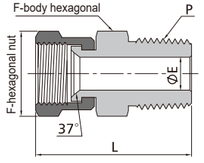


Flared male thread connector



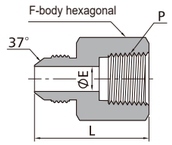

**SAE 070120**

| Tube outer diameter | | P-SAE/MS thread size | Basic order number | Size,mm | | |
|---|---|---|---|---|---|---|
| in. | mm | | | L | E | F |
| 1/8 | 3 | 5/16-24 | -S-AN2ST5 | 26.9 | 1.6 | 11.1 |
| 3/16 | 4 | 3/8-24 | -S-AN3ST6 | 27.9 | 3.2 | 12.7 |
| 1/4 | 6 | 7/16-20 | -S-AN4ST7 | 31.2 | 4.4 | 14.3 |
| 1/4 | 6 | 1/2-20 | -S-AN4ST8 | 31.2 | 4.4 | 15.9 |
| 1/4 | 6 | 9/16-18 | -S-AN4ST9 | 33.0 | 4.4 | 17.5 |
| 1/4 | 6 | 3/4-16 | -S-AN4ST12 | 34.8 | 4.4 | 22.2 |
| 5/16 | 8 | 1/2-20 | -S-AN5ST8 | 31.2 | 6.0 | 15.9 |
| 3/8 | 10 | 9/16-18 | -S-AN6ST9 | 33.0 | 7.5 | 17.5 |
| 3/8 | 10 | 3/4-16 | -S-AN6ST12 | 35.1 | 7.5 | 22.2 |
| 3/8 | 10 | 7/8-14 | -S-AN6ST14 | 38.1 | 7.5 | 25.4 |
| 1/2 | 12 | 9/16-18 | -S-AN8ST9 | 36.6 | 7.5 | 20.6 |
| 1/2 | 12 | 3/4-16 | -S-AN8ST12 | 37.6 | 9.9 | 22.2 |
| 1/2 | 12 | 7/8-14 | -S-AN8ST14 | 40.6 | 9.9 | 25.4 |
| 1/2 | 12 | 1 1/16-12 | -S-AN8ST17 | 44.7 | 9.9 | 31.8 |
| 5/8 | 16 | 3/4-16 | -S-AN10ST12 | 40.6 | 10.7 | 23.8 |
| 5/8 | 16 | 7/8-14 | -S-AN10ST14 | 43.2 | 12.3 | 25.4 |
| 5/8 | 16 | 1 1/16-12 | -S-AN10ST17 | 47.2 | 12.3 | 31.8 |
| 3/4 | 18 | 3/4-16 | -S-AN12ST12 | 45.2 | 10.7 | 28.6 |
| 3/4 | 18 | 7/8-14 | -S-AN12ST14 | 46.4 | 12.7 | 28.6 |
| 3/4 | 18 | 1 1/16-12 | -S-AN12ST17 | 50.0 | 15.5 | 31.8 |
| 3/4 | 18 | 1 5/16-12 | -S-AN12ST21 | 50.8 | 15.5 | 38.1 |
| 7/8 | 22 | 1 3/16-12 | -S-AN14ST19 | 50.5 | 18.3 | 34.9 |
| 7/8 | 22 | 1 5/16-12 | -S-AN14ST21 | 51.3 | 18.3 | 38.1 |
| 1 | 25 | 1 1/16-12 | -S-AN16ST17 | 51.1 | 16.7 | 34.9 |
| 1 | 25 | 1 3/16-12 | -S-AN16ST19 | 51.8 | 18.3 | 34.9 |
| 1 | 25 | 1 5/16-12 | -S-AN16ST21 | 51.8 | 21.5 | 38.1 |



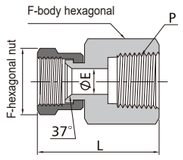

| Tube outer diameter | | P-NPT Size | Basic order number | Size,mm | | | |
|---|---|---|---|---|---|---|---|
| in. | mm | | | L | E | G | F |
| 1/8 | 3 | 1/8 | -S-AS2N2 | 30.0 | 1.6 | 11.1 | 11.1 |
| 3/16 | 4 | 1/8 | -S-AS3N2 | 32.0 | 3.2 | 12.7 | 11.1 |
| 1/4 | 6 | 1/8 | -S-AS4N2 | 34.2 | 4.4 | 14.3 | 12.7 |
| 5/16 | 8 | 1/8 | -S-AS5N2 | 35.0 | 6.0 | 15.9 | 14.3 |
| 3/8 | 10 | 1/4 | -S-AS6N4 | 40.2 | 7.5 | 17.5 | 15.9 |
| 1/2 | 12 | 3/8 | -S-AS8N6 | 42.7 | 9.9 | 22.2 | 20.6 |
| 5/8 | 16 | 1/2 | -S-AS10N8 | 51.3 | 12.3 | 25.4 | 23.8 |
| 3/4 | 18 | 3/4 | -S-AS12N12 | 54.5 | 15.5 | 31.8 | 28.6 |
| 7/8 | 22 | 3/4 | -S-AS14N12 | 56.0 | 18.0 | 34.9 | 31.8 |
| 1 | 25 | 1 | -S-AS16N16 | 63.7 | 21.5 | 38.1 | 34.9 |
| 1 1/4 | 32 | 1 1/4 | -S-AS20N20 | 68.9 | 27.5 | 50.8 | 42.9 |
| 1 1/2 | 38 | 1 1/2 | -S-AS24N24 | 77.6 | 33.0 | 57.2 | 50.8 |
| 2 | 50 | 2 | -S-AS32N32 | 92.9 | 45.0 | 73.0 | 66.7 |

## Flared female thread connector




**SAE 070103**

| Tube outer diameter | | P-NPT Size | Basic order number | Size,mm | | |
|---|---|---|---|---|---|---|
| in. | mm | | | L | E | F |
| 1/8 | 3 | 1/8 | -S-AN2FN2 | 28.4 | 1.6 | 14.3 |
| 3/16 | 4 | 1/8 | -S-AN3FN2 | 28.7 | 3.2 | 14.3 |
| 1/4 | 6 | 1/8 | -S-AN4FN2 | 30.2 | 4.4 | 14.3 |
| 1/4 | 6 | 1/4 | -S-AN4FN4 | 35.3 | 4.4 | 19.1 |
| 5/16 | 8 | 1/8 | -S-AN5FN2 | 29.7 | 6.0 | 14.3 |
| 5/16 | 8 | 1/4 | -S-AN5FN4 | 35.3 | 6.0 | 19.1 |
| 3/8 | 10 | 1/4 | -S-AN6FN4 | 35.6 | 7.5 | 19.1 |
| 3/8 | 10 | 3/8 | -S-AN6FN6 | 37.1 | 7.5 | 22.2 |
| 1/2 | 12 | 3/8 | -S-AN8FN6 | 39.6 | 9.9 | 22.2 |
| 1/2 | 12 | 1/2 | -S-AN8FN8 | 45.6 | 9.9 | 28.6 |
| 5/8 | 16 | 1/2 | -S-AN10FN8 | 48.0 | 12.3 | 28.6 |
| 3/4 | 18 | 1/2 | -S-AN12FN8 | 52.1 | 15.5 | 28.6 |
| 3/4 | 18 | 3/4 | -S-AN12FN12 | 52.3 | 15.5 | 34.9 |
| 7/8 | 22 | 3/4 | -S-AN14FN12 | 52.3 | 18.3 | 34.9 |
| 1 | 25 | 1 | -S-AN16FN16 | 59.7 | 21.5 | 41.3 |
| 1 1/4 | 32 | 1 1/4 | -S-AN20FN20 | 63.2 | 27.5 | 50.8 |
| 1 1/2 | 38 | 1 1/2 | -S-AN24FN24 | 66.5 | 33.0 | 60.3 |
| 2 | 50 | 2 | -S-AN32FN32 | 75.4 | 45.0 | 73.0 |



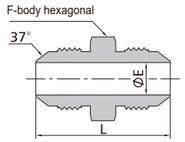

| Tube outer diameter | | P-NPT Size | Basic order number | Size,mm | | | |
|---|---|---|---|---|---|---|---|
| in. | mm | | | L | E | G | F |
| 1/8 | 3 | 1/8 | -S-AS2FN2 | 36.1 | 1.6 | 11.1 | 14.3 |
| 3/16 | 4 | 1/8 | -S-AS3FN2 | 37.3 | 3.2 | 12.7 | 14.3 |
| 1/4 | 6 | 1/8 | -S-AS4FN2 | 39.7 | 4.4 | 14.3 | 14.3 |
| 5/16 | 8 | 1/8 | -S-AS5FN2 | 40.5 | 6.0 | 15.9 | 14.3 |
| 3/8 | 10 | 1/4 | -S-AS6FN4 | 45.8 | 7.5 | 17.5 | 19.1 |
| 1/2 | 12 | 3/8 | -S-AS8FN6 | 47.0 | 9.9 | 22.2 | 22.2 |
| 5/8 | 16 | 1/2 | -S-AS10FN8 | 51.6 | 12.3 | 25.4 | 28.6 |
| 3/4 | 18 | 3/4 | -S-AS12FN12 | 66.6 | 15.5 | 31.8 | 34.9 |
| 7/8 | 22 | 3/4 | -S-AS14FN12 | 67.8 | 18.0 | 34.9 | 34.9 |
| 1 | 25 | 1 | -S-AS16FN16 | 73.5 | 21.5 | 38.1 | 41.3 |
| 1 1/4 | 32 | 1 1/4 | -S-AS20FN20 | 78.1 | 27.5 | 50.8 | 50.8 |
| 1 1/2 | 38 | 1 1/2 | -S-AS24FN24 | 86.7 | 33.0 | 60.3 | 60.3 |
| 2 | 50 | 2 | -S-AS32FN32 | 89.3 | 45.0 | 73.0 | 66.7 |







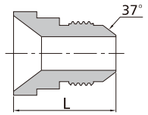
## Flared straight connector




**SAE 070101**

| Tube outer diameter | | Basic order number | Size,mm | | |
|---|---|---|---|---|---|
| in. | mm | | L | E | F |
| 1/8 | 3 | -S-AN2 | 29.7 | 1.6 | 11.1 |
| 3/16 | 4 | -S-AN3 | 31.2 | 3.2 | 11.1 |
| 1/4 | 6 | -S-AN4 | 34.8 | 4.4 | 12.7 |
| 5/16 | 8 | -S-AN5 | 34.8 | 6.0 | 14.3 |
| 3/8 | 10 | -S-AN6 | 35.8 | 7.5 | 15.9 |
| 1/2 | 12 | -S-AN8 | 41.1 | 9.9 | 20.6 |
| 5/8 | 16 | -S-AN10 | 47.8 | 12.3 | 23.8 |
| 3/4 | 18 | -S-AN12 | 54.9 | 15.5 | 28.6 |
| 7/8 | 22 | -S-AN14 | 56.1 | 18.3 | 31.8 |
| 1 | 25 | -S-AN16 | 57.2 | 21.5 | 34.9 |
| 1 1/4 | 32 | -S-AN20 | 61.7 | 27.5 | 42.9 |
| 1 1/2 | 38 | -S-AN24 | 69.8 | 33.0 | 50.8 |
| 2 | 50 | -S-AN32 | 86.4 | 45.0 | 66.7 |

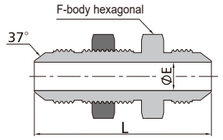
## Flared reducing straight joint




**SAE 070123**

| Tube outer diameter | | Basic order number | L (mm) |
|---|---|---|---|
| In. - mm | In. - mm | | |
| 3/8 - 10 | 1/4 - 6 | -RA-AN6AN4 | 24.6 |
| 1/2 - 12 | 1/4 - 6 | -RA-AN8AN4 | 25.4 |
| 1/2 - 12 | 3/8 - 10 | -RA-AN8AN6 | 25.4 |
| 5/8 - 16 | 1/4 - 6 | -RA-AN10AN4 | 26.2 |
| 5/8 - 16 | 3/8 - 10 | -RA-AN10AN6 | 26.2 |
| 3/4 - 18 | 1/4 - 6 | -RA-AN12AN4 | 27.7 |
| 3/4 - 18 | 3/8 - 10 | -RA-AN12AN6 | 27.7 |
| 3/4 - 18 | 1/2 - 12 | -RA-AN12AN8 | 30.2 |
| 7/8 - 22 | 3/8 - 10 | -RA-AN14AN6 | 28.7 |
| 7/8 - 22 | 5/8 - 16 | -RA-AN14AN10 | 33.7 |
| 1 - 25 | 1/4 - 6 | -RA-AN16AN4 | 31.0 |
| 1 - 25 | 3/8 - 10 | -RA-AN16AN6 | 31.0 |
| 1 - 25 | 1/2 - 12 | -RA-AN16AN8 | 32.3 |
| 1 - 25 | 5/8 - 16 | -RA-AN16AN10 | 35.1 |
| 1 - 25 | 3/4 - 18 | -RA-AN16AN12 | 37.3 |
| 1 1/4 - 32 | 3/4 - 18 | -RA-AN20AN12 | 38.8 |
| 1 1/4 - 32 | 1 - 25 | -RA-AN20AN16 | 40.3 |
| 1 1/2 - 38 | 1/2 - 12 | -RA-AN24AN8 | 39.6 |
| 1 1/2 - 38 | 3/4 - 18 | -RA-AN24AN12 | 41.4 |
| 1 1/2 - 38 | 1 - 25 | -RA-AN24AN16 | 41.4 |
| 2 - 50 | 11/2 - 38 | -RA-AN32AN24 | 48.5 |

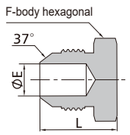
## Flared straight-through bulkhead connector




**SAE 070601**

| Tube outer diameter | | Basic order number | Size,mm | | |
|---|---|---|---|---|---|
| in. | mm | | L | E | F |
| 3/16 | 4 | -S-BAN3 | 48.3 | 3.2 | 15.9 |
| 1/4 | 6 | -S-BAN4 | 52.6 | 4.4 | 17.5 |
| 5/16 | 8 | -S-BAN5 | 52.6 | 6.0 | 19.1 |
| 3/8 | 10 | -S-BAN6 | 55.4 | 7.5 | 20.6 |
| 1/2 | 12 | -S-BAN8 | 62.0 | 9.9 | 25.4 |
| 5/8 | 16 | -S-BAN10 | 69.6 | 12.3 | 28.6 |
| 3/4 | 18 | -S-BAN12 | 78.5 | 15.5 | 34.9 |
| 7/8 | 22 | -S-BAN14 | 79.2 | 18.3 | 38.1 |
| 1 | 25 | -S-BAN16 | 79.8 | 21.5 | 41.3 |
| 1 1/4 | 32 | -S-BAN20 | 84.1 | 27.5 | 47.6 |
| 1 1/2 | 38 | -S-BAN24 | 89.4 | 33.0 | 54.0 |
| 2 | 50 | -S-BAN32 | 106.7 | 45.0 | 69.9 |

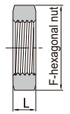
## Flared Tube Plug




**SAE 070109**

| Tube outer diameter | | Basic order number | Size,mm | | |
|---|---|---|---|---|---|
| in. | mm | | L | E | F |
| 1/8 | 3 | -HP-AN2 | 17.8 | 1.6 | 11.1 |
| 3/16 | 4 | -HP-AN3 | 18.5 | 3.2 | 11.1 |
| 1/4 | 6 | -HP-AN4 | 20.3 | 4.4 | 12.7 |
| 5/16 | 8 | -HP-AN5 | 20.3 | 6.0 | 14.3 |
| 3/8 | 10 | -HP-AN6 | 21.3 | 7.5 | 15.9 |
| 1/2 | 12 | -HP-AN8 | 23.9 | 9.9 | 20.6 |
| 5/8 | 16 | -HP-AN10 | 27.9 | 12.3 | 23.8 |
| 3/4 | 18 | -HP-AN12 | 32.5 | 15.5 | 28.6 |
| 7/8 | 22 | -HP-AN14 | 33.3 | 18.3 | 31.8 |
| 1 | 25 | -HP-AN16 | 33.8 | 21.5 | 34.9 |
| 1 1/4 | 32 | -HP-AN20 | 36.8 | 27.5 | 42.9 |
| 1 1/2 | 38 | -HP-AN24 | 41.9 | 33.0 | 50.8 |
| 2 | 50 | -HP-AN32 | 52.1 | 45.0 | 66.7 |

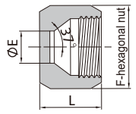
## Bulkhead lock nut




**SAE 070118**

| Tube outer diameter | | Basic order number | Size,mm | |
|---|---|---|---|---|
| in. | mm | | L | G |
| 3/16 | 4 | -BN-AN3 | 5.6 | 15.9 |
| 1/4 | 6 | -BN-AN4 | 7.1 | 17.5 |
| 5/16 | 8 | -BN-AN5 | 7.1 | 19.1 |
| 3/8 | 10 | -BN-AN6 | 6.9 | 20.6 |
| 1/2 | 12 | -BN-AN8 | 7.9 | 25.4 |
| 5/8 | 16 | -BN-AN10 | 9.1 | 28.6 |
| 3/4 | 18 | -BN-AN12 | 10.4 | 34.9 |
| 7/8 | 22 | -BN-AN14 | 10.4 | 38.1 |
| 1 | 25 | -BN-AN16 | 10.4 | 41.3 |
| 1 1/4 | 32 | -BN-AN20 | 10.4 | 47.6 |
| 1 1/2 | 38 | -BN-AN24 | 10.4 | 54.0 |
| 2 | 50 | -BN-AN32 | 10.4 | 69.9 |

## Flared Tube Cap



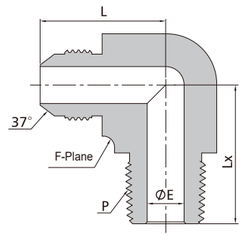

**SAE 070112**

| Tube outer diameter | | Basic order number | Size,mm | | |
|---|---|---|---|---|---|
| in. | mm | | L | E | G |
| 1/8 | 3 | -TN-AN2 | 12.7 | 1.6 | 9.5 |
| 3/16 | 4 | TN AN3 | 14.3 | 3.2 | 11.1 |
| 1/4 | 6 | -TN-AN4 | 15.1 | 4.4 | 14.3 |
| 5/16 | 8 | TN AN5 | 15.5 | 6.0 | 15.9 |
| 3/8 | 10 | -TN-AN6 | 15.9 | 7.5 | 20.6 |
| 1/2 | 12 | TN AN8 | 19.1 | 9.9 | 22.2 |
| 5/8 | 16 | -TN-AN10 | 21.4 | 12.3 | 25.4 |
| 3/4 | 18 | TN AN12 | 23.0 | 15.5 | 31.8 |
| 7/8 | 22 | -TN-AN14 | 24.6 | 18.3 | 34.9 |
| 1 | 25 | TN AN16 | 25.8 | 21.5 | 38.1 |
| 1 1/4 | 32 | -TN-AN20 | 27.0 | 27.5 | 50.8 |
| 1 1/2 | 38 | TN AN24 | 30.2 | 33.0 | 57.2 |
| 2 | 50 | -TN-AN32 | 36.5 | 45.0 | 73.0 |





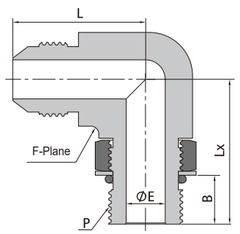
## Flared Sunshine Thread Elbow




**SAE 070202**

| Tube outer diameter | | P-NPT Size | Basic order number | Size,mm | | | |
|---|---|---|---|---|---|---|---|
| in. | mm | | | L | E | F | Lx |
| 1/8 | 3 | 1/8 | -L-AN2N2 | 19.6 | 1.6 | 11.1 | 18.3 |
| 3/16 | 4 | 1/8 | -L-AN3N2 | 21.1 | 3.2 | 11.1 | 18.3 |
| 1/4 | 6 | 1/8 | -L-AN4N2 | 22.6 | 4.4 | 12.7 | 19.8 |
| 1/4 | 6 | 1/4 | -L-AN4N4 | 26.9 | 4.4 | 14.3 | 27.7 |
| 5/16 | 8 | 1/8 | -L-AN5N2 | 24.1 | 4.8 | 14.3 | 19.8 |
| 5/16 | 8 | 1/4 | -L-AN5N4 | 26.9 | 6.0 | 14.3 | 27.7 |
| 3/8 | 10 | 1/8 | -L-AN6N2 | 26.9 | 4.8 | 14.3 | 22.8 |
| 3/8 | 10 | 1/4 | -L-AN6N4 | 26.9 | 7.1 | 14.3 | 27.7 |
| 3/8 | 10 | 3/8 | -L-AN6N6 | 29.0 | 7.5 | 17.5 | 31.0 |
| 3/8 | 10 | 1/2 | -L-AN6N8 | 31.2 | 7.5 | 20.6 | 37.3 |
| 1/2 | 12 | 1/4 | -L-AN8N4 | 31.8 | 7.1 | 20.6 | 31.0 |
| 1/2 | 12 | 3/8 | -L-AN8N6 | 31.8 | 9.9 | 20.6 | 31.0 |
| 1/2 | 12 | 1/2 | -L-AN8N8 | 33.7 | 9.9 | 20.6 | 37.3 |
| 1/2 | 12 | 3/4 | -L-AN8N12 | 36.0 | 9.9 | 25.4 | 40.4 |
| 5/8 | 16 | 3/8 | -L-AN10N6 | 36.8 | 9.9 | 20.6 | 33.0 |
| 5/8 | 16 | 1/2 | -L-AN10N8 | 36.8 | 12.3 | 20.6 | 37.3 |
| 5/8 | 16 | 3/4 | -L-AN10N12 | 38.9 | 12.3 | 25.4 | 40.4 |
| 3/4 | 18 | 3/4 | -L-AN12N12 | 42.2 | 15.5 | 27.0 | 40.4 |
| 3/4 | 18 | 1 | -L-AN12N16 | 42.2 | 15.5 | 31.8 | 50.4 |
| 7/8 | 22 | 3/4 | -L-AN14N12 | 45.7 | 18.3 | 31.8 | 42.9 |
| 1 | 25 | 3/4 | -L-AN16N12 | 46.0 | 18.3 | 34.9 | 45.2 |
| 1 | 25 | 1 | -L-AN16N16 | 46.0 | 21.5 | 34.9 | 50.0 |
| 1 1/4 | 32 | 1 | -L-AN20N16 | 52.3 | 23.8 | 42.9 | 59.6 |
| 1 1/4 | 32 | 1 1/4 | -L-AN20N20 | 52.3 | 27.5 | 42.9 | 60.5 |
| 1 1/2 | 38 | 1 1/2 | -L-AN24N24 | 59.2 | 33.0 | 50.8 | 67.1 |
| 2 | 50 | 2 | -L-AN32N32 | 77.7 | 45.0 | 63.5 | 76.2 |

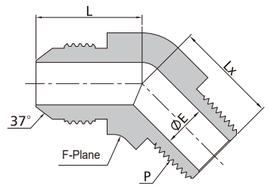
## Flared male thread position adjustable elbow




**SAE 070220**

| Tube outer diameter | | P-SAE/MS thread size | Basic order number | Size,mm | | | | |
|---|---|---|---|---|---|---|---|---|
| in. | mm | | | L | E | F | Lx | B |
| 1/8 | 3 | 5/16-24 | -L-AN2OST5 | 19.6 | 1.6 | 11.1 | 23.9 | 8.4 |
| 3/16 | 4 | 3/8-34 | -L-AN3OST6 | 21.1 | 3.2 | 11.1 | 23.9 | 8.4 |
| 1/4 | 6 | 7/16-20 | -L-AN4OST7 | 22.6 | 4.4 | 12.7 | 26.2 | 9.8 |
| 5/16 | 8 | 1/2-20 | -L-AN5OST8 | 24.1 | 6.0 | 14.3 | 28.7 | 9.8 |
| 3/8 | 10 | 9/16-18 | -L-AN6OST9 | 26.9 | 7.5 | 15.9 | 31.8 | 11.0 |
| 1/2 | 12 | 3/4-16 | -L-AN8OST12 | 31.8 | 9.9 | 20.6 | 36.8 | 12.5 |
| 5/8 | 16 | 7/8-14 | -L-AN10OST14 | 36.8 | 12.3 | 23.8 | 43.2 | 14.2 |
| 3/4 | 18 | 1 1/16-12 | -L-AN12OST17 | 42.2 | 15.5 | 31.8 | 49.3 | 16.5 |
| 7/8 | 22 | 1 3/16-12 | -L-AN14OST19 | 45.7 | 18.3 | 31.8 | 50.8 | 16.5 |
| 1 | 25 | 1 5/16-12 | -L-AN16OST21 | 46.0 | 21.5 | 34.9 | 52.1 | 16.5 |
| 1 1/4 | 32 | 1 5/8-12 | -L-AN20OST26 | 52.3 | 27.5 | 42.9 | 57.2 | 16.5 |
| 1 1/2 | 38 | 1 7/8-12 | -L-AN24OST30 | 59.2 | 33.0 | 50.8 | 60.7 | 16.5 |
| 2 | 50 | 2 1/2-12 | -L-AN32OST40 | 77.7 | 45.0 | 63.5 | 73.4 | 16.5 |

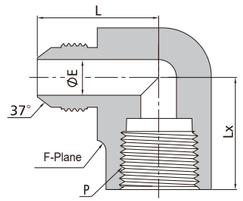
## Flared male thread 45° elbow




**SAE 070302**

| Tube outer diameter | | P-NPT Size | Basic order number | Size,mm | | | |
|---|---|---|---|---|---|---|---|
| in. | mm | | | L | E | F | Lx |
| 1/8 | 3 | 1/8 | -R-AN2N2 | 17.5 | 1.6 | 11.1 | 13.2 |
| 3/16 | 4 | 1/8 | -R-AN3N2 | 17.5 | 3.2 | 11.1 | 13.2 |
| 1/4 | 6 | 1/8 | -R-AN4N2 | 18.3 | 4.4 | 12.7 | 16.3 |
| 5/16 | 8 | 1/8 | -R-AN5N2 | 19.6 | 4.8 | 14.3 | 16.3 |
| 3/8 | 10 | 1/4 | -R-AN6N4 | 21.1 | 7.1 | 14.3 | 21.8 |
| 1/2 | 12 | 3/8 | -R-AN8N6 | 24.9 | 9.9 | 17.5 | 24.1 |
| 5/8 | 16 | 1/2 | -R-AN10N8 | 28.2 | 12.3 | 20.6 | 29.7 |
| 3/4 | 18 | 3/4 | -R-AN12N12 | 32.5 | 15.5 | 27.0 | 30.5 |
| 7/8 | 22 | 3/4 | -R-AN14N12 | 36.8 | 18.3 | 31.8 | 33.0 |
| 1 | 25 | 1 | -R-AN16N16 | 37.3 | 21.5 | 34.9 | 37.6 |
| 1 1/4 | 32 | 1 1/4 | -R-AN20N20 | 40.4 | 27.5 | 42.9 | 42.4 |
| 1 1/2 | 38 | 1 1/2 | -R-AN24N24 | 45.2 | 33.0 | 50.8 | 45.0 |
| 2 | 50 | 2 | -R-AN32N32 | 56.4 | 45.0 | 63.5 | 53.6 |

## Flared female thread changer




**SAE 070203**

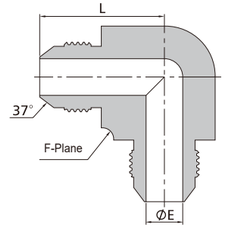
| Tube outer diameter | | P-NPT Size | Basic order number | Size,mm | | | |
|---|---|---|---|---|---|---|---|
| in. | mm | | | L | E | F | Lx |
| 1/8 | 3 | 1/8 | -L-AN2FN2 | 25.4 | 1.6 | 14.3 | 16.8 |
| 3/16 | 4 | 1/8 | -L-AN3FN2 | 26.2 | 3.2 | 14.3 | 16.8 |
| 1/4 | 6 | 1/8 | -L-AN4FN2 | 27.4 | 4.4 | 14.3 | 16.8 |
| 1/4 | 6 | 1/4 | -L-AN4FN4 | 30.9 | 4.4 | 20.6 | 22.4 |
| 5/16 | 8 | 1/8 | -L-AN5FN2 | 27.4 | 6.0 | 14.3 | 16.8 |
| 5/16 | 8 | 1/4 | -L-AN5FN4 | 30.9 | 6.0 | 20.6 | 22.4 |
| 3/8 | 10 | 1/8 | -L-AN6FN2 | 26.9 | 7.5 | 15.9 | 16.8 |
| 3/8 | 10 | 1/4 | -L-AN6FN4 | 31.2 | 7.5 | 20.6 | 22.4 |
| 3/8 | 10 | 3/8 | -L-AN6FN6 | 33.2 | 7.5 | 23.8 | 25.9 |
| 1/2 | 12 | 1/4 | -L-AN8F4 | 31.6 | 9.9 | 20.6 | 22.4 |
| 1/2 | 12 | 3/8 | -L-AN8FN6 | 36.1 | 9.9 | 23.8 | 25.9 |
| 1/2 | 12 | 1/2 | -L-AN8FN8 | 36.1 | 9.9 | 27.0 | 31.2 |
| 5/8 | 16 | 1/2 | -L-AN10FN8 | 41.7 | 12.3 | 27.0 | 31.2 |
| 3/4 | 18 | 1/2 | -L-AN12FN8 | 42.1 | 15.5 | 31.8 | 31.2 |
| 3/4 | 18 | 3/4 | -L-AN12FN12 | 48.0 | 15.5 | 34.9 | 34.5 |
| 7/8 | 22 | 3/4 | -L-AN14FN12 | 47.2 | 18.3 | 34.9 | 36.1 |
| 1 | 25 | 1 | -L-AN16FN16 | 55.1 | 21.5 | 42.9 | 41.1 |
| 1 1/4 | 32 | 1 1/4 | -L-AN20FN20 | 59.2 | 27.5 | 50.8 | 43.2 |
| 1 1/2 | 38 | 1 1/2 | -L-AN24FN24 | 73.4 | 33.0 | 63.5 | 52.8 |
| 2 | 50 | 2 | -L-AN32AN32 | 83.8 | 45.0 | 63.5 | 60.7 |





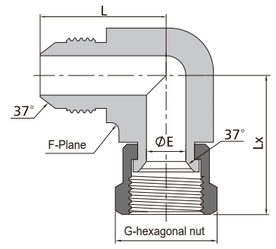


## Flared elbow




**SAE 070201**

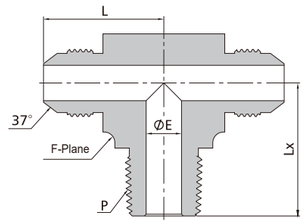
| Tube outer diameter | | Basic order number | Size,mm | | |
|---|---|---|---|---|---|
| in. | mm | | L | E | F |
| 1/8 | 3 | -L-AN2 | 19.6 | 1.6 | 11.1 |
| 3/16 | 4 | -L-AN3 | 21.1 | 3.2 | 11.1 |
| 1/4 | 6 | -L-AN4 | 22.6 | 4.4 | 12.7 |
| 5/16 | 8 | -L-AN5 | 24.1 | 6.0 | 14.3 |
| 3/8 | 10 | -L-AN6 | 26.9 | 7.5 | 14.3 |
| 1/2 | 12 | -L-AN8 | 31.8 | 9.9 | 20.6 |
| 5/8 | 16 | -L-AN10 | 36.8 | 12.3 | 20.6 |
| 3/4 | 18 | -L-AN12 | 42.2 | 15.5 | 27.0 |
| 7/8 | 22 | -L-AN14 | 45.7 | 18.3 | 31.8 |
| 1 | 25 | -L-AN16 | 46.0 | 21.5 | 34.9 |
| 1 1/4 | 32 | -L-AN20 | 52.3 | 27.5 | 42.9 |
| 1 1/2 | 38 | -L-AN24 | 59.2 | 33.0 | 50.8 |
| 2 | 50 | -L-AN32 | 77.7 | 45.0 | 63.5 |




**SAE 070221**

| Tube outer diameter | | Basic order number | Size,mm | | | | |
|---|---|---|---|---|---|---|---|
| in. | mm | | L | E | F | Lx | G |
| 1/8 | 3 | -L-AN2AS2 | 19.6 | 1.6 | 11.1 | 24.6 | 11.1 |
| 3/16 | 4 | -L-AN3AS3 | 21.1 | 3.2 | 11.1 | 25.4 | 12.7 |
| 1/4 | 6 | -L-AN4AS4 | 22.6 | 4.4 | 12.7 | 25.4 | 14.3 |
| 5/16 | 8 | -L-AN5AS5 | 24.1 | 6.0 | 14.3 | 26.9 | 15.9 |
| 3/8 | 10 | -L-AN6AS6 | 26.9 | 7.5 | 14.3 | 31.8 | 17.5 |
| 1/2 | 12 | -L-AN8AS8 | 31.8 | 9.9 | 20.6 | 35.1 | 22.2 |
| 5/8 | 16 | -L-AN10AS10 | 36.8 | 12.3 | 20.6 | 41.1 | 25.4 |
| 3/4 | 18 | -L-AN12AS12 | 42.2 | 15.5 | 27.0 | 44.4 | 31.8 |
| 7/8 | 22 | -L-AN14AS14 | 45.7 | 18.3 | 31.8 | 45.2 | 34.9 |
| 1 | 25 | -L-AN16AS16 | 46.0 | 21.5 | 34.9 | 50.8 | 38.1 |
| 1 1/4 | 32 | -L-AN20AS20 | 52.3 | 27.5 | 42.9 | 58.7 | 50.8 |
| 1 1/2 | 38 | -L-AN24AS24 | 59.2 | 33.0 | 50.8 | 65.8 | 60.3 |
| 2 | 50 | -L-AN32AS32 | 77.7 | 45.0 | 63.5 | 85.9 | 73.0 |

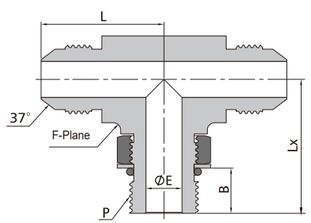
## Branch pipe male thread flared tee




**SAE 070425**

| Tube outer diameter | | P-NPT Size | Basic order number | Size,mm | | | |
|---|---|---|---|---|---|---|---|
| in. | mm | | | L | E | F | Lx |
| 1/8 | 3 | 1/8 | -T-AN2AN2N2 | 19.6 | 1.6 | 11.1 | 18.3 |
| 3/16 | 4 | 1/8 | -T-AN3AN3N2 | 21.1 | 3.2 | 11.1 | 18.3 |
| 1/4 | 6 | 1/8 | -T-AN4AN4N2 | 22.6 | 4.4 | 12.7 | 19.8 |
| 1/4 | 6 | 1/4 | -T-AN4AN4N4 | 26.9 | 4.4 | 14.3 | 27.7 |
| 5/16 | 8 | 1/8 | -T-AN5AN5N2 | 24.1 | 4.8 | 14.3 | 19.8 |
| 5/16 | 8 | 1/4 | -T-AN5AN5N4 | 26.9 | 6.0 | 14.3 | 27.7 |
| 3/8 | 10 | 1/8 | -T-AN6AN6N2 | 26.9 | 4.8 | 14.3 | 22.8 |
| 3/8 | 10 | 1/4 | -T-AN6AN6N4 | 26.9 | 7.1 | 14.3 | 27.7 |
| 3/8 | 10 | 3/8 | -T-AN6AN6N6 | 29.0 | 7.5 | 17.5 | 31.0 |
| 3/8 | 10 | 1/2 | -T-AN6AN6N8 | 31.2 | 7.5 | 20.6 | 37.3 |
| 1/2 | 12 | 1/4 | -T-AN8AN8N4 | 31.8 | 7.1 | 20.6 | 31.0 |
| 1/2 | 12 | 3/8 | -T-AN8AN8N6 | 31.8 | 9.9 | 20.6 | 31.0 |
| 1/2 | 12 | 1/2 | -T-AN8AN8N8 | 33.7 | 9.9 | 20.6 | 37.3 |
| 1/2 | 12 | 3/4 | -T-AN8AN8N12 | 36.0 | 9.9 | 25.4 | 40.4 |
| 5/8 | 16 | 3/8 | -T-AN10AN10N6 | 36.8 | 9.9 | 20.6 | 33.0 |
| 5/8 | 16 | 1/2 | -T-AN10AN10N8 | 36.8 | 12.3 | 20.6 | 37.3 |
| 5/8 | 16 | 3/4 | -T-AN10AN10N12 | 38.9 | 12.3 | 25.4 | 40.4 |
| 3/4 | 18 | 3/4 | -T-AN12AN12N12 | 42.2 | 15.5 | 27.0 | 40.4 |
| 3/4 | 18 | 1 | -T-AN12AN12N16 | 42.2 | 15.5 | 31.8 | 50.4 |
| 7/8 | 22 | 3/4 | -T-AN14AN14N12 | 45.7 | 18.3 | 31.8 | 42.9 |
| 1 | 25 | 3/4 | -T-AN16AN16N12 | 46.0 | 18.3 | 34.9 | 45.2 |
| 1 | 25 | 1 | -T-AN16AN16N16 | 46.0 | 21.5 | 34.9 | 50.0 |
| 1 1/4 | 32 | 1 | -T-AN20AN20N16 | 52.3 | 23.8 | 42.9 | 59.6 |
| 1 1/4 | 32 | 1 1/4 | -T-AN20AN20N2 | 52.3 | 27.5 | 42.9 | 60.5 |
| 1 1/2 | 38 | 1 1/2 | -T-AN24AN24N24 | 59.2 | 33.0 | 50.8 | 67.1 |
| 2 | 50 | 2 | -T-AN32AN32N32 | 77.7 | 45.0 | 63.5 | 76.2 |

## Branch pipe male thread position adjustable expansion tee



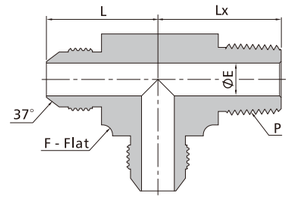

**SAE 070429**

| Tube outer diameter | | P-SAE/MS thread size | Basic order number | Size,mm | | | | |
|---|---|---|---|---|---|---|---|---|
| in. | mm | | | L | E | F | Lx | B |
| 1/8 | 3 | 5/16-24 | -T-AN2AN2OST5 | 19.6 | 1.6 | 11.1 | 23.9 | 8.4 |
| 3/16 | 4 | 3/8-34 | -T-AN3AN3OST6 | 21.1 | 3.2 | 11.1 | 23.9 | 8.4 |
| 1/4 | 6 | 7/16-20 | -T-AN4AN4OST7 | 22.6 | 4.4 | 12.7 | 26.2 | 9.8 |
| 5/16 | 8 | 1/2-20 | -T-AN5AN5OST8 | 24.1 | 6.0 | 14.3 | 28.7 | 9.8 |
| 3/8 | 10 | 9/16-18 | -T-AN6AN6OST9 | 26.9 | 7.5 | 15.9 | 31.8 | 11.0 |
| 1/2 | 12 | 3/4-16 | -T-AN8AN8OST12 | 31.8 | 9.9 | 20.6 | 36.8 | 12.5 |
| 5/8 | 16 | 7/8-14 | -T-AN10AN10OST14 | 36.8 | 12.3 | 23.8 | 43.2 | 14.2 |
| 3/4 | 18 | 1 1/16-12 | -T-AN12AN12OST17 | 42.2 | 15.5 | 31.8 | 49.3 | 16.5 |
| 7/8 | 22 | 1 3/16-12 | -T-AN14AN14OST19 | 45.7 | 18.3 | 31.8 | 50.8 | 16.5 |
| 1 | 25 | 1 5/16-12 | -T-AN16AN16OST21 | 46.0 | 21.5 | 34.9 | 52.1 | 16.5 |
| 1 1/4 | 32 | 1 5/8-12 | -T-AN20AN20OST26 | 52.3 | 27.5 | 42.9 | 57.2 | 16.5 |
| 1 1/2 | 38 | 1 7/8-12 | -T-AN24AN24OST30 | 59.2 | 33.0 | 50.8 | 60.7 | 16.5 |
| 2 | 50 | 2 1/2-12 | -T-AN32AN32OST40 | 77.7 | 45.0 | 63.5 | 73.4 | 16.5 |





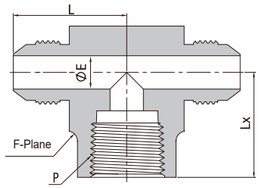
## Main male thread flared tee




**SAE 070424**

| Tube outer diameter | | P-NPT Size | Basic order number | Size,mm | | | |
|---|---|---|---|---|---|---|---|
| in. | mm | | | L | E | F | Lx |
| 1/8 | 3 | 1/8 | -T-AN2N2AN2 | 19.6 | 1.6 | 11.1 | 18.3 |
| 3/16 | 4 | 1/8 | -T-AN3N2AN3 | 21.1 | 3.2 | 11.1 | 18.3 |
| 1/4 | 6 | 1/8 | -T-AN4N2AN4 | 22.6 | 4.4 | 12.7 | 19.8 |
| 1/4 | 6 | 1/4 | -T-AN4N4AN4 | 26.9 | 4.4 | 14.3 | 27.7 |
| 5/16 | 8 | 1/8 | -T-AN5N2AN5 | 24.1 | 4.8 | 14.3 | 19.8 |
| 5/16 | 8 | 1/4 | -T-AN5N4AN5 | 26.9 | 6.0 | 14.3 | 27.7 |
| 3/8 | 10 | 1/8 | -T-AN6N2AN6 | 26.9 | 4.8 | 14.3 | 22.8 |
| 3/8 | 10 | 1/4 | -T-AN6N4AN6 | 26.9 | 7.1 | 14.3 | 27.7 |
| 3/8 | 10 | 3/8 | -T-AN6N6AN6 | 29.0 | 7.5 | 17.5 | 31.0 |
| 3/8 | 10 | 1/2 | -T-AN6N8AN6 | 31.2 | 7.5 | 20.6 | 37.3 |
| 1/2 | 12 | 1/4 | -T-AN8N4AN8 | 31.8 | 7.1 | 20.6 | 31.0 |
| 1/2 | 12 | 3/8 | -T-AN8N6AN8 | 31.8 | 9.9 | 20.6 | 31.0 |
| 1/2 | 12 | 1/2 | -T-AN8N8AN8 | 33.7 | 9.9 | 20.6 | 37.3 |
| 1/2 | 12 | 3/4 | -T-AN8N12AN8 | 36.0 | 9.9 | 25.4 | 40.4 |
| 5/8 | 16 | 3/8 | -T-AN10N6AN10 | 36.8 | 9.9 | 20.6 | 33.0 |
| 5/8 | 16 | 1/2 | -T-AN10N8N10 | 36.8 | 12.3 | 20.6 | 37.3 |
| 5/8 | 16 | 3/4 | -T-AN10N12AN10 | 38.9 | 12.3 | 25.4 | 40.4 |
| 3/4 | 18 | 3/4 | -T-AN12N12AN12 | 42.2 | 15.5 | 27.0 | 40.4 |
| 3/4 | 18 | 1 | -T-AN12N16AN12 | 42.2 | 15.5 | 31.8 | 50.4 |
| 7/8 | 22 | 3/4 | -T-AN14N12AN14 | 45.7 | 18.3 | 31.8 | 42.9 |
| 1 | 25 | 3/4 | -T-AN16N12AN16 | 46.0 | 18.3 | 34.9 | 45.2 |
| 1 | 25 | 1 | -T-AN16N16AN16 | 46.0 | 21.5 | 34.9 | 50.0 |
| 1 1/4 | 32 | 1 | -T-AN20N16AN20 | 52.3 | 23.8 | 42.9 | 59.6 |
| 1 1/4 | 32 | 1 1/4 | -T-AN20N20AN20 | 52.3 | 27.5 | 42.9 | 60.5 |
| 1 1/2 | 38 | 1 1/2 | -T-AN24N24AN24 | 59.2 | 33.0 | 50.8 | 67.1 |
| 2 | 50 | 2 | -T-AN32N32AN32 | 77.7 | 45.0 | 63.5 | 76.2 |

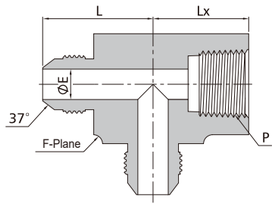
## Branch pipe female thread flared tee




**SAE 070427**

| Tube outer diameter | | P-NPT Size | Basic order number | Size,mm | | | |
|---|---|---|---|---|---|---|---|
| in. | mm | | | L | E | F | Lx |
| 1/8 | 3 | 1/8 | -T-AN2AN2FN2 | 25.4 | 1.6 | 14.3 | 16.8 |
| 3/16 | 4 | 1/8 | -T-AN3AN3FN2 | 26.2 | 3.2 | 14.3 | 16.8 |
| 1/4 | 6 | 1/8 | -T-AN4AN4FN2 | 27.4 | 4.4 | 14.3 | 16.8 |
| 1/4 | 6 | 1/4 | -T-AN4AN4FN4 | 30.9 | 4.4 | 20.6 | 22.4 |
| 5/16 | 8 | 1/8 | -T-AN5AN5FN2 | 27.4 | 6.0 | 14.3 | 16.8 |
| 5/16 | 8 | 1/4 | -T-AN5AN5FN4 | 30.9 | 6.0 | 20.6 | 22.4 |
| 3/8 | 10 | 1/8 | -T-AN6AN6FN2 | 26.9 | 7.5 | 15.9 | 16.8 |
| 3/8 | 10 | 1/4 | -T-AN6AN6FN4 | 31.2 | 7.5 | 20.6 | 22.4 |
| 3/8 | 10 | 3/8 | -T-AN6AN6FN6 | 33.2 | 7.5 | 23.8 | 25.9 |
| 1/2 | 12 | 1/4 | -T-AN8AN8FN4 | 31.6 | 9.9 | 20.6 | 22.4 |
| 1/2 | 12 | 3/8 | -T-AN8AN8FN6 | 36.1 | 9.9 | 23.8 | 25.9 |
| 1/2 | 12 | 1/2 | -T-AN8AN8FN8 | 36.1 | 9.9 | 27.0 | 31.2 |
| 5/8 | 16 | 1/2 | -T-AN10AN10FN8 | 41.7 | 12.3 | 27.0 | 31.2 |
| 3/4 | 18 | 1/2 | -T-AN12AN12FN8 | 42.1 | 15.5 | 31.8 | 31.2 |
| 3/4 | 18 | 3/4 | -T-AN12AN12FN12 | 48.0 | 15.5 | 34.9 | 34.5 |
| 7/8 | 22 | 3/4 | -T-AN14AN14FN12 | 47.2 | 18.3 | 34.9 | 36.1 |
| 1 | 25 | 1 | -T-AN16AN16FN16 | 55.1 | 21.5 | 42.9 | 41.1 |
| 1 1/4 | 32 | 1 1/4 | -T-AN20AN20FN20 | 59.2 | 27.5 | 50.8 | 43.2 |
| 1 1/2 | 38 | 1 1/2 | -T-AN24AN24FN24 | 73.4 | 33.0 | 63.5 | 52.8 |
| 2 | 50 | 2 | -T-AN32AN32FN32 | 83.8 | 45.0 | 63.5 | 60.7 |

Main female thread flared tee

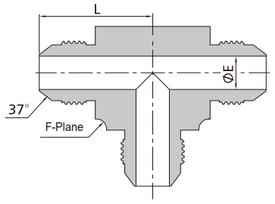



**SAE 070426**

| Tube outer diameter | | P-NPT Size | Basic order number | Size,mm | | | |
|---|---|---|---|---|---|---|---|
| in. | mm | | | L | E | F | Lx |
| 1/8 | 3 | 1/8 | -T-AN2FN2AN2 | 25.4 | 1.6 | 14.3 | 16.8 |
| 3/16 | 4 | 1/8 | -T-AN3FN2AN3 | 26.2 | 3.2 | 14.3 | 16.8 |
| 1/4 | 6 | 1/8 | -T-AN4FN2AN4 | 27.4 | 4.4 | 14.3 | 16.8 |
| 1/4 | 6 | 1/4 | -T-AN4FN4AN4 | 30.9 | 4.4 | 20.6 | 22.4 |
| 5/16 | 8 | 1/8 | -T-AN5FN2AN5 | 27.4 | 6.0 | 14.3 | 16.8 |
| 5/16 | 8 | 1/4 | -T-AN5FN4AN5 | 30.9 | 6.0 | 20.6 | 22.4 |
| 3/8 | 10 | 1/8 | -T-AN6FN2AN6 | 26.9 | 7.5 | 15.9 | 16.8 |
| 3/8 | 10 | 1/4 | -T-AN6FN4AN6 | 31.2 | 7.5 | 20.6 | 22.4 |
| 3/8 | 10 | 3/8 | -T-AN6FN6AN6 | 33.2 | 7.5 | 23.8 | 25.9 |
| 1/2 | 12 | 1/4 | -T-AN8FN4AN8 | 31.6 | 9.9 | 20.6 | 22.4 |
| 1/2 | 12 | 3/8 | -T-AN8FN6AN8 | 36.1 | 9.9 | 23.8 | 25.9 |
| 1/2 | 12 | 1/2 | -T-AN8FN8AN8 | 36.1 | 9.9 | 27.0 | 31.2 |
| 5/8 | 16 | 1/2 | -T-AN10FN8AN10 | 41.7 | 12.3 | 27.0 | 31.2 |
| 3/4 | 18 | 1/2 | -T-AN12FN8AN12 | 42.1 | 15.5 | 31.8 | 31.2 |
| 3/4 | 18 | 3/4 | -T-AN12FN12AN12 | 48.0 | 15.5 | 34.9 | 34.5 |
| 7/8 | 22 | 3/4 | -T-AN14FN12AN14 | 47.2 | 18.3 | 34.9 | 36.1 |
| 1 | 25 | 1 | -T-AN16FN16AN16 | 55.1 | 21.5 | 42.9 | 41.1 |
| 1 1/4 | 32 | 1 1/4 | -T-AN20FN20AN20 | 59.2 | 27.5 | 50.8 | 43.2 |
| 1 1/2 | 38 | 1 1/2 | -T-AN24FN24AN24 | 73.4 | 33.0 | 63.5 | 52.8 |
| 2 | 50 | 2 | -T-AN32FN32AN32 | 83.8 | 45.0 | 63.5 | 60.7 |



Flared Tee



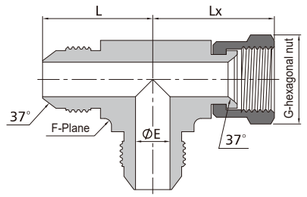

**SAE 070401**

| Tube outer diameter | | Basic order number | Size,mm | | |
|---|---|---|---|---|---|
| in. | mm | | L | E | F |
| 1/8 | 3 | -T-AN2 | 19.6 | 1.6 | 11.1 |
| 3/16 | 4 | -T-AN3 | 21.1 | 3.2 | 11.1 |
| 1/4 | 6 | -T-AN4 | 22.6 | 4.4 | 12.7 |
| 5/16 | 8 | -T-AN5 | 24.1 | 6.0 | 14.3 |
| 3/8 | 10 | -T-AN6 | 26.9 | 7.5 | 14.3 |
| 1/2 | 12 | -T-AN8 | 31.8 | 9.9 | 20.6 |
| 5/8 | 16 | -T-AN10 | 36.8 | 12.3 | 20.6 |
| 3/4 | 18 | -T-AN12 | 42.2 | 15.5 | 27.0 |
| 7/8 | 22 | -T-AN14 | 45.7 | 18.3 | 31.8 |
| 1 | 25 | -T-AN16 | 46.0 | 21.5 | 34.9 |
| 1 1/4 | 32 | -T-AN20 | 52.3 | 27.5 | 42.9 |
| 1 1/2 | 38 | -T-AN24 | 59.2 | 33.0 | 50.8 |
| 2 | 50 | -T-AN32 | 77.7 | 45.0 | 63.5 |



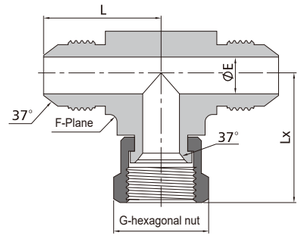


Flared Tee




**SAE 070432**

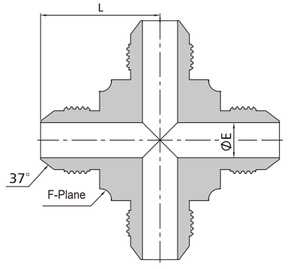
| Tube outer diameter | | Basic order number | Size,mm | | | | |
|---|---|---|---|---|---|---|---|
| in. | mm | | L | E | F | Lx | G |
| 1/8 | 3 | -T-AN2AS2AN2 | 19.6 | 1.6 | 11.1 | 24.6 | 11.1 |
| 3/16 | 4 | -T-AN3AS3AN3 | 21.1 | 3.2 | 11.1 | 25.4 | 12.7 |
| 1/4 | 6 | -T-AN4AS4AN4 | 22.6 | 4.4 | 12.7 | 25.4 | 14.3 |
| 5/16 | 8 | -T-AN5AS5AN5 | 24.1 | 6.0 | 14.3 | 26.9 | 15.9 |
| 3/8 | 10 | -T-AN6AS6AN6 | 26.9 | 7.5 | 14.3 | 31.8 | 17.5 |
| 1/2 | 12 | -T-AN8AS8AN8 | 31.8 | 9.9 | 20.6 | 35.1 | 22.2 |
| 5/8 | 16 | -T-AN10AS10AN10 | 36.8 | 12.3 | 20.6 | 41.1 | 25.4 |
| 3/4 | 18 | -T-AN12AS12AN12 | 42.2 | 15.5 | 27.0 | 44.4 | 31.8 |
| 7/8 | 22 | -T-AN14AS14AN14 | 45.7 | 18.3 | 31.8 | 45.2 | 34.9 |
| 1 | 25 | -T-AN16AS16AN16 | 46.0 | 21.5 | 34.9 | 50.8 | 38.1 |
| 1 1/4 | 32 | -T-AN20AS20AN20 | 52.3 | 27.5 | 42.9 | 58.7 | 50.8 |
| 1 1/2 | 38 | -T-AN24AS24AN24 | 59.2 | 33.0 | 50.8 | 65.8 | 60.3 |
| 2 | 50 | -T-AN32AS32AN32 | 77.7 | 45.0 | 63.5 | 85.9 | 73.0 |




**SAE 070433**

| Tube outer diameter | | Basic order number | Size,mm | | | | |
|---|---|---|---|---|---|---|---|
| in. | mm | | L | E | F | Lx | G |
| 1/8 | 3 | -T-AN2AN2AS2 | 19.6 | 1.6 | 11.1 | 24.6 | 11.1 |
| 3/16 | 4 | -T-AN3AN3AS3 | 21.1 | 3.2 | 11.1 | 25.4 | 12.7 |
| 1/4 | 6 | -T-AN4AN4AS4 | 22.6 | 4.4 | 12.7 | 25.4 | 14.3 |
| 5/16 | 8 | -T-AN5AN5AS5 | 24.1 | 6.0 | 14.3 | 26.9 | 15.9 |
| 3/8 | 10 | -T-AN6AN6AS6 | 26.9 | 7.5 | 14.3 | 31.8 | 17.5 |
| 1/2 | 12 | -T-AN8AN8AS8 | 31.8 | 9.9 | 20.6 | 35.1 | 22.2 |
| 5/8 | 16 | -T-AN10AN10AS10 | 36.8 | 12.3 | 20.6 | 41.1 | 25.4 |
| 3/4 | 18 | -T-AN12AN12AS12 | 42.2 | 15.5 | 27.0 | 44.4 | 31.8 |
| 7/8 | 22 | -T-AN14AN14AS14 | 45.7 | 18.3 | 31.8 | 45.2 | 34.9 |
| 1 | 25 | -T-AN16AN16AS16 | 46.0 | 21.5 | 34.9 | 50.8 | 38.1 |
| 1 1/4 | 32 | -T-AN20AN20AS20 | 52.3 | 27.5 | 42.9 | 58.7 | 50.8 |
| 1 1/2 | 38 | -T-AN24AN24AS24 | 59.2 | 33.0 | 50.8 | 65.8 | 60.3 |
| 2 | 50 | -T-AN32AN32AS32 | 77.7 | 45.0 | 63.5 | 85.9 | 73.0 |

Union Crosses




**SAE 070501**

| Tube outer diameter | | Basic order number | Size,mm | | |
|---|---|---|---|---|---|
| in. | mm | | L | E | F |
| 1/8 | 3 | -C-AN2 | 19.6 | 1.6 | 11.1 |
| 3/16 | 4 | -C-AN3 | 21.1 | 3.2 | 11.1 |
| 1/4 | 6 | -C-AN4 | 22.6 | 4.4 | 12.7 |
| 5/16 | 8 | -C-AN5 | 24.1 | 6.0 | 14.3 |
| 3/8 | 10 | -C-AN6 | 26.9 | 7.5 | 14.3 |
| 1/2 | 12 | -C-AN8 | 31.8 | 9.9 | 20.6 |
| 5/8 | 16 | -C-AN10 | 36.8 | 12.3 | 20.6 |
| 3/4 | 18 | -C-AN12 | 42.2 | 15.5 | 27.0 |
| 7/8 | 22 | -C-AN14 | 45.7 | 18.3 | 31.8 |
| 1 | 25 | -C-AN16 | 46.0 | 21.5 | 34.9 |
| 1 1/4 | 32 | -C-AN20 | 52.3 | 27.5 | 42.9 |
| 1 1/2 | 38 | -C-AN24 | 59.2 | 33.0 | 50.8 |
| 2 | 50 | -C-AN32 | 77.7 | 45.0 | 63.5 |

# Welded joints

## Feature

- Elbow channel arc connection ensures smooth fluid flow
- Precisely processed, diameter matches Tube diameter
- Straight ends, burr-free welding ends for improved alignment
- Can be welded manually or automatically
- Uniform Tube wall thickness improves welding repeatability
- Standard average surface roughness up to Ra 10 yin. (0.25 um) or electrolytic polishing Ra5 yin. (0.13 um) optional
- Each connector is engraved with size, material and heat number

## Technical Data

- Material:

| Material | Bar ① | Forgings② | Code |
|---|---|---|---|
| 316 SS | ASTM A479/A276 | ASTM A182/A314 | SS |
| 316L SS | | | 6L |
| 316L VAR SS | SEMI F20 | —— | 6LV |
| 316L VIM-VAR SS | | | 6LW |

① Only applicable to straight-through and all M series welded fittings.
② Includes all elbows, tees and crosses, excluding M series fittings.

- Working pressure:
  a. The working pressure shown in the sample is calculated according to ASME B31.3 and B31.1 at room temperature.
  b. To obtain the maximum working pressure under elevated temperature conditions, multiply the maximum working pressure at room temperature by the temperature rise coefficient at the corresponding temperature.
  For details, please refer to the high temperature coefficient table in the E-J0E Tubing sample.

- Operating temperature:

| Material | Minimum temperature | Maximum temperature |
|---|---|---|
| 316 SS | -198°C (-325°F) | 538°C (1000°F) |
| 316L SS | -198°C (-325°F) | 454°C (850°F) |
| 316L VAR SS | | |
| 316L VIM-VAR SS | | |

## Ordering Information

- Add the material code as a prefix and the cleaning and packaging code as a suffix to the base ordering number to complete the ordering number.
- Cleaning and Packaging
  a.FC-01 Standard cleaning and packaging for general industry use. No suffix is required.
  b.FC-02 Special cleaning and packaging to meet ASTM G93 Level C product cleanliness requirements. To order, add "-F2" as suffix.
  C.FC-03 Ultrahigh purity process specification, for wetted surface average roughness Ra 0.13 μm (5 pin,). To order, add "-F3" as suffix.
  Example: 1/2" 316L VAR SS Tube, butt weld tee, to FC-03, ultrahigh purity process specification, the ordering number is 6LV-WT1-TB8-F3.

## Notice

- Dimensions are for reference only and are subject to change
- It is recommended to use the same materials for welding, as these materials have the same coefficient of thermal expansion, reducing the possibility of welding defects, lack of roundness or dimensional changes
- Tungsten inert gas welding is recommended





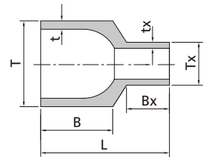


# Micro welding joints

## Feature

- Compact design
- Size range: 1/8" to 1/2", 6 mm to 12 mm
- Suitable for small piping systems

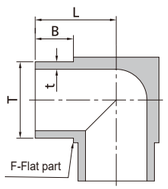
## Reducing straight connector




Imperial

| T-Tube outer diameter (in.) | Tx-Tube outer diameter (in.) | t-wall thickness (in.) | tx-wall thickness (in.) | Basic ordering number | Size,in.(mm) | | | Work Pressure psig(bar) |
|---|---|---|---|---|---|---|---|---|
| | | | | | L | B | Bx | |
| 1/4 | 0.035 | 1/8 | 0.028 | -WU1-TB4TB2 | 0.75 (19.1) | 0.42 (10.7) | 0.25 (6.4) | 5100 (351) |
| 3/8 | 0.035 | 1/4 | 0.035 | -WU1-TB6TB4 | 0.75 (19.1) | 0.42 (10.7) | 0.25 (6.4) | 3300 (227) |
| 1/2 | 0.049 | 1/4 | 0.035 | -WU1-TB8TB4 | 0.75 (19.1) | 0.42 (10.7) | 0.25 (6.4) | 3700 (254) |
| 1/2 | 0.049 | 3/8 | 0.035 | -WU1-TB8TB6 | 0.75 (19.1) | 0.42 (10.7) | 0.25 (6.4) | 3300 (227) |

## 90° Elbow



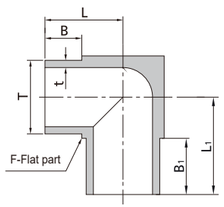

Imperial

| T-Tube outer diameter (in.) | t-wall thickness (in.) | Basic ordering number | Size,in.(mm) | | | Work Pressure psig(bar) |
|---|---|---|---|---|---|---|
| | | | L | B | F | |
| 1/8 | 0.028 | -WL1-TB2 | 0.41 (10.4) | 0.25 (6.4) | 5/16 (7.9) | 8500 (585) |
| 1/4 | 0.035 | -WL1-TB4 | 0.41 (10.4) | 0.25 (6.4) | 5/16 (7.9) | 5100 (351) |
| 3/8 | 0.035 | -WL1-TB6 | 0.47 (11.9) | 0.25 (6.4) | 7/16 (11.1) | 3300 (227) |
| 1/2 | 0.049 | -WL1-TB8 | 0.53 (13.5) | 0.25 (6.4) | 9/16 (14.3) | 3700 (254) |

Metric

| T-Tube outer diameter (mm) | t-wall thickness (mm) | Basic ordering number | Size,mm(in.) | | | Work Pressure psig(bar) |
|---|---|---|---|---|---|---|
| | | | L | B | F | |
| 6 | 1.0 | -WL1-MTB6 | 10.4 (0.41) | 6.4 (0.25) | 7.9 (5/16) | 420 (6095) |
| 8 | 1.0 | -WL1-MTB8 | 11.9 (0.47) | 6.4 (0.25) | 11.1 (7/16) | 310 (4499) |
| 10 | 1.0 | -WL1-MTB10 | 11.9 (0.47) | 6.4 (0.25) | 11.1 (7/16) | 240 (3483) |
| 12 | 1.0 | -WL1-MTB12 | 13.5 (0.53) | 6.4 (0.25) | 14.3 (9/16) | 200 (2902) |

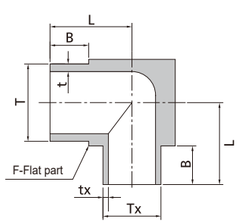
## Single-ended 90° elbow




Imperial

| T-Tube outer diameter (in.) | t-wall thickness (in.) | Basic ordering number | Size,in.(mm) | | | | | Work Pressure psig(bar) |
|---|---|---|---|---|---|---|---|---|
| | | | B | B1 | F | L | L1 | |
| 1/4 | 0.035 | -WL1-TB4-1 | 0.25 (6.4) | 0.45 (11.4) | 5/16 (7.9) | 0.41 (10.4) | 0.61 (15.5) | 5100 (351) |
| 1/4 | 0.035 | -WL1-TB4-2 | 0.25 (6.4) | 0.50 (12.7) | 5/16 (7.9) | 0.41 (10.4) | 0.66 (16.8) | 5100 (351) |
| 1/4 | 0.035 | -WL1-TB4-3 | 0.45 (11.4) | 0.45 (11.4) | 5/16 (7.9) | 0.61 (15.5) | 0.61 (15.5) | 5100 (351) |
| 1/4 | 0.035 | -WL1-TB4-4 | 0.50 (12.7) | 0.50 (12.7) | 5/16 (7.9) | 0.66 (16.8) | 0.66 (16.8) | 5100 (351) |

## Reducer 90° Elbow




Imperial

| T-Tube outer diameter (in.) | t-wall thickness (in.) | Tx-Tube outer diameter (in.) | tx-wall thickness (in.) | Basic ordering number | Size,in.(mm) | | | Work Pressure psig(bar) |
|---|---|---|---|---|---|---|---|---|
| | | | | | L | B | F | |
| 3/8 | 0.035 | 1/4 | 0.035 | -WL1-TB6TB4 | 0.47 (11.9) | 0.25 (6.4) | 7/16 (11.1) | 3300 (227) |
| 1/2 | 0.049 | 1/4 | 0.035 | -WL1-TB8TB4 | 0.53 (13.5) | 0.25 (6.4) | 9/16 (14.3) | 3700 (254) |
| 1/2 | 0.049 | 3/8 | 0.035 | -WL1-TB8TB6 | 0.53 (13.5) | 0.25 (6.4) | 9/16 (14.3) | 3300 (227) |

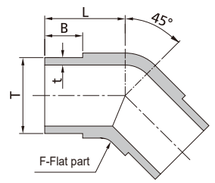
Metric

| T-Tube outer diameter (mm) | t-wall thickness (mm) | Tx-Tube outer diameter (mm) | t-wall thickness (mm) | Basic ordering number | Size,mm(in.) | | | Work Pressure psig(bar) |
|---|---|---|---|---|---|---|---|---|
| | | | | | L | B | F | |
| 8 | 1.0 | 6 | 1.0 | -WL1-MTB8MTB6 | 11.9 (0.47) | 6.4 (0.25) | 11.1 (7/16) | 310 (4499) |
| 10 | 1.0 | 6 | 1.0 | -WL1-MTB10MTB6 | 11.9 (0.47) | 6.4 (0.25) | 11.1 (7/16) | 240 (3483) |
| 12 | 1.0 | 6 | 1.0 | -WL1-MTB12MTB6 | 13.5 (0.53) | 6.4 (0.25) | 14.3 (9/16) | 200 (2902) |
| 12 | 1.0 | 8 | 1.0 | -WL1-MTB12MTB8 | 13.5 (0.53) | 6.4 (0.25) | 14.3 (9/16) | 200 (2902) |





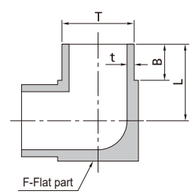
## 45° Elbow




Imperial

| T-Tube outer diameter (in.) | t-wall thickness (in.) | Basic ordering number | Size,in.(mm) | | | Work Pressure psig(bar) |
|---|---|---|---|---|---|---|
| | | | L | B | F | |
| 1/4 | 0.035 | -WV1-TB4 | 0.41 (10.4) | 0.25 (6.4) | 5/16 (7.9) | 5100 (351) |
| 3/8 | 0.035 | -WV1-TB6 | 0.47 (11.9) | 0.25 (6.4) | 7/16 (11.1) | 3300 (227) |
| 1/2 | 0.049 | -WV1-TB8 | 0.53 (13.5) | 0.25 (6.4) | 9/16 (14.3) | 3700 (254) |

## Angle Tee Connector





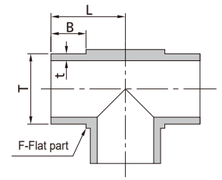

Imperial

| T-Tube outer diameter (in.) | t-wall thickness (in.) | Basic ordering number | Size,in.(mm) | | | Work Pressure psig(bar) |
|---|---|---|---|---|---|---|
| | | | L | B | F | |
| 1/4 | 0.035 | -WB1-TB4 | 0.41 (10.4) | 0.25 (6.4) | 5/16 (7.9) | 5100 (351) |
| 3/8 | 0.035 | -WB1-TB6 | 0.47 (11.9) | 0.25 (6.4) | 7/16 (11.1) | 3300 (227) |
| 1/2 | 0.049 | -WB1-TB8 | 0.53 (13.5) | 0.25 (6.4) | 9/16 (14.3) | 3700 (254) |

Metric

| T-Tube outer diameter (mm) | t-wall thickness (mm) | Basic ordering number | Size,mm(in.) | | | Work Pressure psig(bar) |
|---|---|---|---|---|---|---|
| | | | L | B | F | |
| 6 | 1.0 | -WB1-MTB6 | 10.4 (0.41) | 6.4 (0.25) | 7.9 (5/16) | 420 (6095) |

## Tee Connector



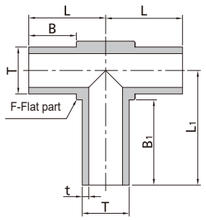

Imperial

| T-Tube outer diameter (in.) | t-wall thickness (in.) | Basic ordering number | Size,in.(mm) | | | Work Pressure psig(bar) |
|---|---|---|---|---|---|---|
| | | | L | B | F | |
| 1/8 | 0.028 | -WT1-TB2 | 0.41 (10.4) | 0.25 (6.4) | 5/16 (7.9) | 8500 (585) |
| 1/4 | 0.035 | -WT1-TB4 | 0.41 (10.4) | 0.25 (6.4) | 5/16 (7.9) | 5100 (351) |
| 3/8 | 0.035 | -WT1-TB6 | 0.47 (11.9) | 0.25 (6.4) | 7/16 (11.1) | 3300 (227) |
| 1/2 | 0.049 | -WT1-TB8 | 0.53 (13.5) | 0.25 (6.4) | 9/16 (14.3) | 3700 (254) |

Imperial

| T-Tube outer diameter (mm) | t-wall thickness (mm) | Basic ordering number | Size,mm(in.) | | | Work Pressure psig(bar) |
|---|---|---|---|---|---|---|
| | | | L | B | F | |
| 6 | 1.0 | -WT1-MTB6 | 10.4 (0.41) | 6.4 (0.25) | 7.9 (5/16) | 420 (6095) |
| 8 | 1.0 | -WT1-MTB8 | 11.9 (0.47) | 6.4 (0.25) | 11.1 (7/16) | 310 (4499) |
| 10 | 1.0 | -WT1-MTB10 | 11.9 (0.47) | 6.4 (0.25) | 11.1 (7/16) | 240 (3483) |
| 12 | 1.0 | -WT1-MTB12 | 13.5 (0.53) | 6.4 (0.25) | 14.3 (9/16) | 200 (2902) |

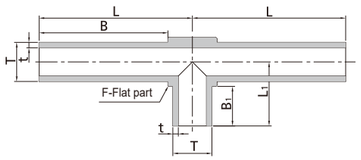
## Branch end extension tee connector




Imperial

| T-Tube outer diameter (in.) | t-wall thickness (in.) | Basic ordering number | Size,in.(mm) | | | | | Work Pressure psig(bar) |
|---|---|---|---|---|---|---|---|---|
| | | | L | L1 | B | B1 | F | |
| 1/4 | 0.035 | -WT1-TB4-45 | 0.41 (10.4) | 0.61 (15.5) | 0.25 (6.4) | 0.45 (11.4) | 5/16 (7.9) | 5100 (351) |

## Straight-end extended tee connector

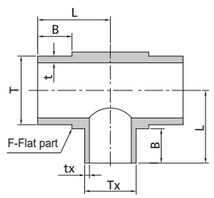



There may be steps at the intersection of the holes at both ends of the straight pipe

Imperial

| T-Tube outer diameter (in.) | t-wall thickness (in.) | Basic ordering number | Size,in.(mm) | | | | | Work Pressure psig(bar) |
|---|---|---|---|---|---|---|---|---|
| | | | L | L1 | B | B1 | F | |
| 1/4 | 0.035 | -WT1-TB4-98 | 0.98 (24.9) | 0.41 (10.4) | 0.83 (21.1) | 0.25 (6.4) | 5/16 (7.9) | 5100 (351) |

## Reducing Tee



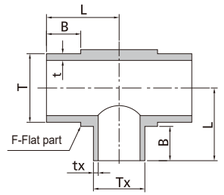

Imperial

| T-Tube outer diameter (in.) | t-wall thickness (in.) | Tx-Tube outer diameter (in.) | tx-wall thickness (in.) | Basic ordering number | Size,in.(mm) | | | Work Pressure psig(bar) |
|---|---|---|---|---|---|---|---|---|
| | | | | | L | B | F | |
| 3/8 | 0.035 | 1/4 | 0.035 | -WT1-TB6TB6TB4 | 0.47 (11.9) | 0.25 (6.4) | 7/16 (11.1) | 3300 (227) |
| 1/2 | 0.049 | 1/4 | 0.035 | -WT1-TB8TB8TB4 | 0.53 (13.5) | 0.25 (6.4) | 9/16 (14.3) | 3700 (254) |
| 1/2 | 0.049 | 3/8 | 0.035 | -WT1-TB8TB8TB6 | 0.53 (13.5) | 0.25 (6.4) | 9/16 (14.3) | 3300 (227) |





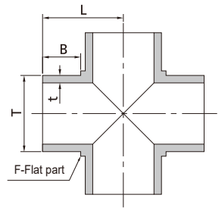





Metric

| T-Tube outer diameter (mm) | t-wall thickness (mm) | Tx-Tube outer diameter (mm) | tx-wall thickness (mm) | Basic ordering number | Size,mm(in.) | | | Work Pressure psig(bar) |
|---|---|---|---|---|---|---|---|---|
| | | | | | L | B | F | |
| 10 | 1.0 | 6 | 1.0 | -WT1-MTB10MTB10MTB6 | 11.9 (0.47) | 6.4 (0.25) | 11.1 (7/16) | 240 (3483) |
| 12 | 1.0 | 6 | 1.0 | -WT1-MTB12MTB12MTB6 | 0.53 (13.5) | 6.4 (0.25) | 14.3 (9/16) | 200 (2902) |
| 12 | 1.0 | 8 | 1.0 | -WT1-MTB12MTB12MTB8 | 0.53 (13.5) | 6.4 (0.25) | 14.3 (9/16) | 200 (2902) |

## Cross Connector




Imperial

| T-Tube outer diameter (in.) | t-wall thickness (in.) | Basic ordering number | Size,in.(mm) | | | Work Pressure psig(bar) |
|---|---|---|---|---|---|---|
| | | | L | B | F | |
| 1/8 | 0.028 | -WC1-TB2 | 0.41 (10.4) | 0.25 (6.4) | 5/16 (7.9) | 8500 (585) |
| 1/4 | 0.035 | -WC1-TB4 | 0.41 (10.4) | 0.25 (6.4) | 5/16 (7.9) | 5100 (351) |
| 3/8 | 0.035 | -WC1-TB6 | 0.47 (11.9) | 0.25 (6.4) | 7/16 (11.1) | 3300 (227) |
| 1/2 | 0.049 | -WC1-TB8 | 0.53 (13.5) | 0.25 (6.4) | 9/16 (14.3) | 3700 (254) |

Metric

| T-Tube outer diameter (mm) | t-wall thickness (mm) | Basic ordering number | Size,mm(in.) | | | Work Pressure psig(bar) |
|---|---|---|---|---|---|---|
| | | | L | B | F | |
| 6 | 1.0 | -WC1-MTB6 | 10.4 (0.41) | 6.4 (0.25) | 7.9 (5/16) | 420 (6095) |
| 8 | 1.0 | -WC1-MTB8 | 11.9 (0.47) | 6.4 (0.25) | 11.1 (7/16) | 310 (4499) |
| 10 | 1.0 | -WC1-MTB10 | 11.9 (0.47) | 6.4 (0.25) | 11.1 (7/16) | 240 (3483) |
| 12 | 1.0 | -WC1-MTB12 | 13.5 (0.53) | 6.4 (0.25) | 14.3 (9/16) | 200 (2902) |

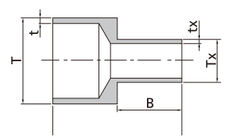
## Tube Butt Weld Fittings

### Feature



- Extended Tube design
- Except for the straight-through structure, all other structural joints are machined from forging blanks
- Size range: 1/4" to 1", 6 mm to 18 mm

### Reducing straight connector



Imperial

| T-Tube outer diameter (in.) | t-wall thickness (in.) | Tx-Tube outer diameter (in.) | tx-wall thickness (in.) | Basic ordering number | Size,in.(mm) | | Work Pressure psig(bar) |
|---|---|---|---|---|---|---|---|
| | | | | | L | B | |
| 3/8 | 0.035 | 1/4 | 0.035 | -WU2-TB6TB4 | 1.50 (38.1) | 0.75 (19.1) | 3300 (227) |
| 1/2 | 0.049 | 1/4 | 0.035 | -WU2-TB8TB4 | 1.50 (38.1) | 0.75 (19.1) | 3700 (254) |
| 1/2 | 0.049 | 3/8 | 0.035 | -WU2-TB8TB6 | 1.50 (38.1) | 0.75 (19.1) | 3300 (227) |
| 3/4 | 0.049 | 1/2 | 0.049 | -WU2-TB12TB8 | 1.50 (38.1) | 0.75 (19.1) | 2400 (165) |
| 1 | 0.065 | 1/2 | 0.049 | -WU2-TB16TB8 | 1.50 (38.1) | 0.75 (19.1) | 2400 (165) |
| 1 | 0.065 | 3/4 | 0.049 | -WU2-TB16TB12 | 1.50 (38.1) | 0.75 (19.1) | 2400 (165) |

Metric

| T-Tube outer diameter (mm) | t-wall thickness (mm) | Tx-Tube outer diameter (mm) | tx-wall thickness (mm) | Basic ordering number | Size,mm(in.) | | Work Pressure psig(bar) |
|---|---|---|---|---|---|---|---|
| | | | | | L | B | |
| 10 | 1.0 | 6 | 1.0 | -WU2-MTB10MTB6 | 38.1 (1.50) | 19.1 (0.75) | 240 (3483) |
| 10 | 1.0 | 8 | 1.0 | -WU2-MTB10MTB8 | 38.1 (1.50) | 19.1 (0.75) | 240 (3483) |
| 12 | 1.0 | 6 | 1.0 | -WU2-MTB12MTB6 | 38.1 (1.50) | 19.1 (0.75) | 200 (2902) |
| 12 | 1.0 | 8 | 1.0 | -WU2-MTB12MTB8 | 38.1 (1.50) | 19.1 (0.75) | 200 (2902) |
| 12 | 1.0 | 10 | 1.0 | -WU2-MTB12MTB10 | 38.1 (1.50) | 19.1 (0.75) | 200 (2902) |
| 18 | 1.5 | 6 | 1.5 | -WU2-MTB18MTB6 | 38.1 (1.50) | 19.1 (0.75) | 200 (2902) |
| 18 | 1.5 | 12 | 1.5 | -WU2-MTB18MTB12 | 38.1 (1.50) | 19.1 (0.75) | 200 (2902) |

## 90° Elbow



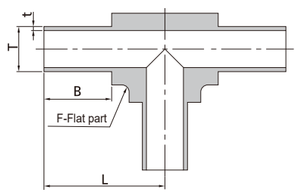

Imperial

| T-Tube outer diameter (in.) | t-wall thickness (in.) | Basic ordering number | Size,in.(mm) | | | Work Pressure psig(bar) |
|---|---|---|---|---|---|---|
| | | | L | B | F | |
| 1/4 | 0.035 | -WL2-TB4 | 1.23 (31.2) | 0.75 (19.1) | 7/16 (11.1) | 5100 (351) |
| 3/8 | 0.035 | -WL2-TB6 | 1.20 (30.5) | 0.75 (19.1) | 7/16 (11.1) | 3300 (227) |
| 1/2 | 0.049 | -WL2-TB8 | 1.34 (34.0) | 0.75 (19.1) | 11/16 (17.5) | 3700 (254) |
| 3/4 | 0.049 | -WL2-TB12 | 1.46 (37.1) | 0.75 (19.1) | 15/16 (23.8) | 2400 (165) |

Metric

| T-Tube outer diameter (mm) | t-wall thickness (mm) | Basic ordering number | Size,mm(in.) | | | Work Pressure psig(bar) |
|---|---|---|---|---|---|---|
| | | | L | B | F | |
| 6 | 1.0 | -WL2-MTB6 | 31.2 (1.23) | 19.1 (0.75) | 11.1 (7/16) | 420 (6095) |
| 8 | 1.0 | -WL2-MTB8 | 31.2 (1.23) | 19.1 (0.75) | 11.1 (7/16) | 310 (4499) |
| 10 | 1.0 | -WL2-MTB10 | 34.0 (1.34) | 19.1 (0.75) | 17.5 (11/16) | 240 (3483) |
| 12 | 1.0 | -WL2-MTB12 | 34.0 (1.34) | 19.1 (0.75) | 17.5 (11/16) | 200 (2902) |
| 18 | 1.5 | -WL2-MTB18 | 37.6 (1.48) | 19.1 (0.75) | 23.8 (15/16) | 200 (2902) |

## Tee Connector




Imperial

| T-Tube outer diameter (in.) | t-wall thickness (in.) | Basic ordering number | Size,in.(mm) | | | Work Pressure psig(bar) |
|---|---|---|---|---|---|---|
| | | | L | B | F | |
| 1/4 | 0.035 | -WT2-TB4 | 1.23 (31.2) | 0.75 (19.1) | 7/16 (11.1) | 5100 (351) |
| 3/8 | 0.035 | -WT2-TB6 | 1.20 (30.5) | 0.75 (19.1) | 7/16 (11.1) | 3300 (227) |
| 1/2 | 0.049 | -WT2-TB8 | 1.34 (34.0) | 0.75 (19.1) | 11/16 (17.5) | 3700 (254) |
| 3/4 | 0.049 | -WT2-TB12 | 1.46 (37.1) | 0.75 (19.1) | 15/16 (23.8) | 2400 (165) |

Metric

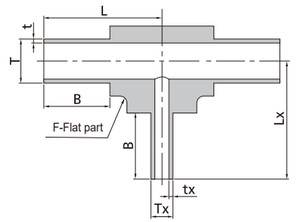
| T-Tube outer diameter (mm) | t-wall thickness (mm) | Basic ordering number | Size,mm(in.) | | | Work Pressure psig(bar) |
|---|---|---|---|---|---|---|
| | | | L | B | F | |
| 6 | 1.0 | -WT2-MTB6 | 31.2 (1.23) | 19.1 (0.75) | 11.1 (7/16) | 420 (6095) |
| 8 | 1.0 | -WT2-MTB8 | 31.2 (1.23) | 19.1 (0.75) | 11.1 (7/16) | 310 (4499) |
| 10 | 1.0 | -WT2-MTB10 | 34.0 (1.34) | 19.1 (0.75) | 17.5 (11/16) | 240 (3483) |
| 12 | 1.0 | -WT2-MTB12 | 34.0 (1.34) | 19.1 (0.75) | 17.5 (11/16) | 200 (2902) |
| 18 | 1.5 | -WT2-MTB18 | 37.6 (1.48) | 19.1 (0.75) | 23.8 (15/16) | 200 (2902) |







## Reducing Tee



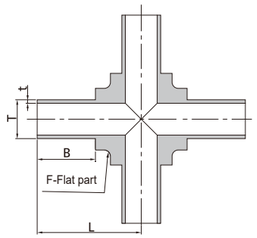

Imperial

| T-Tube outer diameter (in.) | t-wall thickness (in.) | Tx-Tube outer diameter (in.) | tx-wall thickness (in.) | Basic ordering number | Size,in.(mm) | | | | Work Pressure psig(bar) |
|---|---|---|---|---|---|---|---|---|---|
| | | | | | L | Lx | B | F | |
| 3/8 | 0.035 | 1/4 | 0.035 | -WT2-TB6TB6TB4 | 1.20 (30.5) | 1.23 (31.2) | 0.75 (19.1) | 7/16 (11.1) | 3300 (227) |
| 1/2 | 0.049 | 1/4 | 0.035 | -WT2-TB8TB8TB4 | 1.34 (34.0) | 1.34 (34.0) | 0.75 (19.1) | 11/16 (17.5) | 3700 (254) |
| 1/2 | 0.049 | 3/8 | 0.035 | -WT2-TB8TB8TB6 | 1.34 (34.0) | 1.35 (34.3) | 0.75 (19.1) | 11/16 (17.5) | 3700 (254) |
| 3/4 | 0.049 | 1/4 | 0.035 | -WT2-TB12TB12TB4 | 1.46 (37.1) | 1.48 (37.6) | 0.75 (19.1) | 15/16 (23.8) | 2400 (165) |
| 3/4 | 0.049 | 3/8 | 0.035 | -WT2-TB12TB12TB6 | 1.46 (37.1) | 1.35 (34.3) | 0.75 (19.1) | 15/16 (23.8) | 2400 (165) |

Metric

| T-Tube outer diameter (mm) | t-wall thickness (mm) | Tx-Tube outer diameter (mm) | tx-wall thickness (mm) | Basic ordering number | Size,mm(in.) | | | | Work Pressure psig(bar) |
|---|---|---|---|---|---|---|---|---|---|
| | | | | | L | Lx | B | F | |
| 8 | 1.0 | 6 | 1.0 | -WT2-MTB8MTB8MTB6 | 31.3 (1.23) | 31.3 (1.23) | 19.1 (0.75) | 11.1 (7/16) | 310 (4499) |
| 10 | 1.0 | 6 | 1.0 | -WT2-MTB10MTB10MTB6 | 34.0 (1.34) | 34.0 (1.34) | 19.1 (0.75) | 17.5 (11/16) | 240 (3483) |
| 10 | 1.0 | 8 | 1.0 | -WT2-MTB10MTB10MTB8 | 34.0 (1.34) | 34.0 (1.34) | 19.1 (0.75) | 17.5 (11/16) | 240 (3483) |
| 12 | 1.0 | 6 | 1.0 | -WT2-MTB12MTB12MTB6 | 34.0 (1.34) | 34.0 (1.34) | 19.1 (0.75) | 17.5 (11/16) | 200 (2902) |
| 12 | 1.0 | 8 | 1.0 | -WT2-MTB12MTB12MTB8 | 34.0 (1.34) | 34.0 (1.34) | 19.1 (0.75) | 17.5 (11/16) | 200 (2902) |

## Cross Connector




Imperial

| T-Tube outer diameter (in.) | t-wall thickness (in.) | Basic ordering number | Size,in.(mm) | | | Work Pressure psig(bar) |
|---|---|---|---|---|---|---|
| | | | L | B | F | |
| 1/4 | 0.035 | -WC2-TB4 | 1.23 (31.2) | 0.75 (19.1) | 7/16 (11.1) | 5100 (351) |
| 3/8 | 0.035 | -WC2-TB6 | 1.20 (30.5) | 0.75 (19.1) | 7/16 (11.1) | 3300 (227) |
| 1/2 | 0.049 | -WC2-TB8 | 1.34 (34.0) | 0.75 (19.1) | 11/16 (17.5) | 3700 (254) |

Metric

| T-Tube outer diameter (mm) | t-wall thickness (mm) | Basic ordering number | Size,mm(in.) | | | Work Pressure psig(bar) |
|---|---|---|---|---|---|---|
| | | | L | B | F | |
| 6 | 1.0 | -WC2-MTB6 | 31.2 (1.23) | 19.1 (0.75) | 11.1 (7/16) | 420 (6095) |
| 8 | 1.0 | -WC2-MTB8 | 31.2 (1.23) | 19.1 (0.75) | 11.1 (7/16) | 310 (4499) |
| 10 | 1.0 | -WC2-MTB10 | 34.0 (1.34) | 19.1 (0.75) | 15.9 (5/8) | 240 (3483) |
| 12 | 1.0 | -WC2-MTB12 | 34.0 (1.34) | 19.1 (0.75) | 15.9 (5/8) | 200 (2902) |

# Face Seal Fittings

## FR Series Metal Gasket Face Seal Fittings

### Feature

- Metal-to-metal seals provide leak-free service from vacuum to high pressure
- Precision-made gaskets ensure maximum performance
- Test holes on nut end for easy leak testing
- Female nut silver plated
- Standard average surface finish up to Ra 10 µin. (0.25 µm) or electropolished Ra5 µin. (0.13 µm) available
- All sealing surfaces and male thread ends are protected by plastic caps
- Each tube and body is engraved with size, material and heat number

### Technical Data

- Size range: 1/16" to 1" and 6mm to 18 mm
- Thread standards:

| Thread Type | Standard |
|---|---|
| NPT | ASME B1.20.1, SAE AS71051 |
| Unified (SAE) | ASME B1.1, SAE J475 |

- Material:

| Material | Bar | Forgings | Code |
|---|---|---|---|
| Connector material | | | |
| 316 SS | ASTM A276 ASME SA479 | ASME SA182 ASTM A314 | SS |
| 316L SS | | | 6L |
| 316L VAR SS | SEMI F20 | | 6LV |
| Gasket material | | | |
| 316L SS | ASTM A240 | | 6L |
| Copper | ASTM B152 | | CU |
| Nickel | ASTM B162 | | NI |

- Working Pressure:
  The working pressures shown in the catalog are calculated according to ASME B31.3 and B31.1 at room temperature.

- Operating temperature:

| Element | Material | Maximum temperature |
|---|---|---|
| Connectors | 316 SS | 538°C (1000°F) |
| | 316L SS | |
| | 316L VAR SS | |
| Gasket | 316L SS | |
| | Copper | 204°C (400°F) |
| | Nickel | 316°C (600°F) |





### Test

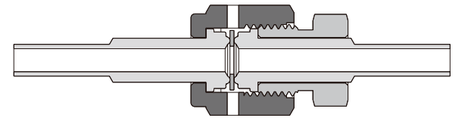
Each FR joint is tested for ammonia leak (maximum permissible leakage rate 4x10°std $cm^3/s$)

### Ordering Information

- Each component can be purchased separately
- Add the material code as a prefix and the cleaning and packaging code as a suffix to the base ordering number to obtain the complete order number
- Cleaning and Packaging
  a. FC-01 Standard cleaning and packaging for general industry use. No suffix is required.
  b. FC-01 Special cleaning and packaging to meet ASTM G93 Level C product cleanliness requirements. To order, add "-F2" as suffix.
  c. FC-03 UHP process specification, for wetted surface average roughness Ra 5 µin. (0.13 µm). To order, add "-F3" as suffix.
  Example: 1/2" 316L VAR SS tube, to FC-03 UHP process specification, the complete ordering number is 6LV-WT1-TB8-F3.

### Installation Instructions

1. As shown in the figure below, install the pipe, nut, gasket and male thread nut in sequence, and tighten the nut by hand.

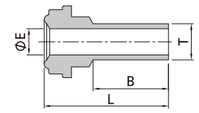


2. For connectors using 316L stainless steel or nickel washers, firmly secure the male nut or connector body and tighten the nut 1/8 turn with a wrench. For copper washers, only tighten 1/4 turn.

### Precautions

- Dimensions are for reference only and are subject to change
- Overtightening may damage seals and may cause leaks
- Use a new gasket for each installation
- Tungsten inert gas welding is recommended
- Always use an appropriate thread sealant on tapered pipe threads
- Do not loosen and tighten fittings while the system is pressurized

### Take over

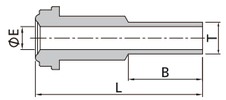



Short Imperial Tube Butt Weld Tube

| FR size (in.) | T-Tube outer diameter (in.) | Conventional wall thickness (in.) | Basic ordering number | Size,in.(mm) | | | Working Pressure, psig (bar) | | |
|---|---|---|---|---|---|---|---|---|---|
| | | | | L | B | E | 6L | CU | NI |
| 1/8 | 1/8 | 0.028 | -G-FR2TB2-12S | 1.08 (27.4) | 0.75 (19.1) | 0.06 (1.5) | 8500 (586) | 6800 (468) | 8500 (586) |
| 1/4 | 1/8 | 0.028 | -G-FR4TB2-12S | 1.10 (27.9) | 0.75 (19.1) | 0.06 (1.5) | 5100 (351) | 5100 (351) | 5100 (351) |
| 1/4 | 1/4 | 0.035 | -G-FR4TB4-4S | 0.60 (15.2) | 0.25 (6.4) | 0.18 (4.6) | 5100 (351) | 5100 (351) | 5100 (351) |
| 1/4 | 1/4 | 0.035 | -G-FR4TB4-6S | 0.72 (18.3) | 0.38 (9.6) | 0.18 (4.6) | 5100 (351) | 5100 (351) | 5100 (351) |
| 1/4 | 1/4 | 0.035 | -G-FR4TB4-12S | 1.10 (27.9) | 0.75 (19.1) | 0.18 (4.6) | 5100 (351) | 5100 (351) | 5100 (351) |
| 1/2 | 1/4 | 0.035 | -G-FR8TB4-12S | 1.12 (28.4) | 0.75 (19.1) | 0.18 (4.6) | 4300 (296) | 2800 (192) | 3500 (241) |
| 1/2 | 3/8 | 0.035 | -G-FR8TB6-4S | 0.62 (15.7) | 0.25 (6.4) | 0.31 (7.9) | 3300 (227) | 2600 (179) | 3300 (227) |
| 1/2 | 3/8 | 0.035 | -G-FR8TB6-12S | 1.12 (28.4) | 0.75 (19.1) | 0.31 (7.9) | 3300 (227) | 2600 (179) | 3300 (227) |
| 1/2 | 1/2 | 0.049 | -G-FR8TB8-4S | 0.62 (15.7) | 0.25 (6.4) | 0.40 (10.2) | 3500 (241) | 2800 (192) | 3500 (241) |
| 1/2 | 1/2 | 0.049 | -G-FR8TB8-6S | 0.74 (18.8) | 0.38 (9.6) | 0.40 (10.2) | 3500 (241) | 2800 (192) | 3500 (241) |
| 1/2 | 1/2 | 0.049 | -G-FR8TB8-12S | 1.12 (28.4) | 0.75 (19.1) | 0.40 (10.2) | 3500 (241) | 2800 (192) | 3500 (241) |

Short Metric Tube Butt Weld

| FR size (in.) | T-Tube outer diameter (mm) | Conventional wall thickness (mm) | Basic ordering number | Size,mm(in.) | | | Working Pressure, psig (bar) | | |
|---|---|---|---|---|---|---|---|---|---|
| | | | | L | B | E | 6L | CU | NI |
| 1/4 | 6 | 1.0 | -G-FR4MTB6-12S | 29.5 (1.16) | 19.1 (0.75) | 4.0 (0.16) | 468 (6800) | 372 (5400) | 468 (6800) |
| 1/4 | 8 | 1.0 | -G-FR4MTB8-12S | 29.5 (1.16) | 19.1 (0.75) | 6.0 (0.24) | 337 (4900) | 337 (4900) | 337 (4900) |
| 1/2 | 10 | 1.0 | -G-FR8MTB10-12S | 29.5 (1.16) | 19.1 (0.75) | 8.0 (0.31) | 241 (3500) | 192 (2800) | 241 (3500) |
| 1/2 | 12 | 1.0 | -G-FR8MTB12-12S | 29.5 (1.16) | 19.1 (0.75) | 10.0 (0.39) | 213 (3100) | 165 (2400) | 213 (3100) |
| 3/4 | 18 | 1.5 | -G-FR12MTB18-12S | 31.0 (1.22) | 19.1 (0.75) | 15.0 (0.59) | 206 (3000) | 165 (2400) | 206 (3000) |




Long Imperial Tube Butt Welded Tube

| FR size (in.) | T-Tube outer diameter (in.) | Conventional wall thickness (in.) | Basic ordering number | Size,in.(mm) | | | Working Pressure, psig (bar) | | |
|---|---|---|---|---|---|---|---|---|---|
| | | | | L | B | E | 6L | CU | NI |
| 1/8 | 1/8 | 0.028 | -G-FR2TB2-12 | 1.42 (36.1) | 0.75 (19.1) | 0.06 (1.5) | 8500 (586) | 6800 (468) | 8500 (586) |
| 1/4 | 1/4 | 0.035 | -G-FR4TB4-4 | 1.20 (30.5) | 0.25 (6.4) | 0.18 (4.6) | 5100 (351) | 5100 (351) | 5100 (351) |
| 1/4 | 1/4 | 0.035 | -G-FR4TB4-1.31① | 1.31 (33.3) | 0.36 (9.1) | 0.18 (4.6) | 5100 (351) | 5100 (351) | 5100 (351) |
| 1/4 | 1/4 | 0.035 | -G-FR4TB4-6 | 1.32 (33.5) | 0.38 (9.6) | 0.18 (4.6) | 5100 (351) | 5100 (351) | 5100 (351) |
| 1/4 | 1/4 | 0.035 | -G-FR4TB4-12 | 1.70 (43.2) | 0.75 (19.1) | 0.18 (4.6) | 5100 (351) | 5100 (351) | 5100 (351) |
| 1/2 | 1/4 | 0.035 | -G-FR8TB4-12 | 1.80 (45.7) | 0.75 (19.1) | 0.18 (4.6) | 4300 (296) | 2800 (192) | 3500 (241) |
| 1/2 | 3/8 | 0.035 | -G-FR8TB6-4 | 1.29 (32.8) | 0.25 (6.4) | 0.31 (7.9) | 3300 (227) | 2600 (179) | 3300 (227) |
| 1/2 | 3/8 | 0.035 | -G-FR8TB6-12 | 1.79 (45.5) | 0.75 (19.1) | 0.31 (7.9) | 3300 (227) | 2600 (179) | 3300 (227) |
| 1/2 | 1/2 | 0.049 | -G-FR8TB8-4 | 1.29 (32.8) | 0.25 (6.4) | 0.40 (10.2) | 3500 (241) | 2800 (192) | 3500 (241) |
| 1/2 | 1/2 | 0.049 | -G-FR8TB8-6 | 1.41 (35.8) | 0.38 (9.6) | 0.40 (10.2) | 3500 (241) | 2800 (192) | 3500 (241) |
| 1/2 | 1/2 | 0.049 | -G-FR8TB8-12 | 1.79 (45.5) | 0.75 (19.1) | 0.40 (10.2) | 3500 (241) | 2800 (192) | 3500 (241) |
| 3/4 | 3/4 | 0.049 | -G-FR12TB12-12 | 2.03 (51.6) | 0.75 (19.1) | 0.65 (16.5) | 2400 (165) | 1900 (130) | 2400 (165) |
| 1 | 1 | 0.065 | -G-FR16TB16-12 | 2.32 (58.9) | 0.75 (19.1) | 0.87 (22.1) | 2400 (165) | 1900 (130) | 2400 (165) |

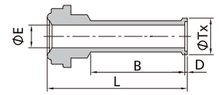
Long Metric Tube Butt Weld Tube

| FR size (in.) | T-Tube outer diameter (mm) | Conventional wall thickness (mm) | Basic ordering number | Size,mm(in.) | | | Working Pressure, psig (bar) | | |
|---|---|---|---|---|---|---|---|---|---|
| | | | | L | B | E | 6L | CU | NI |
| 1/4 | 6 | 1.0 | -G-FR4MTB6-12 | 43.2 (1.7) | 19.1 (0.75) | 4.0 (0.16) | 468 (6800) | 372 (5400) | 468 (6800) |
| 1/4 | 8 | 1.0 | -G-FR4MTB8-12 | 43.2 (1.7) | 19.1 (0.75) | 6.0 (0.24) | 337 (4900) | 337 (4900) | 337 (4900) |
| 1/2 | 10 | 1.0 | -G-FR8MTB10-12 | 45.5 (1.79) | 19.1 (0.75) | 8.0 (0.31) | 241 (3500) | 192 (2800) | 241 (3500) |
| 1/2 | 12 | 1.0 | -G-FR8MTB12-12 | 45.5 (1.79) | 19.1 (0.75) | 10.0 (0.39) | 213 (3100) | 165 (2400) | 213 (3100) |
| 3/4 | 18 | 1.5 | -G-FR12MTB18-12 | 51.6 (2.03) | 19.1 (0.75) | 15.0 (0.59) | 206 (3000) | 165 (2400) | 206 (3000) |

The suffix -4, -6, -12 means that the length of dimension B is equal to 1/16 of the suffix data (unit: inch).
For example: with the suffix "12", dimension B = 12/16 = 3/4" or 19.1mm,
①-1.31 refers to the value of length L.





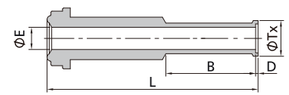



Short Imperial Tube Automatic Welding Tube

| FR size (in.) | T-Tube outer diameter (in.) | Conventional wall thickness (in.) | Basic ordering number | Size,in.(mm) | | | | | Working Pressure, psig (bar) | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | L | B | D | E | Tx | 6L | CU | NI |
| 1/4 | 1/4 | 0.035 | -AG-FR4TB4-12S | 1.12 (28.4) | 0.75 (19.1) | 0.02 (0.5) | 0.18 (4.6) | 0.29 (7.4) | 5100 (351) | 5100 (351) | 5100 (351) |
| 1/2 | 3/8 | 0.035 | -AG-FR8TB6-12S | 1.15 (29.2) | 0.75 (19.1) | 0.03 (0.8) | 0.31 (7.9) | 0.41 (10.4) | 3300 (227) | 2600 (179) | 3300 (227) |
| 1/2 | 1/2 | 0.049 | -AG-FR8TB8-12S | 1.16 (29.5) | 0.75 (19.1) | 0.04 (1.0) | 0.40 (10.2) | 0.55 (14.0) | 3500 (241) | 2800 (192) | 3500 (241) |

Short Metric Tube Automatic Welding Tube

| FR size (in.) | T-Tube outer diameter (mm) | Conventional wall thickness (mm) | Basic ordering number | Size,mm(in.) | | | | | Working Pressure, psig (bar) | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | L | B | D | E | Tx | 6L | CU | NI |
| 1/4 | 6 | 1.0 | -AG-FR4MTB6-12S | 30.0 (1.18) | 19.1 (0.75) | 0.5 (0.02) | 4.0 (0.16) | 6.8 (0.27) | 468 (6800) | 372 (5400) | 468 (6800) |
| 1/4 | 8 | 1.0 | -AG-FR4MTB8-12S | 30.2 (1.19) | 19.1 (0.75) | 0.8 (0.03) | 6.0 (0.24) | 8.9 (0.35) | 337 (4900) | 337 (4900) | 337 (4900) |
| 1/2 | 10 | 1.0 | -AG-FR8MTB10-12S | 31.0 (1.22) | 19.1 (0.75) | 0.8 (0.03) | 8.0 (0.31) | 10.9 (0.43) | 241 (3500) | 192 (2800) | 241 (3500) |
| 1/2 | 12 | 1.0 | -AG-FR8MTB12-12S | 30.5 (1.20) | 19.1 (0.75) | 1.0 (0.04) | 10.0 (0.39) | 13.2 (0.52) | 213 (3100) | 165 (2400) | 213 (3100) |

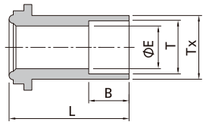



Long Imperial Tube Automatic Welding Tube

| FR size (in.) | T-Tube outer diameter (in.) | Conventional wall thickness (in.) | Basic ordering number | Size,in.(mm) | | | | | Working Pressure, psig (bar) | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | L | B | D | E | Tx | 6L | CU | NI |
| 1/4 | 1/4 | 0.035 | -AG-FR4TB4-12 | 1.72 (43.7) | 0.75 (19.1) | 0.02 (0.5) | 0.18 (4.6) | 0.29 (7.4) | 5100 (351) | 5100 (351) | 5100 (351) |
| 1/2 | 1/4 | 0.035 | -AG-FR8TB4-12 | 1.82 (46.2) | 0.75 (19.1) | 0.02 (0.5) | 0.18 (4.6) | 0.29 (7.4) | 3500 (241) | 2800 (192) | 3500 (241) |
| 1/2 | 3/8 | 0.035 | -AG-FR8TB6-12 | 1.82 (46.2) | 0.75 (19.1) | 0.03 (0.8) | 0.31 (7.9) | 0.41 (10.4) | 3300 (227) | 2600 (179) | 3300 (227) |
| 1/2 | 1/2 | 0.049 | -AG-FR8TB8-12 | 1.83 (46.5) | 0.75 (19.1) | 0.04 (1.0) | 0.40 (10.2) | 0.55 (14.0) | 3500 (241) | 2800 (192) | 3500 (241) |
| 3/4 | 3/4 | 0.049 | -AG-FR12TB12-12 | 2.07 (52.6) | 0.75 (19.1) | 0.04 (1.0) | 0.65 (16.5) | 0.80 (20.3) | 2400 (165) | 2400 (165) | 2400 (165) |
| 1 | 1 | 0.065 | -AG-FR16TB16-16 | 2.57 (65.3) | 0.96 (24.4) | 0.04 (1.0) | 0.87 (22.1) | 1.06 (26.9) | 2400 (165) | 1900 (130) | 2400 (165) |

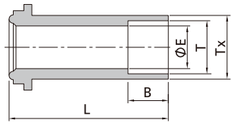
Long Metric Tube Automatic Welding Tube

| FR size (in.) | T-Tube outer diameter (mm) | Conventional wall thickness (mm) | Basic ordering number | Size,mm(in.) | | | | | Working Pressure, psig (bar) | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | L | B | D | E | Tx | 6L | CU | NI |
| 1/4 | 6 | 1.0 | -AG-FR4MTB6-12 | 43.7 (1.72) | 19.1 (0.75) | 0.5 (0.02) | 4.0 (0.16) | 6.8 (0.27) | 468 (6800) | 372 (5400) | 468 (6800) |
| 1/2 | 12 | 1.0 | -AG-FR8MTB12-12 | 46.5 (1.83) | 19.1 (0.75) | 1.0 (0.04) | 10.0 (0.39) | 13.2 (0.52) | 213 (3100) | 165 (2400) | 213 (3100) |
| 3/4 | 18 | 1.5 | -AG-FR12MTB18-12 | 52.6 (2.07) | 19.1 (0.75) | 1.0 (0.04) | 15.0 (0.59) | 19.3 (0.76) | 206 (3000) | 165 (2400) | 206 (3000) |



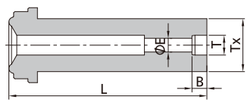

Short Imperial Tube Pipe Welding Tube

| FR size (in.) | T-Tube outer diameter (in.) | Basic ordering number | Size,in.(mm) | | | | Working Pressure, psig (bar) | | |
|---|---|---|---|---|---|---|---|---|---|
| | | | L | B | E | Tx | 6L | CU | NI |
| 1/4 | 1/4 | -G-FR4TS4-0.50 | 0.50 (12.7) | 0.28 (7.1) | 0.18 (4.6) | 0.35 (8.9) | 5500 (378) | 5500 (378) | 5500 (378) |
| 1/4 | 1/4 | -G-FR4TS4-0.75 | 0.75 (19.1) | 0.28 (7.1) | 0.18 (4.6) | 0.35 (8.9) | 5500 (378) | 5500 (378) | 5500 (378) |



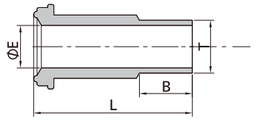

Imperial Tube Pipe Welding Tube

| FR size (in.) | T-Tube outer diameter (in.) | Basic ordering number | Size,in.(mm) | | | | Working Pressure, psig (bar) | | |
|---|---|---|---|---|---|---|---|---|---|
| | | | L | B | E | Tx | 6L | CU | NI |
| 1/8 | 1/16 | -G-FR2TS1 | 0.70 (17.8) | 0.10 (2.5) | 0.05 (1.3) | 0.13 (3.3) | 9000 (620) | 7200 (496) | 9000 (620) |
| 1/8 | 1/8 | -G-FR2TS2 | 0.70 (17.8) | 0.10 (2.5) | 0.09 (2.3) | 0.20 (5.1) | 7100 (489) | 7100 (489) | 7100 (489) |
| 1/4 | 1/4 | -G-FR4TS4 | 1.31 (33.3) | 0.28 (7.1) | 0.18 (4.6) | 0.35 (8.9) | 5500 (378) | 5500 (378) | 5500 (378) |
| 1/2 | 3/8 | -G-FR8TS6 | 1.50 (38.1) | 0.31 (7.9) | 0.28 (7.1) | 0.60 (15.2) | 4300 (296) | 2800 (192) | 3500 (241) |
| 1/2 | 1/2 | -G-FR8TS8 | 1.50 (38.1) | 0.38 (9.7) | 0.40 (10.2) | 0.60 (15.2) | 3000 (206) | 2400 (165) | 3000 (206) |
| 5/8 | 5/8 | -G-FR10TS10 | 1.56 (39.6) | 0.41 (10.4) | 0.50 (12.7) | 0.72 (18.3) | 2800 (192) | 2200 (151) | 2800 (192) |
| 3/4 | 3/4 | -G-FR12TS12 | 2.00 (50.8) | 0.44 (11.2) | 0.62 (15.7) | 0.88 (22.4) | 2800 (192) | 2200 (151) | 2800 (192) |
| 1 | 1 | -G-FR16TS16 | 2.22 (56.4) | 0.62 (15.7) | 0.87 (22.1) | 1.19 (30.2) | 3000 (206) | 1900 (130) | 2400 (165) |




Reduced Imperial Tube Pipe Welding Tube

| FR size (in.) | T-Tube outer diameter (in.) | Basic ordering number | Size,in.(mm) | | | | Working Pressure, psig (bar) | | |
|---|---|---|---|---|---|---|---|---|---|
| | | | L | B | E | Tx | 6L | CU | NI |
| 1/4 | 1/8 | -G-FR4RTS2 | 1.31 (33.3) | 0.10 (2.5) | 0.09 (2.3) | 0.35 (8.9) | 8000 (551) | 8000 (551) | 8000 (551) |
| 1/2 | 1/4 | -G-FR8RTS4 | 1.50 (38.1) | 0.28 (7.1) | 0.18 (4.6) | 0.60 (15.2) | 3500 (241) | 3500 (241) | 3500 (241) |



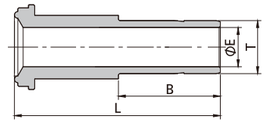

Imperial Tube External Welded Tube

| FR size (in.) | T-Tube outer diameter (in.) | Basic ordering number | Size,in.(mm) | | | Working Pressure, psig (bar) | | |
|---|---|---|---|---|---|---|---|---|
| | | | L | B | E | 6L | CU | NI |
| 1/8 | 1/8 | -G-FR2TB2 | 0.70 (17.8) | 0.28 (7.1) | 0.06 (1.5) | 11200 (772) | 7200 (496) | 9000 (620) |
| 1/4 | 1/8 | -G-FR4TB2 | 1.31 (33.3) | 0.28 (7.1) | 0.06 (1.5) | 10000 (690) | 6400 (440) | 8000 (551) |
| 1/4 | 1/4 | -G-FR4TB4 | 1.31 (33.3) | 0.41 (10.4) | 0.12 (3.0) | 10000 (690) | 6400 (440) | 8000 (551) |
| 1/2 | 1/4 | -G-FR8TB4 | 1.50 (38.1) | 0.41 (10.4) | 0.12 (3.0) | 4300 (296) | 2800 (192) | 3500 (241) |
| 1/2 | 3/8 | -G-FR8TB6 | 1.50 (38.1) | 0.41 (10.4) | 0.28 (7.1) | 4300 (296) | 2800 (192) | 3500 (241) |
| 1/2 | 1/2 | -G-FR8TB8 | 1.50 (38.1) | 0.50 (12.7) | 0.40 (10.2) | 3500 (241) | 3500 (241) | 3500 (241) |
| 3/4 | 3/4 | -G-FR12TB12 | 2.00 (50.8) | 0.62 (15.7) | 0.53 (13.5) | 3700 (254) | 2400 (165) | 3000 (206) |
| 1 | 1 | -G-FR16TB16 | 2.22 (56.4) | 0.81 (20.6) | 0.75 (19.1) | 3000 (206) | 1900 (130) | 2400 (165) |



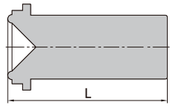







Tube Connectors

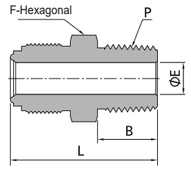
| FR size (in.) | T-Tube outer diameter (in.) | Basic ordering number | Size,in.(mm) | | | Working Pressure, psig (bar) | | |
|---|---|---|---|---|---|---|---|---|
| | | | L | B | E | 6L | CU | NI |
| 1/4 | 1/4 | -G-FR4FT4 | 1.62 (41.0) | 0.64 (16.2) | 0.17 (4.3) | 10000 (690) | 6400 (440) | 8000 (551) |
| 1/2 | 3/8 | -G-FR8FT6 | 1.81 (46.0) | 0.70 (17.8) | 0.27 (6.9) | 4300 (296) | 2800 (192) | 3500 (241) |
| 1/2 | 1/2 | -G-FR8FT8 | 1.94 (49.3) | 0.96 (24.4) | 0.37 (9.4) | 4300 (296) | 2800 (192) | 3500 (241) |




Blind takeover

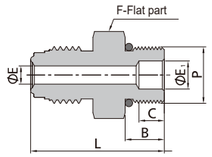
| FR size (in.) | Basic ordering number | Size,in.(mm) |
|---|---|---|
| | | L |
| 1/8 | -G-FR2-B | 0.70 (17.8) |
| 1/4 | -G-FR4-B | 1.31 (33.3) |
| 1/2 | -G-FR8-B | 1.50 (38.1) |
| 3/4 | -G-FR12-B | 2.00 (50.8) |
| 1 | -G-FR16-B | 2.22 (56.4) |

Benxiu




NPT Male Body

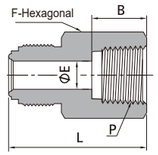
| FR size (in.) | P-thread size | Basic ordering number | Size,in.(mm) | | | | Working Pressure, psig (bar) | | |
|---|---|---|---|---|---|---|---|---|---|
| | | | L | B | E | F | 6L | CU | NI |
| 1/8 | 1/16 | -S-FR2N1 | 1.07 (27.2) | 0.38 (9.7) | 0.09 (2.3) | 3/8 (9.5) | 9000 (620) | 7200 (496) | 9000 (620) |
| 1/8 | 1/8 | -S-FR2N2 | 1.07 (27.2) | 0.38 (9.7) | 0.09 (2.3) | 7/16 (11.1) | 9000 (620) | 7200 (496) | 9000 (620) |
| 1/4 | 1/8 | -S-FR4N2 | 1.31 (33.3) | 0.38 (9.7) | 0.18 (4.6) | 5/8 (15.9) | 10000 (690) | 6400 (440) | 8000 (551) |
| 1/4 | 1/4 | -S-FR4N4 | 1.49 (37.8) | 0.56 (14.2) | 0.18 (4.6) | 5/8 (15.9) | 10000 (690) | 6400 (440) | 8000 (551) |
| 1/2 | 1/4 | -S-FR8N4 | 1.65 (41.9) | 0.56 (14.2) | 0.28 (7.1) | 15/16 (23.8) | 4300 (296) | 2800 (192) | 3500 (241) |
| 1/2 | 3/8 | -S-FR8N6 | 1.65 (41.9) | 0.56 (14.2) | 0.38 (9.7) | 15/16 (23.8) | 4300 (296) | 2800 (192) | 3500 (241) |
| 1/2 | 1/2 | -S-FR8N8 | 1.84 (46.7) | 0.75 (19.1) | 0.40 (10.2) | 15/16 (23.8) | 4300 (296) | 2800 (192) | 3500 (241) |
| 3/4 | 3/4 | -S-FR12N12 | 2.19 (55.6) | 0.75 (19.1) | 0.62 (15.7) | 1 15/16 (33.3) | 3700 (254) | 2400 (165) | 3000 (206) |
| 1 | 1 | -S-FR16N16 | 2.47 (62.7) | 0.94 (23.9) | 0.87 (22.1) | 1 5/8 (41.3) | 3000 (206) | 1900 (130) | 3000 (206) |




Straight Thread O-Ring Male Connection

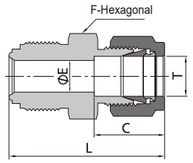
| FR size (in.) | P-SAE/MS end dimensions | Standard O-ring① size | Basic ordering number | Size,in.(mm) | | | | | | Working Pressure, psig (bar) | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | L | B | C | E | $E_1$ | F | 6L | CU | NI |
| 1/4 | 9/16-18 | 906 | -S-FR4ST9 | 1.33 (33.8) | 0.39 (9.9) | 0.25 (6.4) | 0.18 (4.6) | 0.28 (7.1) | 3/4 (19.1) | 4500 (310) | 4500 (310) | 4500 (310) |
| 1/2 | 9/16-18 | 906 | -S-FR8ST9 | 1.48 (37.6) | 0.39 (9.9) | – | 0.28 (7.1) | 0.28 (7.1) | 15/16 (23.8) | 3500 (241) | 2800 (192) | 3500 (241) |
| 1/2 | 7/8-14 | 910 | -S-FR8ST14 | 1.66 (42.2) | 0.50 (12.7) | 0.40 (10.2) | 0.28 (7.1) | 0.59 (15.0) | 1 (25.4) | 3500 (241) | 2800 (192) | 3500 (241) |

① The standard O-ring material is fluorocarbon FKM. For other materials, please contact E-JOE.




Female NPT Body

| FR size (in.) | P-thread size | Basic ordering number | Size,in.(mm) | | | | Working Pressure, psig (bar) | | |
|---|---|---|---|---|---|---|---|---|---|
| | | | L | B | E | F | 6L | CU | NI |
| 1/8 | 1/16 | -S-FR2N1 | 1.10 (27.9) | 0.39 (9.9) | 0.09 (2.3) | 7/16 (11.1) | 6700 (461) | 6700 (461) | 6700 (461) |
| 1/8 | 1/8 | -S-FR2N2 | 1.19 (30.2) | 0.41 (10.4) | 0.09 (2.3) | 9/16 (14.3) | 6500 (447) | 6500 (447) | 6500 (447) |
| 1/4 | 1/8 | -S-FR4N2 | 1.41 (35.8) | 0.41 (10.4) | 0.18 (4.6) | 5/8 (15.9) | 8000 (551) | 6400 (440) | 8000 (551) |
| 1/4 | 1/4 | -S-FR4N4 | 1.54 (39.1) | 0.59 (15.0) | 0.18 (4.6) | 3/4 (19.1) | 6600 (454) | 5200 (358) | 6600 (454) |
| 1/2 | 3/8 | -S-FR8N6 | 1.76 (44.7) | 0.59 (15.0) | 0.40 (10.2) | 15/16 (23.8) | 4300 (296) | 2800 (192) | 3500 (241) |
| 1/2 | 1/2 | -S-FR8N8 | 1.99 (50.5) | 0.78 (19.8) | 0.40 (10.2) | 1 1/16 (27.0) | 4300 (296) | 2800 (192) | 3500 (241) |
| 3/4 | 3/4 | -S-FR12N12 | 2.36 (59.9) | 0.81 (20.6) | 0.62 (15.7) | 1 5/16 (33.3) | 3700 (254) | 2400 (165) | 3000 (206) |
| 1 | 1 | -S-FR16N16 | 2.51 (63.8) | 1.00 (25.4) | 0.87 (22.1) | 1 5/8 (41.3) | 3000 (206) | 1900 (130) | 2400 (165) |




Compression fittings

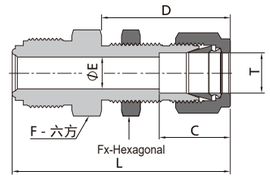
| FR size (in.) | T-Tube outer diameter (in.) | Basic ordering number | Size,in.(mm) | | | | Working Pressure, psig (bar) | | |
|---|---|---|---|---|---|---|---|---|---|
| | | | L① | C | E | F | 6L | CU | NI |
| 1/4 | 1/8 | -S-FR4FJ2 | 1.53 (38.9) | 0.50 (12.7) | 0.09 (2.3) | 5/8 (15.9) | 10000 (690) | 6400 (440) | 8000 (551) |
| 1/4 | 1/4 | -S-FR4FJ4 | 1.62 (41.1) | 0.60 (15.2) | 0.18 (4.6) | 5/8 (15.9) | 10000 (690) | 6400 (440) | 8000 (551) |
| 1/2 | 3/8 | -S-FR8FJ6 | 1.84 (46.7) | 0.66 (16.8) | 0.28 (7.1) | 15/16 (23.8) | 4300 (296) | 2800 (192) | 3500 (241) |
| 1/2 | 1/2 | -S-FR8FJ8 | 1.95 (49.5) | 0.90 (22.9) | 0.40 (10.2) | 15/16 (23.8) | 4300 (296) | 2800 (192) | 3500 (241) |

① Dimension L is the dimension after the nut is finger-tightened.





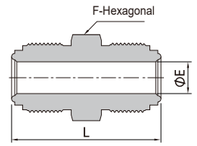





Bulkhead ferrule connector

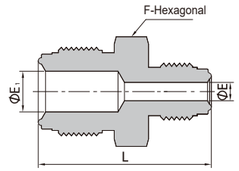
| FR size (in.) | T-Tube outer diameter (in.) | Basic ordering number | Size,in.(mm) | | | | | | Panel aperture in.(mm) | Maximum panel thickness in.(mm) | Working Pressure, psig (bar) | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | L① | C | D | E | F | Fx | | | 6L | CU | NI |
| 1/4 | 1/4 | -S-BFJ4FR4 | 2.25 (57.2) | 0.60 (15.2) | 1.32 (33.5) | 0.18 (4.6) | 5/8 (15.9) | 5/8 (15.9) | 15/32 (11.9) | 0.40 (10.2) | 10000 (690) | 6400 (440) | 8000 (551) |
| 1/4 | 1/4 | -S-BFJ4FR4-1.88 | 1.88 (47.8) | 0.60 (15.2) | 1.05 (26.7) | 0.18 (4.6) | 5/8 (15.9) | 5/8 (15.9) | 15/32 (11.9) | 0.13 (3.3) | 10000 (690) | 6400 (440) | 8000 (551) |
| 1/2 | 3/8 | -S-BFJ6FR8 | 2.54 (64.5) | 0.66 (16.8) | 1.45 (36.8) | 0.28 (7.1) | 15/16 (23.8) | 3/4 (19.1) | 19/32 (15.0) | 0.44 (11.2) | 4300 (296) | 2800 (192) | 3500 (241) |
| 1/2 | 1/2 | -S-BFJ8FR8 | 2.74 (69.6) | 0.90 (22.9) | 1.65 (41.9) | 0.40 (10.2) | 15/16 (23.8) | 15/16 (23.8) | 25/32 (19.8) | 0.50 (12.7) | 4300 (296) | 2800 (192) | 3500 (241) |

① Dimension L is the dimension after the nut is finger-tightened.



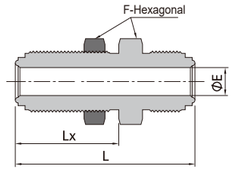

Straight through body

| FR size (in.) | FR size (in.) | Basic ordering number | Size,in.(mm) | | | Working Pressure, psig (bar) | | |
|---|---|---|---|---|---|---|---|---|
| | | | L | E | F | 6L | CU | NI |
| 1/8 | 1/8 | -S-FR2 | 1.13 (28.7) | 0.09 (2.3) | 3/8 (9.5) | 11200 (772) | 7200 (496) | 9000 (620) |
| 1/4 | 1/4 | -S-FR4 | 1.55 (39.4) | 0.18 (4.6) | 5/8 (15.9) | 10000 (690) | 6400 (440) | 8000 (551) |
| 1/2 | 1/2 | -S-FR8 | 1.84 (46.7) | 0.40 (10.2) | 15/16 (23.8) | 4300 (296) | 2800 (192) | 3500 (241) |
| 3/4 | 3/4 | -S-FR12 | 2.44 (62.0) | 0.62 (15.7) | 1 5/16 (33.3) | 3700 (254) | 2400 (165) | 3000 (206) |
| 1 | 1 | -S-FR16 | 2.59 (65.8) | 0.87 (22.1) | 1 5/8 (41.3) | 3000 (206) | 1900 (130) | 2400 (165) |



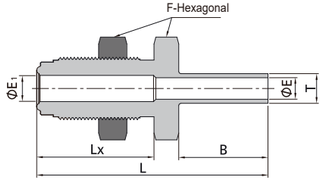

Reducing straight connector

| FR size (in.) | FR size (in.) | Basic ordering number | Size,in.(mm) | | | | Working Pressure, psig (bar) | | |
|---|---|---|---|---|---|---|---|---|---|
| | | | L | E | $E_1$ | F | 6L | CU | NI |
| 1/4 | 1/8 | -S-FR4FR2 | 1.37 (34.8) | 0.09 (2.3) | 0.18 (4.6) | 5/8 (15.9) | 10000 (690) | 6400 (440) | 8000 (551) |
| 1/2 | 1/4 | -S-FR8FR4 | 1.71 (43.4) | 0.18 (4.6) | 0.40 (10.2) | 5/16 (23.8) | 4300 (296) | 2800 (192) | 3500 (241) |



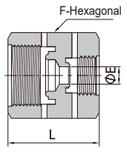

Bulkhead Straight Connector

| FR size (in.) | Basic ordering number | Size,in.(mm) L | Lx | E | F | Panel aperture in.(mm) | Maximum panel thickness in.(mm) | Working Pressure, psig (bar) 6L | CU | NI |
|---|---|---|---|---|---|---|---|---|---|---|
| 1/4 | -S-BFR4-1.82 | 1.82 (46.2) | 0.99 (25.1) | 0.18 (4.6) | 3/4 (19.1) | 19/32 (15.0) | 0.13 (3.3) | 10000 (690) | 6400 (440) | 8000 (551) |
| 1/4 | -S-BFR4 | 2.23 (56.6) | 1.30 (33.3) | 0.18 (4.6) | 3/4 (19.1) | 19/32 (15.0) | 0.44 (11.2) | 10000 (690) | 6400 (440) | 8000 (551) |
| 1/2 | -S-BFR8-2.14 | 2.14 (54.4) | 1.11 (28.2) | 0.40 (10.2) | 1 1/16 (27.0) | 29/32 (23.1) | 0.13 (3.3) | 4300 (296) | 2800 (192) | 3500 (241) |
| 1/2 | -S-BFR8 | 2.57 (65.3) | 1.48 (37.6) | 0.40 (10.2) | 1 1/16 (27.0) | 29/32 (23.1) | 0.50 (12.7) | 4300 (296) | 2800 (192) | 3500 (241) |



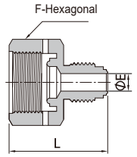

Bulkhead Tube Butt Weld Fittings

| FR size (in.) | T-Tube outer diameter (in.) | Basic ordering number | Size,in.(mm) L | Lx | B | E | E1 | F | Panel aperture in.(mm) | Maximum panel thickness in.(mm) | Working Pressure, psig (bar) 6L | CU | NI |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1/4 | 1/4 | -S-BFR4TB4-1.95 | 1.95 (49.5) | 0.99 (25.1) | 0.75 (19.1) | 0.18 (4.6) | 0.22 (5.6) | 0.75 (19.1) | 19/32 (15.1) | 0.13 (3.3) | 5100 (351) | 5100 (351) | 5100 (351) |
| 1/4 | 1/4 | -S-BFR4TB4 | 2.36 (59.9) | 1.30 (33.0) | 0.75 (19.1) | 0.18 (4.6) | 0.22 (5.6) | 0.75 (19.1) | 19/32 (15.1) | 0.44 (11.2) | 5100 (351) | 5100 (351) | 5100 (351) |



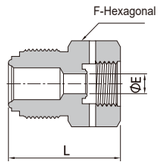

Female thread reducer body

| FR size (in.) | FR size (in.) | Basic ordering number | Size,in.(mm) L | E | F | Working Pressure, psig (bar) 6L | CU | NI |
|---|---|---|---|---|---|---|---|---|
| 1/4 | 1/8 | -RU-FR4FR2 | 1.16 (29.5) | 0.13 (3.3) | 3/4 (19.1) | 10000 (690) | 6400 (440) | 8000 (551) |
| 1/2 | 1/4 | -RU-FR8FR4 | 1.41 (35.8) | 0.25 (6.4) | 1 1/16 (27.0) | 4300 (296) | 2800 (192) | 3500 (241) |




Big Yin and Small Yang

| FR size (in.) | FR size (in.) | Basic ordering number | Size,in.(mm) L | E | F | Working Pressure, psig (bar) 6L | CU | NI |
|---|---|---|---|---|---|---|---|---|
| 1/4 | 1/8 | -RA-FR4FR2 | 1.19 (30.2) | 0.09 (2.3) | 3/4 (19.1) | 10000 (690) | 6400 (440) | 8000 (551) |
| 1/2 | 1/4 | -RA-FR8FR4 | 1.41 (35.8) | 0.18 (4.6) | 1 1/16 (27.0) | 4300 (296) | 2800 (192) | 3500 (241) |

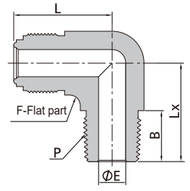



Big Yang and Small Yin

| FR size (in.) | FR size (in.) | Basic ordering number | Size,in.(mm) L | E | F | Working Pressure, psig (bar) 6L | CU | NI |
|---|---|---|---|---|---|---|---|---|
| 1/4 | 1/8 | -RB-FR4FR2 | 1.06 (26.9) | 0.13 (3.3) | 5/8 (15.9) | 10000 (690) | 6400 (440) | 8000 (551) |
| 1/2 | 1/4 | -RB-FR8FR4 | 1.41 (35.8) | 0.25 (6.4) | 15/16 (23.8) | 4300 (296) | 2800 (192) | 3500 (241) |

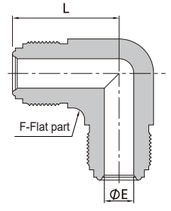






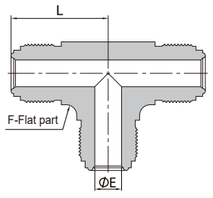

Male thread elbow body

| FR size (in.) | P-thread size | Basic ordering number | Size,in.(mm) L | Lx | B | E | F | Working Pressure, psig (bar) 6L | CU | NI |
|---|---|---|---|---|---|---|---|---|---|---|
| 1/4 | 1/8 | -L-FR4N2 | 1.07 (27.2) | 0.87 (22.1) | 0.38 (9.6) | 0.18 (4.6) | 1/2 (12.7) | 10000 (690) | 6400 (440) | 8000 (551) |
| 1/4 | 1/4 | -L-FR4N4 | 1.07 (27.2) | 1.05 (26.7) | 0.56 (14.2) | 0.18 (4.6) | 1/2 (12.7) | 8000 (551) | 8000 (551) | 8000 (551) |
| 1/2 | 3/8 | -L-FR8N6 | 1.45 (36.8) | 1.26 (32.0) | 0.56 (14.2) | 0.40 (10.2) | 13/16 (20.6) | 4300 (296) | 2800 (192) | 3500 (241) |
| 1/2 | 1/2 | -L-FR8N8 | 1.45 (36.8) | 1.45 (36.8) | 0.75 (19.1) | 0.40 (10.2) | 13/16 (20.6) | 4300 (296) | 2800 (192) | 3500 (241) |



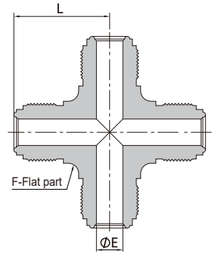

Elbow body

| FR size (in.) | Basic ordering number | Size,in.(mm) L | E | F | Working Pressure, psig (bar) 6L | CU | NI |
|---|---|---|---|---|---|---|---|
| 1/8 | -L-FR2 | 0.89 (22.6) | 0.09 (2.3) | 7/16 (11.1) | 11200 (772) | 7200 (496) | 9000 (620) |
| 1/4 | -L-FR4 | 1.07 (27.2) | 0.18 (4.6) | 1/2 (12.7) | 10000 (690) | 6400 (440) | 8000 (551) |
| 1/2 | -L-FR8 | 1.45 (36.8) | 0.40 (10.2) | 13/16 (20.6) | 4300 (296) | 2800 (192) | 3500 (241) |
| 3/4 | -L-FR12 | 1.92 (48.8) | 0.62 (15.7) | 1 1/4 (31.8) | 3700 (254) | 2400 (165) | 3000 (206) |
| 1 | -L-FR16 | 2.00 (50.8) | 0.87 (22.1) | 1 11/16 (42.9) | 3000 (206) | 1900 (130) | 2400 (165) |




Tee body

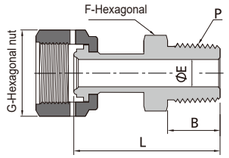
| FR size (in.) | Basic ordering number | Size,in.(mm) L | E | F | Working Pressure, psig (bar) 6L | CU | NI |
|---|---|---|---|---|---|---|---|
| 1/8 | -T-FR2 | 0.89 (22.6) | 0.09 (2.3) | 7/16 (11.1) | 11200 (772) | 7200 (496) | 9000 (620) |
| 1/4 | -T-FR4 | 1.07 (27.2) | 0.18 (4.6) | 1/2 (12.7) | 10000 (690) | 6400 (440) | 8000 (551) |
| 1/2 | -T-FR8 | 1.45 (36.8) | 0.40 (10.2) | 13/16 (20.6) | 4300 (296) | 2800 (192) | 3500 (241) |
| 3/4 | -T-FR12 | 1.92 (48.8) | 0.62 (15.7) | 1 1/4 (31.8) | 3700 (254) | 2400 (165) | 3000 (206) |
| 1 | -T-FR16 | 2.00 (50.8) | 0.87 (22.1) | 1 11/16 (42.9) | 3000 (206) | 1900 (130) | 2400 (165) |




Four-way body

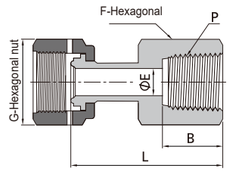
| FR size (in.) | Basic ordering number | Size,in.(mm) L | E | F | Working Pressure, psig (bar) 6L | CU | NI |
|---|---|---|---|---|---|---|---|
| 1/8 | -C-FR2 | 0.89 (22.6) | 0.09 (2.3) | 7/16 (11.1) | 11200 (772) | 7200 (496) | 9000 (620) |
| 1/4 | -C-FR4 | 1.07 (27.2) | 0.18 (4.6) | 1/2 (12.7) | 10000 (690) | 6400 (440) | 8000 (551) |
| 1/2 | -C-FR8 | 1.45 (36.8) | 0.40 (10.2) | 13/16 (20.6) | 4300 (296) | 2800 (192) | 3500 (241) |
| 3/4 | -C-FR12 | 1.92 (48.8) | 0.62 (15.7) | 1 1/4 (31.8) | 3700 (254) | 2400 (165) | 3000 (206) |
| 1 | -C-FR16 | 2.00 (50.8) | 0.87 (22.1) | 1 11/16 (42.9) | 3000 (206) | 1900 (130) | 2400 (165) |

## Welding pipe



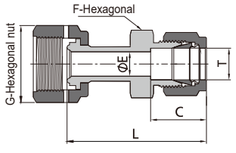

NPT male thread welding nipple

| FR size (in.) | P-thread size | Basic ordering number | Size,in.(mm) | | | | | Working Pressure, psig (bar) | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | L | B | E | G | F | 6L | CU | NI |
| 1/4 | 1/8 | -WG-FR4N2 | 1.58 (40.1) | 0.38 (9.7) | 0.18 (4.6) | 3/4 (19.1) | 7/16 (11.1) | 8000 (551) | 6400 (446) | 8000 (551) |
| 1/4 | 1/4 | -WG-FR4N4 | 1.79 (45.5) | 0.56 (14.2) | 0.18 (4.6) | 3/4 (19.1) | 9/16 (14.3) | 8000 (551) | 6400 (446) | 8000 (551) |
| 1/2 | 3/8 | -WG-FR8N6 | 1.89 (48.0) | 0.56 (14.2) | 0.40 (10.2) | 1 1/16 (27.0) | 11/16 (17.5) | 4300 (296) | 2800 (192) | 3500 (241) |
| 1/2 | 1/2 | -WG-FR8N8 | 2.09 (53.1) | 0.75 (19.1) | 0.40 (10.2) | 1 1/16 (27.0) | 7/8 (22.2) | 4300 (296) | 2800 (192) | 3500 (241) |




NPT female thread welding nipple

| FR size (in.) | P-thread size | Basic ordering number | Size,in.(mm) | | | | | Working Pressure, psig (bar) | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | L | B | E | G | F | 6L | CU | NI |
| 1/4 | 1/4 | -WG-FR4FN4 | 1.77 (45.0) | 0.59 (15.0) | 0.18 (4.6) | 3/4 (19.1) | 3/4 (19.1) | 6600 (454) | 5200 (458) | 6600 (454) |
| 1/2 | 3/8 | -WG-FR8FN6 | 1.95 (49.5) | 0.59 (15.0) | 0.40 (10.2) | 1 1/16 (27.0) | 7/8 (22.2) | 4300 (296) | 2800 (192) | 3500 (241) |
| 1/2 | 1/2 | -WG-FR8FN8 | 2.18 (55.4) | 0.78 (19.8) | 0.40 (10.2) | 1 1/16 (27.0) | 1 1/16 (27.0) | 4300 (296) | 2800 (192) | 3500 (241) |




Ferrule welding pipe

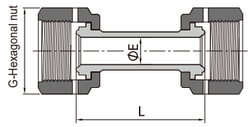
| FR size (in.) | T-Tube outer diameter (in.) | Basic ordering number | Size,in.(mm) | | | | | Working Pressure, psig (bar) | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | L① | C | E | G | F | 6L | CU | NI |
| 1/4 | 1/4 | -WG-FR4FJ4 | 1.94 (49.3) | 0.60 (15.2) | 0.18 (4.6) | 3/4 (19.1) | 1/2 (12.7) | 8000 (551) | 6400 (440) | 8000 (551) |
| 1/4 | 3/8 | -WG-FR4FJ6 | 1.97 (50.0) | 0.66 (16.8) | 0.18 (4.6) | 3/4 (19.1) | 5/8 (15.9) | 6500 (447) | 5200 (358) | 6500 (447) |
| 1/2 | 1/2 | -WG-FR8FJ8 | 2.23 (56.6) | 0.90 (22.9) | 0.40 (10.2) | 1 1/16 (27.0) | 13/16 (20.6) | 4300 (296) | 2800 (192) | 3500 (241) |

① Dimension L is the dimension after the nut is finger-tightened.







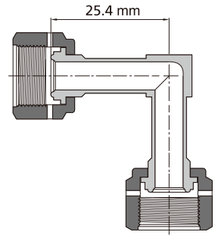



Welding pipe straight

| FR size (in.) | Basic ordering number | Size,in.(mm) | | | Working Pressure, psig (bar) | | |
|---|---|---|---|---|---|---|---|
| | | L | E | G | 6L | CU | NI |
| 1/4 | -WG-FR4 | 1.71 (43.4) | 0.18 (4.6) | 3/4 (19.1) | 8000 (551) | 6400 (440) | 8000 (551) |
| 1/2 | -WG-FR8 | 1.84 (46.7) | 0.40 (10.2) | 1 1/16 (27.0) | 4300 (296) | 2800 (192) | 3500 (241) |

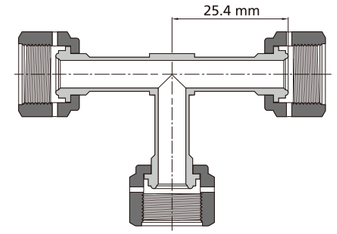
## Female thread elbow

Basic Order Number:-LWG-FR4



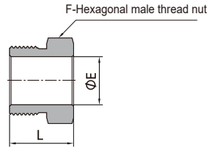

## Female thread tee

Basic Order Number:-LWG-FR4



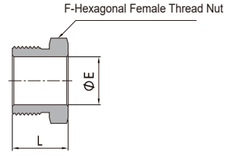

## Nuts




Female thread nut

| FR size (in.) | Basic ordering number | Size,in.(mm) | | |
|---|---|---|---|---|
| | | L | E | G |
| 1/8 | -N-FR2 | 0.53 (13.5) | 0.21 (5.3) | 7/16 (11.1) |
| 1/4 | -N-FR4 | 0.81 (20.6) | 0.36 (9.1) | 3/4 (19.1) |
| 1/2 | -N-FR8 | 0.88 (22.4) | 0.61 (15.5) | 1 1/16 (27.0) |
| 5/8 | -N-FR10 | 0.88 (22.4) | 0.74 (18.8) | 1 3/16 (30.2) |
| 3/4 | -N-FR12 | 1.12 (28.4) | 0.89 (22.6) | 1 1/2 (38.1) |
| 1 | -N-FR16 | 1.34 (34.0) | 1.20 (30.5) | 1 3/4 (44.5) |




Male thread nut

| FR size (in.) | Basic ordering number | Size,in.(mm) | | |
|---|---|---|---|---|
| | | L | E | F |
| 1/8 | -MN-FR2 | 0.50 (12.7) | 0.21 (5.3) | 3/8 (9.5) |
| 1/4 | -MN-FR4 | 0.71 (18.0) | 0.36 (9.1) | 5/8 (15.9) |
| 1/2 | -MN-FR8 | 0.81 (20.6) | 0.61 (15.5) | 15/16 (23.8) |
| 5/8 | -MN-FR10 | 0.81 (20.6) | 0.74 (18.8) | 1 1/16 (27.0) |
| 3/4 | -MN-FR12 | 1.00 (25.4) | 0.89 (22.6) | 1 5/16 (33.3) |
| 1 | -MN-FR16 | 1.19 (30.2) | 1.20 (30.5) | 1 5/8 (41.3) |

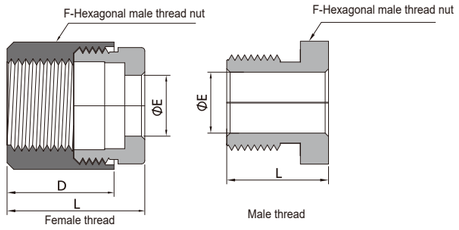
Short male thread nut

| FR size (in.) | Basic ordering number | Size,in.(mm) | | |
|---|---|---|---|---|
| | | L | E | F |
| 1/4 | -MN-FR4-0.54 | 0.54 (13.7) | 0.36 (9.1) | 5/8 (15.9) |
| 1/4 | -MN-FR4-0.65 | 0.65 (16.5) | 0.36 (9.1) | 5/8 (15.9) |

配合短焊接接管使用

Use with short welding pipe

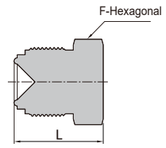
## Nut assembly




Nut assembly

| FR size (in.) | Nut set type | Basic ordering number | Size,in.(mm) | | | |
|---|---|---|---|---|---|---|
| | | | L | E | F | D |
| 1/4 | Female thread | -N-FR4-SN | 0.81 (20.6) | 0.36 (9.1) | 3/4 (19.1) | 0.63 (16.0) |
| 1/4 | Male thread | -MN-FR4-SN | 0.60 (15.2) | 0.36 (9.1) | 5/8 (15.9) | – |

## Plug




Plug

| FR size (in.) | Basic ordering number | Size,in.(mm) | |
|---|---|---|---|
| | | L | F |
| 1/8 | -PG-FR2 | 0.68 (17.3) | 3/8 (9.5) |
| 1/4 | -PG-FR4 | 0.92 (23.4) | 5/8 (15.9) |
| 1/2 | -PG-FR8 | 1.08 (27.4) | 15/16 (23.8) |
| 3/4 | -PG-FR12 | 1.43 (36.3) | 1 5/16 (33.3) |
| 1 | -PG-FR16 | 1.52 (38.6) | 1 5/8 (41.3) |

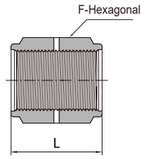
## Plug with lanyard

- Lanyard material: 304 stainless steel
- Lanyard length: 15.2cm



Plug with lanyard

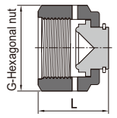
| FR size (in.) | Basic ordering number | Size,in.(mm) | |
|---|---|---|---|
| | | L | F |
| 1/4 | -PG-FR4-BP | 0.92 (23.4) | 5/8 (15.9) |
| 1/2 | -PG-FR8-BP | 1.08 (27.4) | 15/16 (23.8) |




Female thread body

| FR size (in.) | Basic ordering number | Size,in.(mm) | |
|---|---|---|---|
| | | L | F |
| 1/8 | -BC-FR2 | 0.66 (16.8) | 7/16 (11.1) |
| 1/4 | -BC-FR4 | 1.19 (30.2) | 3/4 (19.1) |
| 1/2 | -BC-FR8 | 1.31 (33.3) | 1 1/16 (27.0) |
| 3/4 | -BC-FR12 | 1.68 (42.7) | 1 1/2 (38.1) |
| 1 | -BC-FR16 | 2.04 (51.8) | 1 3/4 (44.5) |

## Cap




Cap

| FR size (in.) | Basic ordering number | Size,in.(mm) | |
|---|---|---|---|
| | | L | G |
| 1/8 | -CP-FR2 | 0.63 (16.0) | 7/16 (11.1) |
| 1/4 | -CP-FR4 | 0.94 (23.9) | 3/4 (19.1) |
| 1/2 | -CP-FR8 | 1.01 (25.6) | 1 1/16 (27.0) |
| 3/4 | -CP-FR12 | 1.29 (32.8) | 1 1/2 (38.1) |
| 1 | -CP-FR16 | 1.54 (39.1) | 1 3/4 (44.5) |

## Plug cap with lanyard

- Lanyard material: 304 stainless steel
- Lanyard length: 15.2cm



Plug cap with lanyard

| FR size (in.) | Basic ordering number | Size,in.(mm) | |
|---|---|---|---|
| | | L | G |
| 1/4 | -CP-FR4-BP | 0.94 (23.9) | 3/4 (19.1) |
| 1/2 | -CP-FR8-BP | 1.01 (25.6) | 1 1/16 (27.0) |

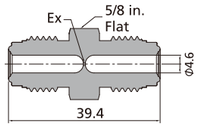






## Flow restrictor

- Working pressure up to: 690 bar (10,000 psig)



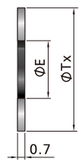

Body with FR male thread

| Ex. in.(mm) | Order Number |
|---|---|
| 0.015 (0.381) | 6LV-R-FR4-015 |
| 0.017 (0.432) | 6LV-R-FR4-017 |
| 0.020 (0.508) | 6LV-R-FR4-020 |
| 0.023 (0.584) | 6LV-R-FR4-023 |
| 0.025 (0.635) | 6LV-R-FR4-025 |
| 0.026 (0.660) | 6LV-R-FR4-026 |
| 0.027 (0.686) | 6LV-R-FR4-027 |
| 0.030 (0.762) | 6LV-R-FR4-030 |
| 0.035 (0.889) | 6LV-R-FR4-035 |
| 0.040 (1.016) | 6LV-R-FR4-040 |
| 0.045 (1.143) | 6LV-R-FR4-045 |
| 0.050 (1.270) | 6LV-R-FR4-050 |
| 0.055 (1.397) | 6LV-R-FR4-055 |
| 0.060 (1.529) | 6LV-R-FR4-060 |
| 0.065 (1.651) | 6LV-R-FR4-065 |
| 0.070 (1.778) | 6LV-R-FR4-070 |
| 0.075 (1.905) | 6LV-R-FR4-075 |
| 0.080 (2.032) | 6LV-R-FR4-080 |
| 0.085 (2.159) | 6LV-R-FR4-085 |
| 0.090 (2.286) | 6LV-R-FR4-090 |
| 0.093 (2.362) | 6LV-R-FR4-093 |
| 0.095 (2.413) | 6LV-R-FR4-095 |
| 0.100 (2.540) | 6LV-R-FR4-100 |

## Gasket

- Copper washers are unplated
- Unplated stainless steel and nickel washers are electropolished
- For silver-plated 316 stainless steel or nickel washers, remove the "-UP" suffix from the ordering number

## Flat gasket




Uncoated (UP)

| FR size (in.) | Basic ordering number | Size,in.(mm) | |
|---|---|---|---|
| | | Tx | E |
| 1/8 | -GT-FR2-UP | 0.26 (6.6) | 0.09 (2.3) |
| 1/4 | -GT-FR4-UP | 0.47 (11.9) | 0.22 (5.6) |
| 1/2 | -GT-FR8-UP | 0.78 (19.8) | 0.44 (11.2) |
| 5/8 | -GT-FR10-UP | 0.91 (23.1) | 0.58 (14.7) |
| 3/4 | -GT-FR12-UP | 1.14 (29.0) | 0.66 (16.8) |
| 1 | -GT-FR16-UP | 1.40 (35.6) | 0.89 (22.6) |

Do not support components when using gaskets

## Locking device

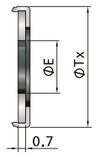
- Prevents inadvertent disassembly of FR fittings
- This device is designed to be used on E-JOE FR metal gasket face seal assemblies with standard male and female threaded nuts



Locking device

| FR size (in.) | Order Number |
|---|---|
| 1/4 | S4-FR4-LD |
| 1/2 | S4-FR8-LD |

## Gasket support assembly

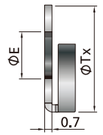



Uncoated (UP)

| FR size (in.) | Basic ordering number | Size,in.(mm) | |
|---|---|---|---|
| | | Tx | E |
| 1/4 | -GT-FR4-A-UP | 0.50 (12.7) | 0.24 (6.1) |
| 1/2 | -GT-FR8-A-UP | 0.79 (20.1) | 0.44 (11.2) |
| 3/4 | -GT-FR12-A-UP | 1.14 (29.0) | 0.66 (16.8) |
| 1 | -GT-FR16-A-UP | 1.40 (35.6) | 0.89 (22.6) |

1. Use the gasket and support together
2. The support material is 316L stainless steel

## Side load mounting support

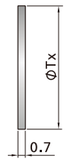



Uncoated (UP)

| FR size (in.) | Basic ordering number | Size,in.(mm) | |
|---|---|---|---|
| | | Tx | E |
| 1/4 | -GT-FR4-AS-UP | 0.45 (11.4) | 0.24 (6.1) |
| 1/2 | -GT-FR8-AS-UP | 0.75 (19.1) | 0.43 (11.0) |

1. Only 316L stainless steel or nickel gaskets are available
2. Silver-plated gaskets are not available

## Blind gasket




Uncoated (UP)

| FR size (in.) | Basic ordering number | Size,in.(mm) |
|---|---|---|
| | | Tx |
| 1/8 | -GT-FR2-B-UP | 0.26 (6.6) |
| 1/4 | -GT-FR4-B-UP | 0.47 (11.9) |
| 1/2 | -GT-FR8-B-UP | 0.78 (19.8) |
| 5/8 | -GT-FR10-B-UP | 0.91 (23.1) |
| 3/4 | -GT-FR12-B-UP | 1.14 (29.0) |
| 1 | -GT-FR16-B-UP | 1.40 (35.6) |

Blind spacer support assemblies are available, please contact E-J0E Group for details.

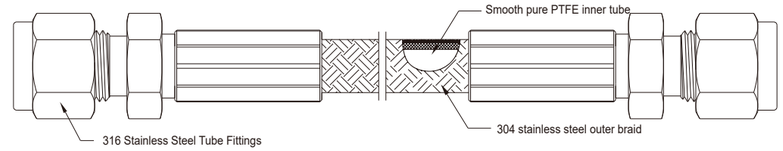




# PTFE lined, stainless steel braided hose
# 93 Series

## Characteristic

- Lightweight construction, easy to handle and install
- Inner tube material: smooth pure PTFE
- Outer braid material: 304 stainless steel
- Working pressure up to: 207 bar (3000 psig)
- Nominal hose size: 1/4" to 1"
- Working temperature: -53°C to 204°C (-65°F to 400°F)
- Standard and custom lengths available



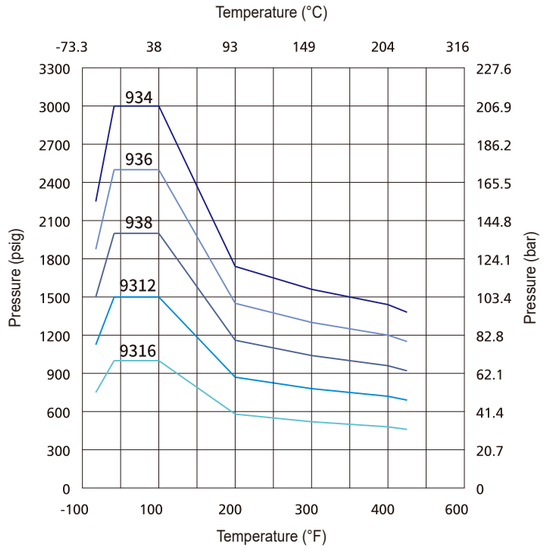

## Hose technical data

| Nominal hose size | Inner diameter | Minimum bending radius | | Temperature range °F(°C) | Working Pressure at 70°F (20°C) | Minimum Burst Pressure at 70°F (20°C) |
|---|---|---|---|---|---|---|
| | | Static | Dynamic | | | |
| | in. (mm) | in. (mm) | in. (mm) | °F(°C) | psig (bar) | psig (bar) |
| 1/4 (6.4) | 0.19 (4.8) | 1.5 (38.1) | 2.0 (50.8) | -65 至 400 (-53 至 204) | 3000 (206) | 12000 (826) |
| 3/8 (9.5) | 0.31 (7.9) | 3.5 (88.9) | 5.0 (127) | | 2500 (172) | 10000 (690) |
| 1/2 (12.7) | 0.41 (10.3) | 4.5 (114) | 6.0 (152) | | 2000 (137) | 8000 (551) |
| 3/4 (19.0) | 0.63 (15.9) | 6.0 (152) | 7.5 (190) | | 1500 (103) | 6000 (413) |
| 1 (25.4) | 0.88 (22.2) | 9.0 (229) | 11.3 (287) | | 1000 (68) | 4000 (275) |



idealPower

## Temperature and pressure curve




## Test

Each E-JOE PTFE lined hose assembly is factory tested with pure water at 1.5 times the maximum working pressure.

## Cleaning and packaging

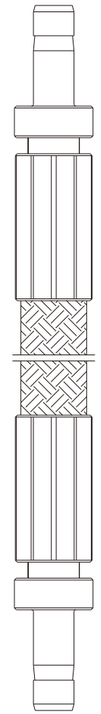
E-JOE's PTFE lined hose components are cleaned during production in accordance with E-JOE cleaning standards (FC-01). Shorter hoses are packaged in cartons with appropriate protective materials, and longer hoses are coiled and boxed or crated.







## PTFE lined hose standard components



Tube Adapters

| Nominal hose size | Tubing Size | Full length | Basic ordering model | Minimum inner diameter | Maximum dimensions |
|---|---|---|---|---|---|
| | in. | in. (mm) | | in. (mm) | in. (mm) |
| 1/4 | 1/4 | 6.0 (153) | SS-934-FT4-F6 | 0.16 (4.1) | 0.54 (13.7) |
| | | 12.0 (305) | SS-934-FT4-F12 | | |
| | | 18.0 (458) | SS-934-FT4-F18 | | |
| | | 24.0 (610) | SS-934-FT4-F24 | | |
| | | 36.0 (915) | SS-934-FT4-F36 | | |
| | | 48.0 (1220) | SS-934-FT4-F48 | | |
| | | 60.0 (1530) | SS-934-FT4-F60 | | |
| | | 72.0 (1829) | SS-934-FT4-F72 | | |
| | | 120.0 (3050) | SS-934-FT4-F120 | | |
| 3/8 | 3/8 | 12.0 (305) | SS-936-FT6-F12 | 0.27 (6.9) | 0.73 (18.5) |
| | | 18.0 (458) | SS-936-FT6-F18 | | |
| | | 24.0 (610) | SS-936-FT6-F24 | | |
| | | 36.0 (915) | SS-936-FT6-F36 | | |
| | | 48.0 (1220) | SS-936-FT6-F48 | | |
| | | 60.0 (1530) | SS-936-FT6-F60 | | |
| | | 72.0 (1829) | SS-936-FT6-F72 | | |
| | | 96.0 (2439) | SS-936-FT6-F96 | | |
| | | 120.0 (3050) | SS-936-FT6-F120 | | |
| 1/2 | 1/2 | 12.0 (305) | SS-938-FT8-F12 | 0.36 (9.1) | 0.86 (21.8) |
| | | 24.0 (610) | SS-938-FT8-F24 | | |
| | | 36.0 (915) | SS-938-FT8-F36 | | |
| | | 48.0 (1220) | SS-938-FT8-F48 | | |
| | | 60.0 (1530) | SS-938-FT8-F60 | | |
| | | 72.0 (1829) | SS-938-FT8-F72 | | |
| 3/4 | 3/4 | 24.0 (610) | SS-9312-FT12-F24 | 0.53 (13.5) | 1.04 (26.4) |
| | | 36.0 (915) | SS-9312-FT12-F36 | | |
| 1 | 1 | 36.0 (915) | SS-9316-FT16-F36 | 0.80 (20.3) | 1.36 (34.5) |
| | | 48.0 (1220) | SS-9316-FT16-F48 | | |
| in. | mm | in. (mm) | —— | in. (mm) | in. (mm) |
| 1/4 | 6 | 12.0 (305) | SS-934-MT6-F12 | 0.16 (4.1) | 0.54 (13.7) |
| | | 24.0 (610) | SS-934-MT6-F24 | | |
| | | 36.0 (915) | SS-934-MT6-F36 | | |
| 1/2 | 12 | 24.0 (610) | SS-938-MT12-F24 | 0.33 (8.4) | 0.86 (21.8) |
| | | 36.0 (915) | SS-938-MT12-F36 | | |

1. Dimensions are for reference only and may vary. Please contact an E-JOE authorized agent for other dimensions.
2. The types and sizes listed are standard. Please refer to the ordering information for other types and sizes.

## Optional Parts

Explosion-proof safety rope

- 304 stainless steel wire rope fastening.
- Adding explosion-proof safety rope does not change the technical data of the hose.
- When the hose breaks accidentally, the explosion-proof safety rope can effectively prevent the potential harm caused by the strong impact force causing the hose body to swing.

Protection spring

- 302 stainless steel
- Adding a protective spring does not change the technical data of the hose
- The protective spring covers the entire hose to prevent kinking and abrasion.

## Model Description

SS – 934 – FJ6FT6 – M1000 – SPF2

| Termination material | |
|---|---|
| SS | 316 Stainless Steel |
| S4 | 304 Stainless Steel |
| INC | Alloy 600 |
| C20 | TAlloy 20 |
| HC | Alloy C-276 |
| TI | Titanium |
| 904L | 904L Stainless Steel |

| Hose Series | |
|---|---|
| 93 | PTFE hose (high pressure) |

| Nominal hose size | |
|---|---|
| 4 | 1/4" |
| 6 | 3/8" |
| 8 | 1/2" |
| 12 | 3/4" |
| 16 | 1" |

| Port 1 Connection Type | |
|---|---|
| FN | NPT Female Thread |
| N | NPT Male Thread |
| FRT | BSPT Female Thread |
| RT | BSPT male Thread |
| FMS | Metric female thread (suitable for RG gasket) |
| MS | Metric male thread (suitable for RG gasket) |
| FJ | Fractional tube fittings |
| MJ | Metric Tube Fittings |
| FT | Fractional Tube Adapters |
| MT | Metric Tube Adapters |
| AN | 37° flared male thread connector |
| SAN | 37° flared female thread swivel joint |
| SMS | Metric female thread swivel joint (compatible with RG gasket) |
| SNS | NPT male swivel |
| SRT | BSPT Male Thread Swivel |
| SRG | BSPP female thread swivel joint (suitable for RG gasket) |

| Port 1 Connection Size | |
|---|---|
| 4 | 1/4" |
| 6 | 3/8" or 6 mm |
| 8 | 1/2" or 8 mm |
| 10 | 5/8" or 10 mm |
| 12 | 3/4" or 12 mm |
| 14 | M14 x 1.5 |
| 16 | 1" or 16 mm |
| 18 | M18 x 1.5 |
| 20 | M20 x 1.5 |

| Port 2 Connection Type and Size | |
|---|---|
| | Same as port 1 |
| Same identification method as port 1 | |

| Full length | |
|---|---|
| SP | Protection spring |
| SK | Explosion-proof safety rope |
| FXX | XX in. |
| MXX | XX mm |

| Optional Parts | |
|---|---|
| | FC–01 |
| F2 | FC–02 |

Note: "Model Description" is used to explain the composition rules of E-JOE product models. It is not applicable to t-he specific selection of products and cannot be combi-ned at will. If you have any questions, please contact E -JOE authorized agents.

Example: SS-934-SAN4-M500
SS: End material is 316 stainless steel
934: 93 series, tube ID is 3/16"
SAN4: Port 1 connection type and size is 1/4" 37° flared female swivel
Port 2 connection type and size is 1/4" 37° flared female swivel
M500: Overall length is 500 mm

Port 1 and port 2 are arranged in the following order and rules:
1. Metric double ferrule-Imperial double ferrule-Metric tube fitting-Imperial tube fitting-NPT thread-BSPT thread-BSPP thread-SAE/MS parallel thread-37° flare-other
2. Arrange in descending order for the same type.
3. Arrange in the order of female first and male later for the same type and size.



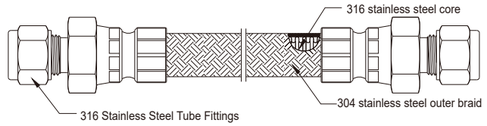


# Metal flexible hose

## 94H /94M Series

## Characteristic

- Inner tube and fitting material: 316 stainless steel
- Outer braid material: 304 stainless steel (316 also available)
- Can be used in vacuum and positive pressure systems
- Working pressure up to: 213 bar (3100 psig)
- Nominal hose size: 1/4" to 2"
- End connections:
  1/4 to 2 pipe thread
  1/4" to 2" and 6mm to 50mm double ferrule
  6m to 50mm double ferrule
- Working temperature: -200°C to 426°C (-325°F to 800°F)
- Hose and fittings are welded for a secure and reliable fit
- Standard and custom lengths available




## Hose technical parameters (94H series)

| Nominal hose size | Inner diameter | Minimum bending radius | | Temperature range °F (°C) | Working Pressure at 70°F (20°C) | Minimum Burst Pressure at 70°F (20°C) | Hose Series |
|---|---|---|---|---|---|---|---|
| | | Static | Dynamic | | | | |
| | in. (mm) | in. (mm) | in. (mm) | °F (°C) | psig (bar) | psig (bar) | |
| 1/4 (6.4) | 0.28 (7.1) | 2.25 (57.2) | 10.0 (254) | -325 至 800 (-200 至 426) | 3100 (213) | 12400 (854) | 94H4 |
| 3/8 (9.7) | 0.42 (10.6) | 3.00 (76.2) | 12.0 (305) | | 2000 (137) | 8000 (551) | 94H6 |
| 1/2 (12.7) | 0.53 (13.5) | 4.50 (114) | 16.0 (406) | | 1800 (124) | 7200 (496) | 94H8 |
| 3/4 (19.0) | 0.80 (20.3) | 6.00 (152) | 17.0 (432) | | 1500 (103) | 6000 (413) | 94H12 |
| 1 (25.4) | 1.03 (26.0) | 6.75 (171) | 20.0 (508) | | 1200 (82.6) | 4800 (330) | 94H16 |
| 1 1/4 (31.8) | 1.30 (33.0) | 8.86 (225) | 23.0 (584) | | 950 (65.4) | 3800 (261) | 94H20 |
| 1 1/2 (38.1) | 1.53 (38.9) | 11.0 (280) | 26.0 (660) | | 900 (62.0) | 3600 (248) | 94H24 |
| 2 (50.8) | 2.05 (52.1) | 13.8 (350) | 32.0 (813) | | 500 (34.4) | 2000 (137) | 94H32 |

## Hose technical parameters (94M series)

| Nominal hose size | Inner diameter | Minimum bending radius | | | | Temperature range | Working Pressure at 70°F (20°C) | Minimum Burst Pressure at 70°F (20°C) | Hose Series |
|---|---|---|---|---|---|---|---|---|---|
| | | Rotating waves | | Ring Wave | | | | | |
| | | Static | Dynamic | Static | Dynamic | | | | |
| | in. (mm) | in. (mm) | in. (mm) | in. (mm) | in. (mm) | °F(°C) | psig (bar) | psig (bar) | |
| 1/4 (6.4) | 0.25 (6.4) | 1.38 (35) | 8.66 (220) | 0.79 (20) | 4.33 (110) | -325 至 800 (-200 至 426) | 1600 (110) | 6400 (440) | 94M4 |
| 3/8 (9.7) | 0.38 (9.5) | 2.36 (60) | 10.40 (264) | 0.98 (25) | 5.91 (150) | | 1470 (101) | 6000 (413) | 94M6 |
| 1/2 (12.7) | 0.50 (12.7) | 2.95 (75) | 11.89 (302) | 1.18 (30) | 4.88 (124) | | 1110 (76.4) | 4500 (310) | 94M8 |
| 3/4 (19.0) | 0.75 (19.0) | 3.54 (90) | 13.58 (345) | 1.50 (38) | 6.65 (169) | | 860 (59.2) | 3500 (241) | 94M12 |
| 1 (25.4) | 1.00 (25.4) | 4.13 (105) | 15.00 (381) | 1.77 (45) | 7.68 (195) | | 680 (46.8) | 2680 (184) | 94M16 |
| 1 1/4 (31.8) | 1.25 (31.8) | 4.72 (120) | 16.22 (412) | | | | 680 (46.8) | 2600 (179) | 94M20 |
| 1 1/2 (38.1) | 1.50 (38.1) | 5.51 (140) | 16.89 (429) | | | | 520 (35.8) | 2200 (151) | 94M24 |
| 2 (50.8) | 2.00 (50.8) | 6.30 (160) | 18.43 (468) | | | | 450 (31.0) | 1800 (124) | 94M32 |

## Test

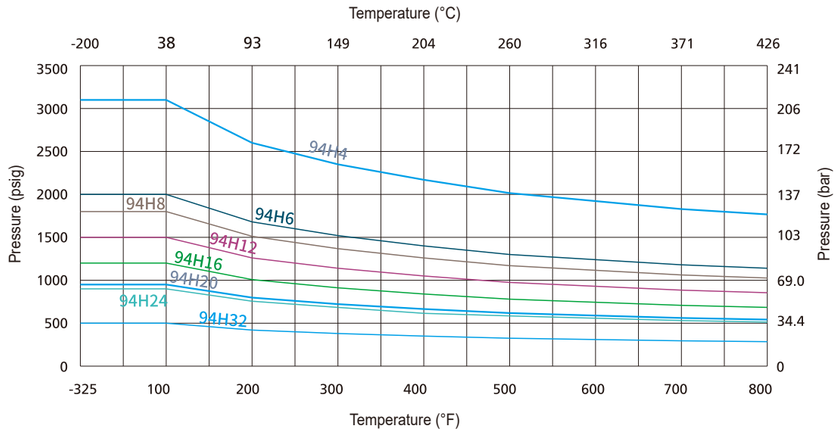
Each E-JOE metal flexible hose assembly is factory tested with helium to a maximum leak rate of 1x10°std cm³/s.

## Cleaning and packaging

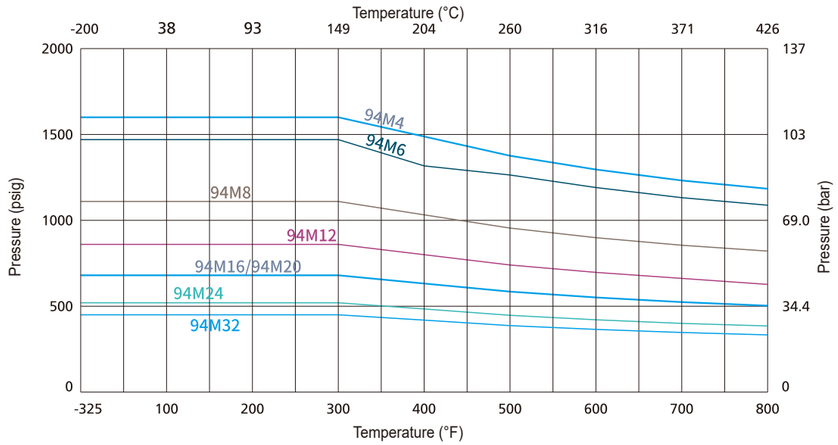
E-JOE metal flexible hose components are cleaned during production according to E-JOE cleaning standards (FC-01).
Shorter hoses are packaged in cartons with appropriate protective materials, and longer hoses are coiled and packaged in boxes or crates.

## Temperature and pressure curve

### 94H Series




### 94M Series

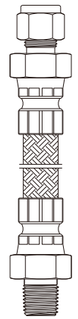



The peak value of pressure fluctuation, vibration or pulse in the system cannot exceed 50% of the rated working pressure of the selected hose.



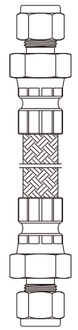


## Standard Components



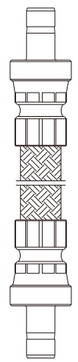
Tube Fittings to NPT Male End Connections

| Nominal hose size | Connector size | Thread size | Hose Series | Full length | Basic ordering model | Minimum inner diameter | Maximum dimensions |
|---|---|---|---|---|---|---|---|
| | in. | in. | | in. (mm) | | in. (mm) | in. (mm) |
| 1/4 | 1/4 | 1/4 | 94H4 | 12 (305) | SS-94H4-FJ4N4-F12 | 0.19 (4.8) | 0.94 (23.8) |
| | | | 94M4 | 36 (914) | SS-94M4-FJ4N4-F36 | 0.19 (4.8) | 0.87 (22.0) |
| 3/8 | 3/8 | 3/8 | 94H6 | 18 (457) | SS-94H6-FJ6N6-F18 | 0.28 (7.1) | 1.09 (27.7) |
| | | | 94M6 | 36 (914) | SS-94M6-FJ6N6-F36 | 0.28 (7.1) | 1.01 (25.7) |
| 1/2 | 1/2 | 1/2 | 94H8 | 18 (457) | SS-94H8-FJ8N8-F18 | 0.41 (10.4) | 1.23 (31.3) |
| | | | 94M8 | 48 (1220) | SS-94M8-FJ8N8-F48 | 0.41 (10.4) | 1.23 (31.3) |
| 3/4 | 3/4 | 3/4 | 94H12 | 18 (457) | SS-94H12-FJ12N12-F18 | 0.66 (16.0) | 1.74 (44.2) |
| | | | 94M12 | 48 (1220) | SS-94M12-FJ12N12-F48 | 0.66 (16.0) | 1.59 (40.5) |
| 1 | 1 | 1 | 94H16 | 24 (610) | SS-94H16-FJ16N16-F24 | 0.88 (22.4) | 1.82 (46.3) |



Tube Fitting End Connections

| Nominal hose size | Connector size | Hose Series | Full length | Basic ordering model | Minimum inner diameter | Maximum dimensions |
|---|---|---|---|---|---|---|
| | in. | | in. (mm) | | in. (mm) | in. (mm) |
| 1/4 | 1/4 | 94H4 | 12 (305) | SS-94H4-FJ4-F12 | 0.19 (4.8) | 0.94 (23.8) |
| | | 94M4 | 36 (914) | SS-94M4-FJ4-F36 | 0.19 (4.8) | 0.87 (22.0) |
| 3/8 | 3/8 | 94H6 | 18 (457) | SS-94H6-FJ6-F18 | 0.28 (7.1) | 1.09 (27.7) |
| | | 94M6 | 36 (914) | SS-94M6-FJ6-F36 | 0.28 (7.1) | 1.01 (25.7) |
| 1/2 | 1/2 | 94H8 | 18 (457) | SS-94H8-FJ8-F18 | 0.41 (10.4) | 1.23 (31.3) |
| | | 94M8 | 48 (1220) | SS-94M8-FJ8-F48 | 0.41 (10.4) | 1.23 (31.3) |
| 3/4 | 3/4 | 94H12 | 18 (457) | SS-94H12-FJ12-F18 | 0.66 (16.0) | 1.74 (44.2) |
| | | 94M12 | 48 (1220) | SS-94M12-FJ12-F48 | 0.66 (16.0) | 1.59 (40.5) |
| 1 | 1 | 94H16 | 24 (610) | SS-94H16-FJ16-F24 | 0.88 (22.4) | 1.82 (46.3) |



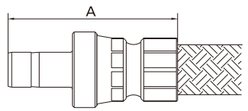
Tube Adapter End Connections

| Nominal hose size | Tubing Size | Hose Series | Full length | Basic ordering model | Minimum inner diameter | Maximum dimensions |
|---|---|---|---|---|---|---|
| | in. | | in. (mm) | | in. (mm) | in. (mm) |
| 1/4 | 1/4 | 94H4 | 12 (305) | SS-94H4-FT4-F12 | 0.16 (4.1) | 0.81 (20.6) |
| | | 94M4 | 36 (914) | SS-94M4-FT4-F36 | 0.16 (4.1) | 0.76 (19.2) |
| 3/8 | 3/8 | 94H6 | 12 (305) | SS-94H6-FT6-F12 | 0.27 (6.9) | 1.01 (25.6) |
| | | 94M6 | 36 (914) | SS-94M6-FT6-F36 | 0.27 (6.9) | 0.91 (23.1) |

1. The dimensions are for reference only and may be subject to change. Please contact an E-JOE authorized agent for other dimensions.
2. The types listed are standard. Please refer to the ordering information for other types.

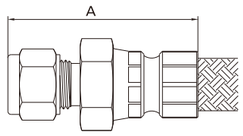
## Termination

### Tube Adapters

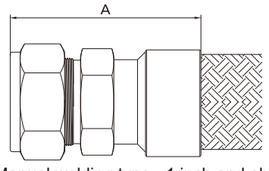



| Tubing Size | Nominal hose size | Termination code | Size | | |
|---|---|---|---|---|---|
| | | | A | Minimum inner diameter | Maximum dimensions |
| in. | | | in. (mm) | | |
| 1/4 | 1/4 | FT4 | 1.76 (44.7) | 0.16 (4.1) | 0.81 (20.6) |
| 3/8 | 3/8 | FT6 | 1.82 (46.2) | 0.27 (6.9) | 1.01 (25.6) |
| 1/2 | 1/2 | FT8 | 2.22 (56.4) | 0.37 (9.4) | 1.23 (31.3) |
| 3/4 | 3/4 | FT12 | 2.35 (59.7) | 0.58 (14.7) | 1.53 (38.8) |
| 1 | 1 | FT16 | 2.69 (68.3) | 0.80 (20.3) | 1.82 (46.3) |
| mm | in. | —— | mm (in.) | | |
| 6 | 1/4 | MT6 | 44.4 (1.75) | 4.1 (0.16) | 20.6 (0.81) |
| 10 | 3/8 | MT10 | 47.0 (1.85) | 7.1 (0.28) | 25.6 (1.01) |
| 12 | 1/2 | MT12 | 57.2 (2.25) | 8.9 (0.35) | 31.3 (1.23) |

### Tube Fittings



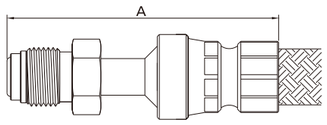

Automatic welding type—1 inch and below




Manual welding type - 1 inch and above

| Connector size | Nominal hose size | Termination code | Size | | |
|---|---|---|---|---|---|
| | | | A | Minimum inner diameter | Maximum dimensions |
| in. | | | in. (mm) | | |
| 1/4 | 1/4 | FJ4 | 1.94 (49.3) | 0.19 (4.8) | 0.94 (23.8) |
| 3/8 | 1/4 | FJ6 | 2.00 (50.8) | 0.28 (7.1) | 0.94 (23.8) |
| 3/8 | 3/8 | FJ6 | 2.02 (51.3) | 0.28 (7.1) | 1.09 (27.7) |
| 1/2 | 1/2 | FJ8 | 2.24 (56.9) | 0.41 (10.4) | 1.23 (31.3) |
| 5/8 | 1/2 | FJ10 | 2.27 (57.7) | 0.50 (12.7) | 1.23 (31.3) |
| 3/4 | 3/4 | FJ12 | 2.35 (59.7) | 0.63 (16.0) | 1.74 (44.2) |
| 1 | 1 | FJ16 | 2.64 (67.1) | 0.88 (22.4) | 1.82 (46.3) |
| 1 1/4 | 1 1/4 | FJ20 | 4.04 (103) | 1.09 (27.7) | 2.23 (58.9) |
| 1 1/2 | 1 1/2 | FJ24 | 4.75 (121) | 1.34 (34.0) | 2.61 (66.3) |
| 2 | 2 | FJ32 | 5.72 (145) | 1.88 (47.8) | 3.48 (88.4) |
| mm | in. | —— | mm (in.) | | |
| 6 | 1/4 | MJ6 | 62.2 (2.45) | 4.8 (0.19) | 20.6 (0.81) |
| 8 | 1/4 | MJ8 | 63.2 (2.49) | 6.4 (0.25) | 20.6 (0.81) |
| 10 | 3/8 | MJ10 | 51.6 (2.03) | 7.9 (0.31) | 31.3 (1.23) |
| 12 | 1/2 | MJ12 | 56.9 (2.24) | 9.7 (0.38) | 38.8 (1.53) |

### Male thread FR metal gasket
### Sealing swivel joint




| FR Size | Nominal hose size | Termination code | Size | | |
|---|---|---|---|---|---|
| | | | A | Minimum inner diameter | Maximum dimensions |
| in. | | | in. (mm) | | |
| 1/4 | 1/4 | SFR4 | 2.60 (66.0) | 0.18 (4.6) | 0.81 (20.6) |
| 1/2 | 1/2 | SFR8 | 2.83 (71.9) | 0.40 (10.2) | 1.23 (31.3) |
| 3/4 | 3/4 | SFR12 | 4.19 (106) | 0.65 (16.5) | 1.52 (38.7) |
| 1 | 1 | SFR16 | 4.80 (122) | 0.87 (22.1) | 1.53 (38.8) |

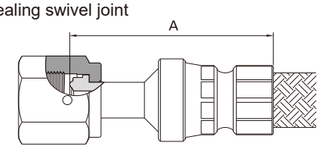






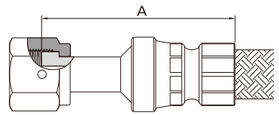
## Termination

### Female thread FR metal gasket
### Sealing swivel joint



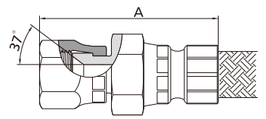

| FR Size | Nominal hose size | Termination code | Size | | |
|---|---|---|---|---|---|
| | | | A | Minimum inner diameter | Maximum dimensions |
| in. | | | in. (mm) | | |
| 1/4 | 1/4 | SFFR4 | 2.00 (50.8) | 0.18 (4.6) | 0.87 (22.1) |
| 1/2 | 1/2 | SFFR8 | 2.16 (54.9) | 0.40 (10.2) | 1.23 (31.3) |
| 3/4 | 3/4 | SFFR12 | 4.19 (106) | 0.65 (16.5) | 1.74 (44.2) |
| 1 | 1 | SFFR16 | 4.80 (122) | 0.87 (22.1) | 2.03 (51.6) |

### Male thread FO
### O-ring sealed swivel joint



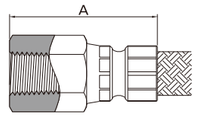

| FO Size | Nominal hose size | Termination code | Size | | |
|---|---|---|---|---|---|
| | | | A | Minimum inner diameter | Maximum dimensions |
| in. | | | in. (mm) | | |
| 1/4 | 1/4 | SFFO4 | 2.11 (53.6) | 0.18 (4.6) | 0.81 (20.6) |
| 1/2 | 1/2 | SFFO8 | 2.14 (54.4) | 0.40 (10.2) | 1.23 (31.3) |

### SAE 37° (JIC) female thread swivel joint



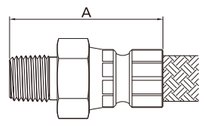

| Joint size | Nominal hose size | Termination code | Size | | |
|---|---|---|---|---|---|
| | | | A | Minimum inner diameter | Maximum dimensions |
| in. | | | in. (mm) | | |
| 1/4 | 1/4 | SAN4 | 1.87 (47.5) | 0.17 (4.3) | 0.81 (20.6) |
| 3/8 | 3/8 | SAN6 | 1.98 (50.3) | 0.28 (7.1) | 1.01 (25.6) |
| 1/2 | 1/2 | SAN8 | 2.25 (57.2) | 0.42 (10.7) | 1.23 (31.3) |

### MPT female thread

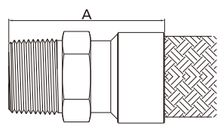



| NPT Size | Nominal hose size | Termination code | Size | | |
|---|---|---|---|---|---|
| | | | A | Minimum inner diameter | Maximum dimensions |
| in. | | | in. (mm) | | |
| 1/4 | 1/4 | FN4 | 1.81 (46.0) | 0.28 (7.1) | 0.94 (23.9) |
| 3/8 | 3/8 | FN6 | 1.87 (47.5) | 0.38 (9.7) | 1.09 (27.7) |
| 1/2 | 1/2 | FN8 | 2.18 (55.4) | 0.47 (11.9) | 1.23 (31.3) |
| 3/4 | 3/4 | FN12 | 2.21 (56.1) | 0.72 (18.3) | 1.74 (44.2) |

### MPT male thread




Automatic welding type—1 inch and below




Manual welding type - 1 inch and above

| NPT Size | Nominal hose size | Termination code | Size | | |
|---|---|---|---|---|---|
| | | | A | Minimum inner diameter | Maximum dimensions |
| in. | | | in. (mm) | | |
| 1/4 | 1/4 | N4 | 1.80 (45.7) | 0.28 (7.1) | 0.94 (23.9) |
| 1/4 | 3/8 | N4 | 1.81 (46.0) | 0.28 (7.1) | 1.09 (27.7) |
| 3/8 | 3/8 | N6 | 1.81 (46.0) | 0.38 (9.7) | 1.09 (27.7) |
| 1/2 | 1/4 | N8 | 1.99 (50.6) | 0.47 (11.9) | 1.02 (25.8) |
| 1/2 | 1/2 | N8 | 2.15 (54.6) | 0.47 (11.9) | 1.23 (31.3) |
| 3/4 | 3/4 | N12 | 2.22 (56.4) | 0.63 (16.0) | 1.74 (44.2) |
| 1 | 1 | N16 | 2.54 (64.5) | 0.88 (22.4) | 1.82 (46.3) |
| 1 1/4 | 1 1/4 | N20 | 3.06 (77.7) | 1.09 (27.7) | 2.03 (51.6) |
| 1 1/2 | 1 1/2 | N24 | 3.72 (94.5) | 1.34 (34.0) | 2.47 (62.6) |
| 2 | 2 | N32 | 4.19 (106) | 1.81 (46.0) | 3.19 (81.0) |

## Optional Parts

Explosion-proof safety rope

- 304 stainless steel wire rope fastening.
- Adding explosion-proof safety rope does not change the technical data of the hose.
- When the hose breaks accidentally, the explosion-proof safety rope can effectively prevent the potential harm caused by the strong impact force causing the hose body to swing.

## Model Description

SS – 94H4 – FJ6 N6 – F36 – R – Z – SK

| Termination material | Series | Nominal hose size | Port 1 Connection Type | Port 1 Connection Size | Port 2 Connection Type and Size | Full length | Waveform | Outer braid material | Optional Parts |
|---|---|---|---|---|---|---|---|---|---|
| SS 316 Stainless Steel | 94M Medium pressure hose | 4 1/4" | MJ Metric Tube Fittings | 3 3/16" | | FXX XX in. | | 304 | SK Explosion-proof safety rope |
| 904L 904L Stainless Steel | 94H High pressure hose | 6 3/8" | FJ Fractional tube fittings | 4 1/4" | | MXX XX mm | | Z 316 | |
| | | 8 1/2" | MT Metric Tube Adapters | 6 3/8" or 6 mm | | | | | |
| | | 12 3/4" | FT Fractional Tube Adapters | 8 1/2" or 8 mm | | | | | |
| | | 16 1" | FN NPT Female Thread | 10 5/8" or 10 mm | | | | | |
| | | 20 1 1/4" | N NPT Male Thread | 12 3/4" or 12 mm | | | | | |
| | | 24 1 1/2" | FRT BSPT Female Thread | 14 M14 x 1.5 | | | | | |
| | | 32 2" | RT BSPT male Thread | 16 1" or 16 mm | | | | | |
| | | | FMS Metric female thread (suitable for RG gasket) | 18 M18 x 1.5 | | | | | |
| | | | MS Metric male thread (suitable for RG gasket) | 20 M20 x 1.5 | | | | | |
| | | | SAN 37° flared male thread connector | Same as port 1 | | | | | |
| | | | AN 37° flared female thread connector | Same identification method as port 1 | | | | | |
| | | | SFFR FR female thread swivel joint | | | | | | |
| | | | SFR FR male thread swivel joint | | | | | | |

| Waveform |
|---|
| Spiral Wave |
| R Ring waveform (only for 94M series) |

Note: "Model Description" is used to explain the composition rules of E-JOE product models. It is not applicable to t-he specific selection of products and cannot be combi-ned at will. If you have any questions, please contact E-JOE.

Example: SS-94H4-FT6-M710
SS: End material is 316 stainless steel
934: 94H series, tube ID is 1/4"
SAN4: Port 1 connection type and size is 3/8" tube adapter
Port 2 connection type and size is 3/8" tube adapter
M500: Overall length is 710 mm

Port 1 and port 2 are arranged in the following order and rules:
1. Metric double ferrule-British double ferrule-Metric tube fitting -British tube fitting-NPT thread-BSPT thread-BSPP thread-SAE/MS parallel thread-37° flare-other
2. Arrange in descending order for the same type.
3. Arrange in the order of female first and male later for the same type and size.







# Thermoplastic hose
## 95 Series

## Characteristic

- Polyurethane outer sheath: oil, water and abrasion resistant
- Reinforcement: high strength double-layer synthetic fiber braid
- Inner tube: nylon
- Working pressure up to: 345 bar (5000 psig)
- Nominal hose size: 3/16" to 1"
- Working temperature: -40°C to 93°C (-40°F to 200°F)
- End connections: 1/4 to 1 pipe thread, 1/4" to 1" and 6mm to 22 mm dual ferrule
- End materials: stainless copper, brass and carbon steel
- Custom lengths available




## Technical Data

Thermoplastic Hydraulic Hose (SAE 100R7)

| Nominal hose size | Hose Series | Minimum bending radius | Hose inner diameter | Temperature range | Working Pressure at 70°F (20°C) | Minimum Burst Pressure at 70°F (20°C) | Specification |
|---|---|---|---|---|---|---|---|
| | | in. (mm) | in. (mm) | °F (°C) | psig (bar) | psig (bar) | |
| 3/16 (4.8) | 953 | 1.58 (40) | 0.19 (4.8) | -40 至 200 (-40 至 93) | 3000 (207) | 12000 (828) | SAE J517 100R7 |
| 1/4 (6.4) | 954 | 1.97 (50) | 0.25 (6.4) | | 2750 (189) | 11000 (758) | |
| 5/16 (8.0) | 955 | 2.36 (60) | 0.31 (7.9) | | 2500 (173) | 10000 (690) | |
| 3/8 (9.6) | 956 | 2.95 (75) | 0.38 (9.8) | | 2250 (155) | 9000 (620) | |
| 1/2 (12.7) | 958 | 3.74 (95) | 0.50 (12.7) | | 2000 (137) | 8000 (551) | |

Thermoplastic Hydraulic Hose (SAE 100R8)

| Nominal hose size | Hose Series | Minimum bending radius | Hose inner diameter | Temperature range | Working Pressure at 70°F (20°C) | Minimum Burst Pressure at 70°F (20°C) | Specification |
|---|---|---|---|---|---|---|---|
| | | in. (mm) | in. (mm) | °F (°C) | psig (bar) | psig (bar) | |
| 3/16 (4.8) | 953 | 2.00 (50.8) | 0.19 (4.8) | -40 至 200 (-40 至 93) | 5000 (344) | 20000 (1378) | SAE J517 100R8 |
| 1/4 (6.4) | 954 | 2.00 (50.8) | 0.25 (6.4) | | 5000 (344) | 20000 (1378) | |
| 3/8 (9.6) | 956 | 2.50 (63.5) | 0.38 (9.8) | | 4000 (275) | 16000 (1102) | |
| 1/2 (12.7) | 958 | 4.00 (102) | 0.50 (12.7) | | 3500 (241) | 14000 (964) | |
| 3/4 (19.0) | 9512 | 6.50 (165) | 0.75 (19.0) | | 2250 (155) | 9000 (620) | |
| 1 (25.4) | 9516 | 10.0 (254) | 1.00 (25.4) | | 2000 (137) | 8000 (551) | |

## Test

Each E-JOE metal flexible hose assembly is factory tested with helium to a maximum leak rate of 1x10°std $cm^3/s$.

## Cleaning and packaging

E-JOE metal flexible hose components are cleaned during production according to E-JOE cleaning standards (FC-01).
Shorter hoses are packaged in cartons with appropriate protective materials, and longer hoses are coiled and packaged in boxes or crates.

## Optional Parts

Explosion-proof safety rope

- 304 stainless steel wire rope fastening.
- Adding explosion-proof safety rope does not change the technical data of the hose.
- When the hose breaks accidentally, the explosion-proof safety rope can effectively prevent the potential harm caused by the strong impact force causing the hose body to swing.

## Thermoplastic Hose Assemblies



## Model Description

SS – 954 – FJ4 SAN4 – M1000 – R7 – SK

| Termination material | Hose Series | Port 1 Connection Type | Port 1 Connection Size | Port 2 Connection Type and Size | Full length | Hose Code | Optional Parts |
|---|---|---|---|---|---|---|---|

| | |
|---|---|
| SS | 316 Stainless Steel |
| CS | Carbon Steel |
| S4 | 304 Stainless Steel |
| 904L | 904L Stainless Steel |

| | |
|---|---|
| 953 | 3/16" (4.8 mm) |
| 954 | 1/4" (6.4 mm) |
| 955 | 5/16" (7.9 mm) |
| 956 | 3/8" (9.5 mm) |
| 958 | 1/2" (12.7 mm) |

| | |
|---|---|
| MJ | Metric Tube Fittings |
| FJ | Fractional tube fittings |
| MT | Metric Tube Adapters |
| FT | Fractional Tube Adapters |
| N | NPT Male Thread |
| RT | BSPT male Thread |
| SRG | BSPP female thread swivel joint (suitable for RG gasket) |
| FMS | Metric female thread (suitable for RG gasket) |
| MS | Metric male thread (suitable for RG gasket) |
| SMS | Metric female thread swivel joint (compatible with RG gasket) |
| SAN | 37° flared female thread swivel joint |

| | |
|---|---|
| 4 | 1/4" |
| 6 | 3/8" or 6 mm |
| 8 | 1/2" or 8 mm |
| 10 | 5/8" or 10 mm |
| 12 | 3/4" or 12 mm |
| 16 | 1" or 16 mm |

| | |
|---|---|
| | Same as port 1 |
| | Same identification method as port 1 |

| | |
|---|---|
| FXX | XX in. |
| MXX | XX mm |

| | |
|---|---|
| R7 | 100R7 |
| R8 | 100R8 |

| | |
|---|---|
| SK | Explosion-proof safety rope |

Note: "Model Description" is used to explain the composition rules of E-JOE product models. It is not applicable to t-he specific selection of products and cannot be combi-ned at will. If you have any questions, please contact E-JOE authorized agents.

Example: SS-954-FJ4N4-F36-R7
SS: End material is 316 stainless steel
954: 95 series, tube ID is 1/4"
FJ4: Port 1 connection type and size is 1/4" tube fitting
N4: Port 2 connection type and size is 1/4 NPT male thread
F36: Overall length 36"
R7: SAE J517 100R7

Port 1 and port 2 are arranged in the following order and rules:
1. Metric double ferrule-British double ferrule-Metric tube fitting -British tube fitting-NPT thread-BSPT thread-BSPP thread-SAE/MS parallel thread-37° flare-other
2. Arrange in descending order for the same type.
3. Arrange in the order of female first and male later for the same type and size.



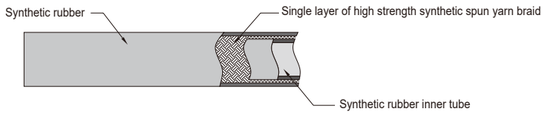




# Multi-purpose push-on hose 96 Series

## Characteristic

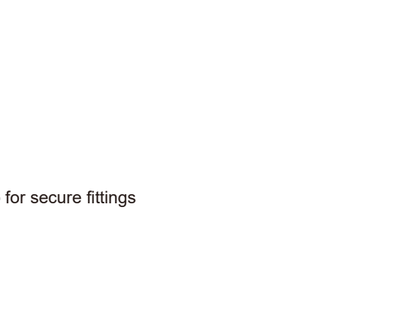
- Outer jacket: Weather, abrasion and oil resistant synthetic rubber
- Reinforcement: Single high strength synthetic spun braid for maximum grip for secure fittings
- Inner tube: Highly oil resistant rubber
- Hose colors: Blue, black, green, gray, red and yellow
- Working pressure up to: 20.7 bar (300 psig)
- Nominal hose sizes: 1/4" to 3/4
- Working temperature: -40°C to 93°C (-40°F to 200°F)
- End materials: Stainless steel and brass
- End fittings are reusable
- Custom lengths available




## Hose technical parameters

| Nominal hose size | Inner diameter | Minimum bending radius | Temperature range °F (°C) | Working Pressure at 70°F (20°C) | Minimum Burst Pressure at 70°F (20°C) |
|---|---|---|---|---|---|
| | in. (mm) | in. (mm) | °F(°C) | psig (bar) | psig (bar) |
| 1/4 (6.4) | 0.26 (6.6) | 2.50 (63.5) | -40 至 200 (-40 至 93) | 300 (20.6) | 1200 (82.7) |
| 3/8 (9.5) | 0.39 (9.9) | 3.00 (76.2) | | | |
| 1/2 (12.7) | 0.50 (12.7) | 5.00 (127) | | | |
| 3/4 (19.0) | 0.76 (19.3) | 7.00 (178) | | | |

## Temperature and pressure curve




## Test

Each E-JOE metal flexible hose assembly is factory tested with helium to a maximum leak rate of 1x10°std $cm^3/s$.

## Cleaning and packaging

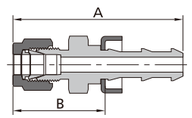
E-JOE metal flexible hose components are cleaned during production according to E-JOE cleaning standards (FC-01).
Shorter hoses are packaged in cartons with appropriate protective materials, and longer hoses are coiled and packaged in boxes or crates.

## Notice:

- Do not reuse hose.

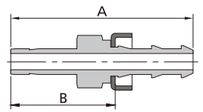
## Multi-purpose push-fit hose end connections

### Tube Fittings



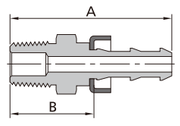

| Nominal hose size | Connector size | Basic ordering model | Size,in.(mm) | | | |
|---|---|---|---|---|---|---|
| | | | A | B | Minimum inner diameter | Maximum dimensions |
| | in. | | | | | |
| 1/4 | 1/4 | -964-FJ4 | 1.97 (50.0) | 1.21 (30.7) | 0.16 (4.1) | 0.67 (17.0) |
| 3/8 | 3/8 | -966-FJ6 | 2.11 (53.6) | 1.24 (31.5) | 0.27 (6.9) | 0.87 (22.1) |
| 1/2 | 1/2 | -968-FJ8 | 2.47 (62.7) | 1.42 (36.1) | 0.37 (9.5) | 1.02 (25.8) |

### Tube Adapters



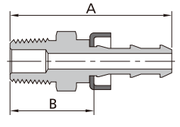

| Nominal hose size | Tubing size | Basic ordering model | Size,in.(mm) | | | |
|---|---|---|---|---|---|---|
| | | | A | B | Minimum inner diameter | Maximum dimensions |
| | in. | | | | | |
| 1/4 | 1/4 | -964-FT4 | 1.93 (49.0) | 1.17 (29.7) | 0.15 (3.8) | 0.67 (17.0) |
| 3/8 | 3/8 | -966-FT6 | 2.03 (51.6) | 1.16 (29.5) | 0.24 (6.1) | 0.83 (21.1) |
| 1/2 | 1/2 | -968-FT8 | 2.47 (62.7) | 1.42 (36.1) | 0.34 (8.7) | 0.98 (24.9) |
| 3/4 | 3/4 | -9612-FT12 | 3.14 (79.8) | 1.48 (37.6) | 0.57 (14.5) | 1.23 (31.3) |
| in. | mm | —— | mm (in.) | | | |
| 1/4 | 6 | -964-MT6 | 49.0 (1.93) | 29.7 (1.17) | 3.8 (0.15) | 17.0 (0.67) |
| 1/4 | 8 | -964-MT8 | 48.8 (1.92) | 29.5 (1.16) | 4.1 (0.16) | 17.0 (0.67) |
| 3/8 | 8 | -966-MT8 | 52.1 (2.05) | 30.0 (1.18) | 5.6 (0.22) | 21.1 (0.83) |
| 3/8 | 10 | -966-MT10 | 51.6 (2.03) | 29.5 (1.16) | 6.9 (0.27) | 21.1 (0.83) |
| 1/2 | 12 | -968-MT12 | 62.7 (2.47) | 36.1 (1.42) | 8.1 (0.32) | 24.9 (0.98) |
| 3/4 | 18 | -9612-MT18 | 79.8 (3.14) | 37.3 (1.47) | 8.6 (0.34) | 31.3 (1.23) |

### NPT male thread




| Nominal hose size | Thread size | Basic ordering model | Size,in.(mm) | | | |
|---|---|---|---|---|---|---|
| | | | A | B | Minimum inner diameter | Maximum dimensions |
| 1/4 | 1/4 | -964-N4 | 1.68 (42.7) | 0.92 (23.4) | 0.16 (4.1) | 0.67 (17.0) |
| 3/8 | 1/4 | -966-N4 | 1.80 (45.7) | 0.93 (23.6) | 0.27 (6.9) | 0.83 (21.1) |
| 3/8 | 3/8 | -966-N6 | 1.80 (45.7) | 0.93 (23.6) | 0.27 (6.9) | 0.83 (21.1) |
| 1/2 | 1/2 | -968-N8 | 2.19 (55.6) | 1.14 (29.0) | 0.37 (9.5) | 1.02 (25.9) |
| 3/4 | 3/4 | -9612-N12 | 2.81 (71.4) | 1.14 (29.0) | 0.61 (15.6) | 1.31 (33.3) |

### BSPT male thread



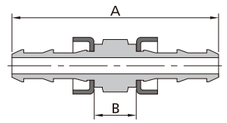

| Nominal hose size | Thread size | Basic ordering model | Size,in.(mm) | | | |
|---|---|---|---|---|---|---|
| | | | A | B | Minimum inner diameter | Maximum dimensions |
| 1/4 | 1/4 | -964-RT4 | 1.68 (42.7) | 0.92 (23.4) | 0.16 (4.1) | 0.67 (17.0) |
| 3/8 | 1/4 | -966-RT4 | 1.80 (45.7) | 0.93 (23.6) | 0.27 (6.9) | 0.83 (21.1) |
| 3/8 | 3/8 | -966-RT6 | 1.80 (45.7) | 0.93 (23.6) | 0.27 (6.9) | 0.83 (21.1) |
| 1/2 | 1/2 | -968-RT8 | 2.19 (55.6) | 1.14 (29.0) | 0.37 (9.5) | 1.02 (25.9) |
| 3/4 | 3/4 | -9612-RT12 | 2.81 (71.4) | 1.14 (29.0) | 0.61 (15.6) | 1.31 (33.3) |







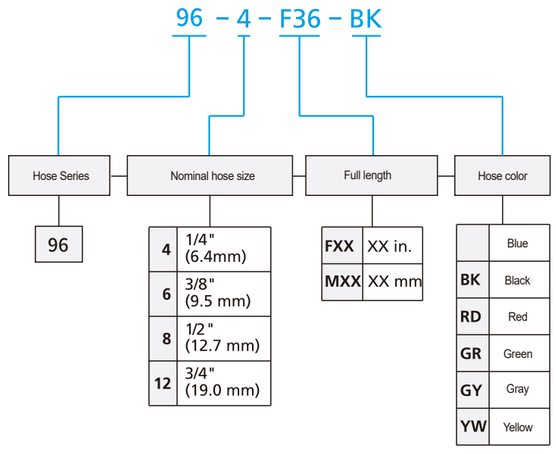
### Straight connector




| Nominal hose size | Basic ordering model | Size,in.(mm) | | | |
|---|---|---|---|---|---|
| | | A | B | Minimum inner diameter | Maximum dimensions |
| 1/4 | -964-4 | 2.07 (52.6) | 0.43 (11.4) | 0.16 (4.1) | 0.67 (17.0) |
| 3/8 | -966-6 | 2.25 (57.2) | 0.40 (12) | 0.27 (6.9) | 0.83 (21.1) |
| 1/2 | -968-8 | 2.61 (69.8) | 0.40 (14) | 0.37 (9.5) | 0.96 (24.5) |
| 3/4 | -9612-12 | 3.85 (97.8) | 0.47 (12.0) | 0.61 (15.6) | 1.23 (31.3) |

## Multi-Purpose Push-On Hose Custom Assemblies






Example: 96-8-F60-BK
96: Hose series
8: Nominal hose size 1/2"
F60: Total length 60"
BK: Hose color black

Note: "Model Description" is used to explain the composition rules of E-JOE product models. It is not applicable to the county-level selection of products and cannot be combined at will. If you have any questions, please contact E-JOE or an authorized agent.

# Multi-Purpose Push-On Hose Custom Assemblies

## Model Description

SS – 964 – FT4 – F36 – BK



| Termination material | Hose Series | Port 1 Connection Type | Port 1 Connection Size | Port 2 Connection Type and Size | Full length | Hose color |
|---|---|---|---|---|---|---|
| SS 316 Stainless Steel | 964 1/4" (6.4 mm) | MJ Metric Tube Fittings | 4 1/4" | Same as port 1 | FXX XX in. | Blue |
| B Brass | 966 3/8" (9.5 mm) | FJ Fractional tube fittings | 6 3/8" or 6 mm | Same as port 1 | MXX XX mm | Black BK |
| S4 304 Stainless Steel | 968 1/2" (12.7 mm) | MT Metric Tubing Conversions | 8 1/2" or 8 mm | | | Red RD |
| 904L 904L Stainless Steel | 9612 3/4" (19.0 mm) | FT Fractional Tube Adapters | 10 10 mm | | | Green GR |
| | | N NPT male thread | 12 3/4" or 12 mm | | | Gray GY |
| | | RT BSPT male thread | 18 18 mm | | | Yellow YW |

Note: "Model Description" is used to explain the composition rules of E-JOE product models. It is not applicable to the county-level selection of products and cannot be combined at will. If you have any questions, please contact E-JOE or an authorized agent.

Example: SS-964-FT4-F28-BK
SS: End material is 316 stainless steel
964: Series, engineering hose size is 1/4"
FT4: Port 1 connection type and size 1/4 tube adapter
Port 2 connection type and size 1/4 tube adapter
F28: Overall length is 28"
BK: Hose color is black

Port 1 and port 2 are arranged in the following order and specifications:
1. Metric double ferrule-British double ferrule-Metric tube fitting-British tube fitting-NPT thread-BSPP thread-BSPT thread-SAE/MS parallel thread-37° flare-Other
2. Arrange in descending order under the same type.
3. Arrange in the order of first female and then male under the same type and size.







# Hose Fittings and Sleeves

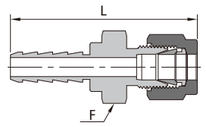
## HC Series

### Characteristic

- For connecting plastic or rubber hoses.
- Operating pressure and temperature ranges are greater than those of the connected hoses.
- Available in stainless steel and brass.
- Barbed shank design holds the tube ID securely.
- Hose connectors are reusable.

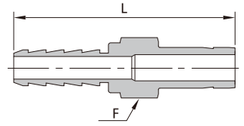
### Hose connector

Tube Fittings



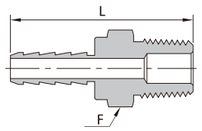

| Hose inner diameter | Connector size | Basic ordering model | Size,in.(mm) | | |
|---|---|---|---|---|---|
| | | | Minimum inner diameter | F | L |
| in. | in. | | in. (mm) | in. | in. (mm) |
| 1/8 | 1/8 | -HC-F2-FJ2 | 0.08 (2.0) | 7/16 | 1.42 (36.1) |
| 1/4 | 1/8 | -HC-F4-FJ2 | 0.09 (2.3) | 7/16 | 1.81 (46.0) |
| | 1/4 | -HC-F4-FJ4 | 0.19 (4.8) | 9/16 | 1.92 (48.8) |
| 3/8 | 1/4 | -HC-F6-FJ4 | 0.19 (4.8) | 9/16 | 1.99 (50.6) |
| | 3/8 | -HC-F6-FJ6 | 0.28 (7.1) | 3/4 | 2.06 (52.3) |
| 1/2 | 1/2 | -HC-F8-FJ8 | 0.38 (9.7) | 7/8 | 2.24 (56.9) |
| mm | mm | —— | mm (in.) | mm | mm (in.) |
| 6 | 6 | -HC-M6-MJ6 | 4.8 (0.19) | 14 | 49.5 (1.95) |
| 8 | 8 | -HC-M8-MJ8 | 6.4 (0.25) | 16 | 49.8 (1.96) |
| | 10 | -HC-M8-MJ10 | 6.4 (0.25) | 18 | 51.6 (2.03) |
| 10 | 10 | -HC-M10-MJ10 | 7.9 (0.31) | 19 | 52.3 (2.06) |
| 12 | 12 | -HC-M12-MJ12 | 9.7 (0.38) | 22 | 57.4 (2.26) |

Tube Adapters



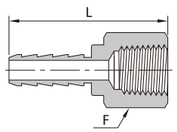

| Hose inner diameter | Connector size | Basic ordering model | Size,in.(mm) | | |
|---|---|---|---|---|---|
| | | | Minimum inner diameter | F | L |
| in. | in. | | in. (mm) | in. | in. (mm) |
| 1/8 | 1/8 | -HC-F2-FT2 | 0.08 (2.0) | 5/16 | 1.37 (34.8) |
| | 1/4 | -HC-F2-FT4 | 0.09 (2.3) | 3/8 | 1.47 (37.3) |
| 1/4 | 1/4 | -HC-F4-FT4 | 0.19 (4.8) | 7/16 | 1.86 (47.2) |
| | 3/8 | -HC-F4-FT6 | 0.19 (4.8) | 7/16 | 1.92 (48.8) |
| 5/16 | 1/4 | -HC-F5-FT4 | 0.19 (4.8) | 7/16 | 1.94 (49.3) |
| 3/8 | 1/4 | -HC-F6-FT4 | 0.19 (4.8) | 9/16 | 1.94 (49.3) |
| | 3/8 | -HC-F6-FT6 | 0.28 (7.1) | 9/16 | 2.00 (50.8) |
| | 1/2 | -HC-F6-FT8 | 0.30 (7.6) | 5/8 | 2.26 (57.4) |
| 1/2 | 3/8 | -HC-F8-FT6 | 0.28 (7.1) | 11/16 | 2.07 (52.6) |
| | 1/2 | -HC-F8-FT8 | 0.38 (9.7) | 11/16 | 2.33 (59.2) |
| 3/4 | 3/4 | -HC-F12-FT12 | 0.63 (16.0) | 13/16 | 2.50 (63.5) |
| 1 | 1 | -HC-F16-FT16 | 0.80 (20.3) | 1 3/8 | 3.03 (77.0) |

NPT male thread




| Hose inner diameter | Thread size | Basic ordering model | Size,in.(mm) | | |
|---|---|---|---|---|---|
| | | | Minimum inner diameter | F | L |
| in. | | | in. (mm) | in. | in. (mm) |
| 1/8 | 1/8 | -HC-F2-N2 | 0.08 (2.0) | 7/16 | 1.08 (27.4) |
| | 1/4 | -HC-F2-N4 | 0.08 (2.0) | 9/16 | 1.26 (32.0) |
| 3/16 | 1/8 | -HC-F3-N2 | 0.13 (3.3) | 7/16 | 1.27 (32.2) |
| | 1/4 | -HC-F3-N4 | 0.13 (3.3) | 9/16 | 1.45 (36.8) |
| 1/4 | 1/8 | -HC-F4-N2 | 0.19 (4.8) | 7/16 | 1.47 (37.3) |
| | 1/4 | -HC-F4-N4 | 0.19 (4.8) | 9/16 | 1.65 (41.9) |
| | 3/8 | -HC-F4-N6 | 0.19 (4.8) | 11/16 | 1.66 (42.2) |
| | 1/2 | -HC-F4-N8 | 0.19 (4.8) | 7/8 | 1.85 (47.0) |
| 5/16 | 1/8 | -HC-F5-N2 | 0.19 (4.8) | 7/16 | 1.55 (39.4) |
| | 1/4 | -HC-F5-N4 | 0.19 (4.8) | 9/16 | 1.73 (43.9) |
| | 3/8 | -HC-F5-N6 | 0.19 (4.8) | 11/16 | 1.74 (44.2) |
| | 1/2 | -HC-F5-N8 | 0.19 (4.8) | 7/8 | 1.96 (49.8) |
| 3/8 | 1/4 | -HC-F6-N4 | 0.30 (7.6) | 9/16 | 1.73 (43.9) |
| | 3/8 | -HC-F6-N6 | 0.30 (7.6) | 11/16 | 1.74 (44.2) |
| | 1/2 | -HC-F6-N8 | 0.30 (7.6) | 7/8 | 1.96 (49.8) |
| 1/2 | 1/4 | -HC-F8-N4 | 0.30 (7.6) | 11/16 | 1.80 (45.7) |
| | 3/8 | -HC-F8-N6 | 0.38 (9.7) | 11/16 | 1.81 (46.0) |
| | 1/2 | -HC-F8-N8 | 0.38 (9.7) | 7/8 | 2.03 (51.6) |
| 5/8 | 3/8 | -HC-F10-N6 | 0.38 (9.7) | 1 1/16 | 1.88 (47.8) |
| | 1/2 | -HC-F10-N8 | 0.47 (11.9) | 1 1/16 | 2.07 (52.6) |
| | 3/4 | -HC-F10-N12 | 0.50 (12.7) | 1 1/16 | 2.07 (52.6) |
| 3/4 | 1/2 | -HC-F12-N8 | 0.47 (11.9) | 1 1/16 | 2.14 (54.4) |
| | 3/4 | -HC-F12-N12 | 0.63 (16.0) | 1 1/16 | 2.14 (54.4) |
| | 1 | -HC-F12-N16 | 0.63 (16.0) | 1 3/8 | 2.43 (61.7) |
| 1 | 3/4 | -HC-F16-N12 | 0.63 (16.0) | 1 3/8 | 2.38 (60.5) |
| | 1 | -HC-F16-N16 | 0.88 (22.4) | 1 3/8 | 2.57 (65.3) |

NPT female thread



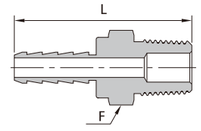

| Hose inner diameter | Thread size | Basic ordering model | Size,in.(mm) | | |
|---|---|---|---|---|---|
| | | | Minimum inner diameter | F | L |
| in. | | | in. (mm) | in. | in. (mm) |
| 1/8 | 1/8 | -HC-F2-FN2 | 0.08 (2.0) | 9/16 | 1.11 (28.2) |
| | 1/4 | -HC-F2-FN4 | 0.08 (2.0) | 3/4 | 1.26 (32.0) |
| 3/16 | 1/8 | -HC-F3-FN2 | 0.13 (3.3) | 9/16 | 1.29 (32.8) |
| | 1/4 | -HC-F3-FN4 | 0.13 (3.3) | 3/4 | 1.44 (36.6) |
| 1/4 | 1/8 | -HC-F4-FN2 | 0.19 (4.8) | 9/16 | 1.47 (37.3) |
| | 1/4 | -HC-F4-FN4 | 0.19 (4.8) | 3/4 | 1.64 (41.7) |
| | 3/8 | -HC-F4-FN6 | 0.19 (4.8) | 7/8 | 1.71 (43.4) |
| 5/16 | 1/4 | -HC-F5-FN4 | 0.19 (4.8) | 3/4 | 1.73 (43.9) |
| | 3/8 | -HC-F5-FN6 | 0.19 (4.8) | 7/8 | 1.82 (46.2) |
| 3/8 | 1/4 | -HC-F6-FN4 | 0.30 (7.6) | 3/4 | 1.69 (42.9) |
| | 3/8 | -HC-F6-FN6 | 0.30 (7.6) | 7/8 | 1.78 (45.2) |
| | 1/2 | -HC-F6-FN8 | 0.30 (7.6) | 1 1/16 | 2.03 (51.6) |
| 1/2 | 1/2 | -HC-F8-FN8 | 0.38 (9.7) | 1 1/16 | 2.13 (54.1) |





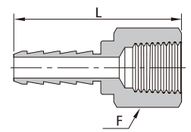


BSPT male thread



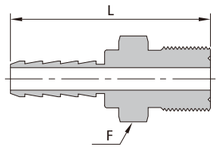

| Hose inner diameter | Thread size | Basic ordering model | Size,in.(mm) | | |
|---|---|---|---|---|---|
| | | | Minimum inner diameter | F | L |
| in. | | | in. (mm) | in. | in. (mm) |
| 1/8 | 1/8 | -HC-F2-RT2 | 0.08 (2.0) | 7/16 | 1.28 (32.5) |
| | 1/4 | -HC-F2-RT4 | 0.08 (2.0) | 9/16 | 1.40 (35.5) |
| 3/16 | 1/8 | -HC-F3-RT2 | 0.13 (3.3) | 7/16 | 1.40 (35.5) |
| | 1/4 | -HC-F3-RT4 | 0.13 (3.3) | 9/16 | 1.58 (40.1) |
| 1/4 | 1/8 | -HC-F4-RT2 | 0.19 (4.8) | 716 | 1.47 (37.3) |
| | 1/4 | -HC-F4-RT4 | 0.19 (4.8) | 9/16 | 1.65 (41.9) |
| | 3/8 | -HC-F4-RT6 | 0.19 (4.8) | 11/16 | 1.66 (42.2) |
| | 1/2 | -HC-F4-RT8 | 0.19 (4.8) | 7/8 | 1.90 (48.3) |
| 5/16 | 1/8 | -HC-F5-RT2 | 0.19 (4.8) | 7/16 | 1.67 (42.4) |
| | 1/4 | -HC-F5-RT4 | 0.19 (4.8) | 9/16 | 1.86 (47.2) |
| | 3/8 | -HC-F5-RT6 | 0.19 (4.8) | 11/16 | 1.87 (47.5) |
| | 1/2 | -HC-F5-RT8 | 0.19 (4.8) | 7/8 | 2.10 (53.3) |
| 3/8 | 1/4 | -HC-F6-RT4 | 0.30 (7.6) | 9/16 | 1.73 (43.9) |
| | 3/8 | -HC-F6-RT6 | 0.30 (7.6) | 11/16 | 1.74 (44.2) |
| | 1/2 | -HC-F6-RT8 | 0.30 (7.6) | 7/8 | 1.96 (49.8) |
| 1/2 | 1/4 | -HC-F8-RT4 | 0.30 (7.6) | 11/16 | 1.80 (45.7) |
| | 3/8 | -HC-F8-RT6 | 0.38 (9.7) | 11/16 | 1.81 (46.0) |
| | 1/2 | -HC-F8-RT8 | 0.38 (9.7) | 7/8 | 2.03 (51.6) |
| 5/8 | 3/8 | -HC-F10-RT6 | 0.38 (9.7) | 1 1/16 | 1.88 (47.8) |
| | 1/2 | -HC-F10-RT8 | 0.47 (11.9) | 1 1/16 | 2.07 (52.6) |
| | 3/4 | -HC-F10-RT12 | 0.50 (12.7) | 1 1/16 | 2.07 (52.6) |
| 3/4 | 1/2 | -HC-F12-RT8 | 0.47 (11.9) | 1 1/16 | 2.14 (54.4) |
| | 3/4 | -HC-F12-RT12 | 0.63 (16.0) | 1 1/16 | 2.14 (54.4) |
| | 1 | -HC-F12-RT16 | 0.63 (16.0) | 1 3/8 | 2.43 (61.7) |
| 1 | 3/4 | -HC-F16-RT12 | 0.63 (16.0) | 1 3/8 | 2.38 (60.5) |
| | 1 | -HC-F16-RT16 | 0.88 (22.4) | 1 3/8 | 2.57 (65.3) |

BSPT female thread



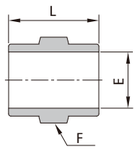

| Hose inner diameter | Thread size | Basic ordering model | Size,in.(mm) | | |
|---|---|---|---|---|---|
| | | | Minimum inner diameter | F | L |
| in. | | | in. (mm) | in. | in. (mm) |
| 1/8 | 1/8 | -HC-F2-FRT2 | 0.08 (2.0) | 9/16 | 1.11 (28.2) |
| | 1/4 | -HC-F2-FRT4 | 0.08 (2.0) | 3/4 | 1.26 (32.0) |
| 3/16 | 1/8 | -HC-F3-FRT2 | 0.13 (3.3) | 9/16 | 1.29 (32.8) |
| | 1/4 | -HC-F3-FRT4 | 0.13 (3.3) | 3/4 | 1.44 (36.6) |
| 1/4 | 1/8 | -HC-F4-FRT2 | 0.19 (4.8) | 9/16 | 1.47 (37.3) |
| | 1/4 | -HC-F4-FRT4 | 0.19 (4.8) | 3/4 | 1.64 (41.7) |
| | 3/8 | -HC-F4-FRT6 | 0.19 (4.8) | 7/8 | 1.71 (43.4) |
| 5/16 | 1/4 | -HC-F5-FRT4 | 0.19 (4.8) | 3/4 | 1.73 (43.9) |
| | 3/8 | -HC-F5-FRT6 | 0.19 (4.8) | 7/8 | 1.82 (46.2) |
| 3/8 | 1/4 | -HC-F6-FRT4 | 0.30 (7.6) | 3/4 | 1.69 (42.9) |
| | 3/8 | -HC-F6-FRT6 | 0.30 (7.6) | 7/8 | 1.78 (45.2) |
| | 1/2 | -HC-F6-FRT8 | 0.30 (7.6) | 1 1/16 | 2.03 (51.6) |
| 1/2 | 1/2 | -HC-F8-FRT8 | 0.38 (9.7) | 1 1/16 | 2.13 (54.1) |

Metric thread




| Hose inner diameter | Thread size | Basic ordering model | Size,in.(mm) | | |
|---|---|---|---|---|---|
| | | | Minimum inner diameter | F | L |
| mm | in. | | in. (mm) | mm | in. (mm) |
| 6 | M10 x 1 | -HC-M6-MS10 | 4.3 (0.17) | 12 | 39.6 (1.54) |
| | M12 x 1.5 | -HC-M6-MS12 | 4.3 (0.17) | 14 | 40.4 (1.59) |
| | M14 x 1.5 | -HC-M6-MS14 | 4.3 (0.17) | 15 | 42.2 (1.66) |
| 8 | M14 x 1.5 | -HC-M8-MS14 | 4.8 (0.19) | 15 | 44.2 (1.74) |
| | M16 x 1.5 | -HC-M8-MS16 | 4.8 (0.19) | 18 | 46.2 (1.82) |
| 10 | M16 x 1.5 | -HC-M10-MS16 | 7.9 (0.31) | 18 | 46.2 (1.82) |
| | M18 x 1.5 | -HC-M10-MS18 | 7.9 (0.31) | 19 | 47.2 (1.86) |
| 12 | M20 x 1.5 | -HC-M12-MS20 | 8.9 (0.35) | 22 | 50.3 (1.98) |
| | M22 x 1.5 | -HC-M12-MS22 | 8.9 (0.35) | 24 | 52.8 (2.08) |

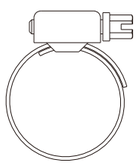
Hose connector sleeve




| Hose inner diameter | Hose outer diameter | Basic ordering model | Size,in.(mm) | | |
|---|---|---|---|---|---|
| | | | E | F | L |
| in. | in. | | | | |
| 1/8 | 1/4 | AL-HC-F2-F4 | 0.26 (6.6) | 3/8 | 0.40 (10.2) |
| 1/4 | 3/8 | AL-HC-F4-F6 | 0.41 (10.4) | 9/16 | 0.79 (20.1) |
| 1/4 | 7/16 | AL-HC-F4-F7 | 0.46 (11.7) | 5/8 | 0.79 (20.1) |
| 1/4 | 1/2 | AL-HC-F4-F8 | 0.52 (13.2) | 11/16 | 0.79 (20.1) |
| 5/16 | 7/16 | AL-HC-F5-F7 | 0.48 (12.2) | 5/8 | 0.87 (22.1) |
| 3/8 | 1/2 | AL-HC-F6-F8 | 0.55 (14.0) | 11/16 | 0.87 (22.1) |
| 3/8 | 9/16 | AL-HC-F6-F9 | 0.61 (15.5) | 3/4 | 0.87 (22.1) |
| 7/16 | 5/8 | AL-HC-F7-F10 | 0.69 (17.5) | 13/16 | 0.94 (23.9) |
| 1/2 | 11/16 | AL-HC-F8-F11 | 0.76 (19.3) | 7/8 | 0.94 (23.9) |
| 3/4 | 1 | AL-HC-F12-F16 | 1.10 (27.9) | 1 1/4 | 1.07 (27.2) |

- Material: Aluminum alloy
- Reusable

## Hose clamp



| Minimum hose outer diameter | Maximum hose outer diameter | Basic ordering model |
|---|---|---|
| mm | mm | |
| 8 | 12 | CP8-12 |
| 10 | 16 | CP10-16 |
| 12 | 20 | CP12-20 |
| 16 | 25 | CP16-25 |
| 20 | 32 | CP20-32 |
| 25 | 40 | CP25-40 |

- Material: 304 stainless steel
- Reusable

1. The types and sizes listed are standard. Please refer to the ordering information for other types and sizes.
2. The sizes are for reference only and may be subject to change. Please contact an E-JOE authorized agent for other sizes.







## Model Description

SS – HC – F4 N4

| Termination material | | Series | Port 1 connection type | | Port 1 Connection Size | | Port 2 connection type | | Port 2 Connection Type and Size | |
|---|---|---|---|---|---|---|---|---|---|---|
| SS | 316 Stainless Steel | HC | F | Imperial | 4 | 1/4" or 4 mm | MJ | Metric Tube Fittings | 4 | 1/4" |
| S4 | 304 Stainless Steel | | M | Metric | 6 | 3/8" or 6 mm | FJ | Fractional tube fittings | 6 | 3/8" or 6 mm |
| A20 | Alloy 20 | | | | 8 | 1/2" or 8 mm | MT | Metric Tube Adapters | 8 | 1/2" or 8 mm |
| INC | Alloy 600 | | | | 10 | 5/8" or 10 mm | FT | Fractional Tube Adapters | 10 | 5/8" or 10 mm |
| HC | Alloy C-276 | | | | 12 | 3/4" or 12 mm | FN | NPT female Thread | 12 | 3/4" or 12 mm |
| TI | Titanium | | | | 16 | 1" or 16 mm | N | NPT male Thread | 16 | 1" or 16 mm |
| AL | Aluminum | | | | | | FRT | BSPT female Thread | 18 | M18 x 1.5 |
| 904L | 904L Stainless Steel | | | | | | RT | BSPT male Thread | 20 | M20 x 1.5 |
| | | | | | | | FMS | Metric female thread (suitable for RG gasket) | | |
| | | | | | | | MS | Metric male thread (suitable for RG gasket) | | |

Example: SS-HC-F4FT6
SS: Connector material is 316 stainless steel
HC: HC series hose connector
F4: Connects to a nominal hose size of 1/4"
FT6: 3/8" tube adapter

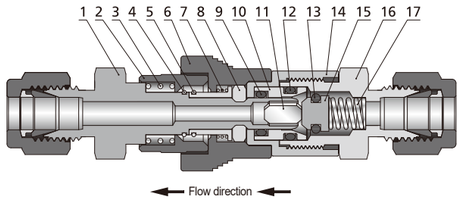
Note: "Model Description" is used to explain the composition rules of E-JOE product models. It is not applicable to the county-level selection of products and cannot be combined at will. If you have any questions, please contact E-JOE or an authorized agent.

# Quick Couplings
# 91C Series

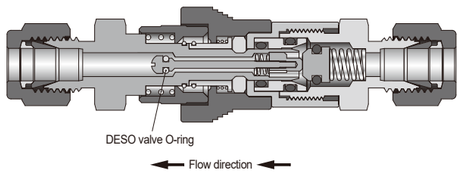
## Feature

- Working pressure up to: 207 bar (3000 psig)
- Material: Stainless steel or brass
- Reliable, leak-free O-ring seal for vacuum and pressure systems
- Interchangeable with other major brands
- Single-end shutoff, double-end shutoff and full flow options available
- Push-in connection for quick and easy operation
- Large-area locking device ensures a more secure grip on the stem
- Stem, body protector options and keyed options available

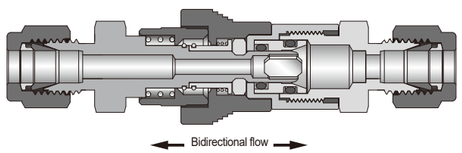
Single-Ended Shutdown (SESO)




Double End Shutoff (DESO) - Red Stem Sleeve




Full flow quick connector




## Structural Materials

| Serial number | Component | Stainless steel | Brass |
|---|---|---|---|
| | | Material Grade/ASTM Specification | |
| 1 | Stem | 316 stainless steel/A479 | Brass C36000/B16 |
| 2 | DESO stem casing | PTFE coated 316L 316 stainless steel/A479 | PTFE coated brass C36000/B16 |
| | SESO stem casing | 316LSS /A479 | Brass C36000/B16 |
| 3 | Spring | 316 stainless steel/A313 | |
| 4 | Shaft retaining ring | 302 stainless steel/A313 | |
| 5 | | | |
| 6 | Pipe body casing | 316L stainless steel/A479 | Brass C36000/B16 |
| 7 | Spring | 316 stainless steel/A313 | |
| 8 | Locking device | 316 Stainless Steel Powder Metal Sprayed with Xylan® | |
| 9 | O-Ring | Fluorocarbon FKM | Nitrile rubber |
| 10 | Sliding Bushing | 316 stainless steel/A479 | Brass C36000/B16 |
| 11 | SESO Stem Inserts | 316 stainless steel/A240 | Brass C26000/B36 |
| 12 | O-Ring | Fluorocarbon FKM | Nitrile rubber |
| 13 | O-Ring | Fluorocarbon FKM | Nitrile rubber |
| 14 | Compression cap | 316L stainless steel/A479 | Brass C36000/B16 |
| 15 | Plug | 316 stainless steel/A479 | Brass C36000/B16 |
| 16 | Tube body | 316 stainless steel/A479 | Brass C36000/B16 |
| 17 | Spring | 316 stainless steel/A313 | |
| 18 | Lubricants | Silicone Grease | |

## Insert depth

| Series | Insert depth | |
|---|---|---|
| | SESO | DESO |
| | in. (mm) | in. (mm) |
| 91C4 | 1.09 (27.7) | 1.15 (29.2) |
| 91C6 | 1.18 (30.0) | 1.30 (33.0) |
| 91C8 | 1.48 (37.6) | 1.68 (42.7) |

To calculate the overall length of the connection, subtract the insertion depth from the overall length of the stem and body.

## Overflow and air inclusion

Spillage - the amount of system fluid that escapes when a quick-release coupling is disconnected (applies only to DESO)

Air inclusion - the amount of air that enters the system and becomes trapped between the tube body and stem when a quick-release coupling is connected (applies only to DESO)

| Series | Overflow $cm^3$ | Air inclusion $cm^3$ |
|---|---|---|
| 91C4 | 0.3 | 0.3 |
| 91C6 | 1.0 | 1.0 |
| 91C8 | 3.0 | 3.0 |







# Pressure-Temperature Ratings

91C (double-end shutoff only) can be operated under pressure at low voltage. For specific parameters, please refer to the data in the table below.

## 91C4 Series

| Material | 316 stainless steel | | | Brass |
|---|---|---|---|---|
| O-Ring Material | Fluorocarbon FKM | EPDM | Perfluorinated FFKM | Nitrile rubber |
| Temperature °C (°F) | Pressure rating bar (psig) | | | |
| | Connect | | | |
| -45 (-50) | — | 206 (3000) | — | — |
| -17 (0) | 206 (3000) | 206 (3000) | 206 (3000) | 137 (2000) |
| -12 (10) | 206 (3000) | 206 (3000) | 206 (3000) | 137 (2000) |
| 15 (60) | 206 (3000) | 206 (3000) | 206 (3000) | 137 (2000) |
| 37 (100) | 206 (3000) | 206 (3000) | 206 (3000) | 137 (2000) |
| 65 (150) | 189 (2750) | 189 (2750) | 189 (2750) | 89.5 (1300) |
| 93 (200) | 158 (2300) | 158 (2300) | 158 (2300) | 48 (700) |
| 121 (250) | 127 (1850) | 127 (1850) | 127 (1850) | 20.6 (300) |
| 148 (300) | 96.4 (1400) | 96.4 (1400) | 96.4 (1400) | — |
| 176 (350) | 65.4 (950) | — | 65.4 (950) | — |
| 204 (400) | 34.4 (500) | — | 34.4 (500) | — |
| 260 (500) | — | — | 10.3 (150) | — |
| | Disconnect, when connecting and disconnecting | | | |
| 20 (70) | 17.2 (250) | | | |

## 91C6 Series

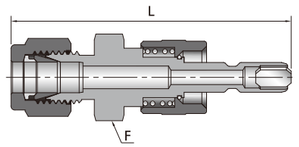
| Material | 316 stainless steel | | | Brass |
|---|---|---|---|---|
| O-Ring Material | Fluorocarbon FKM | EPDM | Perfluorinated FFKM | Nitrile rubber |
| Temperature °C (°F) | Pressure rating bar (psig) | | | |
| | Connect | | | |
| -45 (-50) | — | 103 (1500) | — | — |
| -17 (0) | 103 (1500) | 103 (1500) | 103 (1500) | 68.9 (1000) |
| -12 (10) | 103 (1500) | 103 (1500) | 103 (1500) | 68.9 (1000) |
| 15 (60) | 103 (1500) | 103 (1500) | 103 (1500) | 68.9 (1000) |
| 37 (100) | 103 (1500) | 103 (1500) | 103 (1500) | 68.9 (1000) |
| 65 (150) | 93.0 (1350) | 93.0 (1350) | 93.0 (1350) | 48.2 (700) |
| 93 (200) | 79.2 (1150) | 79.2 (1150) | 79.2 (1150) | 31.0 (450) |
| 121 (250) | 66.8 (970) | 66.8 (970) | 66.8 (970) | 20.6 (300) |
| 148 (300) | 51.6 (750) | 51.6 (750) | 51.6 (750) | — |
| 176 (350) | 39.9 (580) | — | 39.9 (580) | — |
| 204 (400) | 27.5 (400) | — | 27.5 (400) | — |
| 260 (500) | — | — | 10.3 (150) | — |
| | Disconnect, when connecting and disconnecting | | | |
| 20 (70) | 17.2 (250) | | | |

## 91C8 Series

| Material | 316 stainless steel | | | Brass |
|---|---|---|---|---|
| O-Ring Material | Fluorocarbon FKM | EPDM | Perfluorinated FFKM | Nitrile rubber |
| Temperature °C (°F) | Pressure rating bar (psig) | | | |
| | Connect | | | |
| -45 (-50) | — | 51.6 (750) | — | — |
| -17 (0) | 51.6 (750) | 51.6 (750) | 51.6 (750) | 34.4 (500) |
| -12 (10) | 51.6 (750) | 51.6 (750) | 51.6 (750) | 34.4 (500) |
| 15 (60) | 51.6 (750) | 51.6 (750) | 51.6 (750) | 34.4 (500) |
| 37 (100) | 51.6 (750) | 51.6 (750) | 51.6 (750) | 34.4 (500) |
| 65 (150) | 46.8 (680) | 46.8 (680) | 46.8 (680) | 27.5 (400) |
| 93 (200) | 41.3 (600) | 41.3 (600) | 41.3 (600) | 24.1 (350) |
| 121 (250) | 35.8 (520) | 35.8 (520) | 35.8 (520) | 20.6 (300) |
| 148 (300) | 30.3 (440) | 30.3 (440) | 30.3 (440) | — |
| 176 (350) | 24.8 (360) | — | 24.8 (360) | — |
| 204 (400) | 20.6 (300) | — | 20.6 (300) | — |
| 260 (500) | — | — | 10.3 (150) | — |
| | Disconnect, when connecting and disconnecting | | | |
| 20 (70) | 17.2 (250) | | | |

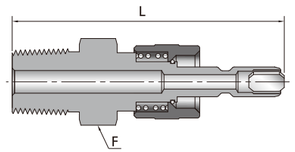
# Size
## SESO stem

Tube Fittings



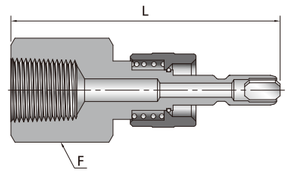

| Connector size | Basic order number | Flow coefficient (Cv) | F | L |
|---|---|---|---|---|
| in. | | | in. | in. (mm) |
| 1/8 | -91C4-FJ2-S | 0.08 | 5/8 | 2.32 (58.9) |
| 1/4 | -91C4-FJ4-S | 0.3 | 5/8 | 2.36 (59.9) |
| 3/8 | -91C6-FJ6-S | 1.0 | 3/4 | 2.52 (64.0) |
| 1/2 | -91C8-FJ8-S | 2.4 | 15/16 | 2.96 (75.2) |
| mm | —— | —— | mm | mm (in.) |
| 6 | -91C4-MJ6-S | 0.3 | 16 | 59.9 (2.36) |
| 10 | -91C6-MJ10-S | 1.0 | 19 | 67.3 (2.65) |
| 12 | -91C8-MJ12-S | 2.4 | 24 | 75.2 (2.96) |

NPT male thread



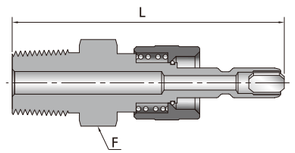

| Thread size | Basic order number | Flow coefficient (Cv) | F | L |
|---|---|---|---|---|
| | | | in. | in. (mm) |
| 1/8 | -91C4-N2-S | 0.3 | 5/8 | 2.07 (52.6) |
| 1/4 | -91C4-N4-S | 0.3 | 5/8 | 2.22 (56.4) |
| 1/4 | -91C6-N4-S | 0.8 | 3/4 | 2.32 (58.9) |
| 3/8 | -91C6-N6-S | 0.8 | 3/4 | 2.35 (59.7) |
| 1/2 | -91C8-N8-S | 2.0 | 15/16 | 2.84 (72.1) |

NPT female thread



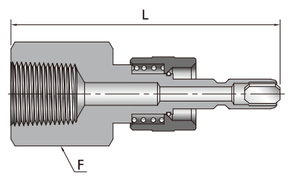

| Thread size | Basic order number | Flow coefficient (Cv) | F | L |
|---|---|---|---|---|
| | | | in. | in. (mm) |
| 1/8 | -91C4-FN2-S | 0.3 | 5/8 | 2.01 (51.1) |
| 1/4 | -91C4-FN4-S | 0.3 | 3/4 | 2.26 (57.4) |
| 1/4 | -91C6-FN4-S | 0.8 | 3/4 | 2.35 (59.7) |
| 3/8 | -91C6-FN6-S | 0.8 | 7/8 | 2.35 (59.7) |
| 1/2 | -91C8-FN8-S | 2.0 | 1 1/16 | 2.82 (71.6) |

BSPT male thread



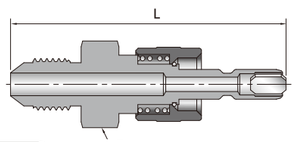

| Thread size | Basic order number | Flow coefficient (Cv) | F | L |
|---|---|---|---|---|
| | | | in. | in. (mm) |
| 1/8 | -91C4-RT2-S | 0.3 | 5/8 | 2.07 (52.6) |
| 1/4 | -91C4-RT4-S | 0.3 | 5/8 | 2.22 (56.4) |
| 1/4 | -91C6-RT4-S | 0.8 | 3/4 | 2.32 (58.9) |
| 3/8 | -91C6-RT6-S | 0.8 | 3/4 | 2.35 (59.7) |
| 1/2 | -91C8-RT8-S | 2.0 | 15/16 | 2.84 (72.1) |

BSPT female thread




| Thread size | Basic order number | Flow coefficient (Cv) | F | L |
|---|---|---|---|---|
| | | | in. | in. (mm) |
| 1/8 | -91C4-FRT2-S | 0.3 | 5/8 | 2.01 (51.1) |
| 1/4 | -91C4-FRT4-S | 0.3 | 3/4 | 2.26 (57.4) |
| 1/4 | -91C6-FRT4-S | 0.8 | 3/4 | 2.35 (59.7) |
| 3/8 | -91C6-FRT6-S | 0.8 | 7/8 | 2.35 (59.7) |
| 1/2 | -91C8-FRT8-S | 2.0 | 1 1/16 | 2.82 (71.6) |

37° flared male thread

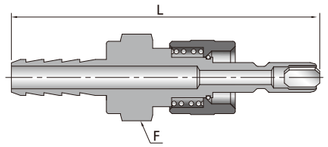



| Flare fitting size | Basic order number | Flow coefficient (Cv) | F | L |
|---|---|---|---|---|
| in. | | | in. | in. (mm) |
| 1/4 | -91C4-AN4-S | 0.2 | 5/8 | 2.23 (56.6) |
| 3/8 | -91C6-AN6-S | 1.0 | 3/4 | 2.35 (59.7) |
| 1/2 | -91C8-AN8-S | 2.4 | 15/16 | 2.79 (70.9) |



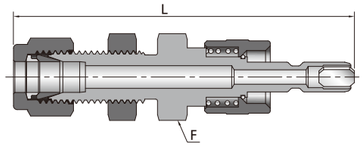


Hose connector




| Tube size | Basic order number | Flow coefficient (Cv) | F | L |
|---|---|---|---|---|
| in. | | | in. | in. (mm) |
| 1/4 | -91C4-HC4-S | 0.2 | 5/8 | 2.47 (62.7) |
| 3/8 | -91C6-HC6-S | 1.0 | 3/4 | 2.66 (67.6) |
| 1/2 | -91C8-HC8-S | 2.4 | 15/16 | 3.07 (78.0) |

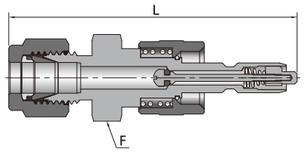
Bulkhead tube fittings




| Connector size | Basic order number | Flow coefficient (Cv) | F | L | Minimum through-plate aperture | Maximum plate thickness |
|---|---|---|---|---|---|---|
| in. | | | in. | in. (mm) | in. (mm) | in. (mm) |
| 1/4 | -91C4-BFJ4-S | 0.3 | 5/8 | 2.74 (69.6) | 0.47 (11.9) | 0.25 (6.4) |
| 3/8 | -91C6-BFJ6-S | 1.0 | 3/4 | 2.92 (74.2) | 0.60 (15.2) | 0.27 (6.9) |
| 1/2 | -91C8-BFJ8-S | 2.4 | 15/16 | 3.43 (87.1) | 0.78 (19.8) | 0.26 (6.6) |
| mm | —— | —— | mm | mm (in.) | mm (in.) | mm (in.) |
| 6 | -91C4-BMJ6-S | 0.3 | 16 | 69.6 (2.74) | 11.7 (0.46) | 6.4 (0.25) |
| 10 | -91C6-BMJ10-S | 1.0 | 22 | 77.7 (3.06) | 16.8 (0.66) | 6.9 (0.27) |
| 12 | -91C8-BMJ12-S | 2.4 | 24 | 87.1 (3.43) | 19.6 (0.77) | 6.6 (0.26) |

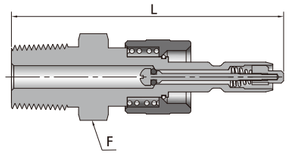
## DESO stem

Tube Fittings



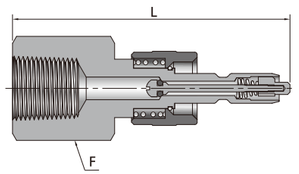

| Connector size | Basic order number | Flow coefficient (Cv) | F | L |
|---|---|---|---|---|
| in. | | | in. | in. (mm) |
| 1/8 | -91C4-FJ2-D | 0.08 | 5/8 | 2.77 (70.4) |
| 1/4 | -91C4-FJ4-D | 0.2 | 5/8 | 2.42 (61.5) |
| 3/8 | -91C6-FJ6-D | 0.5 | 3/4 | 2.64 (67.1) |
| 1/2 | -91C8-FJ8-D | 1.5 | 15/16 | 3.16 (80.3) |
| mm | —— | —— | mm | mm (in.) |
| 6 | -91C4-MJ6-D | 0.2 | 16 | 61.5 (2.42) |
| 10 | -91C6-MJ10-D | 0.5 | 19 | 70.4 (2.77) |
| 12 | -91C8-MJ12-D | 1.5 | 24 | 80.3 (3.16) |

NPT male thread



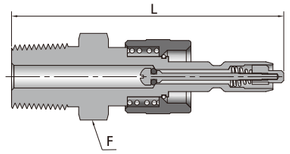

| Thread size | Basic order number | Flow coefficient (Cv) | F | L |
|---|---|---|---|---|
| | | | in. | in. (mm) |
| 1/8 | -91C4-N2-D | 0.2 | 5/8 | 2.13 (54.1) |
| 1/4 | -91C4-N4-D | 0.2 | 5/8 | 2.28 (57.8) |
| 1/4 | -91C6-N4-D | 0.5 | 3/4 | 2.44 (61.9) |
| 3/8 | -91C6-N6-D | 0.5 | 3/4 | 2.47 (62.7) |
| 1/2 | -91C8-N8-D | 1.3 | 15/16 | 3.04 (77.2) |

NPT female thread



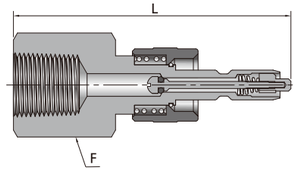

| Thread size | Basic order number | Flow coefficient (Cv) | F | L |
|---|---|---|---|---|
| | | | in. | in. (mm) |
| 1/8 | -91C4-FN2-D | 0.2 | 5/8 | 2.07 (52.6) |
| 1/4 | -91C4-FN4-D | 0.2 | 3/4 | 2.32 (58.9) |
| 1/4 | -91C6-FN4-D | 0.5 | 3/4 | 2.47 (62.7) |
| 3/8 | -91C6-FN6-D | 0.5 | 7/8 | 2.47 (62.7) |
| 1/2 | -91C8-FN8-D | 1.3 | 1 1/16 | 3.04 (77.2) |

BSPT male thread



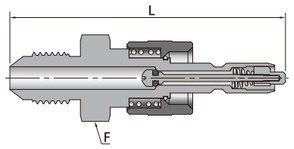

| Thread size | Basic order number | Flow coefficient (Cv) | F | L |
|---|---|---|---|---|
| | | | in. | in. (mm) |
| 1/8 | -91C4-RT2-D | 0.2 | 5/8 | 2.13 (54.1) |
| 1/4 | -91C4-RT4-D | 0.2 | 5/8 | 2.28 (57.8) |
| 1/4 | -91C6-RT4-D | 0.5 | 3/4 | 2.44 (61.9) |
| 3/8 | -91C6-RT6-D | 0.5 | 3/4 | 2.47 (62.7) |
| 1/2 | -91C8-RT8-D | 1.3 | 15/16 | 3.04 (77.2) |

BSPT female thread



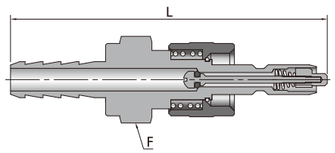

| Thread size | Basic order number | Flow coefficient (Cv) | F | L |
|---|---|---|---|---|
| | | | in. | in. (mm) |
| 1/8 | -91C4-FRT2-D | 0.2 | 5/8 | 2.07 (52.6) |
| 1/4 | -91C4-FRT4-D | 0.2 | 3/4 | 2.32 (58.9) |
| 1/4 | -91C6-FRT4-D | 0.5 | 3/4 | 2.47 (62.7) |
| 3/8 | -91C6-FRT6-D | 0.5 | 7/8 | 2.47 (62.7) |
| 1/2 | -91C8-FRT8-D | 1.3 | 1 1/16 | 3.04 (77.2) |

37° flared male thread



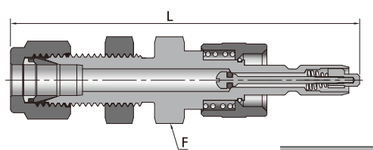

| Flare fitting size | Basic order number | Flow coefficient (Cv) | F | L |
|---|---|---|---|---|
| in. | | | in. | in. (mm) |
| 1/4 | -91C4-AN4-D | 0.2 | 5/8 | 2.29 (58.2) |
| 3/8 | -91C6-AN6-D | 0.5 | 3/4 | 2.47 (62.7) |
| 1/2 | -91C8-AN8-D | 1.5 | 15/16 | 2.99 (75.9) |

Hose connector




| Tube size | Basic order number | Flow coefficient (Cv) | F | L |
|---|---|---|---|---|
| in. | | | in. | in. (mm) |
| 1/4 | -91C4-HC4-D | 0.2 | 5/8 | 2.53 (64.3) |
| 3/8 | -91C6-HC6-D | 0.5 | 3/4 | 2.78 (70.6) |
| 1/2 | -91C8-HC8-D | 1.5 | 15/16 | 3.27 (83.1) |

Bulkhead tube fittings



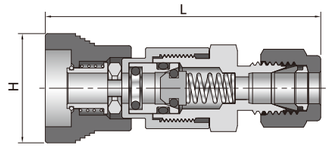

| Connector size | Basic order number | Flow coefficient (Cv) | F | L | Minimum through-plate aperture | Maximum plate thickness |
|---|---|---|---|---|---|---|
| in. | | | in. | in. (mm) | in. (mm) | in. (mm) |
| 1/4 | -91C4-BFJ4-D | 0.2 | 5/8 | 2.80 (71.1) | 0.47 (11.9) | 0.25 (6.4) |
| 3/8 | -91C6-BFJ6-D | 0.5 | 3/4 | 3.07 (78.0) | 0.60 (15.2) | 0.27 (6.9) |
| 1/2 | -91C8-BFJ8-D | 1.5 | 15/16 | 3.63 (92.2) | 0.78 (19.8) | 0.26 (6.6) |
| mm | —— | —— | mm | mm (in.) | mm (in.) | mm (in.) |
| 6 | -91C4-BMJ6-D | 0.2 | 16 | 71.1 (2.80) | 11.7 (0.46) | 6.4 (0.25) |
| 10 | -91C6-BMJ10-D | 0.5 | 22 | 78.7 (3.10) | 16.8 (0.66) | 6.9 (0.27) |
| 12 | -91C8-BMJ12-D | 1.5 | 24 | 92.2 (3.63) | 19.6 (0.77) | 6.6 (0.26) |





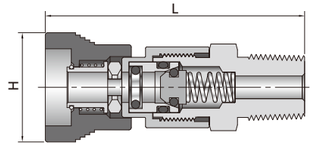
# Tube body

Tube Fittings



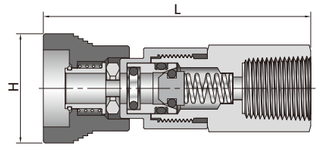

| Connector size | Basic order number | H | L |
|---|---|---|---|
| in. | | in. (mm) | in. (mm) |
| 1/8 | -91C4-FJ2-B | 0.91 (23.1) | 2.26 (57.4) |
| 1/4 | -91C4-FJ4-B | 0.91 (23.1) | 2.30 (58.4) |
| 3/8 | -91C6-FJ6-B | 1.03 (26.2) | 2.58 (65.5) |
| 1/2 | -91C8-FJ8-B | 1.21 (30.7) | 3.09 (78.5) |
| mm | —— | mm (in.) | mm (in.) |
| 6 | -91C4-MJ6-B | 23.1 (0.91) | 58.4 (2.30) |
| 10 | -91C6-MJ10-B | 26.2 (1.03) | 68.1 (2.68) |
| 12 | -91C8-MJ12-B | 30.7 (1.21) | 78.5 (3.09) |

NPT male thread



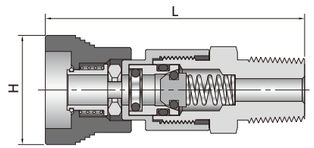

| Thread size | Basic order number | H | L |
|---|---|---|---|
| | | in. (mm) | in. (mm) |
| 1/8 | -91C4-N2-B | 0.91 (23.1) | 2.01 (51.1) |
| 1/4 | -91C4-N4-B | 0.91 (23.1) | 2.16 (54.9) |
| 1/4 | -91C6-N4-B | 1.03 (26.2) | 2.38 (60.5) |
| 3/8 | -91C6-N6-B | 1.03 (26.2) | 2.38 (60.5) |
| 1/2 | -91C8-N8-B | 1.21 (30.7) | 2.97 (75.4) |

NPT female thread



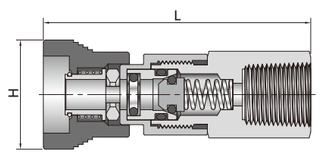

| Thread size | Basic order number | H | L |
|---|---|---|---|
| | | in. (mm) | in. (mm) |
| 1/8 | -91C4-FN2-B | 0.91 (23.1) | 2.16 (54.9) |
| 1/4 | -91C4-FN4-B | 0.91 (23.1) | 2.42 (61.5) |
| 1/4 | -91C6-FN4-B | 1.03 (26.2) | 2.54 (64.5) |
| 3/8 | -91C6-FN6-B | 1.03 (26.2) | 2.57 (65.3) |
| 1/2 | -91C8-FN8-B | 1.21 (30.7) | 3.22 (81.8) |

BSPT male thread



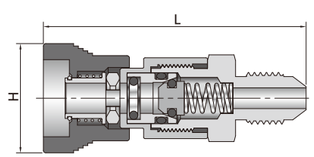

| Thread size | Basic order number | H | L |
|---|---|---|---|
| | | in. (mm) | in. (mm) |
| 1/8 | -91C4-RT2-B | 0.91 (23.1) | 2.01 (51.1) |
| 1/4 | -91C4-RT4-B | 0.91 (23.1) | 2.16 (54.9) |
| 1/4 | -91C6-RT4-B | 1.03 (26.2) | 2.38 (60.5) |
| 3/8 | -91C6-RT6-B | 1.03 (26.2) | 2.38 (60.5) |
| 1/2 | -91C8-RT8-B | 1.21 (30.7) | 2.97 (75.4) |

BSPT female thread



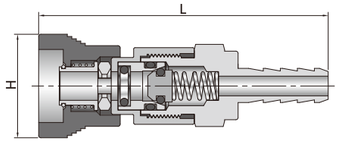

| Thread size | Basic order number | H | L |
|---|---|---|---|
| | | in. (mm) | in. (mm) |
| 1/8 | -91C4-FRT2-B | 0.91 (23.1) | 2.16 (54.9) |
| 1/4 | -91C4-FRT4-B | 0.91 (23.1) | 2.42 (61.5) |
| 1/4 | -91C6-FRT4-B | 1.03 (26.2) | 2.54 (64.5) |
| 3/8 | -91C6-FRT6-B | 1.03 (26.2) | 2.57 (65.3) |
| 1/2 | -91C8-FRT8-B | 1.21 (30.7) | 3.22 (81.8) |

37° flared male thread



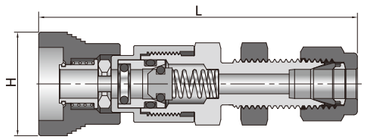

| Flare fitting size | Basic order number | H | L |
|---|---|---|---|
| in. | | in. (mm) | in. (mm) |
| 1/4 | -91C4-AN4-B | 0.91 (23.1) | 2.17 (55.1) |
| 3/8 | -91C4-AN6-B | 1.03 (26.2) | 2.41 (61.2) |
| 1/2 | -91C4-AN8-B | 1.21 (30.7) | 2.92 (74.2) |

Hose connector




| Tube size | Basic order number | H | L |
|---|---|---|---|
| in. | | in. (mm) | in. (mm) |
| 1/4 | -QC4-HC4-B | 0.91 (23.1) | 2.41 (61.2) |
| 3/8 | -QC6-HC6-B | 1.03 (26.2) | 2.72 (69.1) |
| 1/2 | -QC8-HC8-B | 1.21 (30.7) | 3.20 (81.3) |

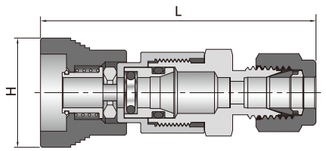
Bulkhead tube fittings




| Connector size | Basic order number | H | L | Minimum through-plate aperture | Maximum plate thickness |
|---|---|---|---|---|---|
| in. | | in. (mm) | in. (mm) | in. (mm) | in. (mm) |
| 1/4 | -91C4-BFJ4-B | 0.91 (23.1) | 2.67 (67.8) | 0.47 (11.9) | 0.25 (6.4) |
| 3/8 | -91C6-BFJ6-B | 1.03 (26.2) | 2.98 (75.7) | 0.60 (15.2) | 0.27 (6.9) |
| 1/2 | -91C8-BFJ8-B | 1.21 (30.7) | 3.56 (90.4) | 0.78 (19.8) | 0.26 (6.6) |
| mm | —— | mm (in.) | mm (in.) | mm (in.) | mm (in.) |
| 6 | -91C4-BMJ6-B | 23.1 (0.91) | 67.8 (2.67) | 11.7 (0.46) | 6.4 (0.25) |
| 10 | -91C6-BMJ10-B | 26.2 (1.03) | 75.9 (2.99) | 16.8 (0.66) | 6.9 (0.27) |
| 12 | -91C8-BMJ12-B | 30.7 (1.21) | 90.4 (3.56) | 19.6 (0.77) | 6.6 (0.26) |

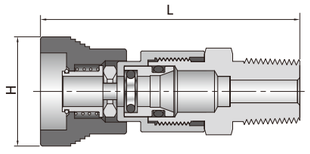
## Full flow pipe body

Tube Fittings



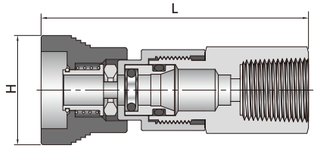

| Connector size | Basic order number | H | L |
|---|---|---|---|
| in. | | in. (mm) | in. (mm) |
| 1/8 | -91C4-FJ2-F | 0.91 (23.1) | 2.26 (57.4) |
| 1/4 | -91C4-FJ4-F | 0.91 (23.1) | 2.30 (58.4) |
| 3/8 | -91C6-FJ6-F | 1.03 (26.2) | 2.58 (65.5) |
| 1/2 | -91C8-FJ8-F | 1.21 (30.7) | 3.09 (78.5) |
| mm | —— | mm (in.) | mm (in.) |
| 6 | -91C4-MJ6-F | 23.1 (0.91) | 58.4 (2.30) |
| 10 | -91C6-MJ10-F | 26.2 (1.03) | 68.1 (2.68) |
| 12 | -91C8-MJ12-F | 30.7 (1.21) | 78.5 (3.09) |

NPT male thread



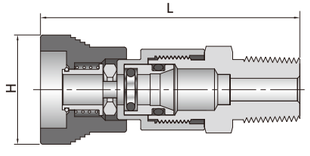

| Thread size | Basic order number | H | L |
|---|---|---|---|
| | | in. (mm) | in. (mm) |
| 1/8 | -91C4-N2-F | 0.91 (23.1) | 2.01 (51.1) |
| 1/4 | -91C4-N4-F | 0.91 (23.1) | 2.16 (54.9) |
| 1/4 | -91C6-N4-F | 1.03 (26.2) | 2.38 (60.5) |
| 3/8 | -91C6-N6-F | 1.03 (26.2) | 2.38 (60.5) |
| 1/2 | -91C8-N8-F | 1.21 (30.7) | 2.97 (75.4) |

NPT female thread




| Thread size | Basic order number | H | L |
|---|---|---|---|
| | | in. (mm) | in. (mm) |
| 1/8 | -91C4-FN2-F | 0.91 (23.1) | 2.16 (54.9) |
| 1/4 | -91C4-FN4-F | 0.91 (23.1) | 2.42 (61.5) |
| 1/4 | -91C6-FN4-F | 1.03 (26.2) | 2.54 (65.4) |
| 3/8 | -91C6-FN6-F | 1.03 (26.2) | 2.57 (65.3) |
| 1/2 | -91C8-FN8-F | 1.21 (30.7) | 3.22 (81.8) |

BSPT male thread



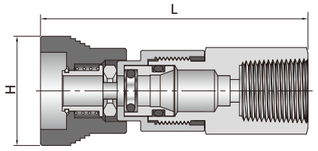

| Thread size | Basic order number | H | L |
|---|---|---|---|
| | | in. (mm) | in. (mm) |
| 1/8 | -91C4-RT2-F | 0.91 (23.1) | 2.01 (51.1) |
| 1/4 | -91C4-RT4-F | 0.91 (23.1) | 2.16 (54.9) |
| 1/4 | -91C6-RT4-F | 1.03 (26.2) | 2.38 (60.5) |
| 3/8 | -91C6-RT6-F | 1.03 (26.2) | 2.38 (60.5) |
| 1/2 | -91C8-RT8-F | 1.21 (30.7) | 2.97 (75.4) |





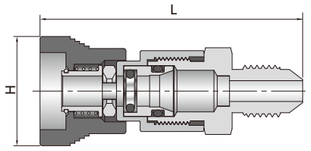


BSPT female thread



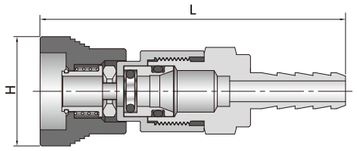

| Thread size | Basic order number | H | L |
|---|---|---|---|
| | | in. (mm) | in. (mm) |
| 1/8 | -91C4-FRT2-F | 0.91 (23.1) | 2.16 (54.9) |
| 1/4 | -91C4-FRT4-F | 0.91 (23.1) | 2.42 (61.5) |
| 1/4 | -91C6-FRT4-F | 1.03 (26.2) | 2.54 (64.5) |
| 3/8 | -91C6-FRT6-F | 1.03 (26.2) | 2.57 (65.3) |
| 1/2 | -91C8-FRT8-F | 1.21 (30.7) | 3.22 (81.8) |

37° flared male thread



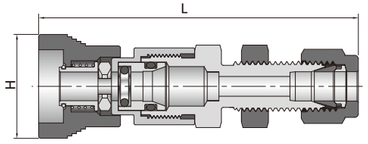

| Flare fitting size | Basic order number | H | L |
|---|---|---|---|
| in. | | in. (mm) | in. (mm) |
| 1/4 | -91C4-AN4-F | 0.91 (23.1) | 2.17 (55.1) |
| 3/8 | -91C6-AN8-F | 1.03 (26.2) | 2.41 (61.2) |
| 1/2 | -91C6-AN8-F | 1.21 (30.7) | 2.92 (74.2) |

Hose connector




| Tube size | Basic order number | H | L |
|---|---|---|---|
| in. | | in. (mm) | in. (mm) |
| 1/4 | -91C4-HC4-F | 0.91 (23.1) | 2.41 (61.2) |
| 3/8 | -91C6-HC6-F | 1.03 (26.2) | 2.72 (69.1) |
| 1/2 | -91C8-HC8-F | 1.21 (30.7) | 3.20 (81.3) |

Bulkhead tube fittings




| Connector size | Basic order number | H | L | Minimum through-plate aperture | Maximum plate thickness |
|---|---|---|---|---|---|
| in. | | in. (mm) | in. (mm) | in. (mm) | in. (mm) |
| 1/4 | -91C4-BFJ4-F | 0.91 (23.1) | 2.67 (67.8) | 0.47 (11.9) | 0.25 (6.4) |
| 3/8 | -91C6-BFJ6-F | 1.03 (26.2) | 2.98 (75.7) | 0.60 (15.2) | 0.27 (6.9) |
| 1/2 | -91C8-BFJ8-F | 1.21 (30.7) | 3.56 (90.4) | 0.78 (19.8) | 0.26 (6.6) |
| mm | —— | mm (in.) | mm (in.) | mm (in.) | mm (in.) |
| 6 | -91C4-BMJ6-F | 23.1 (0.91) | 67.8 (2.67) | 11.7 (0.46) | 6.4 (0.25) |
| 10 | -91C6-BMJ10-F | 26.2 (1.03) | 75.9 (2.99) | 16.8 (0.66) | 6.9 (0.27) |
| 12 | -91C8-BMJ12-F | 30.7 (1.21) | 90.4 (3.56) | 19.6 (0.77) | 6.6 (0.26) |

## 91C Series Options

### Keyed 91C Series

The E-J0E keyed quick connector provides a reliable mechanical locking system to prevent accidental mixing of different working lines in multi-fluid and multi-pressure systems.

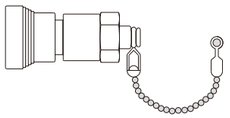
### 91C Series Key Number and Bushing OD

| Key numbers and colors | 91C4 | | 91C6 | | 91C8 | |
|---|---|---|---|---|---|---|
| | Tube body key cover | Stem Key Set | Tube body key cover | Stem Key Set | Tube body key cover | Stem Key Set |
| | in. (mm) | in. (mm) | in. (mm) | in. (mm) | in. (mm) | in. (mm) |
| K1 Black | 0.96 (24.4) | 0.82 (20.8) | 1.13 (28.7) | 0.99 (25.1) | 1.26 (32.0) | 1.10 (27.9) |
| K2 Oranges | 0.99 (25.1) | 0.85 (21.6) | 1.16 (29.5) | 1.02 (25.9) | 1.29 (32.8) | 1.14 (29.0) |
| K3 Green | 1.02 (25.9) | 0.88 (22.4) | 1.19 (30.2) | 1.05 (26.7) | 1.32 (33.5) | 1.17 (29.7) |
| K4 Yellow | 1.05 (26.7) | 0.91 (23.1) | 1.22 (31.0) | 1.08 (27.4) | 1.35 (34.3) | 1.20 (30.5) |
| K5 Blue | 1.08 (27.4) | 0.94 (23.9) | 1.24 (31.5) | 1.11 (28.2) | 1.38 (35.1) | 1.23 (31.2) |
| K6 White | 1.11 (28.2) | 0.97 (24.6) | 1.28 (32.5) | 1.14 (29.0) | 1.41 (35.8) | 1.26 (32.0) |
| K7 Purple | 1.14 (29.0) | 1.00 (25.4) | 1.31 (33.3) | 1.17 (29.7) | 1.44 (36.6) | 1.29 (32.8) |
| K8 Brown | 1.17 (29.7) | 1.03 (26.2) | 1.34 (34.0) | 1.20 (30.5) | 1.47 (37.3) | 1.32 (33.5) |

## Stem and body protectors

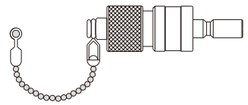
Prevents damage and contamination of stems and tubes during disconnection.

Stem protector



| Series | Basic order number |
|---|---|
| 91C4 | -91C4-SP |
| 91C6 | -91C6-SP |
| 91C8 | -91C8-SP |

Pipe protector



| 系列 | 基本订购号 |
|---|---|
| 91C4 | -91C4-BP |
| 91C6 | -91C6-BP |
| 91C8 | -91C8-BP |

- Protector model description: material code (SS for stainless steel, B for brass) + basic ordering number
  Example: SS-91C4-BP
- Keyed protector model description: material code (SS for stainless steel, B for brass) + basic ordering number + key code in the table below
  Example: SS-91C4-BP-K2
- This protector is not a pressure maintaining device. If you need to order a pressure maintaining protector, please contact E-JOE or an authorized agent

## Model Description

SS – 91C4 – FJ4 – S – K1 – B –CE

| Material | |
|---|---|
| SS | 316 stainless steel |
| B | Brass |

| Series | |
|---|---|
| 91C4 | 1/4" (6.4 mm) |
| 91C6 | 3/8" (9.5 mm) |
| 91C8 | 1/2" (12.7 mm) |

| End Connection Type | |
|---|---|
| FN | NPT female thread |
| N | NPT male thread |
| FRT | Imperial taper female thread |
| RT | Imperial taper male thread |
| FMS | Metric female thread (for RG gasket) |
| MS | Metric male thread (for RG gasket) |
| FJ | Imperial double ferrule |
| MJ | Metric double ferrule |
| FT | Imperial ferrule adapter |
| MT | Metric ferrule adapter |
| AN | 37° flared male thread adapter |

| End Connection Size | |
|---|---|
| 4 | 1/4" |
| 6 | 3/8" or 6 mm |
| 8 | 1/2" or 8 mm |
| 10 | 5/8" or 10 mm |
| 12 | 3/4" or 12 mm |
| 14 | M14 x 1.5 |
| 16 | 1" or 16 mm |
| 18 | M18 x 1.5 |
| 20 | M20 x 1.5 |

| Stem or Body | |
|---|---|
| S | Without valve stem, open when not connected |
| D | With valve stem, closed when not connected |
| B | With valve body, closed when not connected |
| F | Full fluid body |

| Key Number and Color | |
|---|---|
| | Keyless |
| K1 | Black |
| K2 | Orange |
| K3 | Green |
| K4 | Yellow |
| K5 | Blue |
| K6 | White |
| K7 | Purple |
| K8 | Brown |

| Seal Material | |
|---|---|
| | Fluorocarbon (FKM) |
| B | Nitrile rubber (NBR) |
| E | EPDM |
| N | Chloroprene rubber (CR) |
| Z | Perfluoro rubber (Kalrez) |

| Special Application | |
|---|---|
| | None |
| CE | NACE MR 0175 |
| SI | Sulfur passivation |

Note: 1. "Model Description" is used to explain the composition rules of E-JOE product models. It is not applicable to the specific selection of products and cannot be combined at will. If you have any questions, please contact E-JOE or an authorized agent.
2. Dimensions are for reference only and may be subject to change.
3. Special Applications
Sulfur passivation: Mainly wetted metal parts are treated with sulfur passivation.



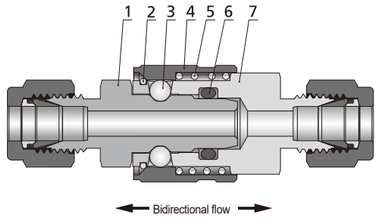




# 91F Series

## Feature

- Working pressure up to: 414bar (6000 psig)
- Material: stainless steel or brass
- Full flow
- Easy and fast operation
- Smooth, open cavity, no valves at both ends, minimizes pressure drop and is easier to clean




## Structural Materials

| Serial number | Component | Stainless steel | Brass |
|---|---|---|---|
| | | Material Grade/ASTM Specification | |
| 1 | Tube stem | 316 Stainless Steel/A479 | Brass C36000/B16 |
| 2 | Shaft retaining ring | 316 Stainless Steel/A313 | |
| 3 | Locking ball | 440C/A276 | |
| 4 | Tube body sleeve | 316 Stainless Steel/A479 | C36000/B16 |
| 5 | Spring | 316 Stainless Steel/A313 | |
| 6 | O-ring | Fluorocarbon FKM | Nitrile rubber |
| 7 | Tube body | 316 Stainless Steel/A479 | Brass C36000/B16 |
| 8 | Lubricant | Silicone grease | |

## Insertion depth

| Series | Insert Depth |
|---|---|
| | in. (mm) |
| 91F4 | 0.78 (19.8) |
| 91F8 | 0.81 (20.6) |
| 91F12 | 0.90 (22.9) |
| 91F12 | 0.94 (23.9) |

To calculate the overall length of the connection, subtract the insertion depth from the overall length of the stem and body.

## Pressure-Temperature Ratings

①Pressure ratings may be limited by end connections
②For products that comply with NACE MR0175, pressure ratings may be reduced, please consult E-JOE or your dealer for details
③Do not disconnect under pressure

91F4 Series and 91F8 Series

| Material | 316 stainless steel | | | Brass | |
|---|---|---|---|---|---|
| O-Ring Material | Fluorocarbon FKM | EPDM | Perfluoro FFKM | Nitrile rubber | |
| Series | 91F4 and 91F8 | | | 91F4 | 91F8 |
| Temperature °C (°F) | Pressure rating bar (psig) | | | | |
| | Connect | | | | |
| -45 (-50) | — | 413 (6000) | — | — | — |
| -17 (0) | 413 (6000) | 413 (6000) | 413 (6000) | 275 (4000) | 206 (3000) |
| -12 (10) | 413 (6000) | 413 (6000) | 413 (6000) | 275 (4000) | 206 (3000) |
| 4 (40) | 413 (6000) | 413 (6000) | 413 (6000) | 275 (4000) | 206 (3000) |
| 37 (100) | 413 (6000) | 413 (6000) | 413 (6000) | 275 (4000) | 206 (3000) |
| 65 (150) | 344 (5000) | 275 (4000) | 344 (5000) | 186 (2700) | 137 (2000) |
| 93 (200) | 275 (4000) | 186 (2700) | 275 (4000) | 96.4 (1400) | 68.9 (1000) |
| 121 (250) | 206 (3000) | 96.4 (1400) | 206 (3000) | 20.6 (300) | 20.6 (300) |
| 148 (300) | 137 (2000) | 27.5 (400) | 137 (2000) | — | — |
| 176 (350) | 82.6 (1200) | — | 82.6 (1200) | — | — |
| 204 (400) | 27.5 (400) | — | 27.5 (400) | — | — |
| 260 (500) | — | — | 13.7 (200) | — | — |

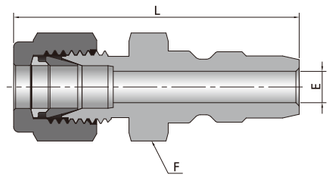
91F12 Series and 91F16 Series

| Material | 316 stainless steel | | | Brass |
|---|---|---|---|---|
| O-Ring Material | Fluorocarbon FKM | EPDM | Perfluoro FFKM | Nitrile rubber |
| Temperature °C (°F) | Pressure rating bar (psig) | | | |
| | Connect | | | |
| -45 (-50) | — | 275 (4000) | — | — |
| -17 (0) | 275 (4000) | 275 (4000) | 275 (4000) | 137 (2000) |
| -12 (10) | 275 (4000) | 275 (4000) | 275 (4000) | 137 (2000) |
| 4 (40) | 275 (4000) | 275 (4000) | 275 (4000) | 137 (2000) |
| 37 (100) | 275 (4000) | 275 (4000) | 275 (4000) | 137 (2000) |
| 65 (150) | 241 (3500) | 137 (2000) | 241 (3500) | 89.5 (1300) |
| 93 (200) | 192 (2800) | 89.5 (1300) | 192 (2800) | 48.2 (700) |
| 121 (250) | 144 (2100) | 48.2 (700) | 144 (2100) | 13.7 (200) |
| 148 (300) | 96.4 (1400) | 13.7 (200) | 96.4 (1400) | — |
| 176 (350) | 55.1 (800) | — | 55.1 (800) | — |
| 204 (400) | 13.7 (200) | — | 13.7 (200) | — |
| 260 (500) | — | — | 10.3 (150) | — |

## Size

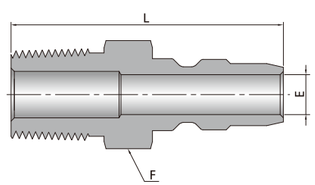
### Stem

Tube Fittings




| Connector size | Basic order number | Flow coefficient (Cv) | E | F | L |
|---|---|---|---|---|---|
| in. | | | in. (mm) | in. | in. (mm) |
| 1/4 | -91F4-FJ4-S | 2.2 | 0.19 (4.8) | 9/16 | 1.77 (45.0) |
| 3/8 | -91F4-FJ4-S | 2.8 | 0.24 (6.1) | 11/16 | 1.77 (45.0) |
| 3/8 | -91F8-FJ6-S | 2.8 | 0.28 (7.1) | 7/8 | 1.88 (47.8) |
| 1/2 | -91F8-FJ8-S | 13.0 | 0.41 (10.4) | 7/8 | 1.99 (50.5) |
| 3/4 | -91F12-FJ12-S | 26.0 | 0.62 (15.7) | 1 1/16 | 2.15 (54.6) |
| 1 | -91F16-FJ16-S | 45.0 | 0.88 (22.4) | 1 3/8 | 2.45 (62.2) |
| mm | —— | —— | (mm) in. | mm | (mm) in. |
| 6 | -91F4-MJ6-S | 2.2 | 4.8 (0.19) | 15 | 45.0 (1.77) |
| 10 | -91F8-MJ10-S | 2.8 | 7.1 (0.28) | 22 | 48.5 (1.91) |
| 12 | -91F8-MJ12-S | 13.0 | 9.5 (0.37) | 22 | 51.3 (2.02) |
| 20 | -91F12-MJ20-S | 26.0 | 15.7 (0.62) | 30 | 54.6 (2.15) |
| 25 | -91F16-MJ25-S | 45.0 | 22.4 (0.88) | 36 | 63.5 (2.50) |

NPT male thread




| Thread size | Basic order number | Flow coefficient (Cv) | E | F | L |
|---|---|---|---|---|---|
| | | | in. (mm) | in. | in. (mm) |
| 1/4 | -91F4-N4-S | 1.7 | 0.24 (6.1) | 9/16 | 1.59 (40.4) |
| 3/8 | -91F4-N6-S | 1.7 | 0.24 (6.1) | 11/16 | 1.59 (40.4) |
| 3/8 | -91F8-N6-S | 7.1 | 0.41 (10.4) | 7/8 | 1.65 (41.9) |
| 1/2 | -91F8-N8-S | 11.5 | 0.50 (12.7) | 7/8 | 1.84 (46.7) |
| 3/4 | -91F12-N12-S | 23.6 | 0.72 (18.3) | 1 1/16 | 2.03 (51.6) |
| 1 | -91F16-N16-S | 39.0 | 0.88 (22.4) | 1 3/8 | 2.35 (59.7) |

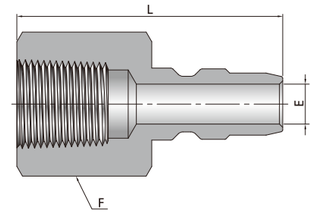






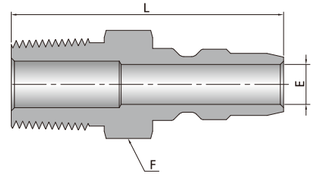
### Stem

NPT female thread



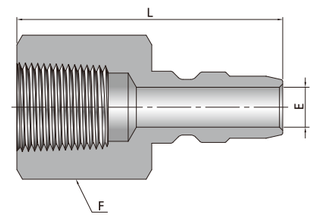

| Thread size | Basic order number | Flow coefficient (Cv) | E | F | L |
|---|---|---|---|---|---|
| | | | in. (mm) | in. | in. (mm) |
| 1/4 | -91F4-FN4-S | 1.7 | 0.24 (6.1) | 3/4 | 1.60 (40.6) |
| 3/8 | -91F4-FN6-S | 1.7 | 0.24 (6.1) | 7/8 | 1.67 (42.4) |
| 3/8 | -91F8-FN6-S | 7.1 | 0.41 (10.4) | 1 1/16 | 1.59 (40.4) |
| 1/2 | -91F8-FN8-S | 11.5 | 0.50 (12.7) | 1 1/16 | 1.82 (46.2) |
| 3/4 | -91F12-FN12-S | 23.6 | 0.72 (18.3) | 1 5/16 | 2.08 (52.8) |
| 1 | -91F16-FN16-S | 39.0 | 0.88 (22.4) | 1 5/8 | 2.49 (63.2) |

BSPT male thread




| Thread size | Basic order number | Flow coefficient (Cv) | E | F | L |
|---|---|---|---|---|---|
| | | | in. (mm) | in. | in. (mm) |
| 1/4 | -91F4-RT4-S | 1.7 | 0.24 (6.1) | 9/16 | 1.59 (40.4) |
| 3/8 | -91F4-RT6-S | 1.7 | 0.24 (6.1) | 11/16 | 1.59 (40.4) |
| 3/8 | -91F8-RT6-S | 7.1 | 0.41 (10.4) | 7/8 | 1.65 (41.9) |
| 1/2 | -91F8-RT8-S | 11.5 | 0.50 (12.7) | 7/8 | 1.84 (46.7) |
| 3/4 | -91F12-RT12-S | 23.6 | 0.72 (18.3) | 1 1/16 | 2.03 (51.6) |
| 1 | -91F16-RT16-S | 39.0 | 0.88 (22.4) | 1 3/8 | 2.35 (59.7) |

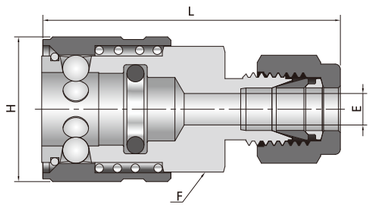
BSPT female thread




| Thread size | Basic order number | Flow coefficient (Cv) | E | F | L |
|---|---|---|---|---|---|
| | | | in. (mm) | in. | in. (mm) |
| 1/4 | -91F4-FRT4-S | 1.7 | 0.24 (6.1) | 3/4 | 1.60 (40.6) |
| 3/8 | -91F4-FRT6-S | 1.7 | 0.24 (6.1) | 7/8 | 1.67 (42.4) |
| 3/8 | -91F8-FRT6-S | 7.1 | 0.41 (10.4) | 1 1/16 | 1.59 (40.4) |
| 1/2 | -91F8-FRT8-S | 11.5 | 0.50 (12.7) | 1 1/16 | 1.82 (46.2) |
| 3/4 | -91F12-FRT12-S | 23.6 | 0.72 (18.3) | 1 5/16 | 2.08 (52.8) |
| 1 | -91F16-FRT16-S | 39.0 | 0.88 (22.4) | 1 5/8 | 2.49 (63.2) |

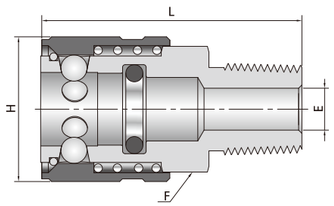
### Tube body

Tube Fittings



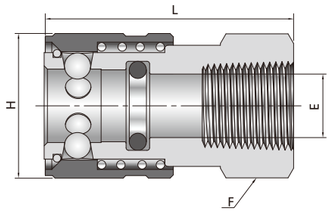

| Connector size | Basic order number | E | F | H | L |
|---|---|---|---|---|---|
| in. | | in. (mm) | in. | in. (mm) | in. (mm) |
| 1/4 | -91F4-FJ4-B | 0.19 (4.8) | 11/16 | 0.87 (22.1) | 1.80 (45.7) |
| 3/8 | -91F4-FJ6-B | 0.28 (7.1) | 11/16 | 0.87 (22.1) | 1.81 (46.0) |
| 3/8 | -91F8-FJ6-B | 0.28 (7.1) | 1 1/16 | 1.30 (33.0) | 2.17 (55.1) |
| 1/2 | -91F8-FJ8-B | 0.47 (11.9) | 1 1/16 | 1.30 (33.0) | 2.23 (56.6) |
| 3/4 | -91F12-FJ12-B | 0.62 (15.7) | 1 1/2 | 1.66 (42.2) | 2.45 (62.2) |
| 1 | -91F16-FJ16-B | 0.88 (22.4) | 1 11/16 | 1.88 (47.8) | 2.75 (69.9) |
| mm | —— | (mm) in. | mm | (mm) in. | (mm) in. |
| 6 | -91F4-MJ6-B | 4.8 (0.19) | 18 | 22.1 (0.87) | 45.7 (1.80) |
| 10 | -91F8-MJ10-B | 7.1 (0.28) | 27 | 33.0 (1.30) | 55.9 (2.20) |
| 12 | -91F8-MJ12-B | 10.4 (0.41) | 27 | 33.0 (1.30) | 57.4 (2.26) |
| 20 | -91F12-MJ20-B | 15.9 (0.63) | 38 | 42.2 (1.66) | 63.5 (2.50) |
| 25 | -91F16-MJ25-B | 21.8 (0.86) | 46 | 47.8 (1.88) | 70.0 (2.76) |

NPT male thread



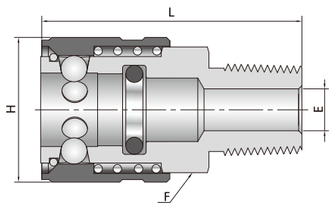

| Thread size | Basic order number | E | F | H | L |
|---|---|---|---|---|---|
| | | in. (mm) | in. | in. (mm) | in. (mm) |
| 1/4 | -91F4-N4-B | 0.25 (6.4) | 11/16 | 0.87 (22.1) | 1.57 (39.9) |
| 3/8 | -91F4-N6-B | 0.37 (9.4) | 11/16 | 0.87 (22.1) | 1.57 (39.9) |
| 3/8 | -91F8-N6-B | 0.41 (10.4) | 1 1/16 | 1.30 (33.0) | 1.83 (46.5) |
| 1/2 | -91F8-N8-B | 0.50 (12.7) | 1 1/16 | 1.30 (33.0) | 2.08 (52.8) |
| 3/4 | -91F12-N12-B | 0.72 (18.3) | 1 1/2 | 1.66 (42.2) | 2.33 (59.2) |
| 1 | -91F16-N16-B | 0.88 (22.4) | 1 11/16 | 1.88 (47.8) | 2.65 (67.3) |

NPT female thread



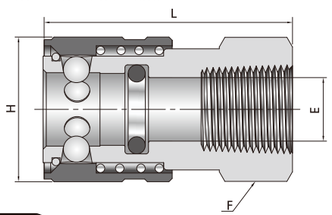

| Thread size | Basic order number | E | F | H | L |
|---|---|---|---|---|---|
| | | in. (mm) | in. | in. (mm) | in. (mm) |
| 1/4 | -91F4-FN4-B | 0.38 (9.7) | 3/4 | 0.87 (22.1) | 1.50 (38.1) |
| 3/8 | -91F4-FN6-B | 0.38 (9.7) | 7/8 | 0.87 (22.1) | 1.63 (41.4) |
| 3/8 | -91F8-FN6-B | 0.59 (15.0) | 1 1/16 | 1.30 (33.0) | 1.73 (43.9) |
| 1/2 | -91F8-FN8-B | 0.63 (16.0) | 1 1/16 | 1.30 (33.0) | 1.73 (43.9) |
| 3/4 | -91F12-FN12-B | 0.88 (22.4) | 1 1/2 | 1.66 (42.2) | 1.89 (48.0) |
| 1 | -91F16-FN16-B | 1.06 (26.9) | 1 11/16 | 1.88 (47.8) | 2.12 (53.8) |

BSPT male thread




| Thread size | Basic order number | E | F | H | L |
|---|---|---|---|---|---|
| | | in. (mm) | in. | in. (mm) | in. (mm) |
| 1/4 | -91F4-RT4-B | 0.25 (6.4) | 11/16 | 0.87 (22.1) | 1.57 (39.9) |
| 3/8 | -91F4-RT6-B | 0.37 (9.4) | 11/16 | 0.87 (22.1) | 1.57 (39.9) |
| 3/8 | -91F8-RT6-B | 0.41 (10.4) | 1 1/16 | 1.30 (33.0) | 1.83 (46.5) |
| 1/2 | -91F8-RT8-B | 0.50 (12.7) | 1 1/16 | 1.30 (33.0) | 2.08 (52.8) |
| 3/4 | -91F12-RT12-B | 0.72 (18.3) | 1 1/2 | 1.66 (42.2) | 2.33 (59.2) |
| 1 | -91F16-RT16-B | 0.88 (22.4) | 1 11/16 | 1.88 (47.8) | 2.65 (67.3) |

BSPT female thread




| Thread size | Basic order number | E | F | H | L |
|---|---|---|---|---|---|
| | | in. (mm) | in. | in. (mm) | in. (mm) |
| 1/4 | -91F4-FRT4-B | 0.38 (9.7) | 3/4 | 0.87 (22.1) | 1.50 (38.1) |
| 3/8 | -91F4-FRT6-B | 0.38 (9.7) | 7/8 | 0.87 (22.1) | 1.63 (41.4) |
| 3/8 | -91F8-FRT6-B | 0.59 (15.0) | 1 1/16 | 1.30 (33.0) | 1.73 (43.9) |
| 1/2 | -91F8-FRT8-B | 0.63 (16.0) | 1 1/16 | 1.30 (33.0) | 1.73 (43.9) |
| 3/4 | -91F12-FRT12-B | 0.88 (22.4) | 1 1/2 | 1.66 (42.2) | 1.89 (48.0) |
| 1 | -91F16-FRT16-B | 1.06 (26.9) | 1 11/16 | 1.88 (47.8) | 2.12 (53.8) |





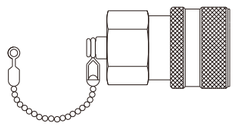


# 91F Series Options

## Stem and body protectors

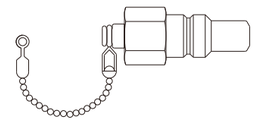
Prevents damage and contamination of stems and tubes during disconnection.

Stem protector



| Series | Basic order number |
|---|---|
| 91F4 | -91F4-SP |
| 91F8 | -91F8-SP |
| 91F16 | -91F12-SP |
| 91F12 | -91F16-SP |

Pipe protector



| Series | Basic order number |
|---|---|
| 91F4 | -91F4-BP |
| 91F8 | -91F8-BP |
| 91F16 | -91F12-BP |
| 91F12 | -91F16-BP |

◎ Protector model description: material code (SS for stainless steel, B for brass) + basic ordering number
Example: SS-91F4-BP

◎ This protector is not a pressure maintaining device. If you need to order a pressure maintaining protector, please contact E-JOE or an authorized agent

## Model Description

SS – 91F4 – FJ4 – S – B – CE

| Material | |
|---|---|
| SS | 316 stainless steel |
| B | Brass |

| Series | |
|---|---|
| 91F4 | 1/4" (6.4 mm) |
| 91F8 | 1/2" (12.7 mm) |
| 91F12 | 3/4" (19.0 mm) |
| 91F16 | 1" (25.4 mm) |

| End Connection Type | |
|---|---|
| FN | NPT female thread |
| N | NPT male thread |
| FRT | BSPT female thread |
| RT | BSPT male thread |
| FMS | Metric female thread (for RG gasket) |
| MS | Metric male thread (for RG gasket) |
| FJ | Fractional tube fittings |
| MJ | Metric Tube Fittings |
| FT | Imperial ferrule adapter |
| MT | Metric ferrule adapter |
| AN | 37° flared male thread adapter |

| End Connection Size | |
|---|---|
| 4 | 1/4" |
| 6 | 3/8" or 6 mm |
| 8 | 1/2" or 8 mm |
| 10 | 5/8" or 10 mm |
| 12 | 3/4" or 12 mm |
| 14 | M14 x 1.5 |
| 16 | 1" or 16 mm |
| 18 | M18 x 1.5 |
| 20 | M20 x 1.5 |

| Stem or Body | |
|---|---|
| S | Stem |
| B | Tube body |

| Seal Material | |
|---|---|
| | Fluorocarbon (FKM) |
| B | Nitrile rubber (NBR) |
| E | EPDM |
| N | Chloroprene rubber (CR) |
| Z | Perfluoro rubber (Kalrez) |

| Special Application | |
|---|---|
| | None |
| CE | NACE MR 0175 |
| SI | Sulfur passivation |

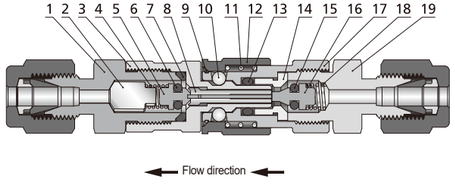
Note: 1. "Model Description" is used to explain the composition rules of E-JOE product models. It is not applicable to the specific selection of products and cannot be combined at will. If you have any questions, please contact E-JOE or an authorized agent.
2. Dimensions are for reference only and may be subject to change.
3. Special Applications
Sulfur passivation: Mainly wetted metal parts are treated with sulfur passivation.

# 91M Series

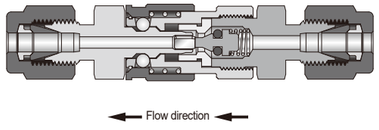
## Feature

- Working pressure up to: 276 bar (4000 psig)
- Single-end shutoff, double-end shutoff and full flow available
- Easy and fast operation

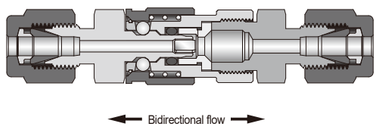
Double-Ended Shutoff (DESO)




Single-Ended Shutdown (SESO)




Full flow quick connector




## Insert depth

| Depth in, (mm) | |
|---|---|
| Single-ended shutdown | Double-ended shutdown |
| 0.47 (11.9) | 0.53 (13.5) |

To calculate the overall length of the connection, subtract the insertion depth from the overall length of the stem and body.

## Overflow and air inclusion

0.1cm³ (only applicable to double-ended shut-off DESO)

## 结构材料 Structural Materials

| Serial number | Component | Stainless steel | Brass |
|---|---|---|---|
| | | Material Grade/ASTM Specification | |
| 1 | Stem body | 316 Stainless Steel/A479 | Brass C36000/B16 |
| 2 | Valve stopper | 316 Stainless Steel/A240 | Brass C36000/B36 |
| 3 | Tube stem | 316 Stainless Steel/A479 | Brass C36000/B16 |
| 4 | Spring | 316 Stainless Steel/A313 | |
| 5 | Valve head | 316 Stainless Steel/A479 | Brass C36000/B16 |
| 6 | O-ring | 316 Stainless Steel/A479 | Brass C36000/B16 |
| 7 | | | |
| 8 | Stem Inserts | 316 Stainless Steel/A240 | Brass C36000/B36 |
| 9 | Shaft retaining ring | 316 Stainless Steel/A313 | |
| 10 | Steel Ball | 440C/A276 | |
| 11 | Spring | 316 Stainless Steel/A313 | |
| 12 | Tube body sleeve | 316 Stainless Steel/A479 | Brass C36000/B16 |
| 13 | O-ring | Fluorocarbon FKM | Nitrile rubber |
| 14 | Sliding Bushing | 316 Stainless Steel/A313 | Brass C36000/B16 |
| 15 | O-ring | Fluorocarbon FKM | Nitrile rubber |
| 16 | Valve head | 316 Stainless Steel/A479 | Brass C36000/B16 |
| 17 | Shell | 316 Stainless Steel/A479 | Brass C36000/B16 |
| 18 | Spring | 316 Stainless Steel/A313 | |
| 19 | Tube body | 316 Stainless Steel/A479 | Brass C36000/B16 |
| 20 | Lubricant | Silicone grease | |

## Pressure-Temperature Ratings

91M (double-end shutoff only) can be operated under pressure at low voltage. For specific parameters, please refer to the data in the table below.

| Material | 316 stainless steel | | | Brass |
|---|---|---|---|---|
| O-Ring Material | Fluorocarbon FKM | EPDM | Perfluoro FFKM | Nitrile rubber |
| Temperature °C (°F) | Pressure rating bar (psig) | | | |
| | Connect | | | |
| -45 (-50) | — | 275 (4000) | — | — |
| -17 (0) | 275 (4000) | 275 (4000) | 275 (4000) | 137 (2000) |
| -12 (10) | 275 (4000) | 275 (4000) | 275 (4000) | 137 (2000) |
| 4 (40) | 275 (4000) | 275 (4000) | 275 (4000) | 137 (2000) |
| 37 (100) | 275 (4000) | 275 (4000) | 275 (4000) | 137 (2000) |
| 65 (150) | 241 (3500) | 241 (3500) | 241 (3500) | 89.5 (1300) |
| 93 (200) | 192 (2800) | 192 (2800) | 192 (2800) | 48 (700) |
| 121 (250) | 144 (2100) | 144 (2100) | 144 (2100) | 13.7 (200) |
| 148 (300) | 96.4 (1400) | 96.4 (1440) | 96.4 (1400) | — |
| 176 (350) | 55.1 (800) | — | 55.1 (800) | — |
| 204 (400) | 13.7 (200) | — | 13.7 (200) | — |
| 260 (500) | — | — | 10.3 (150) | — |
| | Disconnect, when connecting and disconnecting | | | |
| 20 (70) | 6.8 (100) | | | |

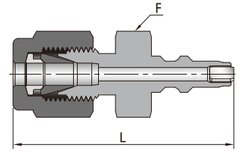




# Size

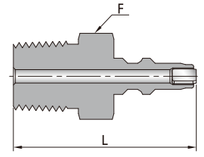
## Single-ended shut-off stem

Compression fittings



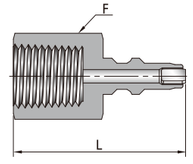

| Connector size in. | Basic order number | Flow coefficient (Cv) | L | F |
|---|---|---|---|---|
| | | | in. (mm) | in. |
| 1/16 | -91M-FJ1-S | 0.06 | 1.18 (30.0) | 7/16 |
| 1/8 | -91M-FJ2-S | | 1.29 (32.8) | |

Male thread NPT




| Thread size in. | Basic order number | Flow coefficient (Cv) | L | F |
|---|---|---|---|---|
| | | | in. (mm) | in. |
| 1/16 | -91M-N1-S | 0.06 | 1.03 (26.2) | 7/16 |
| 1/8 | -91M-N2-S | | | |

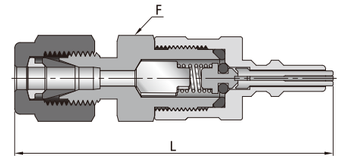
Female thread NPT




| Thread size in. | Basic order number | Flow coefficient (Cv) | L | F |
|---|---|---|---|---|
| | | | in. (mm) | in. |
| 1/16 | -91M-FN1-S | 0.06 | 1.03 (26.2) | 7/16 |
| 1/8 | -91M-FN2-S | | 1.18 (30.0) | 9/16 |

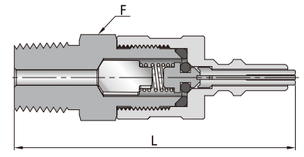
## Double-ended shut-off stem

Compression fittings



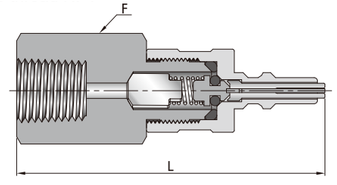

| Connector size in. | Basic order number | Flow coefficient (Cv) | L | F |
|---|---|---|---|---|
| | | | in. (mm) | in. |
| 1/16 | -91M-FJ1-D | 0.05 | 1.76 (44.7) | 7/16 |
| 1/8 | -91M-FJ2-D | | 1.87 (47.5) | |

Male thread NPT




| Thread size in. | Basic order number | Flow coefficient (Cv) | L | F |
|---|---|---|---|---|
| | | | in. (mm) | in. |
| 1/16 | -91M-N1-D | 0.05 | 1.61 (40.9) | 7/16 |
| 1/8 | -91M-N2-D | | | |

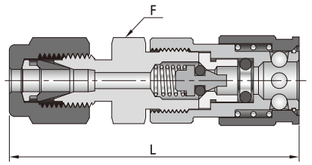
Female thread NPT




| Thread size in. | Basic order number | Flow coefficient (Cv) | L | F |
|---|---|---|---|---|
| | | | in. (mm) | in. |
| 1/16 | -91M-FN1-D | 0.05 | 1.61 (40.9) | 7/16 |
| 1/8 | -91M-FN2-D | | 1.81 (46.0) | 9/16 |

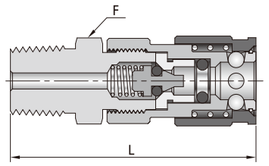
## Tube body

Compression fittings



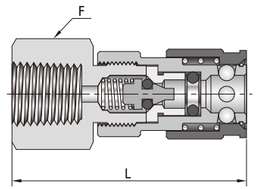

| Connector size in. | Basic order number | L | F |
|---|---|---|---|
| | | in. (mm) | in. |
| 1/16 | -91M-FJ1-B | 1.50 (38.1) | 7/16 |
| 1/8 | -91M-FJ2-B | 1.70 (43.2) | |

Male thread NPT



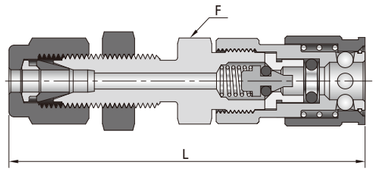

| Thread size in. | Basic order number | L | F |
|---|---|---|---|
| | | in. (mm) | in. |
| 1/16 | -91M-N1-B | 1.42 (36.1) | 7/16 |
| 1/8 | -91M-N2-B | 1.44 (36.6) | |

Female thread NPT




| Thread size in. | Basic order number | L | F |
|---|---|---|---|
| | | in. (mm) | in. |
| 1/16 | -91M-FN1-B | 1.43 (36.3) | 7/16 |
| 1/8 | -91M-FN2-B | 1.62 (41.1) | 9/16 |

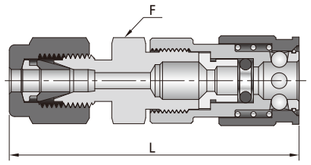
Compression Fittings




| Connector size in. | Basic order number | A | F | Minimum through-plate aperture in(mm) | Maximum plate thickness in(mm) |
|---|---|---|---|---|---|
| | | in. (mm) | in. | | |
| 1/8 | -91M-BFJ2-B | 2.09 (53.1) | 7/16 | 0.33 (8.3) | 0.25 (6.4) |

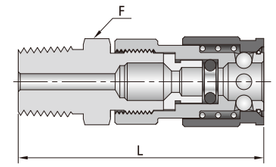
## Full flow pipe body

Compression fittings



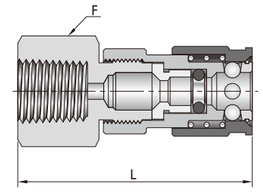

| Connector size in. | Basic order number | Flow coefficient (Cv) | L | F |
|---|---|---|---|---|
| | | | in. (mm) | in. |
| 1/16 | 91M-FJ1-F | 0.06 | 1.50 (38.1) | 7/16 |
| 1/8 | | | 1.70 (43.2) | |

Male thread NPT




| Thread size | Basic order number | Flow coefficient (Cv) | L | F |
|---|---|---|---|---|
| | | | in. (mm) | in. |
| 1/16 | -91M-N1-F | 0.06 | 1.42 (36.1) | 7/16 |
| 1/8 | -91M-N2-F | | 1.44 (36.6) | |

Female thread NPT




| Thread size | Basic order number | Flow coefficient (Cv) | L | F |
|---|---|---|---|---|
| | | | in. (mm) | in. |
| 1/16 | -91M-FN1-F | 0.06 | 1.43 (36.3) | 7/16 |
| 1/8 | -91M-FN2-F | | 1.62 (41.1) | 9/16 |

## Model Description

SS – 91M – FJ2 – S – B – CE

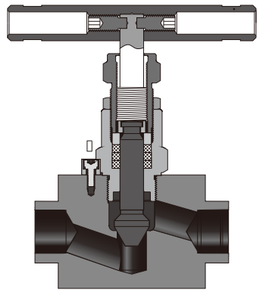
| Material | | Series | End Connection Type | | End Connection Size | | Stem or Body | | Seal Material | | Special Application | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| SS | 316 stainless steel | 91M | FN | NPT female thread | 1 | 1/16" | S | Without valve stem, open when not connected | | Fluorocarbon (FKM) | | None |
| B | Brass | | N | NPT male thread | 2 | 1/8" | D | With valve stem, closed when not connected | B | Nitrile rubber (NBR) | CE | NACE MR 0175 |
| | | | FRT | Imperial taper female thread | | | B | With valve body, closed when not connected | E | EPDM | | |
| | | | RT | Imperial taper male thread | | | F | Full fluid body | N | Chloroprene rubber (CR) | | |
| | | | FJ | Imperial double ferrule | | | | | Z | Perfluoro rubber (Kalrez) | | |
| | | | MJ | Metric double ferrule | | | | | | | | |

Note: 1. "Model Description" is used to explain the composition rules of E-JOE product models. It is not applicable to the specific selection of products and cannot be combined at will. If you have any questions, please contact E-JOE or an authorized agent.

2. Dimensions are for reference only and may be subject to change.

# Threaded bonnet needle valve

31 Series:Operating pressures up to 6000 psig

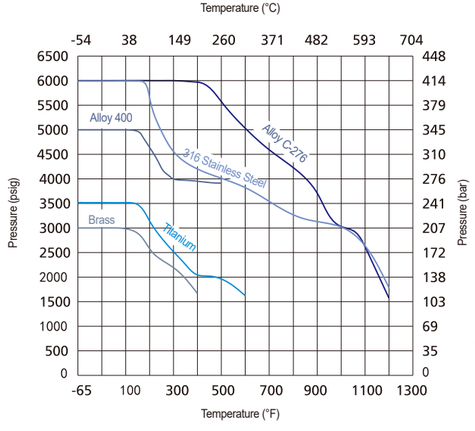


## Features

- Cold drawn square rod valve body
- Two-section valve stem design, upper valve stem thread is roll hardened, lower valve stem surface is specially hardened
- The grease of upper valve stem thread is isolated from system medium
- The non-rotating lower valve stem uses up and down movement instead of rotation and lifting, reducing the wear of packing on e-ach stroke and reducing the friction between the valve seat and the valve head
- The valve has a back seal function in the fully open position
- Can be panel mounted
- The handle is locked with screws at both ends, which is stable and durable
- A variety of handle colors are available
- Each valve is tested for sealing with nitrogen or compressed air at rated working pressure before leaving the factory
- Working pressures up to:
  Stainless steel: 414 bar (6000 psig)
  Alloy C-276: 414 bar (6000 psig)
  Alloy 400: 345 bar (5000 psig)
  Titanium: 241 bar (3500 psig)
  Brass: 207 bar (3000 psig)
- Working temperature:
  PTFE packing: -54°C to 232°C (-65° to 450°F)
  PEEK: -54°C to 260°C (-65°F to 500°F)
  Graphite packing: -54°C to 649*C (-65 ℉ to 1200°F)

## Temperature and pressure curve

31 Series




1. Graphs are based on graphite packing.
2. Maximum operating temperature is 93°C (200°F) with PCTFE valve tip (soft valve tip).
3. For graphs of other materials, please contact an authorized E-JOE distributor.

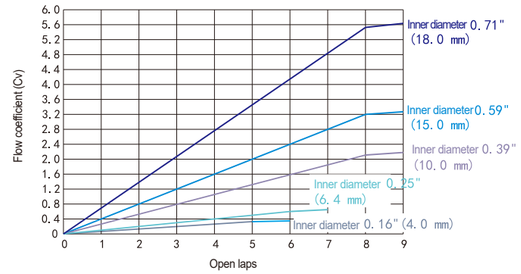




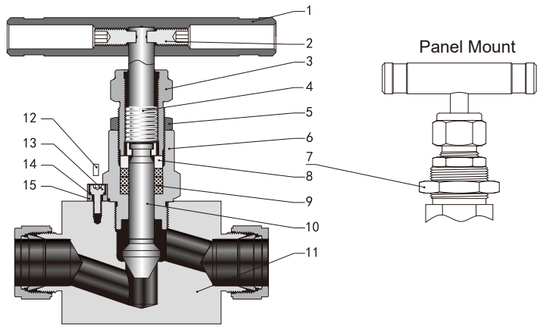


## Flow Data 38°C (100°F)

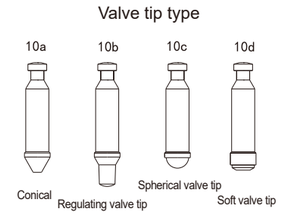
Regulating valve tip




## Standard structural materials




31 Series



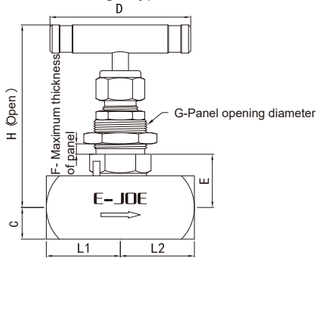

| Serial number | Component | Valve material | | | | |
|---|---|---|---|---|---|---|
| | | 316 stainless steel | Alloy 400 | Titanium | Alloy C-276 | Brass |
| | | Material Grade/ASTM Specification | | | | |
| 1 | Handle | Anodized aluminum bar, stainless steel bar handle, or black round handle | | | | |
| 2 | Set screw | Galvanized carbon steel | | | | |
| 3 | Packing gland | 304 stainless steel/A479 | | | | Brass C36000/B16 |
| 4 | Upper stem | 304 stainless steel/A479 | | | | |
| 5 | Locking nut | Stainless steel | | | | Brass C36000/B16 |

| Serial number | Component | Valve material | | | | |
|---|---|---|---|---|---|---|
| | | 316 stainless steel | Alloy 400 | Titanium | Alloy C-276 | Brass |
| | | Material Grade/ASTM Specification | | | | |
| 6 | Bonnet | 316 stainless steel/A479 | Alloy 400/B164 | Titanium Gr4/B348 | Alloy C-276/B574 | Brass C36000/B16 |
| 7 | Through plate nut | stainless steel | | | | Brass C36000/B16 |
| 8 | Compression ring | 316 stainless steel/A479 | | | | |
| 9 | Packing | PTFE, PEEK or graphite | | | | |
| 10a<br>10b<br>10c | Lower stem | Hardened<br>316 stainless steel / A479 | Alloy 400/B164 | Titanium Gr4/B348 | Alloy C-276/B574 | Hardened<br>316 stainless steel / A479 |
| 10d | Valve stem | 316 stainless steel/A479 | Alloy 400/B164 | Titanium Gr4/B348 | Alloy C-276/B574 | 316 stainless steel/A479 |
| | Valve tip | PTFE or PCTFE | | | | |
| 11 | Valve body | 316 stainless steel/A479 | Alloy 400/B164 | Titanium Gr4/B348 | Alloy C-276/B574 | Brass C36000/B16 |
| | Valve seat | Consistent with valve body | | | | |
| 12 | Pin | Stainless steel | | | | |
| 13 | Screw | Stainless steel | | | | |
| 14 | Elastic washer | Stainless steel | | | | |
| 15 | Stop nut | Stainless steel | | | | |
| | Lubricant | Molybdenum disulfide | | | | |

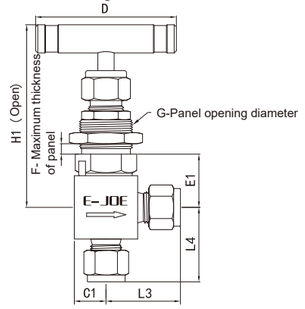
Note: 1. Part No. 12 is used for valves with internal diameters of 4.0 and 6.4 mm. For valves with internal diameters of 10.0, 15.0 and 18.0 mm, use parts No. 13, 14, 15 instead of part No. 12.
2. For valves made of other materials, please contact an E-JOE authorized agent.

## Size

Straight type




Angle




◎ Standard products do not have a through-plate structure by default. If you need to order a valve with a through-plate structure as shown in the figure, please add "-Y" after the basic ordering model, for example: SS-31-FN4-4-Y

31 series size table

| Basic Ordering Information | Port Type and Size | | Inner diameter in.(mm) | Cv | Size in.(mm) | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Import | Exit | | | L1 | L2 | L3 | L4 | C | C1 | D | E | E1 | F | G | H | H1 |
| □□-31-FN2-4 | 1/8 NPT female thread | 1/8NPT female thread | 0.16 (4.0) | 0.35 | 1.00 (25.4) | 1.00 (25.4) | 1.00 (25.4) | 0.56 (14.3) | 0.50 (12.7) | 0.50 (12.7) | 2.17 (55) | 0.84 (21.4) | 0.82 (20.9) | 0.25 (6.4) | 0.77 (19.6) | 2.86 (72.7) | 2.86 (72.7) |
| □□-31-FN4-4 | 1/4 NPT female thread | 1/4NPT female thread | | | 1.06 (26.9) | 1.06 (26.9) | | | | | | | | | | | |
| □□-31-N4-4 | 1/4 NPT male thread | 1/4NPT male thread | | | 1.03 (26.2) | 1.03 (26.2) | 1.06 (26.9) | 1.06 (26.9) | | | | | | | | | |
| □□-31-N6-4 | 3/8 NPT male thread | 3/8NPT male thread | | | 1.19 (30.2) | 1.19 (30.2) | | | | | | | | | | | |
| □□-31-FJ4-4 | 1/4" E-JOE | 1/4" E-JOE | | | 1.20 (30.5) | 1.20 (30.5) | 1.20 (30.5) | 1.20 (30.5) | | | | | | | | | |
| □□-31-MJ6-4 | 6 mm E-JOE | 6 mm E-JOE | | | | | | | | | | | | | | | |
| □□-31-MJ8-4 | 8 mm E-JOE | 8 mm E-JOE | | | | | | | | | | | | | | | |
| □□-31-FN4-6 | 1/4 NPT female thread | 1/4NPT female thread | 0.25 (6.4) | 0.85 | 1.12 (28.6) | 1.12 (28.6) | 1.12 (28.6) | 0.63 (15.9) | 0.56 (14.3) | 0.56 (14.3) | 2.50 (63.5) | 0.89 (22.5) | 0.89 (22.5) | 0.38 (9.7) | 0.96 (24.4) | 3.50 (88.9) | 3.50 (88.9) |
| □□-31-FN6-6 | 3/8 NPT female thread | 3/8NPT female thread | | | | | | 1.12 (28.6) | | | | | | | | | |
| □□-31-N6-6 | 3/8NPT male thread | 3/8NPT male thread | | | | | | | | | | | | | | | |
| □□-31-FJ6-6 | 3/8" E-JOE | 3/8" E-JOE | | | 1.41 (35.8) | 1.41 (35.8) | 1.32 (33.6) | 1.32 (33.6) | | | | | | | | | |







31 series size table

| Basic Ordering Information | Port Type and Size | | Inner diameter in.(mm) | Cv | Size in.(mm) | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Import | Exit | | | L1 | L2 | L3 | L4 | C | C1 | D | E | E1 | F | G | H | H1 |
| □□-31-FJ8-6 | 1/2" E-JOE | 1/2" E-JOE | 0.25 (6.4) | 0.85 | 1.52 (38.6) | 1.52 (38.6) | 1.42 (36.1) | 1.42 (36.1) | 0.56 (14.3) | 0.56 (14.3) | 2.50 (63.5) | 0.89 (22.5) | 0.89 (22.5) | 0.38 (9.7) | 0.96 (24.4) | 3.50 (88.9) | 3.50 (88.9) |
| □□-31-MJ10-6 | 10 mm E-JOE | 10 mm E-JOE | | | 1.42 (36.1) | 1.42 (36.1) | 1.33 (33.8) | 1.33 (33.8) | | | | | | | | | |
| □□-31-MJ12-6 | 12 mm E-JOE | 12 mm E-JOE | | | 1.52 (38.6) | 1.52 (38.6) | 1.42 (36.1) | 1.42 (36.1) | | | | | | | | | |
| □□-31-MJ14-6 | 14 mm E-JOE | 14 mm E-JOE | | | 1.56 (39.7) | 1.56 (39.7) | | | | | | | | | | | |
| □□-31-TS6-6-G | 3/8" TS | 3/8" TS | | | 1.13 (28.6) | 1.13 (28.6) | 1.13 (28.6) | 1.13 (28.6) | | | | | | | | | |
| □□-31-TS8-6-G | 1/2" TS | 1/2" TS | | | | | | | | | | | | | | | |
| □□-31-MTS12-6-G | 12 mm MTS | 12 mm MTS | | | | | | | | | | | | | | | |
| □□-31-MTS14-6-G | 14 mm MTS | 14 mm MTS | | | | | | | | | | | | | | | |
| □□-31-MTS16-6-G | 16 mm MTS | 16 mm MTS | | | | | | | | | | | | | | | |
| □□-31-MTB14-6-G | 14 mm MTB | 14 mm MTB | | | 1.50 (38.1) | 1.50 (38.1) | 1.50 (38.1) | 1.50 (38.1) | | | | | | | | | |
| □□-31-MTB16-6-G | 16 mm MTB | 16 mm MTB | | | | | | | | | | | | | | | |
| □□-31-UMB14-6 | 14 mm UMB | 14 mm UMB | | | 2.92 (74.1) | 2.92 (74.1) | —— | —— | | | | | | | | | |
| □□-31-UMB16-6 | 16 mm UMB | 16 mm UMB | | | | | | | | | | | | | | | |
| □□-31-MS20-6 | M20 x1.5 | M20 x1.5 | | | 1.50 (38.1) | 1.50 (38.1) | | | | | | | | | | | |
| □□-31-MS22-6 | M2 2 x1.5 | M2 2 x1.5 | | | | | | | | | | | | | | | |
| □□-31-FN8-10 | 1/2 Metric Male Thread | 1/2Metric Male Thread | 0.39 (10.0) | 2.18 | 1.75 (44.5) | 1.75 (44.5) | 1.63 (41.3) | 1.50 (38.1) | 0.88 (22.2) | 0.77 (19.5) | 3.50 (88.9) | 1.38 (34.9) | 1.25 (31.75) | 0.38 (9.7) | 1.08 (27.5) | 4.11 (104.5) | 4.11 (104.5) |
| □□-31-FN12-10 | 3/4 NPT female thread | 3/4 NPT female thread | | | | | 1.50 (38.1) | | | | | | | | | | |
| □□-31-N12-10 | 3/4 NPT male thread | 3/4 NPT male thread | | | | | | | | | | | | | | | |
| □□-31-FJ12-10 | 3/4" E-JOE | 3/4" E-JOE | | | 1.97 (50.0) | 1.97 (50.0) | 1.61 (41.0) | 1.61 (41.0) | | | | | | | | | |
| □□-31-MJ14-10 | 14 mm E-JOE | 14 mm E-JOE | | | | | | | | | | | | | | | |
| □□-31-MJ16-10 | 16 mm E-JOE | 16 mm E-JOE | | | | | | | | | | | | | | | |
| □□-31-MJ18-10 | 18 mm E-JOE | 18 mm E-JOE | | | | | | | | | | | | | | | |
| □□-31-MTS14-10-G | 14 mm MTS | 14 mm MTS | | | 1.75 (44.5) | 1.75 (44.5) | —— | —— | | | | | | | | | |
| □□-31-MTS16-10-G | 16 mm MTS | 16 mm MTS | | | | | | | | | | | | | | | |
| □□-31-TS12-10-G | 3/4" TS | 3/4" TS | | | | | | | | | | | | | | | |
| □□-31-UMB14-10 | 14 mm UMB | 14 mm UMB | | | 2.98 (75.7) | 2.98 (75.7) | | | | | | | | | | | |
| □□-31-MS27-10 | M27 x 2<br>Metric Male Thread | M27 x 2<br>Metric Male Thread | | | 1.56 (39.7) | 1.56 (39.7) | | | | | | | | | | | |
| □□-31-FN12-15 | 3/4 NPT female thread | 3/4 NPT female thread | 0.59 (15.0) | 3.27 | 1.75 (44.5) | 1.75 (44.5) | 1.75 (44.5) | 1.14 (29.0) | 1.14 (29.0) | 0.88 (22.2) | 5.00 (127) | 1.70 (43.2) | 1.43 (36.4) | 0.38 (9.7) | 1.28 (32.5) | 5.00 (127) | 4.72 (120) |
| □□-31-TS16-15-G | 1" TS | 1" TS | | | | | 1.75 (44.5) | 1.75 (44.5) | | | | | | | | | |
| □□-31-MTS25-15-G | 25 mm MTS | 25 mm MTS | | | | | | | | | | | | | | | |
| □□-31-MTS28-15-G | 28 mm MTS | 28 mm MTS | | | | | | | | | | | | | | | |
| □□-31-PS12-15-G | 3/4 PS | 3/4 PS | | | | | | | | | | | | | | | |
| □□-31-FN16-18 | 1 NPT female thread | 1 NPT female thread | 0.71 (18.0) | 5.65 | 1.97 (50.0) | 1.97 (50.0) | —— | —— | 1.24 (31.5) | —— | 5.00 (127) | —— | —— | —— | —— | 5.25 (133.3) | —— |
| □□-31-MTS25-18-G | 25 mm MTS | 25 mm MTS | | | | | | | | | | | | | | | |
| □□-31-TS16-18-G | 1" TS | 1" TS | | | | | | | | | | | | | | | |
| □□-31-MTS28-18-G | 28 mm MTS | 28 mm MTS | | | | | | | | | | | | | | | |
| □□-31-PS12-18-G | 3/4 PS | 3/4 PS | | | | | | | | | | | | | | | |
| □□-31-PS16-18-G | 1 PS | 1 PS | | | | | | | | | | | | | | | |

1. E-J0E in the port type is E-J0E double ferrule joint. The valve working pressure of E-J0E double ferrule joint is related to the wall thickness of the selected Tubing pipe. For its working pressure, please refer to the allowable pressure value in the "Trubing pipe" sample.
2. TS in the port type is British Tube pipe plug welding, MTS is Metric Tube pipe plug welding, MTB is Metric Tube pipe butt welding, UMB is Metric Tube pipe union butt welding, PS is Pipe pipe plug welding.
3. The listed sizes and types are standard. Other sizes and types are available. Please contact E-J0E authorized agents.
4. The valve size of E-J0E ferrule joint in the listed port type is the size when the ferrule nut is hand-tightened. All sizes are for reference only and may change. For sizes not listed above, please contact E-J0E authorized agents.

## Model Description

SS – 31 – FJ8 MJ12 – 6WB – GYM – ASF2

| | Valve body material | Series | Inlet type | Inlet size | Outlet type | Outlet size | Internal diameter | Valve tip material | Valve tip type | Packing material | Panel mounting | Handle | Flow type | Special application | Cleaning and packaging |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Valve body material | Series | Inlet type | Inlet size | Outlet type | Outlet size | Internal diameter | Valve tip material | Valve tip type | Packing material | Panel mounting | Handle | Flow type | Special application | Cleaning and packaging |
| SS | 316 Stainless steel | 31 | FN NPT female thread | 2 1/8" | | | 4 0.16" (4.0 mm) | W Same as valve body | R Conical | P PTFE | Y No | C Black anodized aluminium bar handle | A Straight type | None | F0-01 |
| 6L | 316L Stainless steel | | N NPT male thread | 4 1/4" | | | 6 0.25" (6.4 mm) | Stellite | Adjustable | PEEK | Yes | F Red anodized aluminium bar handle | Angle type | MR0175 | F2 F0-02 |
| S4 | 304 Stainless steel | | FRT BSPT female thread | 6 3/8" or 6 mm | | | 10 0.39" (10 mm) | D5 2205 Duplex Steel | B Spherical | G Graphite | | J Green anodized aluminium bar handle | | NACE | |
| 4L | 304L Stainless steel | | RT BSPT male thread | 8 1/2" or 8 mm | | | 15 0.59" (15 mm) | T1 Titanium | T Soft tip-PTFE | | | M Blue anodized aluminium bar handle | | S | |
| S1 | 321 Stainless steel | | FMS Metric female thread (Suitable for RG gasket) | 10 10 mm | | | 18 0.71" (18 mm) | A20 Alloy 20 | K Soft tip-PCTFE | | | 0 Stainless steel handle | | | |
| 91 | F91 | | MS Metric male thread (Suitable for RG gasket) | 12 3/4" 12 mm | | | | M Alloy 400 | Soft tip selection is only available for 0.16" (4.0mm), 0.25" (6.4mm) and 0.39" (10mm) internal diameters in the 31 series | | | Black round handle (only for 0.16" (4.0mm) and 0.25" (6.4mm) inner diameters in 31 series) | | | |
| 92 | F92 | | FRP BSPP female thread (Suitable for RG gasket) | 14 14 mm M14 x 1.5 | | | | INC Alloy 600 | | | | | | | |
| D5 | 2205 Duplex Steel | | BP BSPP male thread (Suitable for RG gasket) | 16 1" or 16 mm | | | | HC Alloy C-276 | | | | | | | |
| T1 | Titanium | | TS Imperial tube plug welding | 18 18 mm | | | | | | | | | | | |
| A20 | Alloy 20 | | MTS Metric tube plug welding | 20 1 1/4" or 20 mm or M20 x 1.5 | | | | | | | | | | | |
| M | Alloy 400 | | TB Imperial tube butt welding | 22 22 mm or M22 x 1.5 | | | | | | | | | | | |
| INC | Alloy 600 | | MTB Metric tube butt welding | 24 M24 x 1.5 | | | | | | | | | | | |
| HC | Alloy C-276 | | PS Pipe plug welding | 25 25 mm | | | | | | | | | | | |
| B | Brass | | PB Pipe butt welding | 27 M27 x 2 | | | | | | | | | | | |
| CS | Carbon Steel | | FJ Imperial double ferrule fitting | 28 28 mm | Consistent with imports | The marking method is consistent with the import type and import size | | | | | | | | | |
| 904L | 904L Stainless steel | | MJ Metric double ferrule fittings | | | | | | | | | | | | |
| | | | UFB Imperial tube butt weld joints | | | | | | | | | | | | |
| | | | UMB Metric tube butt weld joints | | | | | | | | | | | | |

Note: "Model Description" is used to explain the composition rules of E-J0E product models. It is not applicable to the specific selection of products and cannot be combined at will. If you have any questions, please contact E-J0E authorized agents.

1. The standard pitch of metric threads is as follows:
M10 and below: 1mm
M12 and below: 1.5mm
M27 and below: 2mm
The standard pitch has been omitted in the model.
2. Cleaning and packaging:
FC-Q1 Standard cleaning and packaging for general industrial use.
FC-Q2 Special cleaning and packaging for infiltration system components, meeting ASTM G93 C grade requirements.







# Forged body needle valve

32 Series: Working pressure up to 6000 psig

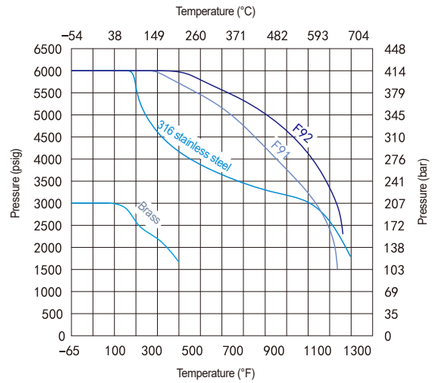
32H Series: Working pressure up to 10000 psig

## Features

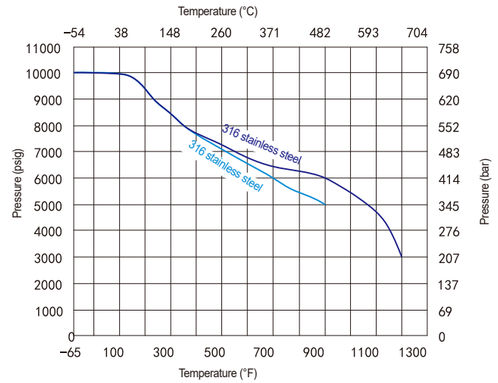
- One-piece forged valve body
- Two-piece valve stem design, upper valve stem thread is roll-hardened, lower valve stem surface is specially hardened
- The grease of upper valve stem thread is isolated from system media
- The non-rotating lower valve stem uses up-and-down movement instead of rotation and lifting, reducing the wear of packing on each stroke and the friction between the valve seat and the valve head
- Can be panel mounted
- The handle is locked with screws at both ends, which is stable and durable
- A variety of handle colors are available
- Each valve is tested for sealing with nitrogen or compressed air (32 series) at rated working pressure or water (32H series) at 1.1 times rated working pressure before leaving the factory
- Working pressure can reach:
  32 series-stainless steel: 414 bar (6000 psig)
  Alloy C-276: 414bar 6000 psig)
  Alloy 400: 345 bar (5000 psig)
  Titanium: 241 bar (3500 psig)
  Brass: 207 bar (3000 psig)
  32H Series - Stainless Steel: 690 bar (10,000 psig)
- Operating Temperature:
  PTFE Packing: -54°C to 232°C (-65°F to 450°F)
  PEEK Packing: -54°C to 260°C (-65°F to 500°F)
  Graphite Packing: -54°C to 649°C (-65°F to 1200°F)

## Temperature and pressure curve

32 Series



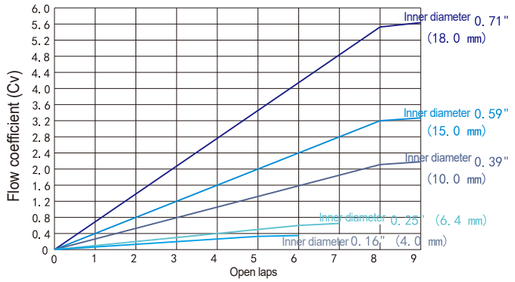

32H Series



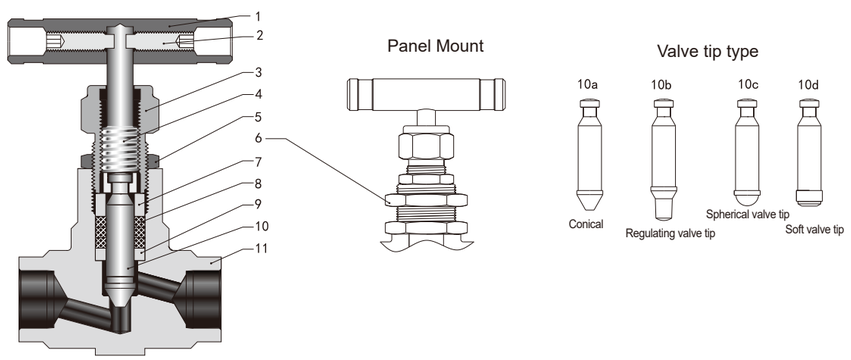

1. The curve is based on graphite packing
2. The soft valve tip is only applicable to 32 series needle valves. The maximum operating temperature of PCTFE valve tip (soft valve tip) is 93°C (200°F).
3. For curves of other materials, please contact E-J0E authorized agents.

# Flow Data 38°C (100°F)

Adjust the valve tip




## Standard structural materials




| Serial number | Component | Valve material | | |
|---|---|---|---|---|
| | | 316 stainless steel | F91 | Brass |
| | | Material Grade/ASTM Specification | | |
| 1 | Handle | Anodized aluminum bar, stainless steel bar handle, or black round handle | | |
| 2 | Set screw | Galvanized carbon steel | | |
| 3 | Packing gland | 304 stainless steel/A479 | F91/A182 | Brass C36000/B16 |
| 4 | Upper stem | 316 stainless steel/A479 | | |
| 5 | Locking nut | Stainless steel | 1020/A108 | Brass C36000/B16 |
| 6 | Through-plate nut | Stainless steel | 1020/A108 | Brass C36000/B16 |
| 7 | Compression ring | 316 stainless steel/A479 | | Brass C36000/B16 |
| 8 | Packing | PTFE or PEEK or Graphite | | |
| 9 | Packing pad | 316 stainless steel/A479 | | Brass C36000/B16 |
| 10a<br>10b<br>10c | Lower stem | Hardened<br>316 stainless steel/A479 | | |
| 10d | Valve stem | 316 stainless steel/A479 | | |
| | Valve tip | PTFE or PCTEE | | |
| 11 | Valve body | 316 stainless steel/A182 | F91/A182 | Brass C36000/B16 |
| | Valve seat | Same as valve body | | |
| | Lubricant | Molybdenum disulfide based | | |

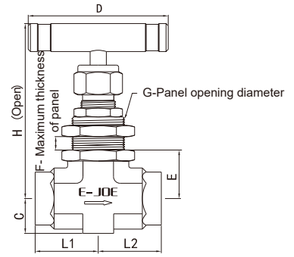
Note: 1. For valves made of other materials, please contact E-J0E authorized agents.



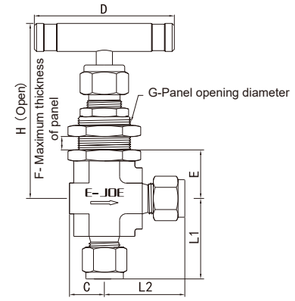


# Size

Straight type




Angle type




◎ Standard products do not have a through-plate structure by default. If you need to order a valve with a through-plate structure as shown in the figure, please add "-Y" after the basic ordering model, for example: SS-32-FN4-4-Y

32 series size table

| Basic Ordering Information | Port Type and Size | | Inner diameter in.(mm) | Cv | Size in.(mm) | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Import | Exit | | | L1 | L2 | H | D | C | E | F | G |
| □□-32-FN2-4 | 1/8 NPT female thread | 1/8 NPT female thread | 0.16 (4.0) | 0.35 | 1.00 (25.4) | 1.00 (25.4) | 2.85 (72.5) | 2.17 (55) | 0.49 (12.5) | 0.71 (18.0) | 0.25 (6.4) | 0.77 (19.6) |
| □□-32-FN4-4 | 1/4 NPT female thread | 1/4 NPT female thread | | | 1.03 (26.2) | 1.03 (26.2) | | | | | | |
| □□-32-FJ4-4 | 1/4" E-J0E | 1/4" E-J0E | | | 1.22 (30.9) | 1.22 (30.9) | | | | | | |
| □□-32-MJ6-4 | 6 mm E-J0E | 6 mm E-J0E | | | | | | | | | | |
| □□-32-MJ8-4 | 8 mm E-J0E | 8 mm E-J0E | | | 1.25 (31.75) | 1.25 (31.75) | | | | | | |
| □□-32-N4-4 | 1/4 NPT male thread | 1/4 NPT male thread | | | 1.03 (26.2) | 1.03 (26.2) | | | | | | |
| □□-32-N6-4 | 3/8 NPT male thread | 3/8 NPT male thread | | | 1.13 (28.6) | 1.13 (28.6) | | | | | | |
| □□-32-F04-4 | 1/4" FO male thread | 1/4" FO male thread | | | | | | | | | | |
| □□-32-FR4-4 | 1/4" FR male thread | 1/4" FR male thread | | | | | | | | | | |
| □□-32-FN4-6 | 1/4 NPT female thread | 1/4 NPT female thread | 0.25 (6.4) | 0.85 | 1.13 (28.6) | 1.13 (28.6) | 3.38 (85.8) | 2.50 (63.5) | 0.62 (15.8) | 0.87 (22.0) | 0.38 (9.7) | 0.96 (24.4) |
| □□-32-FN6-6 | 3/8 NPT female thread | 3/8 NPT female thread | | | | | | | | | | |
| □□-32-N6-6 | 3/8 NPT male thread | 3/8 NPT male thread | | | 1.42 (36.1) | 1.42 (36.1) | | | | | | |
| □□-32-FJ6-6 | 3/8" E-J0E | 3/8" E-J0E | | | 1.44 (36.5) | 1.44 (36.5) | | | | | | |
| □□-32-MJ10-6 | 10 mm E-J0E | 10 mm E-J0E | | | | | | | | | | |
| □□-32-MJ12-6 | 12 mm E-J0E | 12 mm E-J0E | | | 1.53 (38.9) | 1.53 (38.9) | | | | | | |
| □□-32-MJ14-6 | 14 mm E-J0E | 14 mm E-J0E | | | 1.56 (39.7) | 1.56 (39.7) | | | | | | |
| □□-32-FN8-6 | 1/2 NPT female thread | 1/2 NPT female thread | | | 1.26 (32.0) | 1.26 (32.0) | | | 0.76 (19.4) | | | |
| □□-32-N8-6 | 1/2 NPT male thread | 1/2 NPT male thread | | | 1.50 (38.1) | 1.50 (38.1) | | | | | | |
| □□-32-FJ8-6 | 1/2" E-J0E | 1/2" E-J0E | | | 1.53 (38.9) | 1.53 (38.9) | | | | | | |
| □□-32-TS6-6-G | 3/8" TS | 3/8" TS | | | 1.13 (28.6) | 1.13 (28.6) | | | 0.62 (15.8) | | | |
| □□-32-TS8-6-G | 1/2" TS | 1/2" TS | | | | | | | | | | |
| □□-32-MTS12-6-G | 12 mm MTS | 12 mm MTS | | | | | | | | | | |
| □□-32-MTS14-6-G | 14 mm MTS | 14 mm MTS | | | | | | | | | | |
| □□-32-MTS16-6-G | 16 mm MTS | 16 mm MTS | | | | | | | | | | |
| □□-32-MTB14-6-G | 14 mm MTB | 14 mm MTB | | | 1.50 (38.1) | 1.50 (38.1) | | | | | | |
| □□-32-MTB16-6-G | 16 mm MTB | 16 mm MTB | | | | | | | | | | |
| □□-32-UMB14-6 | 14 mm UMB | 14 mm UMB | | | 2.92 (74.1) | 2.92 (74.1) | | | | | | |
| □□-32-UMB16-6 | 16 mm UMB | 16 mm UMB | | | | | | | | | | |
| □□-32-F08-6 | 1/2"FO male thread | 1/2"FO male thread | | | 1.13 (28.6) | 1.13 (28.6) | | | | | | |
| □□-32-FR8-6 | 1/2" FR male thread | 1/2" FR male thread | | | 1.56 (39.7) | 1.56 (39.7) | | | | | | |
| □□-32-MS20-6 | M20 x 1.5 Metric Male Thread | M20 x 1.5 Metric Male Thread | | | 1.50 (38.1) | 1.50 (38.1) | | | | | | |



idealPower

32 series size table

| Basic Ordering Information | Port Type and Size | | Inner diameter in.(mm) | Cv | Size in.(mm) | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Import | Exit | | | L1 | L2 | H | D | C | E | F | G |
| □□-32-MS22-6 | M22 x 1.5 Metric Male Thread | M22 x 1.5Metric Male Thread | 0.25 (6.4) | 0.85 | 1.50 (38.1) | 1.50 (38.1) | 3.38 (85.8) | 2.50 (63.5) | 0.62 (15.8) | 0.87 (22.0) | 0.38 (9.7) | 0.96 (24.4) |
| □□-32-FN8-10 | 1/2 NPT female thread | 1/2 NPT female thread | 0.39 (10.0) | 2.18 | 1.56 (39.7) | 1.56 (39.7) | 3.86 (98.0) | 3.50 (88.9) | 0.80 (20.4) | 1.10 (28.3) | 0.38 (9.7) | 1.08 (27.5) |
| □□-32-N12-10 | 3/4 NPT male thread | 3/4 NPT male thread | | | | | | | | | | |
| □□-32-FJ12-10 | 3/4" E-J0E | 3/4" E-J0E | | | 1.97 (50.0) | 1.97 (50.0) | | | 0.76 (19.4) | | | |
| □□-32-MJ14-10 | 14 mm E-J0E | 14 mm E-J0E | | | | | | | | | | |
| □□-32-MJ16-10 | 16 mm E-J0E | 16 mm E-J0E | | | | | | | | | | |
| □□-32-MJ18-10 | 18 mm E-J0E | 18 mm E-J0E | | | | | | | | | | |
| □□-32-MJ20-10 | 20 mm E-J0E | 20 mm E-J0E | | | | | | | | | | |
| □□-32-MTS14-10-G | 14 mm MTS | 14 mm MTS | | | 1.56 (39.7) | 1.56 (39.7) | | | 0.80 (20.4) | | | |
| □□-32-MTS16-10-G | 16 mm MTS | 16 mm MTS | | | | | | | | | | |
| □□-32-MTS18-10-G | 18 mm MTS | 18 mm MTS | | | | | | | | | | |
| □□-32-TS12-10-G | 3/4" TS | 3/4" TS | | | | | | | | | | |
| □□-32-PS8-10-G | 1/2 PS | 1/2 PS | | | | | | | | | | |
| □□-32-MTB16-10-G | 16 mm MTB | 16 mm MTB | | | | | | | 0.76 (19.4) | | | |
| □□-32-UMB14-10 | 14 mm UMB | 14 mm UMB | | | 2.98 (75.7) | 2.98 (75.7) | | | | | | |
| □□-32-UMB16-10 | 16 mm UMB | 16 mm UMB | | | | | | | | | | |
| □□-32-MS27-10 | M27 x 2 Metric Male Thread | M27 x 2 Metric Male Thread | | | 1.56 (39.7) | 1.56 (39.7) | | | | | | |
| □□-32-FN12-15 | 3/4 NPT female thread | 3/4 NPT female thread | 0.59 (15.0) | 3.27 | 1.97 (50.0) | 1.97 (50.0) | 5.00 (127) | 5.00 (127) | 1.08 (27.5) | 1.61 (41.0) | 0.38 (9.7) | 1.45 (36.8) |
| □□-32-TS16-15-G | 1" TS | 1" TS | | | | | | | | | | |
| □□-32-MTS25-15-G | 25 mm MTS | 25 mm MTS | | | | | | | | | | |
| □□-32-MTS28-15-G | 28 mm MTS | 28 mm MTS | | | | | | | | | | |
| □□-32-PS12-15-G | 3/4 PS | 3/4 PS | | | | | | | | | | |
| □□-32-PB12-15-G | 3/4 PB | 3/4 PB | | | | | | | | | | |
| □□-32-FJ12-15 | 3/4" E-J0E | 3/4" E-J0E | | | 2.35 (59.7) | 2.35 (59.7) | | | | | | |
| □□-32-MJ20-15 | 20 mm E-J0E | 20 mm E-J0E | | | | | | | | | | |
| □□-32-TS16-18-G | 1" TS | 1" TS | 0.71 (18.0) | 5.65 | 1.97 (50.0) | 1.97 (50.0) | 5.33 (135.4) | 5.00 (127) | 1.08 (27.5) | 1.61 (41.0) | 0.38 (9.7) | 1.45 (36.8) |
| □□-32-MTS25-18-G | 25 mm MTS | 25 mm MTS | | | | | | | | | | |
| □□-32-MTS28-18-G | 28 mm MTS | 28 mm MTS | | | | | | | | | | |
| □□-32-PS12-18-G | 3/4 PS | 3/4 PS | | | | | | | | | | |
| □□-32-PB16-18-G | 1 PB | 1 PB | | | | | | | | | | |

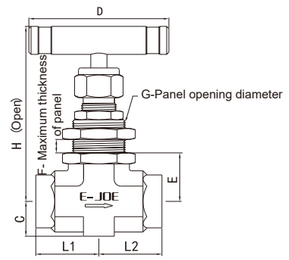
1. E-J0E in the port type is E-J0E double ferrule joint. The valve working pressure of E-J0E double ferrule joint is related to the wall thickness of the selected Tubing pipe. For its working pressure, please refer to the allowable pressure value in the "Trubing pipe" sample.
2. Among the port types, F0 is an O-shaped end face seal joint, FR is a metal gasket end face seal joint, TS is an imperial tube plug weld, MTS is a metric tube plug weld, MTB is a metric tube butt weld, UMB is a metric tube union butt weld, PS is a pipe plug weld, and PB is a pipe butt weld.
3. The listed sizes and types are standard. Other sizes and types are available. Please contact E-J0E authorized agents.
4. The valve size of E-J0E ferrule joint in the listed port type is the size when the ferrule nut is hand-tightened. All sizes are for reference only and may change. For sizes not listed above, please contact E-J0E authorized agents.



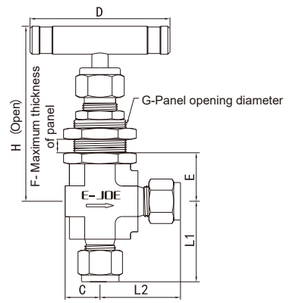




Straight type




Angle type




◎ Standard products do not have a through-plate structure by default. If you need to order a valve with a through-plate structure as shown in the figure, please add "-Y" after the basic ordering model, for example: SS-32-FN2-4-Y

32H series size table

| Basic Ordering Information | Port Type and Size | | Inner diameter in.(mm) | Cv | Size in.(mm) | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Import | Exit | | | L1 | L2 | H | D | C | E | F | G |
| □□-32H-FJ4-4 | 1/4" E-J0E | 1/4" E-J0E | 0.16 (4.0) | 0.35 | 1.41 (35.8) | 1.41 (35.8) | 2.85 (72.5) | 2.17 (55) | 0.62 (15.8) | 0.76 (19.4) | 0.25 (6.4) | 0.77 (19.6) |
| □□-32H-FN2-4 | 1/8 NPT female thread | 1/8 NPT female thread | | | 1.00 (25.4) | 1.00 (25.4) | | | | | | |
| □□-32H-FN4-4 | 1/4 NPT female thread | 1/4 NPT female thread | | | 1.06 (26.2) | 1.06 (26.2) | | | | | | |
| □□-32H-N4-4 | 1/4 NPT male thread | 1/4 NPT male thread | | | 1.22 (30.9) | 1.22 (30.9) | | | | | | |
| □□-32H-FN4N4-4 | 1/4 NPT male thread | 1/4 NPT male thread | | | 1.06 (26.2) | 1.22 (30.9) | | | | | | |
| □□-32H-TS4-4-G | 1/4" TS | 1/4" TS | | | 1.06 (26.2) | 1.0 (26.2) | | | | | | |
| □□-32H-FN4-6 | 1/4 NPT female thread | 1/4 NPT female thread | 0.25 (6.4) | 0.85 | 1.12 (28.6) | 1.12 (28.6) | 3.38 (85.8) | 2.50 (63.5) | 0.76 (19.4) | 0.87 (22.0) | 0.38 (9.7) | 0.96 (24.4) |
| □□-32H-FN6-6 | 3/8 NPT female thread | 3/8 NPT female thread | | | | | | | | | | |
| □□-32H-N6-6 | 3/8 NPT male thread | 3/8 NPT male thread | | | 1.50 (38.1) | 1.50 (38.1) | | | | | | |
| □□-32H-TS8-10-G | 1/2" TS | 1/2" TS | 0.39 (10.0) | 2.18 | 1.56 (39.7) | 1.56 (39.7) | 3.86 (98.0) | 3.50 (88.9) | 0.76 (19.4) | 1.10 (28.3) | 0.38 (9.7) | 1.08 (27.5) |
| □□-32H-MTS16-10-G | 16 mm MTS | 16 mm MTS | | | | | | | 0.80 (20.4) | | | |
| □□-32H-MTB25-10-G | 25 mm MTB | 25 mm MTB | | | | | 4.16 (105.7) | | 0.88 (22.2) | | | |
| □□-32H-FN8-10 | 1/2 NPT female thread | 1/2 NPT female thread | | | | | | | | | | |

1. E-J0E in the port type is E-J0E double ferrule joint. The valve working pressure of E-J0E double ferrule joint is related to the wall thickness of the selected Tubing pipe. For its working pressure, please refer to the allowable pressure value in the "Trubing pipe" sample.
2. In the port type, TS is British tube plug welding, MTS is metric tube plug welding, and MTB is metric tube butt welding.
3. The listed sizes and types are standard. Other sizes and types are available. Please contact E-J0E authorized agents.
4. The valve size of E-J0E ferrule joint in the listed port type is the size when the ferrule nut is hand-tightened. All sizes are for reference only and may change. For sizes not listed above, please contact E-J0E authorized agents.

## Model Description

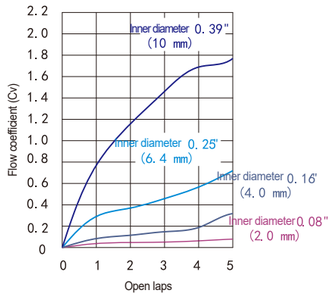
S4 – 32 – TS16 MTS25 – 18WR – GYM – ASF2

| | | |

Needle Valves

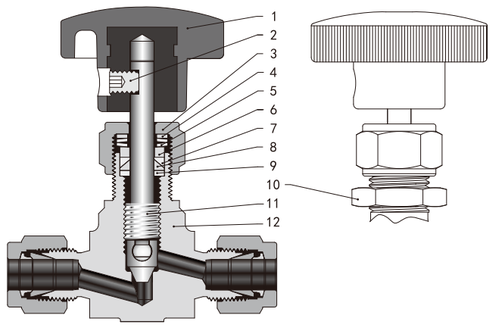
## Flow Data 38°C (100°F)

Regulating valve tip

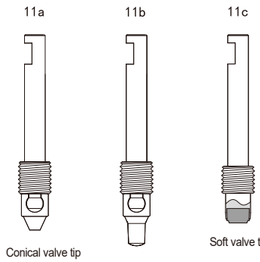



## Standard structural materials

Panel Mount



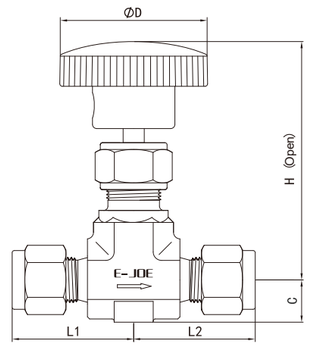

Valve tip type



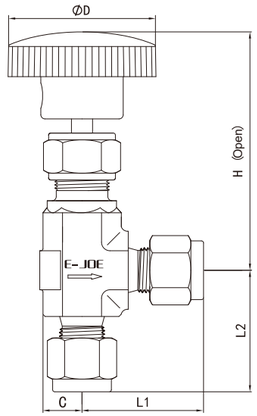

| Serial number | Component | Valve material | | |
|---|---|---|---|---|
| | | 316 stainless steel | Brass | Alloy 400 |
| | | Material Grade/ASTM Specification | | |
| 1 | Handle | Black round handle (aluminum alloy or nylon with copper insert), aluminum alloy bar handle or stainless steel bar handle | | |
| 2 | Set screw | Galvanized carbon steel | | |
| 3 | Packing gland | 304 stainless steel/A479 | Brass C36000/B16 | 304 stainless steel/A479 |
| 4 | Gasket | 316 stainless steel/A479 | | |
| 5 | Butterfly spring | S17700/A 693 | | |
| 6 | Gasket | 316 stainless steel/A479 | | |
| 7 | Upper packing | PTFE/PEEK | | |
| 8 | Lower packing | | | |
| 9 | Packing pad | 316 stainless steel/A479 | | Alloy 400/B164 |
| 10 | Through plate nut | Stainless steel | Brass C36000/B16 | Stainless steel |
| 11a | Valve stem | 316 stainless steel/A479 | | Alloy 400/B164 |
| 11b | Valve tip | Hardened 316 stainless steel/A479 | | Alloy 400/B164 |
| 11c | Valve stem | 316 stainless steel/A479 | | Alloy 400/B164 |
| | Valve tip | PCTFE or PEEK | | |
| 12 | Valve body | 316 stainless steel/A182 | Brass C36000/B16 | Alloy 400/B564 |
| | Lubricant | Molybdenum disulfide | | |

Note: 1. For valves made of other materials, please contact E-J0E authorized agents.

Straight type




Angle type




33 series size table

| Basic Ordering Information | Port Type and Size | | Inner diameter in.(mm) | Cv | Size in.(mm) | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | Import | Exit | | | L1 | L2 | C | D | H |
| □□-33-N2-2 | 1/8 NPT male thread | 1/8 NPT male thread | 0. 08 (2. 0) | 0. 09 | 0. 75 (19. 05) | 0. 75 (19. 05) | 0. 32 (8. 2) | 1. 00 (25. 4) | 2. 30 (58. 4) |
| □□-33-FN2-2 | 1/8 NPT female thread | 1/8 NPT female thread | | | 0. 81 (20. 6) | 0. 81 (20. 6) | | | |
| □□-33-FJ2-2 | 1/8" E-J0E | 1/8'' E-J0E | | | 0. 98 (25. 0) | 0. 98 (25. 0) | | | |
| □□-33-MJ3-2 | 3 mm E-J0E | 3 mm E-J0E | | | | | | | |
| □□-33-FN2-4 | 1/8 NPT female thread | 1/8 NPT female thread | 0. 16 (4. 0) | 0. 35 | 0. 81 (20. 6) | 0. 81 (20. 6) | 0. 39 (10. 0) | 1. 38 (35. 0) | 2. 46 (62. 5) |
| □□-33-N4-4 | 1/4 NPT male thread | 1/4 NPT male thread | | | 0. 98 Ø25. 0) | 0. 98 Ø25. 0) | | | |
| □□-33-FJ4-4 | 1/4" E-J0E | 1/4" E-J0E | | | 1. 13 (28. 7) | 1. 13 (28. 7) | | | |
| □□-33-MJ6-4 | 6 mm E-J0E | 6 mm E-J0E | | | | | | | |
| □□-33-MJ8-4 | 8 mm E-J0E | 8 mm E-J0E | | | 1. 17 (29. 7) | 1. 17 (29. 7) | | | |
| □□-33-UMB6-4 | 6 mm UMB | 6 mm UMB | | | 2. 24 (57. 0) | 2. 24 (57. 0) | | | |
| □□-33-FN4-6 | 1/4 NPT female thread | 1/4 NPT female thread | 0. 25 (6. 4) | 0. 70 | 1. 06 (26. 9) | 1. 06 (26. 9) | 0. 49 (12. 5) | 1. 88 (47. 8) | 2. 85 (72. 4) |
| □□-33-FN6-6 | 3/8 NPT female thread | 3/8 NPT female thread | | | | | 0. 62 (15. 8) | | 2. 90 (73. 7) |
| □□-33-N6-6 | 3/8 NPT male thread | 3/8 NPT male thread | | | 1. 12 (28. 4) | 1. 12 (28. 4) | 0. 49 (12. 5) | | 2. 85 (72. 4) |
| □□-33-N8-6 | 1/2 NPT male thread | 1/2 NPT male thread | | | 1. 50 (38. 1) | 1. 50 (38. 1) | 0. 62 (15. 8) | | 2. 90 (73. 7) |
| □□-33-FJ6-6 | 3/8" E-J0E | 3/8" E-J0E | | | 1. 29 (32. 8) | 1. 29 (32. 8) | 0. 49 (12. 5) | | 2. 85 (72. 4) |
| □□-33-FJ8-6 | 1/2" E-J0E | 1/2" E-J0E | | | 1. 40 (35. 6) | 1. 40 (35. 6) | | | |
| □□-33-MJ10-6 | 10 mm E-J0E | 10 mm E-J0E | | | 1. 30 (33. 0) | 1. 30 (33. 0) | | | |
| □□-33-MJ12-6 | 12 mm E-J0E | 12 mm E-J0E | | | 1. 40 (35. 6) | 1. 40 (35. 6) | | | |
| □□-33-MJ14-6 | 14 mm E-J0E | 14 mm E-J0E | | | 1. 56 (39. 7) | 1. 56 (39. 7) | 0. 62 (15. 8) | | 2. 90 (73. 7) |
| □□-33-MS20-6 | M20 x 1. 5Metric Male Thread | M20 x 1. 5Metric Male Thread | | | 1. 50 (38. 1) | 1. 50 (38. 1) | | | |
| □□-33-UMB10-6 | 10 mm UMB | 10 mm UMB | | | 2. 60 (66. 0) | 2. 60 (66. 0) | 0. 49 (12. 5) | | 2. 85 (72. 4) |
| □□-33-UMB14-6 | 14 mm UMB | 14 mm UMB | | | | | | | |







idealPower

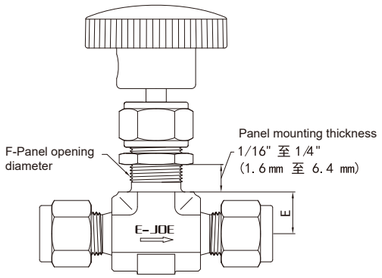
33 series size table

| Basic Ordering Information | Port Type and Size | | Inner diameter in.(mm) | Cv | Size in.(mm) | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | Import | Exit | | | L1 | L2 | C | D | H |
| □□-33-FN8-10-L | 1/2 NPT female thread | 1/2 NPT female thread | 0.39 (10.0) | 1.80 | 1.50 (38.1) | 1.50 (38.1) | 0.76 (19.4) | 3.50 (88.9) | 3.37 (85.7) |
| □□-33-N12-10-L | 3/4 NPT male thread | 3/4 NPT male thread | | | 1.56 (39.7) | 1.56 (39.7) | 0.76 (19.4) | | |
| □□-33-FJ8-10-L | 1/2'' E-J0E | 1/2'' E-J0E | | | 1.90 (48.3) | 1.90 (48.3) | 0.76 (19.4) | | |
| □□-33-FJ12-10-L | 3/4" E-J0E | 3/4" E-J0E | | | | | | | |
| □□-33-MJ14-10-L | 14 mm E-J0E | 14 mm E-J0E | | | | | | | |

1. E-J0E in the port type is E-J0E double ferrule joint. The valve working pressure of E-J0E double ferrule joint is related to the wall thickness of the selected Tubing pipe. For its working pressure, please refer to the allowable pressure value in the "Trubing pipe" sample.
2. UMB in the port type is metric tube union butt welding.
3. The listed sizes and types are standard. Other sizes and types are available. Please contact E-J0E authorized agents.
4. The valve size of E-J0E ferrule joint in the listed port type is the size when the ferrule nut is hand-tightened. All sizes are for reference only and may change. For sizes not listed above, please contact E-J0E authorized agents.

33 Series Panel Mount Dimensions

| Inner diameter in.(mm) | Size in.(mm) | |
|---|---|---|
| | E | F |
| 0.08 (2.0) | 0.44 (11.2) | 0.47 (11.9) |
| 0.16 (4.0) | 0.44 (11.2) | 0.53 (13.5) |
| 0.25 (6.4) | 0.50 (12.7) | 0.78 (19.8) |
| 0.39 (10.0) | 0.75 (19.1) | 1.03 (26.2) |




1. Standard products do not have a through-plate structure by default.
2. To order a valve with a through-plate structure as shown in the figure, please add "-Y" after the basic ordering model, for example: SS-33-FN4-4-Y







## Model Description

## 型号说明

S4 – 33 – FN 8 FJ8 –10P– PYM – ASF2

| | | | |
|---|---|---|---|
| Valve body material | SS | 316 Stainless steel | |
| | 6L | 316L Stainless steel | |
| | S4 | 304 Stainless steel | |
| | 4L | 304L Stainless steel | |
| | S1 | 321 Stainless steel | |
| | A20 | Alloy 20 | |
| | M | Alloy 400 | |
| | INC | Alloy 600 | |
| | HC | Alloy C-276 | |
| | B | Brass | |
| | CS | Carbon Steel | |
| | 904L | 904L Stainless steel | |
| Series | 33 | | |
| Inlet type | FN | NPT female thread | |
| | N | NPT male thread | |
| | FRT | BSPT female thread | |
| | RT | BSPT male thread | |
| | FMS | Metric female thread (Suitable for RG gasket) | |
| | MS | Metric male thread (Suitable for RG gasket) | |
| | FRP | BSPP female thread (Suitable for RG gasket) | |
| | BP | BSPP male thread (Suitable for RG gasket) | |
| | FJ | Imperial double ferrule fitting | |
| | MJ | Metric double ferrule fittings | |
| | UMB | Metric tube butt weld joints | |
| Inlet size | 2 | 1/8" | |
| | 4 | 1/4" | |
| | 6 | 3/8" or 6 mm | |
| | 8 | 1/2 " or 8 mm | |
| | 10 | 10 mm | |
| | 12 | 3/4" or 12 mm | |
| | 14 | 14 mm or M14 x 1.5 | |
| | 16 | 1" or 16 mm | |
| | 18 | 18 mm | |
| | 20 | 1 1/4" or 20 mm or M20 x 1.5 | |
| | 22 | 22 mm or M22 x 1.5 | |
| Outlet type | | | |
| Outlet size | | Consistent with imports | |
| | | The marking method is consistent with the import type and import size | |
| Valve tip type | Conical valve tip | | |
| | R | Regulating valve tip | |
| | K | Soft valve tip-PCTFE | |
| | P | Soft valve tip-PEEK | |
| Internal diameter | 2 | 0.08" (2.0 mm) | |
| | 4 | 0.16" (4.0 mm) | |
| | 6 | 0.25" (6.4 mm) | |
| | 10 | 0.39" (10 mm) | |
| Handle | Black round handle not available with internal diameter 0.39" (10mm) | | |
| | C | Red alumina rod | |
| | F | Green alumina rod | |
| | J | Blue alumina rod | |
| | L | Black alumina rod | |
| | M | Stainless steel rod | |
| Panel mounting | | No | |
| | Y | Yes | |
| Packing material | | PTFE | |
| | P | PEEK | |
| Flow type | | Straight type | |
| | A | Angle type | |
| Special application | | None | |
| | S | NACE MR0175 | |
| Cleaning and packaging | | FC-01 | |
| | F2 | FC-02 | |

Note: "Model Description" is used to explain the composition rules of E-J0E product models. It is not applicable to the specific selection of products and cannot be combined at will. If you have any questions, please contact E-J0E authorized agents.

1. The standard pitch of metric threads is as follows:
   M10 and below: 1mm
   M12 and below: 1.5mm
   M27 and below: 2mm
   The standard pitch has been omitted in the model.
2. Needle valves with an internal diameter of 0.39" (10mm) do not currently have a black round handle option. If the handle option is "blank", a black anodized aluminum rod handle will also be provided.
3. Cleaning and packaging:
   FC-Q1 Standard cleaning and packaging for general industrial use.
   FC-Q2 Special cleaning and packaging for infiltration system components, meeting ASTM G93 C grade requirements.

# Union Bonnet Needle Valve

Series 34: Working pressure up to 6000 psig

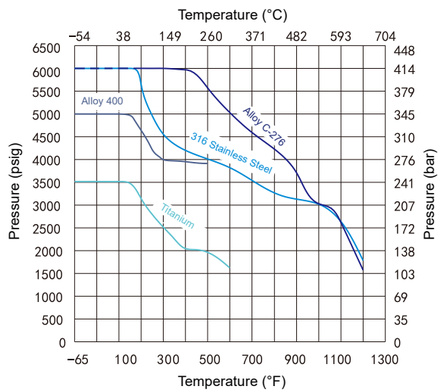
Series 34H: Working pressure up to 10000 psig

## Characteristics

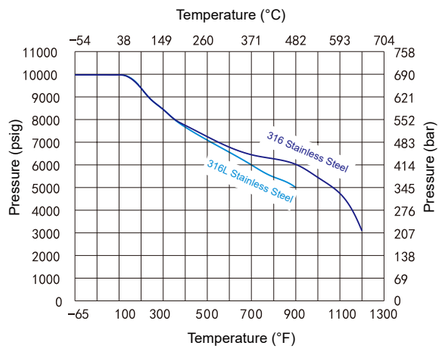
- Integrally Forged Valve Body
- Two-piece stem design, with the upper stem threads hardened by rolling, and the lower stem surface specially hardened.
- The combined bonnet structure prevents accidental disassembly of the valve.
- The grease on the upper stem threads is isolated from the system medium.
- The non-rotating lower stem moves up and down instead of rotating, reducing wear on the packing with each stroke and minimizing friction between the valve seat and the valve head.
- The valve has a back-sealing function in the fully open position.
- Panel Mounting.
- The handle is secured with screws at both ends, ensuring stability and durability.
- Handles are available in a variety of colors for selection.
- Each valve is subjected to a seal test before leaving the factory, using nitrogen or compressed air at the rated working pressure for the 34 series, or water at 1.1 times the rated working pressure for the 34H series.
- The working pressure can reach up to:
  Series 34 - Stainless Steel: 414 bar (6000 psig)
  Alloy C - 276:414 bar (6000 psig)
  Alloy 400： 345 bar (5000 psig)
  Titanium： 241 bar (3500 psig)
  Series 34H - Stainless Steel: 690 bar (10000 psig)

## Temperature Pressure Curve

### Series 34




### Series 34H



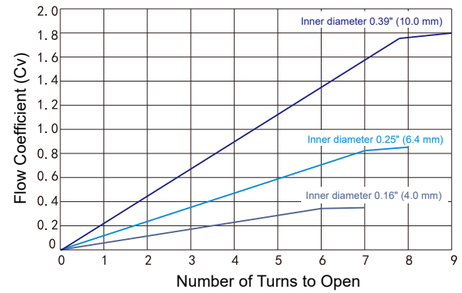

1. The graph is based on graphite filler.
2. Soft valve tips are only applicable to Series 34 needle valves, PCTFE valve tips (the maximum operating temperature for soft valve tips is 93°C (200F).
3. For curve charts of other materials, please contact an authorized Ideal Power agent.



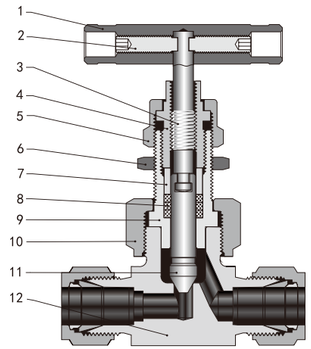


# Flow Rate Data at 37°C (100°F)

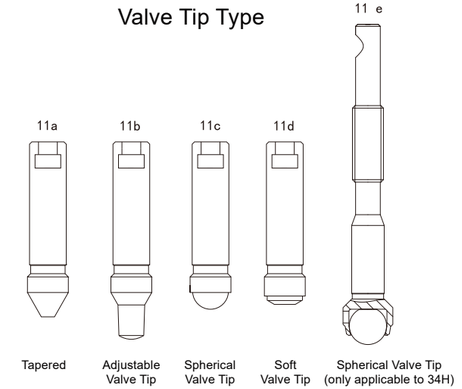
Adjustable Valve Tip




# Standard Structural Materials




Valve Tip Type

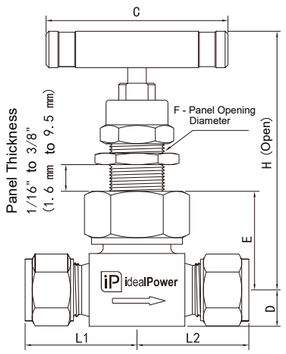



| Serial Number | Component | Valve Material | | | |
|---|---|---|---|---|---|
| | | 316 Stainless Steel | Alloy 400 | Titanium | Alloy C-276 |
| | | Material Grade/ASTM Specifications | | | |
| 1 | Handle | Anodized Aluminum Rod, Stainless Steel Bar Handle or Black Round Handle | | | |
| 2 | Set Screw | Galvanized Carbon Steel | | | |
| 3 | Upper Valve Stem | 316 Stainless Steel/A479 | | | |
| 4 | Packing Gland | 304 Stainless Steel/A479 | | | |
| 5 | Lock Nut | 316 Stainless Steel/A479 | | | |
| 6 | Panel Nut | Stainless Steel | | | |
| 7 | Compression Ring | 316 Stainless Steel/A479 | | | |
| 8 | Packing | PTFE or PEEK or Graphite | | | |
| 9 | Valve Cap | 316 Stainless Steel/A479 | Alloy 400/B164 | Titanium Gr4/B348 | Alloy C-276/B574 |
| 10 | Union Nut | 316 Stainless Steel/A479 | | | |
| 11a 11b 11c | Lower Valve Stem | Hardened 316 Stainless Steel /A479 | Alloy 400/B164 | Titanium Gr4/B348 | Alloy C-276/B574 |
| 11d | Valve Stem | 316 Stainless Steel /A479 | Alloy 400/B164 | Titanium Gr4/B348 | Alloy C-276/B574 |
| | Valve Tip | PTFE or PCTFE or PEEK | | | |
| 11e | Valve Stem | 316 Stainless Steel /A479 | Not Applicable | | Alloy C-276/B574 |
| | Valve Tip | Stellite Alloy | | | |
| 12 | Valve Body | 316 Stainless Steel /A182 | Alloy 400/B164, B127, B564 | Titanium Gr 4/B348 or Titanium Gr 4/B381 | Alloy C-276/B564 |
| | Valve Seat | Consistent with the Valve Body | | | |
| | Lubricant | Molybdenum Disulfide-based | | | |

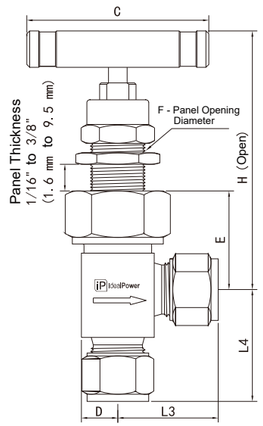
Note: For valves made of other materials, please contact an authorized Ideal Power agent.

## Size

### Straight-through Type




### Corner Type




### 34 Series Size Chart

| Basic Ordering Information | Port Type and Size | | Internal Path in. (mm) | Cv | Size, in. (mm) | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Import | Outlet | | | L1 | L2 | L3 | L4 | C | D | E | F | H |
| □□-34-FN2-4 | 1/8 NPT Female Thread | 1/8 NPT Female Thread | 0.16 (4.0) | 0.35 | 1.00 (25.4) | 1.00 (25.4) | 0.89 (22.6) | 1.00 (25.4) | 1.75 (44.5) | 0.39 (9.9) | 1.09 (27.7) | 0.59 (15.0) | 3.06 (77.7) |
| □□-34-FN4-4 | 1/4 NPT Female Thread | 1/4 NPT Female Thread | | | 1.03 (26.2) | 1.03 (26.2) | | | | | | | |
| □□-34-N4FN4-4 | 1/4 NPT Male Thread | 1/4 NPT Female Thread | | | 1.00 (25.4) | 1.03 (26.2) | | | | | | | |
| □□-34-N4-4 | 1/4 NPT Male Thread | 1/4 NPT Male Thread | | | 1.00 (25.4) | 1.00 (25.4) | 1.00 (25.4) | | | | | | |
| □□-34-N6-4 | 3/8 NPT Male Thread | 3/8 NPT Male Thread | | | 1.03 (26.2) | 1.03 (26.2) | 0.89 (22.6) | | | | | | |
| □□-34-FRP4-4 | 1/8 BSPP Female Thread | 1/8 BSPP Female Thread | | | 1.00 (25.4) | 1.22 (30.9) | 1.14 (29.0) | | | | | | |
| □□-34-N4FJ4-4 | 1/4 NPT Male Thread | 1/4" E-JOE | | | 1.03 (26.2) | 1.22 (30.9) | | | | | | | |
| □□-34-FN4FJ4-4 | 1/4 NPT Female Thread | 1/4" E-JOE | | | 1.22 (30.9) | 1.22 (30.9) | 1.15 (29.2) | 1.22 (30.9) | | | | | |
| □□-34-FJ4-4 | 1/4" E-JOE | 1/4" E-JOE | | | | | | | | | | | |
| □□-34-MJ6-4 | 6 mm E-JOE | 6 mm E-JOE | | | 1.00 (25.4) | 1.00 (25.4) | 0.85 (21.6) | 1.00 (25.4) | | | | | |
| □□-34-MJ8-4 | 8 mm E-JOE | 8 mm E-JOE | | | 1.03 (26.2) | 1.03 (26.2) | 1.10 (28.0) | 1.10 (28.0) | | | | | |
| □□-34-TS4-4-G | 1/4" TS | 1/4" TS | | | | | | | | | | | |
| □□-34-F04-4 | 1/4" F0 Male Thread | 1/4" F0 Male Thread | | | | | | | | | | | |
| □□-34-FR4-4 | 1/4" FR Male Thread | 1/4" FR Male Thread | | | | | | | | | | | |
| □□-34-FN4-6 | 1/4 NPT Female Thread | 1/4 NPT Female Thread | 0.25 (6.4) | 0.86 | 1.13 (28.6) | 1.13 (28.6) | 1.00 (25.4) | 1.13 (28.6) | 2.50 (63.5) | 0.50 (12.7) | 1.34 (34.0) | 0.78 (19.8) | 3.78 (96.0) |
| □□-34-FN6-6 | 3/8 NPT Female Thread | 3/8 NPT Female Thread | | | | | 1.06 (26.9) | | | | | | |
| □□-34-N6-6 | 3/8 NPT Male Thread | 3/8 NPT Male Thread | | | 1.41 (35.9) | 1.41 (35.9) | 1.28 (32.5) | 1.47 (37.3) | | | | | |
| □□-34-FJ6-6 | 3/8" F0 E-JOE | 3/8" F0 E-JOE | | | 1.52 (38.6) | 1.52 (38.6) | 1.40 (35.6) | 1.58 (40.1) | | | | | |
| □□-34-FJ8-6 | 1/2" E-JOE | 1/2" E-JOE | | | 1.42 (36.1) | 1.42 (36.1) | 1.30 (33.0) | 1.48 (37.6) | | | | | |
| □□-34-MJ10-6 | 10 mm E-JOE | 10 mm E-JOE | | | | | | | | | | | |



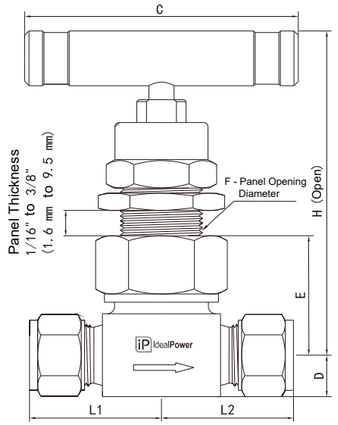




### 34 Series Size Chart

| Basic Ordering Information | Port Types and Sizes | | Internal Path in. (mm) | Cv | Size, in. (mm) | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Import | Outlet | | | L1 | L2 | L3 | L4 | C | D | E | F | H |
| □□-34-MJ12-6 | 12 mm E-JOE | 12 mm E-JOE | 0.25 (6.4) | 0.86 | 1.52 (38.6) | 1.52 (38.6) | 1.40 (35.6) | 1.58 (40.1) | 2.50 (63.5) | 0.50 (12.7) | 1.34 (34.0) | 0.78 (19.8) | 3.78 (96.0) |
| □□-34-MJ14-6 | 14 mm E-JOE | 14 mm E-JOE | | | | | | | | | | | |
| □□-34-MJ16-6 | 16 mm E-JOE | 16 mm E-JOE | | | | | | | | | | | |
| □□-34-TS6-6-G | 3/8" TS | 3/8" TS | | | 1.13 (28.6) | 1.13 (28.6) | 1.00 (25.4) | 1.13 (28.6) | | | | | |
| □□-34-TS8-6-G | 1/2" TS | 1/2" TS | | | | | | | | | | | |
| □□-34-PS4-6-G | 1/4 PS | 1/4 PS | | | | | | | | | | | |
| □□-34-MTS12-6-G | 12 mm MTS | 12 mm MTS | | | | | | | | | | | |
| □□-34-MTS14-6-G | 14 mm MTS | 14 mm MTS | | | | | | | | | | | |
| □□-34-MTS16-6-G | 16 mm MTS | 16 mm MTS | | | | | | | | | | | |
| □□-34-MTB14-6-G | 14 mm MTB | 14 mm MTB | | | | | | | | | | | |
| □□-34-MTB16-6-G | 16 mm MTB | 16 mm MTB | | | | | | | | | | | |
| □□-34-UMB14-6 | 14 mm UMB | 14 mm UMB | | | 2.92 (74.1) | 2.92 (74.1) | 2.55 (64.7) | 2.92 (74.1) | | | | | |
| □□-34-F08-6 | 1/2" F0 Male Thread | 1/2" F0 Male Thread | | | 1.13 (28.6) | 1.13 (28.6) | —— | —— | | | | | |
| □□-34-FR8-6 | 1/2" FR Male Thread | 1/2" FR Male Thread | | | 1.56 (39.6) | 1.56 (39.6) | | | | 0.63 (16.0) | 1.46 (37.1) | | 3.90 (99.0) |
| □□-34-MS20-6 | M20 x1.5 Metric Male Thread | M20 x1.5 Metric Male Thread | | | 1.50 (38.1) | 1.50 (38.1) | 1.13 (28.6) | 1.50 (38.1) | | 0.50 (12.7) | 1.34 (34.0) | | 3.78 (96.0) |
| □□-34-MS22-6 | M22 x1.5 Metric Male Thread | M22 x1.5 Metric Male Thread | | | | | | | | | | | |
| □□-34-N8-10 | 1/2 NPT Male Thread | 1/2 NPT Male Thread | 0.39 (10.0) | 1.8 | 1.56 (39.6) | 1.56 (39.6) | 1.56 (39.6) | 1.56 (39.6) | 3.50 (88.9) | 0.63 (16.0) | 1.82 (46.2) | 1.03 (26.2) | 4.76 (121) |
| □□-34-FN8-10 | 1/2 NPT Female Thread | 1/2 NPT Female Thread | | | | | | | | | | | |
| □□-34-FN12-10 | 3/4 NPT Fmale Thread | 3/4 NPT Fmale Thread | | | 1.63 (41.3) | 1.63 (41.3) | —— | —— | | 0.87 (22.2) | 2.07 (52.6) | | 5.00 (127) |
| □□-34-N12-10 | 3/4 NPT Male Thread | 3/4 NPT Male Thread | | | | | | | | | | | |
| □□-34-FJ8-10 | 1/2" E-JOE | 1/2" E-JOE | | | 1.97 (50.0) | 1.97 (50.0) | 1.68 (42.7) | 2.08 (52.8) | | | | | |
| □□-34-FJ12-10 | 3/4" E-JOE | 3/4" E-JOE | | | | | | | | | | | |
| □□-34-MJ14-10 | 14 mm E-JOE | 14 mm E-JOE | | | | | | | | | | | |
| □□-34-MJ16-10 | 16 mm E-JOE | 16 mm E-JOE | | | | | | | | | | | |
| □□-34-MJ18-10 | 18 mm E-JOE | 18 mm E-JOE | | | | | | | | | | | |
| □□-34-MJ20-10 | 20 mm E-JOE | 20 mm E-JOE | | | | | | | | | | | |
| □□-34-MTS14-10-G | 14 mm MTS | 14 mm MTS | | | 1.56 (39.7) | 1.56 (39.7) | 1.31 (33.3) | 1.69 (42.9) | | | | | |
| □□-34-MTS16-10-G | 16 mm MTS | 16 mm MTS | | | | | | | | | | | |
| □□-34-TS8-10-G | 1/2" TS | 1/2" TS | | | | | | | | | | | |
| □□-34-TS12-10-G | 3/4" TS | 3/4" TS | | | | | | | | | | | |
| □□-34-MTB16-10-G | 16 mm MTB | 16 mm MTB | | | | | | | | | | | |
| □□-34-UMB14-10 | 14 mm UMB | 14 mm UMB | | | 2.98 (75.7) | 2.98 (75.7) | —— | —— | | | | | |
| □□-34-FR8-10 | 1/2" FR Male Thread | 1/2" FR Male Thread | | | 1.56 (39.7) | 1.56 (39.7) | | | | | | | |
| □□-34-MS27-10 | M27 x2 Metric Male Thread | M27 x2 Metric Male Thread | | | | | | | | | | | |

1. In the port type, "Ideal Power" refers to the Ideal Power double ferrule fitting. The working pressure of the valve for the Ideal Power double ferrule fitting is related to the wall thickness of the selected Tubing tube. Please refer to the allowable pressure values in the "Tubing Tube" sample for its working pressure.
2. In port types, F0 refers to an O-ring face seal fitting, FR denotes a metal gasket face seal fitting, TS stands for imperial Tube tube socket weld, MTS represents metric Tube tube socket weld, MTB indicates metric Tube tube butt weld, UMB signifies metric Tube tube union butt weld, and PS refers to Pipe tube socket weld.
3. The listed dimensions and types are standard; other dimensions and types are available upon request.
4. In the listed port types, the valve dimensions for the Ideal Power ferrule fitting are those when the hand-tight ferrule nut is applied. All dimensions are for reference only and may be subject to change. For dimensions not listed above, please contact an authorized Ideal Power agent.




## 34H Series Size Chart

| Basic Ordering Information | Port Type and Size | | Internal Path in. (mm) | Cv | Size, in. (mm) | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | Import | Outlet | | | L1 | L2 | C | D | E | F | H |
| □□-34H-FJ4-4 | 1/4" E-JOE | 1/4" E-JOE | 0.16 (4.0) | 0.35 | 1.41 (35.8) | 1.41 (35.8) | 2.50 (63.5) | 0.50 (12.7) | 1.34 (34.1) | 0.78 (19.8) | 3.42 (86.9) |
| □□-34H-FN2-4 | 1/8 NPT Female Thread | 1/8 NPT Female Thread | | | | | | | | | |
| □□-34H-FN4-4 | 1/4 NPT Female Thread | 1/4 NPT Female Thread | | | 1.13 (28.6) | 1.13 (28.6) | | | | | |
| □□-34H-N4FN4-4 | 1/4 NPT Male Thread | 1/4 NPT Female Thread | | | | | | | | | |
| □□-34H-N4-4 | 1/4 NPT Male Thread | 1/4 NPT Male Thread | | | | | | | | | |
| □□-34H-TS4-4-G | 1/4" TS | 1/4" TS | | | | | | | | | |
| □□-34H-FN4-6 | 1/4 NPT Female Thread | 1/4 NPT Female Thread | 0.25 (6.4) | 0.86 | 1.56 (39.7) | 1.56 (39.7) | 3.50 (88.9) | 0.63 (16.0) | 1.81 (46.0) | 1.03 (26.2) | 4.09 (104) |
| □□-34H-N8-6 | 1/2 NPT Male Thread | 1/2 NPT Male Thread | | | | | | | | | |
| □□-34H-TS8-6-G | 1/2" TS | 1/2" TS | | | | | | | | | |
| □□-34H-MTS12-6-G | 12 mm MTS | 12 mm MTS | | | | | | | | | |
| □□-34H-MTS16-10-G | 16 mm MTS | 16 mm MTS | 0.39 (10.0) | 1.8 | 1.75 (44.5) | 1.75 (44.5) | 3.50 (88.9) | 0.91 (23.0) | 2.29 (58.2) | 1.14 (28.9) | 5.28 (134.1) |
| □□-34H-MTB22-10-G | 22 mm MTB | 22 mm MTB | | | | | | | | | |
| □□-34H-FN8-10 | 1/2 NPT Female Thread | 1/2 NPT Female Thread | | | 1.56 (39.7) | 1.56 (39.7) | | | | | |

1. In the port types, "Ideal Power" refers to the "Ideal Power double ferrule fitting". The working pressure of the valve with the Ideal Power double ferrule fitting is related to the wall thickness of the selected Tubing tube. For the specific working pressure, please refer to the allowable pressure values listed in the Festo "Tubing Tube" catalog.
2. In the port types, "TS" stands for imperial Tube tube socket welding, "MTS" stands for metric Tube tube socket welding, and "MTB" stands for metric Tube tube butt welding.
3. The listed dimensions and types are standard. Other dimensions and types are available upon request. Please contact an authorized Ideal Power distributor for further information.
4. In the listed port types, the valve dimensions for the Ideal Power ferrule fittings are based on the dimensions when the ferrule nut is hand-tightened. All dimensions are for reference only and may be subject to change. For dimensions not listed above, please contact an authorized Ideal Power distributor.







## Model Description

SS – 34 – FN6 FJ6 – 6WB – GM – ASF2

| | | | | | | | | |

# Non-rotating stem needle valve

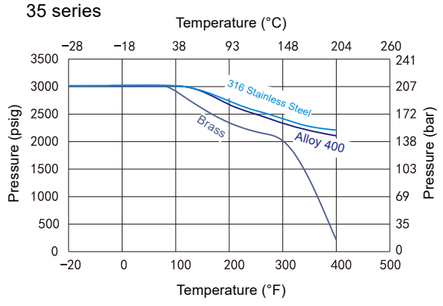
Series 35: Working pressure up to 3000 psig.

## Characteristics

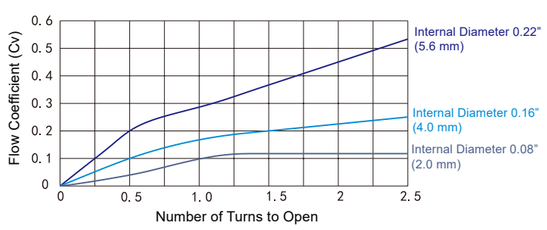
- ◎ One-piece Forged Valve Body
- ◎ Straight-through and Angle Type Structures Available
- ◎ Compact Structure
- ◎ Non-rotating Valve Stem
- ◎ Handle with Anti-contamination Feature
- ◎ Each valve is subjected to a seal test with nitrogen or compressed air at the rated working pressure before leaving the factory
- ◎ Working pressure can reach up to:
  Series 35 - Stainless Steel: 207 bar (3000 psig)
  Brass: 207 bar (3000 psig)
- ◎ Valve tip operating temperature:
  PCTFE valve tip: -28°C to 930 (-20°F to 200°F)
  PEEK valve tip: -28°C to 204°C (-20°F to 400°F)
- ◎ O-ring Operating Temperature
  The operating temperature range for Fluorocarbon Rubber (FKM) is -28°C to 204°C (-20°F to 400°F).
  The operating temperature range for Nitrile Butadiene Rubber (NBR) is -28°C to 100°C (-20°F to 212°F).
  The operating temperature range for Ethylene Propylene Diene Monomer (EPDM) is -28°C to 148°C (-20°F to 300°F).

## Temperature-pressure Curve

35 series

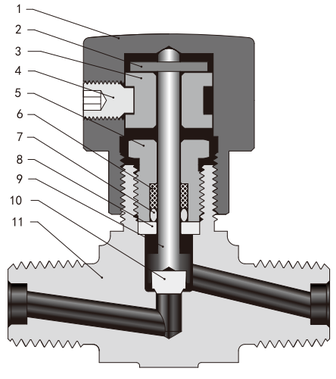



## Flow Rate Data at 38°C (100°F)




1. The graph is based on the PEEK valve tip and fluorocarbon rubber (FKM) O-ring.
2. For curve charts of other materials, please contact an authorized Ideal Power agent.

## Standard Structural Materials




| Serial Number | Component | Valve Vaterial | | | | |
|---|---|---|---|---|---|---|
| | | 316 Stainless Steel | 304 Stainless Steel | 321 Stainless Steel | Brass | Alloy 400 |
| | | Material Grade/ASTM Specification | | | | |
| 1 | Handle | Anodized Aluminum | | | | |
| 2 | Stop Pin | Stainless Steel | | | | |
| 3 | Coupling | Aluminum | | | | |
| 4 | Set Screw | Stainless Steel | | | | |
| 5 | Stuffing Box Gland | 304 Stainless Steel/A479 | | | Brass C36000/B16 | Alloy 400/B164 |
| 6 | Retaining Ring | PTFE/D1710 | | | | |
| 7 | O-ring | Fluorocarbon Rubber (FKM), Nitrile Rubber (NBR), or Ethylene Propylene Diene Monomer Rubber (EPDM) | | | | |
| 8 | Gasket | 316 Stainless Steel/A479 | | | | Alloy 400/B164 |
| 9 | Valve Stem | 316 Stainless Steel/A479 | | | | Alloy 400/B164 |
| 10 | Valve Tip | PCTFE or PEEK | | | | |
| 11 | Valve Body | 316 Stainless Steel/A182 | 304 Stainless Steel/A182 | 321 Stainless Steel/A182 | Brass C37700/B283 | Alloy 400/B564 |
| | Lubricant | Molybdenum Disulfide-based | | | | |

Note: 1. For valves made of other materials, please contact Ideal Power or an authorized agent.

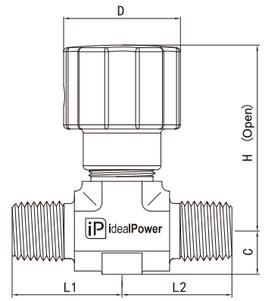




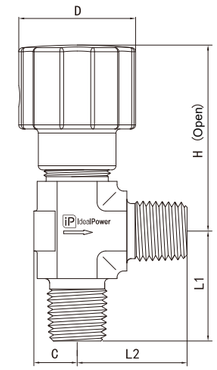


# Size

Straight-through Type




Angle Type




35 Series Size Chart

| Basic Ordering Information | Port Type and Size | | Internal Path in. (mm) | Cv | Size, in. (mm) | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | Import | Outlet | | | L1 | L2 | C | D | H |
| □□−35 −N2−2 | 1/8 NPT Male Thread | 1/8 NPT Male Thread | 0. 08 (2. 0) | 0. 12 | 0. 81 (20. 6) | 0. 81 (20. 6) | 0. 32 (8. 1) | 1. 06 (26. 9) | 1. 86 (47. 2) |
| □□−35 −N2FJ2−2 | 1/8 NPT Male Thread | 1/8” E-JOE | | | | | | | |
| □□−35 −FJ2−2 | 1/8” E-JOE | 1/8” E-JOE | | | 1. 10 (27. 9) | 1. 10 (27. 9) | | | |
| □□−35 −MJ3−2 | 3 mm E-JOE | 3 mm E-JOE | | | | | | | |
| □□−35 −N4−4 | 1/4 NPT Male Thread | 1/4 NPT Male Thread | 0. 16 (4. 0) | 0. 27 | 0. 98 (25. 0) | 0. 98 (25. 0) | 0. 39 (10. 0) | 1. 13 (28. 7) | 1. 86 (47. 2) |
| □□−35 −N4FJ4−4 | 1/4 NPT Male Thread | 1/4” E-JOE | | | | | | | |
| □□−35 −FJ4−4 | 1/4” E-JOE | 1/4” E-JOE | | | 1. 13 (28. 7) | 1. 13 (28. 7) | | | |
| □□−35 −MJ6−4 | 6 mm E-JOE | 6 mm E-JOE | | | | | | | |
| □□−35 −MJ8−4 | 8 mm E-JOE | 8 mm E-JOE | | | 1. 18 (30. 0) | 1. 18 (30. 0) | | | |
| □□−35 −FN4−6 | 1/4 NPT Female Thread | 1/4 NPT Female Thread | 0. 22 (5. 6) | 0. 53 | 1. 06 (26. 9) | 1. 06 (26. 9) | 0. 49 (12. 5) | 1. 22 (31. 0) | 2. 02 (51. 3) |
| □□−35 −N6−6 | 3/8 NPT Male Thread | 3/8 NPT Male Thread | | | 1. 12 (28. 6) | 1. 12 (28. 6) | | | |
| □□−35 −FJ6−6 | 3/8” E-JOE | 3/8” E-JOE | | | 1. 29 (32. 8) | 1. 29 (32. 8) | | | |
| □□−35 −FJ8−6 | 1/2” E-JOE | 1/2” E-JOE | | | 1. 40 (35. 6) | 1. 40 (35. 6) | | | |
| □□−35 −MJ10−6 | 10 mm E-JOE | 10 mm E-JOE | | | 1. 30 (33. 0) | 1. 30 (33. 0) | | | |
| □□−35 −MJ12−6 | 12 mm E-JOE | 12 mm E-JOE | | | 1. 40 (35. 6) | 1. 40 (35. 6) | | | |

1. In the port types, Ideal Power refers to the Ideal Power double ferrule compression fitting. The working pressure of the valve for the Ideal Power double ferrule compression fitting is related to the wall thickness of the selected Tubing tube. For the specific working pressure, please refer to the allowable pressure values listed in the "Tubing" sample.
2. The listed dimensions and types are standard. Other dimensions and types are available upon request. Please contact an authorized Ideal Power distributor for more information.
3. The valve dimensions for the Ideal Power ferrule compression fitting listed in the port types are based on the dimensions when the ferrule nut is hand-tightened. All dimensions are for reference only and may be subject to change. For dimensions not listed above, please contact an authorized Ideal Power distributor.

## Model Description

SS – 35 – FN4 MJ8 – 4PE – ASF2

| | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Valve Body Material | SS | 316 Stainless Steel | 6L | 316L Stainless Steel | S4 | 304 Stainless Steel | 4L | 304L Stainless Steel | S1 | 321 Stainless Steel | M | Alloy 400 | B | Brass |
| Series | 35 | | | | | | | | | | | | | |
| Inlet Type | FN | NPT Female Thread | N | NPT Male Thread | FRT | BSPT Female Thread | RT | BSPT Male Thread | FJ | Imperial Double Ferrule Tube Fitting | MJ | Metric Double Ferrule Tube Fitting | | |
| Inlet Size | 2 | 1/8" | 4 | 1/4" | 6 | 3/8" or 6 mm | 8 | 1/2" or 8 mm | 10 | 10 mm | 12 | 12 mm | | |
| Outlet Type | Same as Inlet | | | | | | | | | | | | | |
| Outlet Size | The marking method is consistent with the inlet type and inlet size | | | | | | | | | | | | | |
| Modern Form of Circulation | Straight-through Type | | Angular Shape | | | | | | | | | | | |
| | A | | | | | | | | | | | | | |
| Special Applications | NONE | | NACE MR0175 | | Sulfur Passivation | | | | | | | | | |
| | S | | SI | | | | | | | | | | | |
| Cleaning and Packaging | FC-01 | | FC-02 | | | | | | | | | | | |
| | F2 | | | | | | | | | | | | | |
| Inside Diameter Size | 2 | 0. 08" (2. 0 mm) | 4 | 0. 16" (4. 0 mm) | 6 | 0. 22" (5. 6 mm) | | | | | | | | |
| Valve Tip Material | PCTFE | | PEEK | | | | | | | | | | | |
| | P | | | | | | | | | | | | | |
| O-ring Material | Fluoroelastomer (FKM) | | Nitrile Rubber (NBR) | | Ethylene Propylene Diene Monomer (EPDM) | | | | | | | | | |
| | B | | E | | | | | | | | | | | |

Note: The "Model Description" is used to explain the composition rules of Ideal Power product models and is not applicable to the specific selection of products. It should not be arbitrarily combined. If you have any questions, please contact an authorized Ideal Power agent.

1. Cleaning and Packaging:
   FC-01: Standard cleaning and packaging for general industrial use1.
   FC-02: Special cleaning and packaging for immersion system components, meeting ASTM G93C grade requirements

# High-Performance Ball Valve

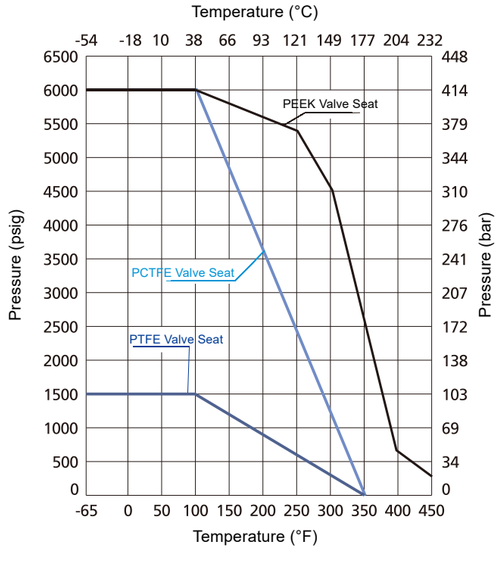
## Series 41

## Characteristics

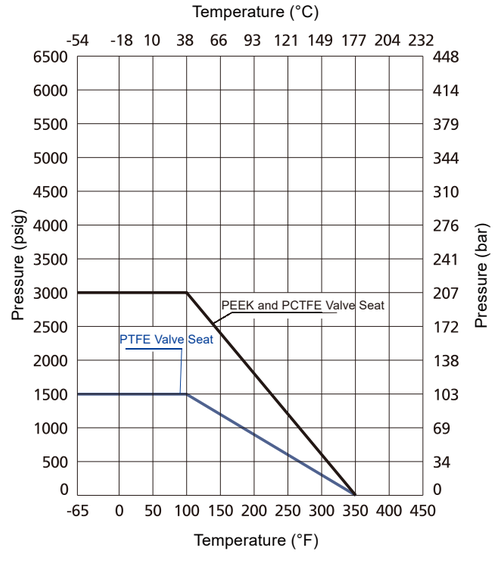
- Working pressure up to: 414 bar (6000 psig)
- Operating temperature range: -54°C to 232°C (-65°F to 450°F)
- Low operating torque
- Handle indicates flow direction
- Handle limit stop
- Pneumatic or electric actuators are available
- Handle colors are available for selection
- Each valve is subjected to a sealing test using nitrogen or compressed air at its rated working pressure to meet the requirement of no visible leakage.
- Straight-through valves allow bidirectional flow
- For both three-way ball valves and angle-type ball valves, the medium can only enter through the bottom port

## Temperature Pressure Curve

316 Stainless Steel Valve Body



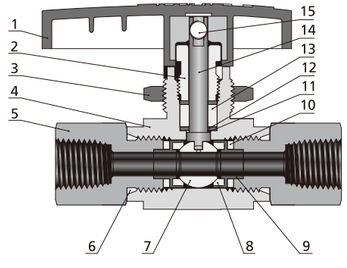

Brass Valve Body




Note: The working pressure of the valve is limited by the valve body material, valve seat material, and port specifications. When selecting a valve, please refer to the temperature-pressure curve above and the port pressure ratings in the size list, and choose the lowest value as the rated pressure value of the valve.

# Structural Material

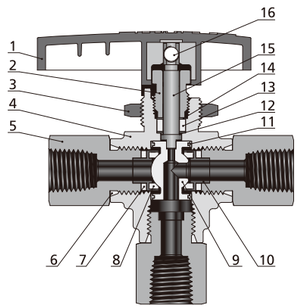
## Straight-through Valve




| Project | Component | Valve Body Material | |
|---|---|---|---|
| | | Stainless Steel | Brass |
| 1 | Handle | Nylon or Aluminum | |
| 2 | Packing Gland | 316 Stainless Steel | *C36000/B16* |
| 3 | Panel Nut | 316 Stainless Steel/A479 | |
| 4 | *Valve Body* | *CF8M/A351* | *C37700/B283* |
| 5 | *End Connection* | *316 Stainless Steel/A479* | *C36000/B16* |
| 6 | *Gasket* | *PTFE* | |
| 7 | *Ball* | *316 Stainless Steel/A479* | |
| 8 | *Valve Seat* | *PTEF or PCTFE or PEEK* | |
| 9 | *Support Base* | *316 Stainless Steel/A479* | |
| 10 | *Valve Seat Gasket* | *PTFE* | |
| 11 | *Valve Stem Retaining Ring* | *PEEK* | |
| 12 | *Packing Gasket* | *316/A479* | |
| 13 | *Packing Material* | *PTFE* | |
| 14 | *Valve Stem* | *316 Stainless Steel/A479* | |
| 15 | Set Screw | Galvanized Carbon Steel | |
| *Impregnating Lubricant* | | Fluorinated Group | |

Note: Components in contact with the medium are listed in italics.
For valves made of other materials, please contact an authorized Ideal Power distributor.

## Straight-through Valve




| Project | Component | Valve Body Material | |
|---|---|---|---|
| | | Stainless Steel | Brass |
| 1 | Handle | Nylon or Aluminum | |
| 2 | Packing Gland | 316 Stainless Steel/A479 | *C36000/B16* |
| 3 | Panel Nut | 316 Stainless Steel/A479 | |
| 4 | *Valve Body* | *CF8M/A351* | *C37700/B283* |
| 5 | *End Connection* | *316 Stainless Steel/A479* | *C36000/B16* |
| 6 | *Gasket* | *PTFE* | |
| 7 | *Valve Seat Gasket* | *PTFE* | |
| 8 | *Valve Seat* | *PTEF or PCTFE or PEEK* | |
| 9 | *Ball* | *316 Stainless Steel/A479* | |
| 10 | *Support Bracket* | *316 Stainless Steel/A479* | |
| 11 | *Ball Bearing* | *PEEK* | |
| 12 | *Valve Stem Retaining Ring* | *PEEK* | |
| 13 | *Filling Material* | *PTFE* | |
| 14 | *Filler Pad* | *316 Stainless Steel/A479* | |
| 15 | *Valve Stem* | *316 Stainless Steel/A479* | |
| 16 | Set Screw | Galvanized Carbon Steel | |
| *Lubricant for Immersed Components* | | *Fluorinated Group* | |

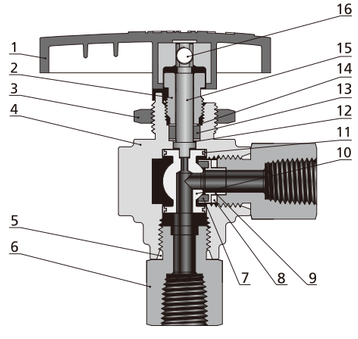
Note: Components in contact with the medium are listed in italics.
For valves made of other materials, please contact an authorized Ideal Power distributor.







## Angle Valve

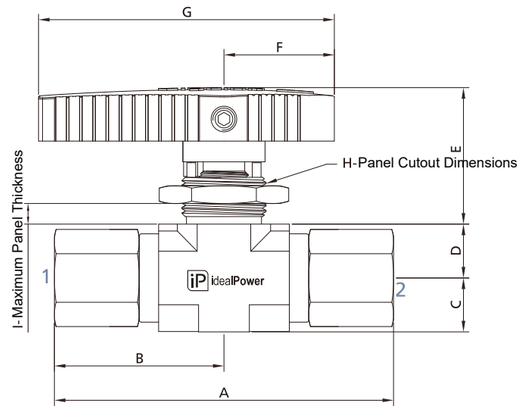


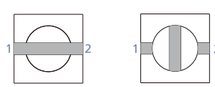

| Project | Component | Valve Body Material | |
|---|---|---|---|
| | | Stainless Steel | Brass |
| 1 | Handle | Nylon or Aluminum | |
| 2 | Gland Packing | *316 Stainless Steel/A479* | *C36000/B16* |
| 3 | Panel Nut | *316 Stainless Steel/A479* | |
| 4 | *Valve Body* | *CF8M/A351* | *C37700/B283* |
| 5 | *Gasket* | *PTFE* | |
| 6 | *End Connection* | *316 Stainless Steel/A479* | *C36000/B16* |
| 7 | *Valve Seat* | *PTEF or PCTFE or PEEK* | |
| 8 | *Valve Seat Gasket* | *PTFE* | |
| 9 | *Support Base* | *316 Stainless Steel/A479* | |
| 10 | *Ball* | *316 Stainless Steel/A479* | |
| 11 | *Ball Bearing* | *PEEK* | |
| 12 | *Valve Stem Retaining Ring* | *PEEK* | |
| 13 | *Valve Stem Packing* | *PTFE* | |
| 14 | *Packing Gasket* | *316 Stainless Steel/A479* | |
| 15 | *Valve Stem* | *316 Stainless Steel/A479* | |
| 16 | Set Screw | Galvanized Carbon Steel | |
| *Impregnating Lubricant for Components* | | *Fluorinated Group* | |

Note: Components in contact with the medium are listed in italics.
For valves made of other materials, please contact an authorized Ideal Power distributor.

# Size

## Straight-way Valve




ON OFF

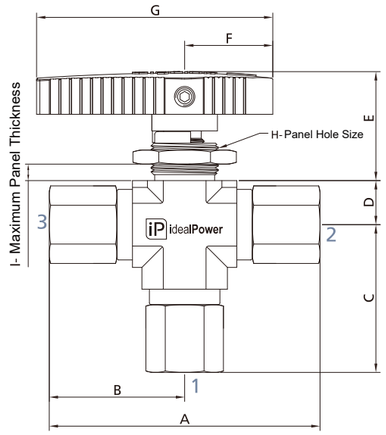
| Basic Ordering Information | Port types and specifications | Pressure rating of the port at 38°C (100°F) in bar (pisg) | | Bore Diameter in. (mm) | Flow Coefficient | Size, in. (mm) | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Port 1/2 | 316 Stainless Steel | Brass | | | A | B | C | D | E | F | G | H | I |
| □□-41-FJ1-01 | 1/16" E-JOE | 414 (6000) | 207 (3000) | 0.05 (1.3) | 0.06 | 2.60 (66.0) | 1.30 (33.0) | 0.36 (9.2) | 0.33 (8.5) | 0.94 (23.9) | 0.79 (20.0) | 1.97 (50.0) | 0.58 (14.7) | 0.18 (4.6) |
| □□-41-FJ2-02 | 1/8" E-JOE | 414 (6000) | 207 (3000) | 0.09 (2.4) | 0.21 | 2.72 (69.0) | 1.36 (34.5) | | | | | | | |
| □□-41-MJ3-02 | 3 mm E-JOE | 414 (6000) | 207 (3000) | | | 2.74 (69.6) | 1.37 (34.8) | | | | | | | |
| □□-41-FRT2-04 | 1/8 Imperial Standard Taper Pipe Female Thread | 414 (6000) | 207 (3000) | 0.17 (4.2) | 0.93 | 2.14 (54.4) | 1.07 (27.2) | | | | | | | |
| □□-41-FRP2-04 | 1/8 Imperial Standard Taper Pipe Female Thread | 414 (6000) | 207 (3000) | | | | | | | | | | | |
| □□-41-FN2-04 | 1/8 NPT Female Thread | 414 (6000) | 207 (3000) | | | | | | | | | | | |
| □□-41-RT2-04 | 1/8 Imperial Standard Taper Pipe Male Thread | 414 (6000) | 207 (3000) | | | | | | | | | | | |
| □□-41-BP2-04 | 1/8 Imperial Standard Parallel Pipe Male Thread | 414 (6000) | 207 (3000) | | | 2.36 (60.0) | 1.18 (30.0) | | | | | | | |
| □□-41-N2-04 | 1/8 NPT Male Thread | 414 (6000) | 207 (3000) | | | | | | | | | | | |
| □□-41-RT4-04 | 1/4 Imperial Standard Taper Pipe Male Thread | 414 (6000) | 207 (3000) | | | | | | | | | | | |
| □□-41-BP4-04 | 1/4 Imperial Standard Parallel Pipe Male Thread | 414 (6000) | 207 (3000) | | | 2.70 (68.6) | 1.35 (34.3) | | | | | | | |
| □□-41-N4-04 | 1/4 NPT Male Thread | 414 (6000) | 207 (3000) | | | | | | | | | | | |
| □□-41-FJ4-05 | 1/4" E-JOE | 414 (6000) | 207 (3000) | 0.19 (4.7) | 1.04 | 3.48 (88.4) | 1.74 (44.2) | 0.48 (12.2) | 0.48 (12.2) | 1.24 (31.5) | 0.59 (25.0) | 2.64 (67.0) | 0.77 (19.6) | 0.25 (6.4) |
| □□-41-MJ6-05 | 6 mm E-JOE | 414 (6000) | 207 (3000) | | | 3.50 (89.0) | 1.75 (44.5) | | | | | | | |
| □□-41-FJ6-06 | 3/8" E-JOE | 414 (6000) | 152 (2200) | 0.25 (6.4) | 2.34 | 3.60 (91.4) | 1.80 (45.7) | | | | | | | |
| □□-41-MJ8-06 | 8 mm E-JOE | 414 (6000) | 159 (2300) | | | 3.56 (90.4) | 1.78 (45.2) | | | | | | | |
| □□-41-MJ10-06 | 10 mm E-JOE | 414 (6000) | 131 (1900) | | | 3.62 (92.0) | 1.81 (46.0) | | | | | | | |
| □□-41-FRT4-06 | 1/4 Imperial Standard Taper Pipe Female Thread | 414 (6000) | 207 (3000) | | | 3.02 (76.8) | 1.51 (38.4) | | | | | | | |
| □□-41-FRP4-06 | 1/4 Imperial Standard Parallel Pipe Female Thread | 414 (6000) | 207 (3000) | | | | | | | | | | | |
| □□-41-FN4-06 | 1/4 NPT Female Thread | 414 (6000) | 207 (3000) | | | | | | | | | | | |
| □□-41-RT4-06 | 1/4 Imperial Standard Taper Pipe Male Thread | 414 (6000) | 207 (3000) | | | | | | | | | | | |
| □□-41-BP4-06 | 1/4 Imperial Standard Parallel Pipe Male Thread | 414 (6000) | 207 (3000) | | | | | | | | | | | |
| □□-41-N4-06 | 1/4 NPT Male Thread | 414 (6000) | 207 (3000) | | | 3.24 (82.2) | 1.62 (41.1) | | | | | | | |
| □□-41-RT6-06 | 3/8 Imperial Standard Taper Pipe Male Thread | 414 (6000) | 207 (3000) | | | | | | | | | | | |
| □□-41-BP6-06 | 3/8 Imperial Standard Parallel Pipe Male Thread | 414 (6000) | 207 (3000) | | | | | | | | | | | |
| □□-41-N6-06 | 3/8 NPT Male Thread | 414 (6000) | 207 (3000) | | | | | | | | | | | |
| □□-41-FJ8-10 | 1/2" E-JOE | 414 (6000) | 145 (2100) | 0.41 (10.3) | 6.42 | 4.68 (118.8) | 2.34 (59.4) | 0.75 (19.0) | 0.71 (18.0) | 1.54 (39.0) | 1.42 (36.0) | 3.78 (96.0) | 0.90 (22.9) | 0.38 (9.7) |
| □□-41-FJ12-10 | 3/4" E-JOE | 400 (5800) | 124 (1800) | | | 4.66 (118.4) | 2.33 (59.2) | | | | | | | |
| □□-41-MJ12-10 | 12 mm E-JOE | 414 (6000) | 138 (2000) | 0.37 (9.5) | 5.57 | | | | | | | | | |
| □□-41-MJ14-10 | 14 mm E-JOE | 414 (6000) | 131 (1900) | 0.41 (10.3) | 6.42 | | | | | | | | | |
| □□-41-MJ16-10 | 16 mm E-JOE | 400 (5800) | 117 (1700) | | | | | | | | | | | |
| □□-41-MJ18-10 | 18 mm E-JOE | 372 (5400) | 110 (1600) | | | | | | | | | | | |
| □□-41-MJ20-10 | 20 mm E-JOE | 379 (5500) | 110 (1600) | | | 4.84 (123.0) | 2.42 (61.5) | | | | | | | |
| □□-41-MJ22-10 | 22 mm E-JOE | 338 (4900) | 100 (1450) | | | | | | | | | | | |
| □□-41-FRT6-10 | 3/8 Imperial Standard Taper Pipe Female Thread | 414 (6000) | 207 (3000) | | | 3.90 (99.0) | 1.95 (49.5) | | | | | | | |
| □□-41-FRP6-10 | 3/8 Imperial Standard Parallel Pipe Female Thread | 414 (6000) | 207 (3000) | | | | | | | | | | | |
| □□-41-FN6-10 | 3/8 NPT Female Thread | 414 (6000) | 207 (3000) | | | | | | | | | | | |
| □□-41-FRT8-10 | 1/2 Imperial Standard Taper Pipe Female Thread | 414 (6000) | 207 (3000) | | | 4.30 (109.2) | 2.15 (54.6) | | | | | | | |
| □□-41-FRP8-10 | 1/2 Imperial Standard Parallel Pipe Female Thread | 414 (6000) | 207 (3000) | | | 3.97 (101.0) | 1.99 (50.5) | | | | | | | |
| □□-41-FN8-10 | 1/2 NPT Female Thread | 414 (6000) | 207 (3000) | | | 4.30 (109.2) | 2.15 (54.6) | | | | | | | |
| □□-41-FRT12-10 | 3/4 Imperial Standard Taper Pipe Female Thread | 414 (6000) | 207 (3000) | | | 4.50 (114.2) | 2.25 (57.1) | | | | | | | |
| □□-41-FRP12-10 | 3/4 Imperial Standard Parallel Pipe Female Thread | 414 (6000) | 207 (3000) | | | | | | | | | | | |
| □□-41-FN12-10 | 3/4 NPT Female Thread | 414 (6000) | 207 (3000) | | | | | | | | | | | |
| □□-41-RT8-10 | 1/2 Imperial Standard Taper Pipe Male Thread | 414 (6000) | 207 (3000) | | | | | | | | | | | |
| □□-41-BP8-10 | 1/2 Imperial Standard Parallel Pipe Male Thread | 414 (6000) | 207 (3000) | | | | | | | | | | | |
| □□-41-N8-10 | 1/2 NPT Male Thread | 414 (6000) | 207 (3000) | | | 4.44 (112.8) | 2.22 (56.4) | | | | | | | |
| □□-41-RT12-10 | 3/4 Imperial Standard Taper Pipe Male Thread | 414 (6000) | 207 (3000) | | | | | | | | | | | |
| □□-41-BP12-10 | 3/4 Imperial Standard Parallel Pipe Male Thread | 414 (6000) | 207 (3000) | | | | | | | | | | | |
| □□-41-N12-10 | 3/4 NPT Male Thread | 414 (6000) | 207 (3000) | | | | | | | | | | | |







**3**







Port 1 and Port 2 are connected




Port 1 and Port 3 are connected

| Basic Ordering Information | Port types and specifications | Pressure rating of the port at 38°C (100°F) in bar (pisg) | | Bore Diameter in. (mm) | Flow Coefficient | Size, in. (mm) | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Port 1/2/3 | 316 Stainless Steel | Brass | | | A | B | C | D | E | F | G | H | I |
| □□-41-FJ1-01-3 | 1/16" E-JOE | 414 (6000) | 207 (3000) | 0.05 (1.3) | 0.06 | 2.60 (66.0) | 1.30 (33.0) | 1.35 (34.3) | 0.33 (8.5) | 0.94 (23.9) | 0.79 (20.0) | 1.97 (50.0) | 0.58 (14.7) | 0.18 (4.6) |
| □□-41-FJ2-02-3 | 1/8" E-JOE | 414 (6000) | 207 (3000) | 0.09 (2.4) | 0.21 | 2.72 (69.0) | 1.36 (34.5) | 1.41 (35.8) | | | | | | |
| □□-41-MJ3-02-3 | 3 mm E-JOE | 414 (6000) | 207 (3000) | | | 2.74 (69.6) | 1.37 (34.8) | 1.42 (36.1) | | | | | | |
| □□-41-FRT2-04-3 | 1/8 NPT Female Thread | 414 (6000) | 207 (3000) | 0.12 (3.0) | 0.28 | 2.14 (54.4) | 1.07 (27.2) | 1.12 (28.5) | | | | | | |
| □□-41-FRP2-04-3 | 1/8 NPS Female Thread | 414 (6000) | 207 (3000) | | | | | | | | | | | |
| □□-41-FN2-04-3 | 1/8 NPT Female Thread | 414 (6000) | 207 (3000) | | | | | | | | | | | |
| □□-41-RT2-04-3 | 1/8 NPT Male Thread | 414 (6000) | 207 (3000) | | | 2.36 (60.0) | 1.18 (30.0) | 1.23 (31.3) | | | | | | |
| □□-41-BP2-04-3 | 1/8 NPS Male Thread | 414 (6000) | 207 (3000) | | | | | | | | | | | |
| □□-41-N2-04-3 | 1/8 NPT Male Thread | 414 (6000) | 207 (3000) | | | | | | | | | | | |
| □□-41-RT4-04-3 | 1/4 NPT Male Thread | 414 (6000) | 207 (3000) | | | | | | | | | | | |
| □□-41-BP4-04-3 | 1/4 NPS Male Thread | 414 (6000) | 207 (3000) | | | 2.70 (68.6) | 1.35 (34.3) | 1.40 (35.6) | | | | | | |
| □□-41-N4-04-3 | 1/4 NPT Male Thread | 414 (6000) | 207 (3000) | | | | | | | | | | | |
| □□-41-FJ4-05-3 | 1/14" E-JOE | 414 (6000) | 207 (3000) | 0.19 (4.7) | 0.70 | 3.48 (88.4) | 1.74 (44.2) | 1.88 (47.7) | 0.48 (12.2) | 1.24 (31.5) | 0.59 (25.0) | 2.64 (67.0) | 0.77 (19.6) | 0.25 (6.4) |
| □□-41-MJ6-05-3 | 6 mm E-JOE | 414 (6000) | 207 (3000) | | | 3.50 (89.0) | 1.75 (44.5) | 1.89 (48.0) | | | | | | |
| □□-41-FJ6-06-3 | 3/8" E-JOE | 414 (6000) | 152 (2200) | | | 3.60 (91.4) | 1.80 (45.7) | 1.94 (49.2) | | | | | | |
| □□-41-MJ8-06-3 | 8 mm E-JOE | 414 (6000) | 159 (2300) | | | 3.56 (90.4) | 1.78 (45.2) | 1.92 (48.7) | | | | | | |
| □□-41-MJ10-06-3 | 10 mm E-JOE | 414 (6000) | 131 (1900) | | | 3.62 (92.0) | 1.81 (46.0) | 1.95 (49.5) | | | | | | |
| □□-41-FRT4-06-3 | 1/4 NPT Female Thread | 414 (6000) | 207 (3000) | | | 3.02 (76.8) | 1.51 (38.4) | 1.65 (41.9) | | | | | | |
| □□-41-FRP4-06-3 | 1/4 NPS Female Thread | 414 (6000) | 207 (3000) | | | | | | | | | | | |
| □□-41-FN4-06-3 | 1/4 NPT Female Thread | 414 (6000) | 207 (3000) | | | | | | | | | | | |
| □□-41-RT4-06-3 | 1/4 NPT Male Thread | 414 (6000) | 207 (3000) | | | | | | | | | | | |
| □□-41-BP4-06-3 | 1/4 NPS Male Thread | 414 (6000) | 207 (3000) | | | | | | | | | | | |
| □□-41-N4-06-3 | 1/4 NPT Male Thread | 414 (6000) | 207 (3000) | | | | | | | | | | | |
| □□-41-RT6-06-3 | 3/8 NPT Male Thread | 414 (6000) | 207 (3000) | | | 3.24 (82.2) | 1.62 (41.1) | 1.76 (44.6) | | | | | | |
| □□-41-BP6-06-3 | 3/8 NPS Male Thread | 414 (6000) | 207 (3000) | | | | | | | | | | | |
| □□-41-N6-06-3 | 3/8 NPT Male Thread | 414 (6000) | 207 (3000) | | | | | | | | | | | |

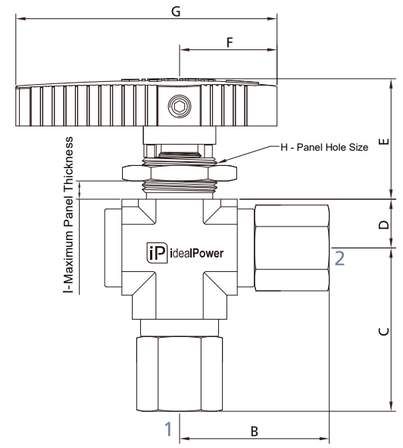
| Basic Ordering Information | Port types and specifications | Pressure rating of the port at 38°C (100°F) in bar (pisg) | | Bore Diameter in. (mm) | Flow Coefficient | Size, in. (mm) | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Port 1/2/3 | 316 Stainless Steel | Brass | | | A | B | C | D | E | F | G | H | I |
| □□-41-FJ8-10-3 | 1/2" E-JOE | 414 (6000) | 145 (2100) | 0.37 (9.5) | 3.48 | 4.68 (118.8) | 2.34 (59.4) | 2.68 (68.1) | 0.71 (18.0) | 1.54 (39.0) | 1.42 (36.0) | 3.78 (96.0) | 0.90 (22.9) | 0.38 (9.7) |
| □□-41-FJ12-10-3 | 3/4" E-JOE | 400 (5800) | 124 (1800) | | | 4.66 (118.4) | 2.33 (59.2) | 2.67 (67.9) | | | | | | |
| □□-41-MJ12-10-3 | 12 mm E-JOE | 414 (6000) | 138 (2000) | | | | | | | | | | | |
| □□-41-MJ14-10-3 | 14 mm E-JOE | 414 (6000) | 131 (1900) | | | | | | | | | | | |
| □□-41-MJ16-10-3 | 16 mm E-JOE | 400 (5800) | 117 (1700) | | | | | | | | | | | |
| □□-41-MJ18-10-3 | 18 mm E-JOE | 372 (5400) | 110 (1600) | | | | | | | | | | | |
| □□-41-MJ20-10-3 | 20 mm E-JOE | 379 (5500) | 110 (1600) | | | 4.84 (123.0) | 2.42 (61.5) | 2.76 (70.2) | | | | | | |
| □□-41-MJ22-10-3 | 22 mm E-JOE | 338 (4900) | 100 (1450) | | | | | | | | | | | |
| □□-41-FRT6-10-3 | 3/8 BSPT Female | 414 (6000) | 207 (3000) | | | 3.90 (99.0) | 1.95 (49.5) | 2.29 (58.2) | | | | | | |
| □□-41-FRP6-10-3 | 3/8 BSPP Female | 414 (6000) | 207 (3000) | | | | | | | | | | | |
| □□-41-FN6-10-3 | 3/8 NPT Female Thread | 414 (6000) | 207 (3000) | | | | | | | | | | | |
| □□-41-FRT8-10-3 | 1/2 BSPT Female | 414 (6000) | 207 (3000) | | | 4.30 (109.2) | 2.15 (54.6) | 2.49 (63.3) | | | | | | |
| □□-41-FRP8-10-3 | 1/2 BSPP Female | 414 (6000) | 207 (3000) | | | 3.97 (101.0) | 1.99 (50.5) | 2.33 (59.1) | | | | | | |
| □□-41-FN8-10-3 | 1/2 NPT Female Thread | 414 (6000) | 207 (3000) | | | 4.30 (109.2) | 2.15 (54.6) | 2.49 (63.3) | | | | | | |
| □□-41-FRT12-10-3 | 3/4 BSPT Female | 414 (6000) | 207 (3000) | | | 4.50 (114.2) | 2.25 (57.1) | 2.59 (65.8) | | | | | | |
| □□-41-FRP12-10-3 | 3/4 BSPP Female | 414 (6000) | 207 (3000) | | | | | | | | | | | |
| □□-41-FN12-10-3 | 3/4 NPT Female Thread | 414 (6000) | 207 (3000) | | | | | | | | | | | |
| □□-41-RT8-10-3 | 1/2 BSPT Male | 414 (6000) | 207 (3000) | | | 4.44 (112.8) | 2.22 (56.4) | 2.56 (65.1) | | | | | | |
| □□-41-BP8-10-3 | 1/2 BSPP Male | 414 (6000) | 207 (3000) | | | | | | | | | | | |
| □□-41-N8-10-3 | 1/2 NPT Male Thread | 414 (6000) | 207 (3000) | | | | | | | | | | | |
| □□-41-RT12-10-3 | 3/4 BSPT Female | 414 (6000) | 207 (3000) | | | | | | | | | | | |
| □□-41-BP12-10-3 | 3/4 BSPP Female | 414 (6000) | 207 (3000) | | | | | | | | | | | |
| □□-41-N12-10-3 | 3/4 NPT Male Thread | 414 (6000) | 207 (3000) | | | | | | | | | | | |

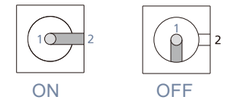






## Angle Valve




## Entrance

| Basic Ordering Information | Port types and specifications | Pressure rating of the port at 38°C (100°F) in bar (pisg) | | Bore Diameter in. (mm) | Flow Coefficient | Size, in. (mm) | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Port 1/2 | 316 Stainless Steel | Brass | | | B | C | D | E | F | G | H | I | |
| □□-41-FJ1-01-A | 1/16" E-JOE | 414 (6000) | 207 (3000) | 0.05 (1.3) | 0.06 | 1.30 (33.0) | 1.35 (34.3) | 0.33 (8.5) | 0.94 (23.9) | 0.79 (20.0) | 1.97 (50.0) | 0.58 (14.7) | 0.18 (4.6) | |
| □□-41-FJ2-02-A | 1/8" E-JOE | 414 (6000) | 207 (3000) | 0.09 (2.4) | 0.21 | 1.36 (34.5) | 1.41 (35.8) | | | | | | | |
| □□-41-MJ3-02-A | 3 mm E-JOE | 414 (6000) | 207 (3000) | | | 1.37 (34.8) | 1.42 (36.1) | | | | | | | |
| □□-41-FRT2-04-A | 1/8 BSPT Female Thread | 414 (6000) | 207 (3000) | 0.12 (3.0) | 0.28 | 1.07 (27.2) | 1.12 (28.5) | | | | | | | |
| □□-41-FRP2-04-A | 1/8 BSPP Female Thread | 414 (6000) | 207 (3000) | | | | | | | | | | | |
| □□-41-FN2-04-A | 1/8 NPT Female Thread | 414 (6000) | 207 (3000) | | | 1.18 (30.0) | 1.23 (31.3) | | | | | | | |
| □□-41-RT2-04-A | 1/8 BSPT Male Thread | 414 (6000) | 207 (3000) | | | | | | | | | | | |
| □□-41-BP2-04-A | 1/8 BSPP Male Thread | 414 (6000) | 207 (3000) | | | | | | | | | | | |
| □□-41-N2-04-A | 1/8 NPT Male Thread | 414 (6000) | 207 (3000) | | | | | | | | | | | |
| □□-41-RT4-04-A | 1/4 BSPT Male Thread | 414 (6000) | 207 (3000) | | | 1.35 (34.3) | 1.40 (35.6) | | | | | | | |
| □□-41-BP4-04-A | 1/4 BSPP Male Thread | 414 (6000) | 207 (3000) | | | | | | | | | | | |
| □□-41-N4-04-A | 1/4 NPT Male Thread | 414 (6000) | 207 (3000) | | | | | | | | | | | |
| □□-41-FJ4-05-A | 1/4" E-JOE | 414 (6000) | 207 (3000) | 0.19 (4.7) | 0.70 | 1.74 (44.2) | 1.88 (47.7) | 0.48 (12.2) | 1.24 (31.5) | 0.59 (25.0) | 2.64 (67.0) | 0.77 (19.6) | 0.25 (6.4) | |
| □□-41-MJ6-05-A | 6 mm E-JOE | 414 (6000) | 207 (3000) | | | 1.75 (44.5) | 1.89 (48.0) | | | | | | | |
| □□-41-FJ6-06-A | 3/8" E-JOE | 414 (6000) | 152 (2200) | | | 1.80 (45.7) | 1.94 (49.2) | | | | | | | |
| □□-41-MJ8-06-A | 8 mm E-JOE | 414 (6000) | 159 (2300) | | | 1.78 (45.2) | 1.92 (48.7) | | | | | | | |
| □□-41-MJ10-06-A | 10 mm E-JOE | 414 (6000) | 131 (1900) | | | 1.81 (46.0) | 1.95 (49.5) | | | | | | | |
| □□-41-FRT4-06-A | 1/4 BSPT Female Thread | 414 (6000) | 207 (3000) | | | 1.51 (38.4) | 1.65 (41.9) | | | | | | | |
| □□-41-FRP4-06-A | 1/4 BSPP Female Thread | 414 (6000) | 207 (3000) | | | | | | | | | | | |
| □□-41-FN4-06-A | 1/4 NPT Female Thread | 414 (6000) | 207 (3000) | | | | | | | | | | | |
| □□-41-RT4-06-A | 1/4 BSPT Thread | 414 (6000) | 207 (3000) | | | 1.62 (41.1) | 1.76 (44.6) | | | | | | | |
| □□-41-BP4-06-A | 1/4 BSPP Thread | 414 (6000) | 207 (3000) | | | | | | | | | | | |
| □□-41-N4-06-A | 1/4 NPT Male Thread | 414 (6000) | 207 (3000) | | | | | | | | | | | |
| □□-41-RT6-06-A | 3/8 BSPT Thread | 414 (6000) | 207 (3000) | | | | | | | | | | | |
| □□-41-BP6-06-A | 3/8 BSPP Thread | 414 (6000) | 207 (3000) | | | | | | | | | | | |
| □□-41-N6-06-A | 3/8 NPT Thread | 414 (6000) | 207 (3000) | | | | | | | | | | | |

| Basic Ordering Information | Port types and specifications | Pressure rating of the port at 38°C (100°F) in bar (pisg) | | Bore Diameter in. (mm) | Flow Coefficient | Size, in. (mm) | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Port 1/2 | 316 Stainless Steel | Brass | | | B | C | D | E | F | G | H | I |
| □□-41-FJ8-10-A | 1/2" E-JOE | 414 (6000) | 145 (2100) | 0.37 (9.5) | 3.48 | 2.34 (59.4) | 2.68 (68.1) | 0.71 (18.0) | 1.54 (39.0) | 1.42 (36.0) | 3.78 (96.0) | 0.90 (22.9) | 0.38 (9.7) |
| □□-41-FJ12-10-A | 3/4" E-JOE | 400 (5800) | 124 (1800) | | | 2.33 (59.2) | 2.67 (67.9) | | | | | | |
| □□-41-MJ12-10-A | 12 mm E-JOE | 414 (6000) | 138 (2000) | | | | | | | | | | |
| □□-41-MJ14-10-A | 14 mm E-JOE | 414 (6000) | 131 (1900) | | | | | | | | | | |
| □□-41-MJ16-10-A | 16 mm E-JOE | 400 (5800) | 117 (1700) | | | | | | | | | | |
| □□-41-MJ18-10-A | 18 mm E-JOE | 372 (5400) | 110 (1600) | | | | | | | | | | |
| □□-41-MJ20-10-A | 20 mm E-JOE | 379 (5500) | 110 (1600) | | | 2.42 (61.5) | 2.76 (70.2) | | | | | | |
| □□-41-MJ22-10-A | 22 mm E-JOE | 338 (4900) | 100 (1450) | | | | | | | | | | |
| □□-41-FRT6-10-A | 3/8 Imperial Taper Female Thread | 414 (6000) | 207 (3000) | | | 1.95 (49.5) | 2.29 (58.2) | | | | | | |
| □□-41-FRP6-10-A | 3/8 Imperial Straight Female Thread | 414 (6000) | 207 (3000) | | | | | | | | | | |
| □□-41-FN6-10-A | 3/8 NPT Female Thread | 414 (6000) | 207 (3000) | | | | | | | | | | |
| □□-41-FRT8-10-A | 1/2 Imperial Taper Female Thread | 414 (6000) | 207 (3000) | | | 2.15 (54.6) | 2.49 (63.3) | | | | | | |
| □□-41-FRP8-10-A | 1/2 Imperial Straight Female Thread | 414 (6000) | 207 (3000) | | | 1.99 (50.5) | 2.33 (59.1) | | | | | | |
| □□-41-FN 8-10-A | 1/2 NPT Female Thread | 414 (6000) | 207 (3000) | | | 2.15 (54.6) | 2.49 (63.3) | | | | | | |
| □□-41-FRT12-10-A | 3/4 Imperial Taper Female Thread | 414 (6000) | 207 (3000) | | | 2.25 (57.1) | 2.59 (65.8) | | | | | | |
| □□-41-FRP12-10-A | 3/4 Imperial Straight Female Thread | 414 (6000) | 207 (3000) | | | | | | | | | | |
| □□-41-FN12-10-A | 3/4 NPT Female Thread | 414 (6000) | 207 (3000) | | | | | | | | | | |
| □□-41-RT8-10-A | 1/2 Imperial Taper Male Thread | 414 (6000) | 207 (3000) | | | 2.22 (56.4) | 2.56 (65.1) | | | | | | |
| □□-41-BP8-10-A | 1/2 Imperial Straight Male Thread | 414 (6000) | 207 (3000) | | | | | | | | | | |
| □□-41-N8-10-A | 1/2 NPT Male Thread | 414 (6000) | 207 (3000) | | | | | | | | | | |
| □□-41-RT12-10-A | 3/4 Imperial Taper Female Thread | 414 (6000) | 207 (3000) | | | | | | | | | | |
| □□-41-BP12-10-A | 3/4 Imperial Straight Female Thread | 414 (6000) | 207 (3000) | | | | | | | | | | |
| □□-41-N12-10-A | 3/4 NPT Male Thread | 414 (6000) | 207 (3000) | | | | | | | | | | |

1. Ideal Power Double Ferrule Fitting.
2. The listed dimensions and types are standard; other dimensions and types are available. Please contact an authorized Ideal Power agent for more information.
3. The valve dimensions for Ideal Power ferrule fittings listed in the port types are based on the size when the hand-tightening ferrule nut is used.
   All dimensions are for reference only and may be subject to change.
   For dimensions not listed above, please contact an authorized Ideal Power agent.







Model Description

SS – 41 – FJ8 MJ12 MJ10 – P06 – RXHQ3 – SCEF2

| Valve Body Material | Series | Port 1 Type | Port 1 Size | Port 2/3 type | Port 2/3 size | Flow Passage | Actuator Accessories | Handle/Actuator | Internal latus rectum | Valve Seat Material | Special Applications | Cleaning and Packaging |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| SS 316 Stainless Steel | 41 | FN NPT Female Thread | 2 1/8" | Same as Port 1 | | Straight-Through | NONE | C Black Nylon Handle | 02 0.09" (2.4 mm) | PTFE | S NONE | FC-01 |
| 6L 316L Stainless Steel | | N NPT Male Thread | 3 3 mm | The description method is the same as port 1. In the case of a three-way valve, if the ports are not identical, the model must specify all three ports | | A Angular type (ports located at the bottom) | H Mechanical Limit Switch | F Red Nylon Handle | 03 0.13" (3.2 mm) | K PCTFE | S NACE MR0175 | F2 FC-02 |
| S4 304 Stainless Steel | | FRT Imperial Standard Pipe Taper Female Thread | 4 1/4" | | | 3 Three-way (change valve) | N Inductive Limit Switch | J Green Nylon Handle | 04 0.17" (4.2 mm) | P PEEK | SI Sulfur Passivation | |
| B Brass | | RT Imperial Standard Taper Pipe Male Thread | 5 5/16" | | | | Q Solenoid Valve | Y Blue Nylon Handle | 05 0.19" (4.7 mm) | | | |
| | | FMS Metric Female Thread (compatible with FG gasket) | 6 3/8" or 6 mm or M6 x 1 | | | | HQ Mechanical limit switch and solenoid valve | U Yellow Nylon Handle | 06 0.25" (6.4 mm) | | | |
| | | MS Metric Male Thread (compatible with RG gasket) | 8 1/2" or 8 mm | | | | NQ Inductive limit switch and solenoid valve | CS Black Aluminum Handle | 10 0.41" (10.3 mm) | | | |
| | | FRP Imperial Standard Straight Pipe Female Thread (compatible with RP gasket) | 10 10 mm or M10 x 1 | | | | | OS Normally closed spring return pneumatic actuator | | | | |
| | | BP Imperial Standard Straight Pipe Male Thread (compatible with RG gasket) | 12 3/4" or 12 mm | | | | | DA Normally open 90° spring return pneumatic actuator | | | | |
| | | FJ Imperial Standard Double Ferrule | 14 14 mm or M14 x 1.5 | | | | | LX 90° double acting pneumatic actuator | | | | |
| | | MJ Metric Double Ferrule | 16 16 mm | | | | | RX 180° normally open spring return pneumatic actuator with left end | | | | |
| | | UFB Imperial Standard Tube Welded Union | 18 18 mm | | | | | DX 180° normally open spring return pneumatic actuator with right end | | | | |
| | | UMB Metric Tube Welded Union | 20 20 mm or M20 x 1.5 | | | | | EA 180° double acting pneumatic actuator | | | | |
| | | UPB Pipe Welded Union | 22 22 mm or M22 x 1.5 | | | | | EX 90° electric actuator | | | | |
| | | | 24 M24 x 1.5 | | | | | | | | | |

1. The standard pitch for metric threads is as follows:
   For sizes below M10: 1mm;
   for sizes from M12 to M24: 1.5mm.
2. The standard pitch should be omitted in the model designation, while other pitches should be explicitly stated.
3. In an oxygen-enriched environment or with hazardous media, please contact Ideal Power or an authorized agent.
4. Cleaning and Packaging
   FC-01: Standard cleaning and packaging for general industrial use.
   FC-02: Special cleaning and packaging for wetted system components, which must meet the requirements of ASTM G93, Level C.
   Sulfur Passivation: Perform sulfur passivation treatment on the primary wetted metal components, and exclude PEEK valve seat selection.

Note: The "Model Description" is used to explain the composition rules of Ideal Power product models and is not applicable to specific product selection. It cannot be arbitrarily combined. If you have any questions, please contact an authorized Ideal Power agent.

# Cold-Drawn Bar Stock Ball Valve

# Series 42

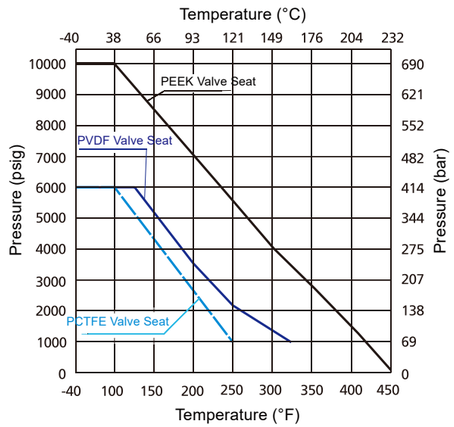
## Characteristics

- Working pressure up to: 690 bar (10000 psig)
- Operating temperature range: -40°C to 232°C (-40°F to 450°F)
- 2-way valve can flow in both directions
- Floating ball structure compensates for valve wear
- Various port fitting types available
- Anti-blowout stem structure
- Handle color options available
- Pneumatic or electric actuator options available
- Each valve undergoes airtightness testing with nitrogen or compressed air at the rated working pressure, achieving no visible leakage requirement. For rated working pressures exceeding 6000 psig, testing is conducted at 6000 psig.
- 2-way valve can flow in both directions
- 42 three-way switching ball valve has restricted medium flow direction, with port 1 only serving as an inlet and ports 2 and 3 only serving as outlets.

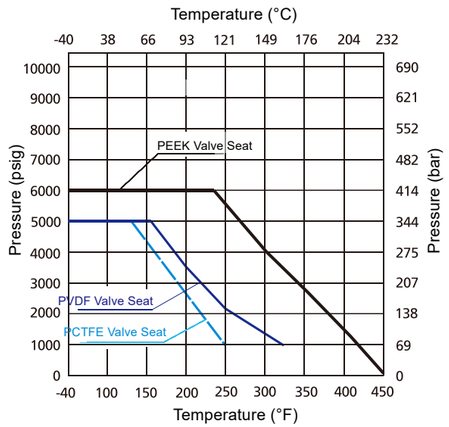
### Temperature Pressure Curve

2-way Valve

10 Port Size




13 port size or 19 bore size"



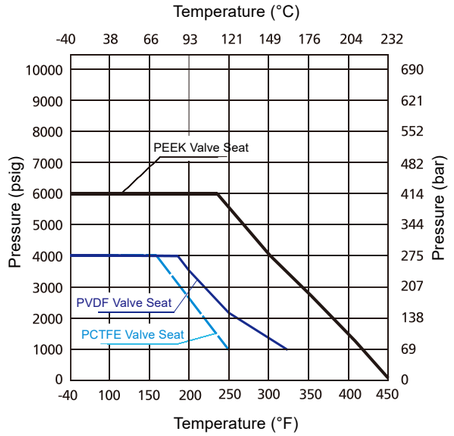




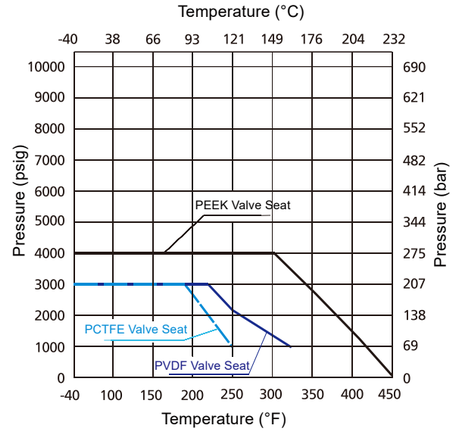



3-way Valve

10 Bore




13 and 19 Bore

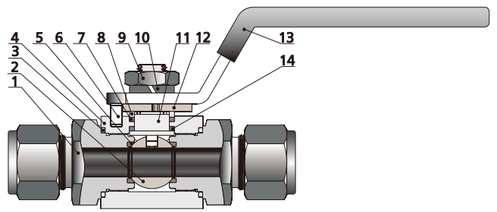



Note: The curves are applicable only to valve bodies made of 316 stainless steel.
For information on valve bodies made of other materials, please consult an authorized Ideal Power distributor.
The working pressure of the valve is limited by the material of the valve body, the material of the valve seat, and the port specifications. When selecting a valve, please refer to both the temperature-pressure curves above and the port pressure ratings in the dimensional table, and use the lowest value as the rated pressure of the valve.

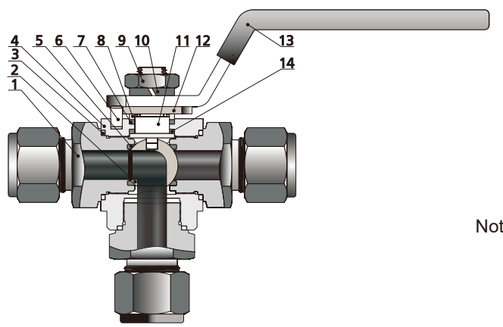
10 Bore

## Standard Structural Materials

2-way Valve




3-way Valve

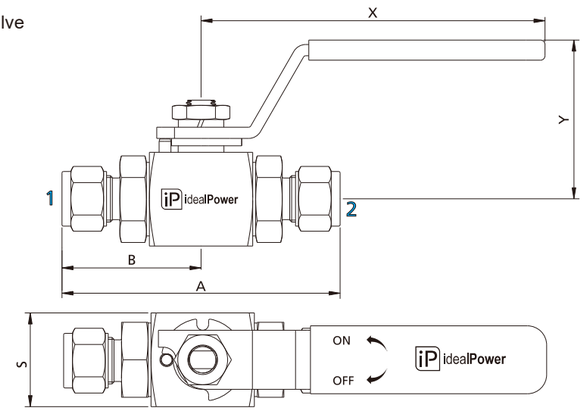


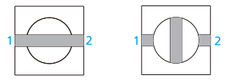

| Sequence Number | Component | Valve Body Material |
|---|---|---|
| | | 316 Stainless Steel |
| 1 | *Butt Joint* | *316 Stainless Steel/A479* |
| 2 | *Ball* | *316 Stainless Steel/A479* |
| 3 | *O-ring* | *Epilogue Fluor FKM* |
| 4 | *Valve Body* | *316 Stainless Steel/A479* |
| 5 | *Valve Seat* | *PVDF or PCTFE or PEEK* |
| 6 | Dowel Pin | Stainless Steel |
| 7 | *Upper Packing* | *PTFE/D1710* |
| 8 | Valve Stem Washer | 316 Stainless Steel/A479 |
| 9 | Valve Stem Nut ① | Stainless Steel |
| 10 | Spring Washer | Stainless Steel |
| 11 | *Valve Stem* | *316 Stainless Steel/A479* |
| 12 | Positioning Block | 304 Stainless Steel/A240 |
| 13 | Handle | Stainless steel with polyethylene-based plastic handle sleeve |
| 14 | *Underfill* ② | *PEEK* |

Note: Components in contact with the medium are indicated in italics.
For valves made of other materials, please contact an authorized Ideal Power distributor.
① Valves with 13 and 19 bore sizes have 2 stem nuts.
② The lower packing material for the 19 bore valve is PTFE.

## Size

2-Way Valve




| Basic Ordering Information | Port types and specifications | Pressure rating of the port at 38°C (100°F) in bar (pisg) | Inner diameter in. (mm) | Cv | Size, in. (mm) | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | Port 1/2 | 316 Stainless Steel | | | A | B | X | Y | S |
| □□-42-MJ6-10 | 6 mm E-JOE | 690 (10000) | 0.19(4.8) | 1.2 | 3.54 (90.0) | 1.77 (45.0) | 4.57 (116.0) | 2.10 (53.4) | 1.30 (32.0) |
| □□-42-MJ8-10 | 8 mm E-JOE | 517 (7500) | 0.25(6.4) | 2.3 | 3.60 (91.6) | 1.80 (45.8) | | | |
| □□-42-MJ10-10 | 10 mm E-JOE | 579 (8400) | 0.28(7.1) | 3.7 | 3.70 (94.0) | 1.85 (47.0) | | | |
| □□-42-MJ12-10 | 12 mm E-JOE | 469 (6800) | 0.39 (10.0) | 7.5 | 3.94 (100.0) | 1.97 (50.0) | | | |
| □□-42-MJ14-10 | 14 mm E-JOE | 427 (6200) | | | | | | | |
| □□-42-FJ4-10 | 1/4" E-JOE | 690 (10000) | 0.19(4.8) | 1.2 | 3.56 (90.4) | 1.78 (45.2) | | | |
| □□-42-FJ6-10 | 3/8" E-JOE | 448 (6500) | 0.28(7.1) | 3.7 | 3.72 (94.6) | 1.86 (47.3) | | | |
| □□-42-FJ8-10 | 1/2" E-JOE | 462 (6700) | 0.39 (10.0) | 7.5 | 3.92 (99.6) | 1.96 (49.8) | | | |
| □□-42-FN4-10 | 1/4 NPT Female Thread | 690 (10000) | | | 3.03 (77.0) | 1.52 (38.5) | | | |
| □□-42-FN6-10 | 3/8 NPT Female Thread | 690 (10000) | | | 2.80 (71.0) | 1.40 (35.5) | | | |
| □□-42-FN8-10 | 1/2 NPT Female Thread | 690 (10000) | | | 3.27 (83.0) | 1.63 (41.5) | | | |
| □□-42-N4-10 | 1/4 NPT Male Thread | 690 (10000) | 0.28(7.1) | 3.7 | 3.36 (85.4) | 1.68 (42.7) | | | |
| □□-42-N6-10 | 3/8 NPT Male Thread | 690 (10000) | 0.39 (10.0) | 7.5 | | | | | |
| □□-42-N8-10 | 1/2 NPT Male Thread | 690 (10000) | | | 3.75 (95.2) | 1.88 (47.6) | | | |
| □□-42-MJ16-13 | 16 mm E-JOE | 400 (5800) | 0.50 (12.7) | 10.0 | 4.42 (112.2) | 2.21 (56.1) | 5.59 (142.0) | 2.54 (64.4) | 1.50 (38.0) |
| □□-42-MJ18-13 | 18 mm E-JOE | 372 (5400) | | | 4.12 (104.6) | 2.06 (52.3) | | | |
| □□-42-MJ20-13 | 20 mm E-JOE | 379 (5500) | | | 4.43 (112.6) | 2.22 (56.3) | | | |
| □□-42-MJ22-13 | 22 mm E-JOE | 338 (4900) | | | 4.29 (109.0) | 2.15 (54.5) | | | |
| □□-42-FJ10-13 | 5/8" E-JOE | 414 (6000) | | | 4.36 (110.6) | 2.18 (55.3) | | | |
| □□-42-FJ12-13 | 3/4" E-JOE | 400 (5800) | | | | | | | |
| □□-42-FN8-13 | 1/2 NPT Female Thread | 414 (6000) | | | 3.54 (90.0) | 1.77 (45.0) | | | |
| □□-42-FN12-13 | 3/4 NPT Female Thread | 414 (6000) | | | 4.09 (104.0) | 2.05 (52.0) | | | |
| □□-42-N12-13 | 3/4 NPT Male Thread | 414 (6000) | | | 4.14 (105.2) | 2.07 (52.6) | | | |
| □□-42-MJ20-19 | 20 mm E-JOE | 379 (5500) | 0.71 (18.0) | 30.0 | 4.87 (123.8) | 2.43 (61.9) | 6.46 (164.0) | 2.72 (69.0) | 1.96 (50.0) |
| □□-42-MJ22-19 | 22 mm E-JOE | 338 (4900) | | | | | | | |
| □□-42-MJ25-19 | 25 mm E-JOE | 317 (4600) | | | 5.11 (129.8) | 2.66 (64.9) | | | |
| □□-42-FJ12-19 | 3/4" E-JOE | 400 (5800) | | | 4.59 (116.6) | 2.29 (58.3) | | | |
| □□-42-FJ16-19 | 1" E-JOE | 324 (4700) | | | 5.11 (129.8) | 2.66 (64.9) | | | |
| □□-42-FN12-19 | 3/4 NPT Female Thread | 414 (6000) | | | 3.81 (96.8) | 1.91 (48.4) | | | |
| □□-42-FN16-19 | 1 NPT Female Thread | 414 (6000) | | | 4.26 (108.2) | 2.13 (54.1) | | | |
| □□-42-N16-19 | 1 NPT Male Thread | 414 (6000) | | | 4.91 (124.8) | 2.45 (62.4) | | | |

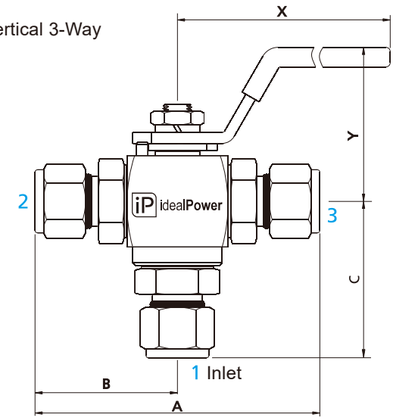






3-Way Ball Valve

Vertical 3-Way




Port 1 as the inlet, turning the handle 180° to change direction.

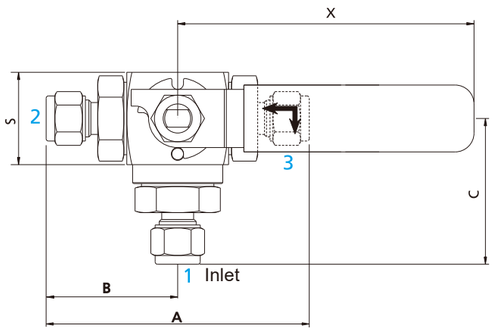



Port 1 and Port 2 are connected

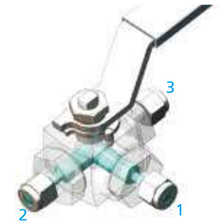



Port 1 and Port 3 are connected

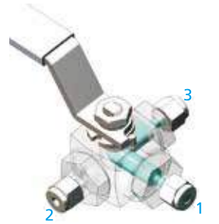
Horizontal 3-Way




Port 1 as the inlet, turning the handle 90° to change direction.




Port 1 and Port 2 are connected




Port 1 and Port 3 are connected

| Basic Ordering Information | Port types and specifications | Pressure rating of the port at 38°C (100°F) in bar (pisg) | Inner diameter in. (mm) | Size, in. (mm) | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | Port 1/2/3 | 316 Stainless Steel | | A | B | C | X | Y | S |
| □□-42-MJ6-10-3□ | 6 mm E-JOE | 690 (10000) | 0.19 (4.8) | 3.54 (90.0) | 1.77 (45.0) | 2.00 (51.0) | 4.57 (116.0) | 2.10 (53.4) | 1.30 (32.0) |
| □□-42-MJ8-10-3□ | 8 mm E-JOE | 517 (7500) | 0.25 (6.4) | 3.60 (91.6) | 1.80 (45.8) | 2.02 (51.3) | | | |
| □□-42-MJ10-10-3□ | 10 mm E-JOE | 579 (8400) | 0.28 (7.1) | 3.70 (94.0) | 1.85 (47.0) | 2.07 (52.5) | | | |
| □□-42-MJ12-10-3□ | 12 mm E-JOE | 469 (6800) | 0.39 (10.0) | 3.94 (100.0) | 1.97 (50.0) | 2.18 (55.5) | | | |
| □□-42-MJ14-10-3□ | 14 mm E-JOE | 427 (6200) | | | | | | | |
| □□-42-FJ4-10-3□ | 1/4" E-JOE | 690 (10000) | 0.19 (4.8) | 3.56 (90.4) | 1.78 (45.2) | 1.95 (49.5) | | | |
| □□-42-FJ6-10-3□ | 3/8" E-JOE | 448 (6500) | 0.28 (7.1) | 3.72 (94.6) | 1.86 (47.3) | 2.16 (54.8) | | | |
| □□-42-FJ8-10-3□ | 1/2" E-JOE | 462 (6700) | 0.39 (10.0) | 3.92 (99.6) | 1.96 (49.8) | 2.13 (54.0) | | | |
| □□-42-FN4-10-3□ | 1/4 NPT Female Thread | 690 (10000) | | 3.03 (77.0) | 1.52 (38.5) | 1.44 (36.5) | | | |
| □□-42-FN6-10-3□ | 3/8 NPT Female Thread | 690 (10000) | | 2.80 (71.0) | 1.40 (35.5) | 1.57 (40.0) | | | |
| □□-42-FN8-10-3□ | 1/2 NPT Female Thread | 690 (10000) | | 3.27 (83.0) | 1.63 (41.5) | 1.83 (46.4) | | | |
| □□-42-N4-10-3□ | 1/4 NPT Male Thread | 690 (10000) | 0.28 (7.1) | 3.36 (85.4) | 1.68 (42.7) | 1.90 (48.2) | | | |
| □□-42-N6-10-3□ | 3/8 NPT Male Thread | 690 (10000) | 0.39 (10.0) | | | | | | |
| □□-42-N8-10-3□ | 1/2 NPT Male Thread | 690 (10000) | | 3.75 (95.2) | 1.88 (47.6) | 2.09 (53.1) | | | |

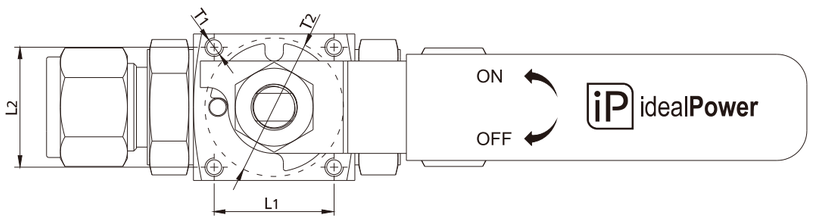
| Basic Ordering Information | Port types and specifications | Pressure rating of the port at 38°C (100°F) in bar (pisg) | Inner diameter in. (mm) | Size, in. (mm) | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | Port 1/2/3 | 316 Stainless Steel | | A | B | C | X | Y | S |
| □□-42-MJ16-13-3□ | 16 mm E-JOE | 400 (5800) | 0.50 (12.7) | 4.42 (112.2) | 2.21 (56.1) | 2.60 (66.1) | 5.59 (142.0) | 2.54 (64.4) | 1.50 (38.0) |
| □□-42-MJ18-13-3□ | 18 mm E-JOE | 372 (5400) | | 4.12 (104.6) | 2.06 (52.3) | 2.45 (62.3) | | | |
| □□-42-MJ20-13-3□ | 20 mm E-JOE | 379 (5500) | | 4.43 (112.6) | 2.22 (56.3) | 2.61 (66.3) | | | |
| □□-42-MJ22-13-3□ | 22 mm E-JOE | 338 (4900) | | 4.29 (109.0) | 2.15 (54.5) | 2.54 (64.5) | | | |
| □□-42-FJ10-13-3□ | 5/8" E-JOE | 414 (6000) | | 4.36 (110.6) | 2.18 (55.3) | 2.57 (65.3) | | | |
| □□-42-FJ12-13-3□ | 3/4" E-JOE | 400 (5800) | | | | | | | |
| □□-42-FN8-13-3□ | 1/2 NPT Female Thread | 414 (6000) | | 3.54 (90.0) | 1.77 (45.0) | 2.02 (51.2) | | | |
| □□-42-FN12-13-3□ | 3/4 NPT Female Thread | 414 (6000) | | 4.09 (104.0) | 2.05 (52.0) | 2.44 (62.0) | | | |
| □□-42-N12-13-3□ | 3/4 NPT Male Thread | 414 (6000) | | 4.14 (105.2) | 2.07 (52.6) | 2.46 (62.6) | | | |
| □□-42-MJ20-19-3□ | 20 mm E-JOE | 379 (5500) | 0.71 (18.0) | 4.87 (123.8) | 2.43 (61.9) | 2.89 (73.4) | 6.46 (164.0) | 2.72 (69.0) | 1.96 (50.0) |
| □□-42-MJ22-19-3□ | 22 mm E-JOE | 338 (4900) | | | | | | | |
| □□-42-MJ25-19-3□ | 25 mm E-JOE | 317 (4600) | | 5.11 (129.8) | 2.66 (64.9) | 3.00 (76.2) | | | |
| □□-42-FJ12-19-3□ | 3/4" E-JOE | 400 (5800) | | 4.86 (123.4) | 2.43 (61.7) | 3.02 (76.7) | | | |
| □□-42-FJ16-19-3□ | 1" E-JOE | 324 (4700) | | 5.11 (129.8) | 2.66 (64.9) | 2.85 (72.4) | | | |
| □□-42-FN12-19-3□ | 3/4 NPT Female Thread | 414 (6000) | | 3.82 (97.0) | 1.91 (48.5) | 2.22 (56.5) | | | |
| □□-42-FN16-19-3□ | 1 NPT Female Thread | 414 (6000) | | 4.26 (108.2) | 2.13 (54.1) | 2.72 (69.1) | | | |
| □□-42-N12-19-3□ | 3/4 NPT Male Thread | 414 (6000) | | 4.54 (115.2) | 2.27 (57.6) | 2.72 (69.1) | | | |
| □□-42-N16-19-3□ | 1 NPT Male Thread | 414 (6000) | | 4.91 (124.8) | 2.45 (62.4) | 2.90 (73.9) | | | |

1. Ideal Power stands for Ideal Power double ferrule tube fittings.
2. The listed sizes and types are standard, and other sizes and types are available, Please contact an authorized Ideal Power agent for more information.
3. The valve dimensions for Ideal Power ferrule fittings listed in the port types are the dimensions when the hand-tight ferrule nut is applied. All dimensions are for reference only and may be subject to change. For sizes not listed above, please contact an authorized Ideal Power agent.

## Panel Options

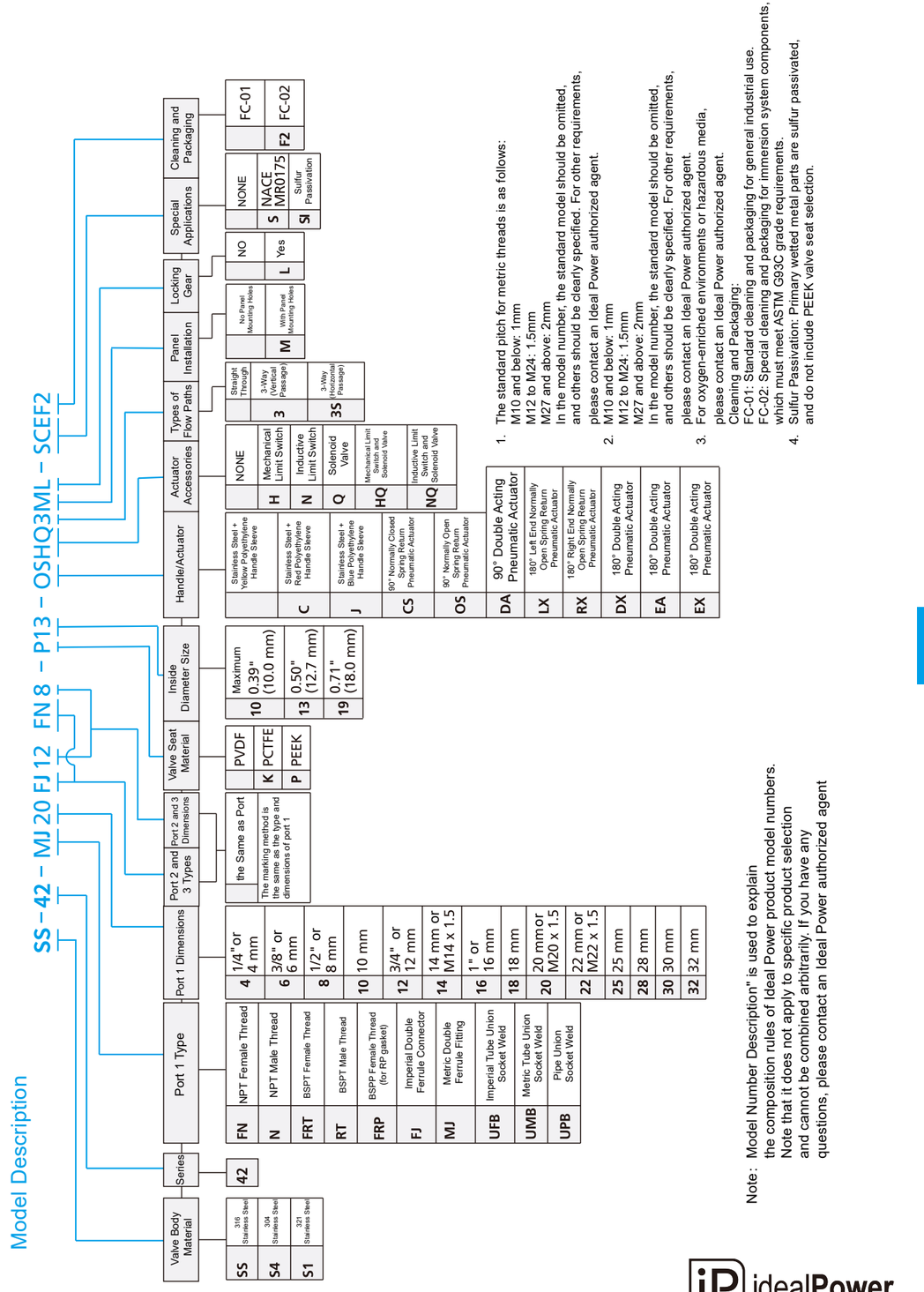
Panel Mounting Dimensions

| Bore Diameter in. (mm) | Size, in. (mm) | | | |
|---|---|---|---|---|
| | L1 | L2 | T1 | T2 |
| 0.39 (10.0) | 1.02 (26.0) | 1.02 (26.0) | M4×0.7P Depth 0.19 (5.0) | 1.18 (30.0) |
| 0.50 (12.7) | 1.18 (30.0) | 1.18 (30.0) | M5×0.8P Depth 0.19 (5.0) | 1.18 (30.0) |
| 0.71 (18.0) | 1.37 (35.0) | 1.57 (40.0) | M5×0.8P Depth 0.19 (5.0) | 1.50 (38.0) |








1. The standard pitch for metric threads is as follows:
   M10 and below: 1mm
   M12 to M24: 1.5mm
   M27 and above: 2mm
   In the model number, the standard model should be omitted, and others should be clearly specified. For other requirements, please contact an Ideal Power authorized agent.
2. M10 and below: 1mm
   M12 to M24: 1.5mm
   M27 and above: 2mm
   In the model number, the standard model should be omitted, and others should be clearly specified. For other requirements, please contact an Ideal Power authorized agent.
3. For oxygen-enriched environments or hazardous media, please contact an Ideal Power authorized agent.
   Cleaning and Packaging:
   FC-01: Standard cleaning and packaging for general industrial use.
   FC-02: Special cleaning and packaging for immersion system components, which must meet ASTM G93C grade requirements.
4. Sulfur Passivation: Primary wetted metal parts are sulfur passivated, and do not include PEEK valve seat selection.

Note: Model Number Description" is used to explain the composition rules of Ideal Power product model numbers. Note that it does not apply to specific product selection and cannot be combined arbitrarily. If you have any questions, please contact an Ideal Power authorized agent

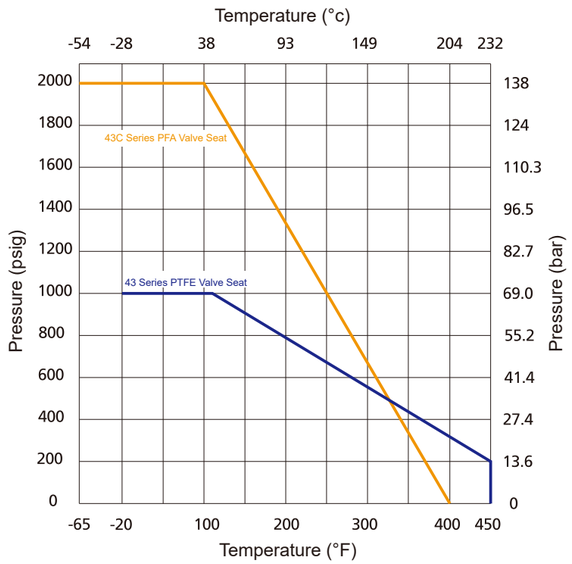
# Hexagonal Bar Ball Valve

# Series 43 and 43C

## Characteristics

- Working Pressure Can Reach:
  43 Series: 69 bar (1000 psig)
  43C Series: 138 bar (2000 psig)
- Operating Temperature Range:
  43 Series: -28°C to 232°C (-20°F to 450°F)
  43C Series: -54°C to 204°C (-65°F to 400°F)
- Compact and Economical Design
- The floating ball design allows for sealing compensation on the valve seat
- Bidirectional flow
- Low operating torque
- Multiple port configurations are available for selection
- Blowout-proof stem structure
- Handle colors are available for selection
- Each valve is subjected to a seal test using nitrogen or compressed air at the rated working pressure to ensure that there is no visible leakage

## Temperature Pressure Curve



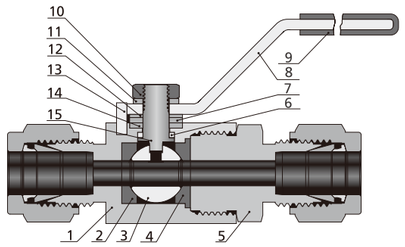




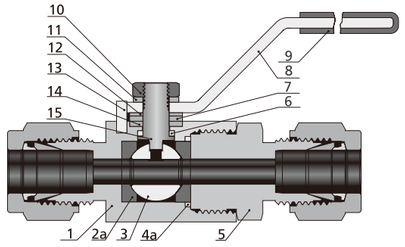



# Standard Structural Materials

43 Series



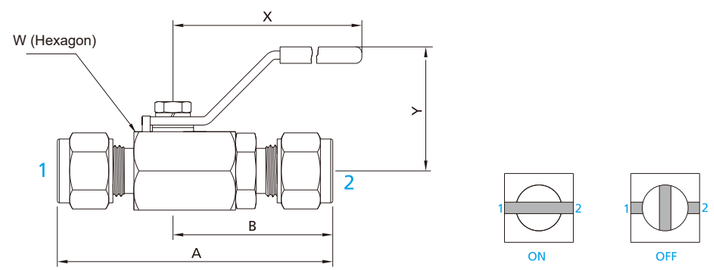

43C Series




| Serial Number | Component | 43 Series | | 43C Series |
|---|---|---|---|---|
| | | Valve Body Material | | |
| | | 316 Stainless Steel | Brass | 316 Stainless Steel |
| | | Material Grade/ASTM Specification | | |
| 1 | *Valve Body* | *316 Stainless Steel/A479* | *Brass C36000/B16* | *316 Stainless Steel/A479* |
| 2 | *Front Valve Seat* | *PTFE/D1710* | | ——— |
| 2a | *Valve Seat* | ——— | | *PFA/D3307* |
| 3 | *Ball* | *316 Stainless Steel/A479* | | |
| 4 | *Rear Valve Seat* | *PTFE/D1710* | | ——— |
| 4a | *Sealing Gasket* | ——— | | *316L Stainless Steel/A269* |
| 5 | *End Connection* | *316 Stainless Steel/A479* | *Brass C36000/B16* | *316 Stainless Steel/A479* |
| 6 | *Underfill* | *PTFE/D1710* | | |
| 7 | Spacer Ring | 316 Stainless Steel/A479 | | |
| 8 | Handle | 304 Stainless Steel/A240 or Aluminum | | |
| 9 | Handle Sleeve | Vinyl Ester Resins | | |
| 10 | Valve Stem Nut | Stainless Steel | | |
| 11 | Gasket | Stainless Steel | | |
| 12 | Disc Spring | S17700/A693 | | |
| 13 | Locating Pin | Stainless Steel | | |
| 14 | *Upper Packing* | *PTFE/D1710* | | |
| 15 | *Valve Stem* | *316 Stainless Steel/A479* | | |

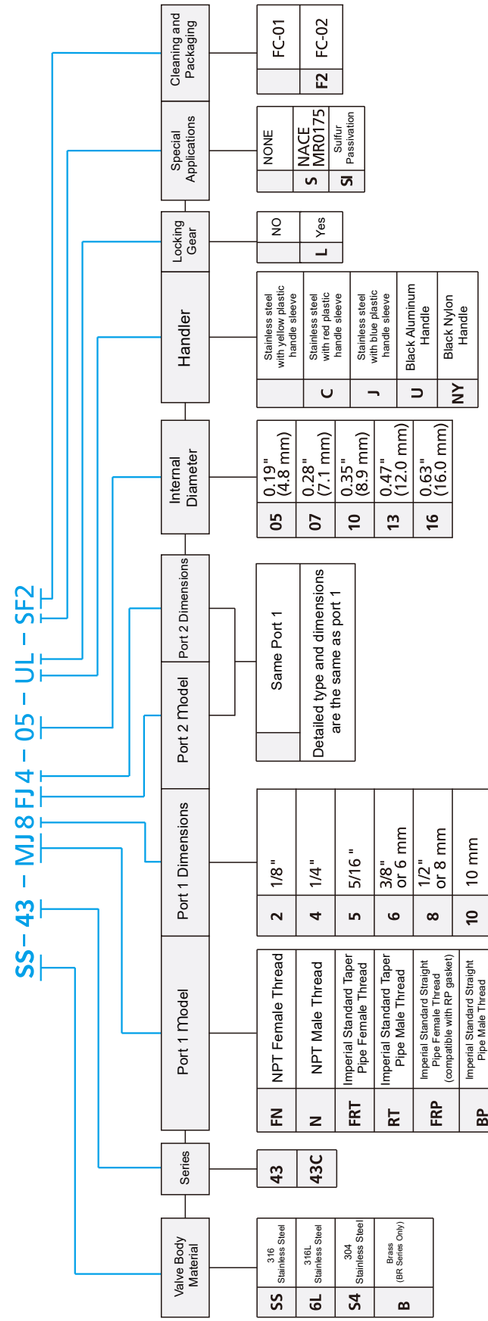
"Note: Components in contact with the medium are indicated in italics.
For valves made of other materials,
please contact an authorized Ideal Power distributor."

## Size



| Basic Ordering Information | | Port types and specifications | Inner diameter in. (mm) | Cv | Size, in. (mm) | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | | Port 1/2 | | | A | B | W | X | Y |
| □□-43-MJ6-05 | □□-43C-MJ6-05 | 6 mm E-JOE | 0.19 (4.8) | 1.25 | 2.57 (65.2) | 1.50 (38.1) | 3/4 (19.05) | 2.36 (60) | 1.18 (30) |
| □□-43-MJ8-05 | □□-43C-MJ8-05 | 8 mm E-JOE | | | 2.63 (66.8) | 1.53 (38.8) | | | |
| □□-43-FJ4-05 | □□-43C-FJ4-05 | 1/4” E-JOE | | | 2.57 (65.2) | 1.50 (38.1) | | | |
| □□-43-FJ5-05 | □□-43C-FJ5-05 | 5/16” E-JOE | | | 2.63 (66.8) | 1.53 (38.8) | | | |
| □□-43-FN2-05 | □□-43C-FN2-05 | 1/8 NPT Female Thread | | | 1.85 (47.0) | 1.08 (27.4) | | | |
| □□-43-FRP2-05 | □□-43C-FRP2-05 | 1/8 Inch Straight Pipe Female Thread | | | 2.00 (50.0) | 1.14 (29.0) | | | |
| □□-43-FRP4-05 | □□-43C-FRP4-05 | 1/4 Inch Straight Pipe Female Thread | | | 2.00 (50.0) | 1.14 (29.0) | | | |
| □□-43-FN4-05 | □□-43C-FN4-05 | 1/4 NPT Female Thread | | | 1.85 (47.0) | 1.08 (27.4) | | | |
| □□-43-MJ10-07 | □□-43C-MJ10-07 | 10 mm E-JOE | 0.28 (7.1) | 2.50 | 2.87 (72.9) | 1.68 (42.7) | 7/8 (22.23) | | 1.26 (32) |
| □□-43-FJ6-07 | □□-43C-FJ6-07 | 3/8” E-JOE | | | | | | | |
| □□-43-FRP6-07 | □□-43C-FRP6-07 | 3/8 Inch Straight Pipe Female Thread | | | 2.03 (51.6) | 1.18 (30.0) | | | |
| □□-43-FN6-07 | □□-43C-FN6-07 | 3/8 NPT Female Thread | | | | | | | |
| □□-43-MJ12-10 | □□-43C-MJ12-10 | 12 mm E-JOE | 0.35 (8.9) | 9.25 | 3.15 (80.0) | 1.83 (46.5) | 1 1/16 (27.0) | 3.15 (80) | 1.54 (39) |
| □□-43-MJ14-10 | □□-43C-MJ14-10 | 14 mm E-JOE | | | 3.24 (82.2) | 1.87 (47.5) | | | |
| □□-43-FJ8-10 | □□-43C-FJ8-10 | 1/2” E-JOE | | | 3.15 (80.0) | 1.83 (46.5) | | | |
| □□-43-FJ10-10 | □□-43C-FJ10-10 | 5/8” E-JOE | | | 3.24 (82.2) | 1.87 (47.5) | | | |
| □□-43-FRP8-10 | □□-43C-FRP8-10 | 1/2 Inch Straight Pipe Female Thread | | | 2.08 (53.0) | 1.12 (28.5) | 15/16 (24.0) | | |
| □□-43-FN8-10 | □□-43C-FN8-10 | 1/2 NPT Female Thread | | | 2.08 (53.0) | 1.12 (28.5) | | | |
| □□-43-MJ16-13 | □□-43C-MJ16-13 | 16 mm E-JOE | 0.47 (12.0) | 12.65 | 3.50 (88.9) | 2.00 (50.8) | 1 1/4 (31.75) | 3.94 (100) | 2.03 (51.7) |
| □□-43-MJ18-13 | □□-43C-MJ18-13 | 18 mm E-JOE | | | | | | | |
| □□-43-FJ12-13 | □□-43C-FJ12-13 | 3/4” E-JOE | | | | | | | |
| □□-43-FRP12-13 | □□-43C-FRP12-13 | 3/4 Inch Straight Pipe Female Thread | | | 2.48 (63.0) | 1.30 (33.0) | | | |
| □□-43-FN12-13 | □□-43C-FN12-13 | 3/4 NPT Female Thread | | | 2.39 (60.7) | 1.20 (30.5) | | | |
| □□-43-MJ22-16 | □□-43C-MJ22-16 | 22 mm E-JOE | 0.63 (16.0) | 17.35 | 3.96 (100.6) | 2.24 (57.1) | 1 1/2 (38.1) | | 2.15 (54.8) |
| □□-43-MJ25-16 | □□-43C-MJ25-16 | 25 mm E-JOE | | | 4.31 (109.5) | 2.42 (61.5) | | | |
| □□-43-FJ16-16 | □□-43C-FJ16-16 | 1” E-JOE | | | | | | | |
| □□-43-FRP16-16 | □□-43C-FRP16-16 | 1 Inch Straight Pipe Female Thread | | | 3.25 (82.6) | 1.63 (41.3) | | | |
| □□-43-FN16-16 | □□-43C-FN16-16 | 1 NPT Female Thread | | | 3.00 (76.5) | 1.50 (38.1) | | | |

1. Ideal Power represents the Ideal Power double ferrule fitting.
2. The listed dimensions and types are standard; other dimensions and types are available upon request. Please contact an authorized Ideal Power distributor for more options.
3. The valve dimensions of the Ideal Power ferrule fittings listed in the port types are based on the dimensions when the ferrule nut is hand-tightened. All dimensions are for reference only and are subject to change. For dimensions not listed above, please contact an authorized Ideal Power distributor.




1. The standard pitch of metric threads is as follows:
   M10 and below: 1mm
   M12 to M24: 1.5 mm
   M27 and above: 2 mm
   In the model designation, the standard pitch should be omitted, while others should be explicitly specified.
2. For oxygen-enriched environments or hazardous media, please contact an authorized Ideal Power distributor.
3. Cleaning and Packaging:
   FC-01: Standard cleaning and packaging for general industrial use.
   FC-02: Special cleaning and packaging for wetted system components, which should meet the ASTM G93, Level C requirements.
4. Sulfur Passivation: Primarily involves the sulfur passivation treatment of wetted metal components.

Model Number Description:
This is used to explain the composition rules of Ideal Power product model numbers and is not applicable for specific product selection. It should not be arbitrarily combined. If you have any questions, please contact an authorized Ideal Power agent.

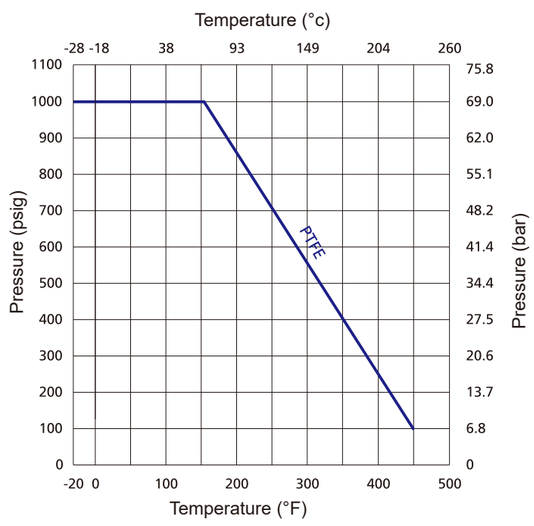
# Three-Piece Ball Valve

## Series 44

## Characteristics

- The working pressure can reach up to: 69.0 bar (1000 psig)
- The operating temperature range is from -28°C to 232°C (-20°F to 450°F)
- Ports:
  1/8 to 1 Pipe Threads
  Pipe Butt Welding or Socket Welding
  1/4" to 1" and 6 mm to 25 mm Tube Butt Welding or Socket Welding
  1/4" to 1" and 6 mm to 25 mm Tube Double Ferrule Compression Fittings
- Internal Diameter: 4.8 mm (0.19") to 25 mm (1")
- Anti-Blowout Stem Design
- Valve with Bi-Directional Flow
- Each valve is subjected to a sealing test using nitrogen or compressed air at the rated working pressure, ensuring that there are no visible leaks.

## Temperature-Pressure Curve

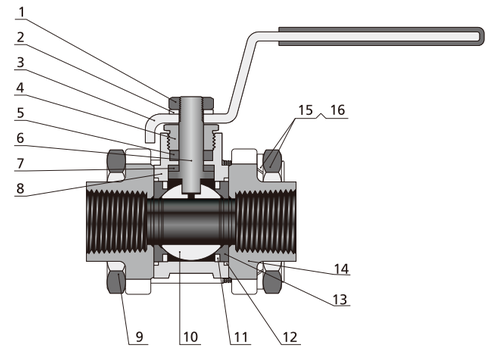



Note: The temperature-pressure ratings are based on valves composed of standard structural materials.





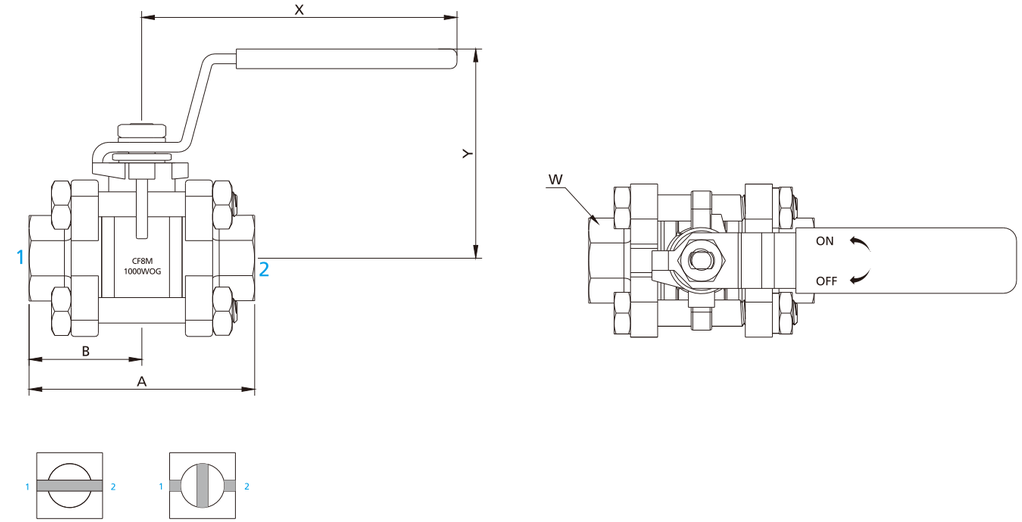
## Standard Structural Materials




| Serial Number | Component | Valve Body Material | |
|---|---|---|---|
| | | CF8M/ A351 | CF8/ A351 |
| 1 | Stem Nut | Stainless Steel | |
| 2 | Gasket | Stainless Steel | |
| 3 | Handle | 304 Stainless Steel/A240 (with PVC Handle Cover) | |
| 4 | Stuffing Box Gland | 316 Stainless Steel/A479 or 304 Stainless Steel/A479 | |
| 5 | *Valve Stem Packing* | *PTFE/D1710* | |
| 6 | *Valve Stem* | *316 Stainless Steel/A479 or 304 Stainless Steel/A479* | |
| 7 | *Valve Stem Support* | *PTFE/D1710* | |
| 8 | *Valve Body* | *CF8M/A351* | *CF8/A351* |
| 9 | Bolt | Stainless Steel | |
| 10 | Ball | *316 Stainless Steel/A479 or 304 Stainless Steel/A479* | |
| 11 | *Support Ring* | *316 Stainless Steel/A240 or 304 Stainless Steel/A240* | |
| 12 | *Flange Seal* | *PTFE/D1710* | |
| 13 | *Valve Seat* | *PTFE/D1710* | |
| 14 | *End Connection* | *CF8M/A351* | *CF8/A351* |
| 15 | Gasket | Stainless Steel | |
| 16 | Nut | Stainless Steel | |
| *Lubricant* | | *Silicone-based and PTFE-based lubricants* | |

Note: Components in contact with the medium are indicated in italics.
For valves made of other materials, please contact an authorized Ideal Power distributor.

## 尺寸



| Basic Ordering Information | Port types and sizes | | Inner diameter in. (mm) | Cv | Size, in. (mm) | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | Port 1 | Port 2 | | | A | B | W | X | Y |
| □□-44-FN2-05 | 1/8 NPT Female Thread | 1/8 NPT Female Thread | 0.19 (4.8) | 1.2 | 2.05 (52.1) | 1.03 (26.0) | 0.63 (16.0) | 2.69 (68.3) | 1.46 (37.0) |
| □□-44-FRP2-05 | 1/8" Straight Pipe Female Thread | 1/8" Straight Pipe Female Thread | | | | | | | |
| □□-44-PB4-05 | 1/4" pipe, wall thickness schedule 80 for butt welding | 1/4" pipe, wall thickness schedule 80 for butt welding | | | | | | | |
| □□-44-FJ4-05 | 1/4" E-JOE | 1/4" E-JOE | | | 2.63 (66.8) | 1.31 (33.4) | | | |
| □□-44-MJ6-05 | 6 mm E-JOE | 6 mm E-JOE | | | | | | | |
| □□-44-MJ8-05 | 8 mm E-JOE | 8 mm E-JOE | | | | | | | |
| □□-44-FN4-07 | 1/4 NPT Female Thread | 1/4 NPT Female Thread | 0.28 (7.1) | 3.8 | 2.05 (52.1) | 1.03 (26.0) | | | |
| □□-44-FRP4-07 | 1/4" Straight Pipe Female Thread | 1/4" Straight Pipe Female Thread | | | | | | | |
| □□-44-FJ6-07 | 3/8" E-JOE | 3/8" E-JOE | | | 2.63 (66.8) | 1.31 (33.4) | | | |
| □□-44-MJ10-07 | 10 mm E-JOE | 10 mm E-JOE | | | | | | | |
| □□-44-FJ8-11 | 1/2" E-JOE | 1/2" E-JOE | 0.42 (10.6) | 7.5 | 4.04 (103.0) | 2.02 (51.3) | 0.93 (23.5) | 3.94 (100.0) | 2.19 (55.7) |
| □□-44-MJ12-11 | 12 mm E-JOE | 12 mm E-JOE | | | | | | | |
| □□-44-MJ14-11 | 14 mm E-JOE | 14 mm E-JOE | | | | | | | |
| □□-44-FN6-13 | 3/8 NPT Female Thread | 3/8 NPT Female Thread | 0.50 (12.7) | 11.3 | 2.57 (65.2) | 1.28 (32.6) | | | |
| □□-44-FRP6-13 | 3/8" Straight Pipe Female Thread | 3/8" Straight Pipe Female Thread | | | | | | | |
| □□-44-PS6-13 | 3/8 Pipe Socket Welding | 3/8 Pipe Socket Welding | | | | | | | |
| □□-44-PB8-13 | 1/2 Pipe Butt Welding | 1/2 Pipe Butt Welding | | | 2.96 (75.3) | 1.48 (37.7) | | | |
| □□-44-FJ10-13 | 5/8" E-JOE | 5/8" E-JOE | | | 4.04 (103.0) | 2.02 (51.3) | | | |
| □□-44-MJ16-13 | 16 mm E-JOE | 16 mm E-JOE | | | | | | | |
| □□-44-FN8-15 | 1/2 NPT Female Thread | 1/2" NPT Female Thread | 0.55 (14.0) | 13.0 | 2.74 (69.5) | 1.37 (34.8) | 1.06 (27.0) | | 2.26 (57.5) |
| □□-44-FRP8-15 | 1/2" Straight Pipe Female Thread | 1/2" Straight Pipe Female Thread | | | | | | | |
| □□-44-PS8-15 | 1/2 Pipe Socket Welding | 1/2 Pipe Socket Welding | | | | | | | |
| □□-44-MTB22-15 | 22 mm Wall Thickness 3mm Metric Tube Butt Welding | 22 mm Wall Thickness 3mm Metric Tube Butt Welding | | | | | | | |
| □□-44-TS12-15 | 3/4" Tube Socket Welding | 3/4" Tube Socket Welding | | | | | | | |
| □□-44-MTS18-15 | 18 mm Metric Tube Socket Welding | 18 mm Metric Tube Socket Welding | | | | | | | |
| □□-44-FJ12-15 | 3/4" E-JOE | 3/4" E-JOE | | | 4.04 (103.0) | 2.02 (51.3) | | | |
| □□-44-MJ18-15 | 18 mm E-JOE | 18 mm E-JOE | | | | | | | |
| □□-44-FN12-20 | 3/4 NPT Female Thread | 3/4 NPT Female Thread | 0.79 (20.0) | 50.0 | 3.15 (80.0) | 1.57 (40.0) | 1.34 (34.0) | 5.18 (131.5) | 2.66 (67.5) |
| □□-44-FRP12-20 | 3/4" Imperial Standard Straight Pipe Female Thread | 3/4" Imperial Standard Straight Pipe Female Thread | | | | | | | |







| Basic Ordering Information | Port types and specifications | | Inner diameter in. (mm) | Cv | Size, in. (mm) | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | Port 1 | Port 2 | | | A | B | W | X | Y |
| □□-44-PB12-20 | 3/4" Pipe Socket Weld Wall Thickness Schedule 80 | 3/4" Pipe Socket Weld Wall Thickness Schedule 80 | 0.79 (20.0) | 50.0 | 3.15 (80.0) | 1.57 (40.0) | 1.34 (34.0) | 5.18 (131.5) | 2.66 (67.5) |
| □□-44-PS12-20 | 3/4" Pipe Socket Weld | 3/4" Pipe Socket Weld | | | | | | | |
| □□-44-TS16-20 | 1" Tube Socket Weld | 1" Tube Socket Weld | | | | | | | |
| □□-44-MTB25-20 | 25 mm Metric Tube Socket Weld Wall Thickness 3.5mm | 25 mm Metric Tube Socket Weld Wall Thickness 3.5mm | | | | | | | |
| □□-44-MTS25-20 | 25 mm Metric Tube Socket Weld | 25 mm Metric Tube Socket Weld | | | | | | | |
| □□-44-FJ16-20 | 1" E-JOE | 1" E-JOE | | | 5.12 (130.0) | 2.56 (65.0) | | | |
| □□-44-MJ22-20 | 22 mm E-JOE | 22 mm E-JOE | | | | | | | |
| □□-44-MJ25-20 | 25 mm E-JOE | 25 mm E-JOE | | | | | | | |
| □□-44-FN16-25 | 1 NPT Female Thread | 1 NPT Female Thread | 0.98 (25.0) | 93.0 | 3.54 (90.0) | 1.77 (45.0) | 1.57 (40.0) | 5.95 (151.2) | 3.08 (78.2) |
| □□-44-FRP16-25 | 1" Straight Pipe Female Thread | 1" Straight Pipe Female Thread | | | | | | | |
| □□-44-PS16-25 | 1" Pipe Socket Weld | 1" Pipe Socket Weld | | | | | | | |
| □□-44-PB16-25 | 1" Pipe Butt Weld Wall Thickness Schedule 80 | 1" Pipe Butt Weld Wall Thickness Schedule 80 | | | | | | | |

1. Ideal Power refers to the Ideal Power Double Ferrule Tube Fitting, 7S stands for Imperial 7ube Socket Weld, MTS represents Metric Tube Socket Weld, Bdenotes Imperial Tube Butt Weld, MTB signifies Metric Tube Butt Weld, PS indicates Pipe Socket Weld, PB stands for Pipe Butt Weld.
2. The listed dimensions and types are standard; other dimensions and types are available. Please contact an Ideal Power authorized distributor for further options.
3. In the listed port types, the valve dimensions for Ideal Power ferrule fittings are based on the size when the hand-tightening nut is secured. All dimensions are for reference only and may be subject to change. For sizes not listed above, please contact an Ideal Power authorized distributor.

## Model Description

SS – 44 – FN 8 MJ18 – 15 – L – SF2

| | Valve Body Material |
|---|---|
| SS | CF8M |
| S4 | CF8 |

| | Series |
|---|---|
| 44 | |

| | Port 1 Model |
|---|---|
| FN | NPT Female Thread |
| N | NPT Female Thread |
| FRT | Imperial Standard Taper Pipe Internal Thread |
| RT | Imperial Standard Taper Pipe External Thread |
| FRP | Imperial Standard Parallel Pipe Internal Thread (compatible with RP gasket) |
| BP | Imperial Standard Parallel Pipe External Thread (compatible with RG gasket) |
| FMS | Metric Internal Thread (compatible with RG gasket) |
| MS | Metric External Thread (compatible with RG gasket) |
| MTS | Metric Tube Socket Weld |
| TS | Imperial Tube Socket Weld |
| MTB | Metric Tube Butt Weld |
| TB | Imperial Tube Butt Weld |
| PS | Pipe Socket Weld |
| PB | Pipe Smart Butt Weld |
| FJ | Imperial Double Ferrule Tube Fitting |
| MJ | Metric Double Ferrule Tube Fitting |
| UFB | Imperial Tube Union Butt Weld |
| UMB | Metric Tube Union Butt Weld |
| UPB | Pipe Union Butt Weld |

| | Port 1 Dimensions |
|---|---|
| 2 | 1/8" |
| 4 | 1/4" |
| 5 | 5/16" |
| 6 | 3/8" or 6 mm |
| 8 | 1/2" or 8 mm |
| 10 | 10 mm |
| 12 | 3/4" or 12 mm |
| 14 | 14 mm or M14 x 1.5 |
| 16 | 1" or 16 mm |
| 18 | 18 mm |
| 20 | 1 1/4" or 20 mm or M20 x 1.5 |
| 22 | 22 mm or M22 x 1.5 |
| 24 | 1 1/2" or M24 x 1.5 |
| 25 | 25 mm |

| | Port 2 Type |
|---|---|
| | Same as Port 1 |
| | Detailed type and dimensions same as the port |

| | Port 2 Dimensions |
|---|---|

| | Internal Diameter |
|---|---|
| 05 | 0.19" (4.8 mm) |
| 07 | 0.28" (7.1 mm) |
| 11 | 0.42" (10.6 mm) |
| 13 | 0.50" (12.7 mm) |
| 15 | 0.55" (14 mm) |
| 20 | 0.79" (20 mm) |
| 25 | 0.98" (25 mm) |

| | Locking Gear |
|---|---|
| | NO |
| L | YES |

| | Special Applications |
|---|---|
| | NONE |
| S | NACE MR0175 |
| SI | Sulfur Passivation |

| | Cleaning and Packaging |
|---|---|
| | FC-01 |
| F2 | FC-02 |

1. The standard pitch for metric threads is as follows:
   M10 and below: 1mm
   M12 to M24: 1.5 mm
   In the model designation, the standard pitch should be omitted, while others should be explicitly stated.
2. For oxygen-enriched environments or hazardous media, please contact an authorized Ideal Power distributor.
3. Cleaning and Packaging:
   FC-01: Standard cleaning and packaging for general industrial use.
   FC-02: Special cleaning and packaging for wetted system components, which should meet the ASTM G93 Level C requirements.
4. Sulfur Passivation: Primarily involves the sulfur passivation treatment of wetted metal components

Note: "Model Description" is used to explain the composition rules of Ideal Power product models and is not applicable to the specific selection of products. It should not be arbitrarily combined. If you have any questions, please contact an authorized Ideal Power agent.







# Three-Piece Ball Valve

## Series 45

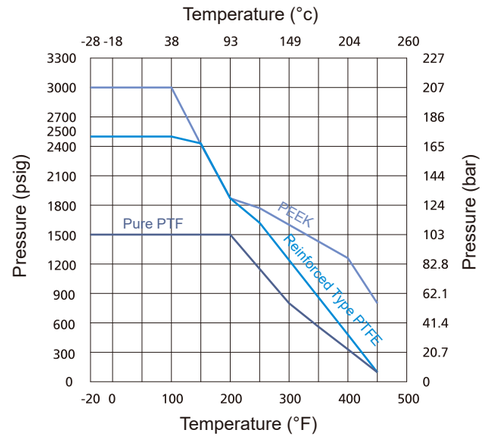
## Characteristics

- Working pressure up to: 207 bar (3000 psig)
- Operating temperature range: -28°C to 232°C (-20°F to 450°F)
- Ports:
  1/8 to 2 pipe thread
  1/8" to 2" Pipe butt weld or socket weld
  1/4" to 2" and 6 mm to 50 mm Tube butt weld or socket weld
  1/4" to 2" and 6 mm to 38 mm Tube double ferrule fittings
- Three-piece precision casting structure
- The inner diameter ranges from 4.8 mm (0.19") to 38.1 mm (1.5")
- Pneumatic or electric actuators are available for selection
- A 2-way valve allows for bidirectional flow
- A 3-way ball valve can only use the bottom port as the inlet
- Each valve undergoes a leak-tightness test using nitrogen or compressed air at its rated working pressure, achieving the requirement of no visible leakage

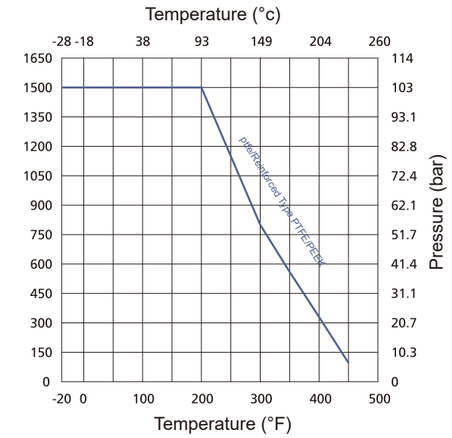
## Temperature Pressure Curve

2-way valve

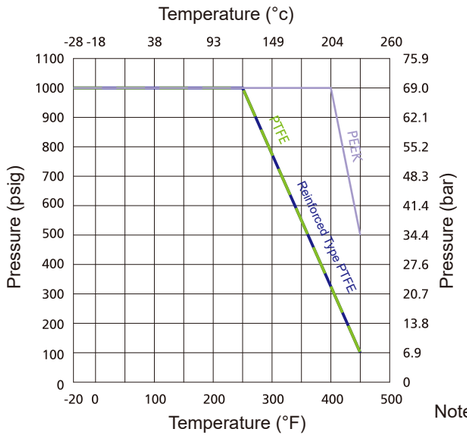
Inner Diameter: 0.19" & 0.28" & 0.41" & 0.52" & 0.88




Inner Diameter: 1.13"&1.25"&1.50"

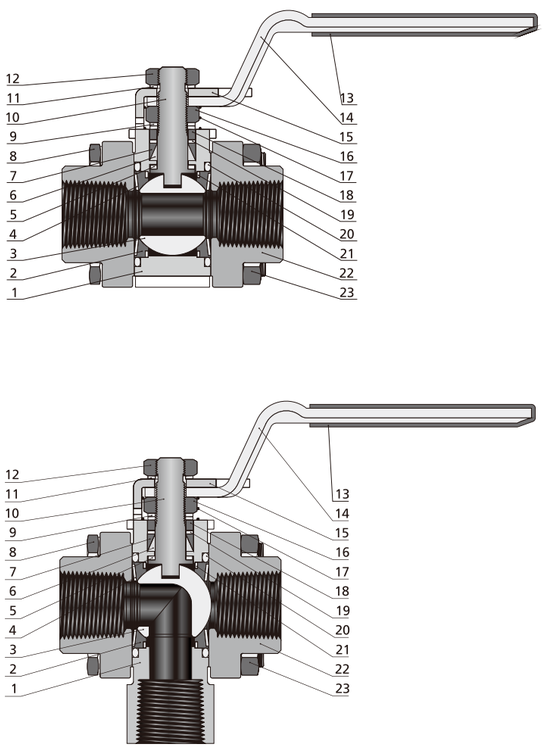


3-Way Valve




Note: The temperature-pressure ratings are based on valves composed of standard structural materials.

## Standard Structural Materials




| Serial Number | Component | Material/ASME Standard | |
|---|---|---|---|
| 1 | *Valve Body* | *CF8M/A351* | *CF8/A351* |
| 2 | *Valve Seat* | *PTFE or reinforced PTFE or PEEK* | |
| 3 | *Ball* | *316 Stainless Steel/A479* | |
| 4 | *Belleville spring* | *Strain Hardened 316 Stainless Steel/A240* | |
| 5 | *Valve Stem Support* | *PEEK* | |
| 6 | *Underfill* | *Reinforced PTFE* | |
| 7 | *Overfill* | *Reinforced PTFE* | |
| 8 | Valve Body Bolt | Gr.B8M/A193 | |
| 9 | Valve Stem Spring | Strain Hardened 316 Stainless Steel /A240 | |
| 10 | *Valve Stem* | *316 Stainless Steel/A479* | |
| 11 | Valve Stem Spring | Strain Hardened 316 Stainless Steel /A240 | |
| 12 | Valve Stem Nut | Gr.8M/A194 | |
| 13 | Handle Sleeve | Vinyl Plastic | |
| 14 | Handle | 304 Stainless Steel/A240 | |
| 15 | Stop Plate | 304 Stainless Steel/A240 | |
| 16 | Valve Stem Nut | Gr.8M/A194 | |
| 17 | Grounding Spring | 302 Stainless Steel/A2313 | |
| 18 | Seal Gland | 316 Stainless Steel / A479 with PTFE Coating | |
| 19 | *Packing Support* | *PEEK* | |
| 20 | *Side Seal Ring* | *PTFE/D1710* | |
| 21 | *Support Ring* | 316 Stainless Steel / A240 | |
| 22 | *Ball Valve Connector* | *CF8M/A351* | *CF8/A351* |
| 23 | Valve Body Nut | Gr.8M/A194 | |
| | *Lubricating Grease* | *Silicone Grease* | |

Note: Components in contact with the medium are indicated in italics. For valves made of other materials, please contact an authorized Ideal Power distributor.

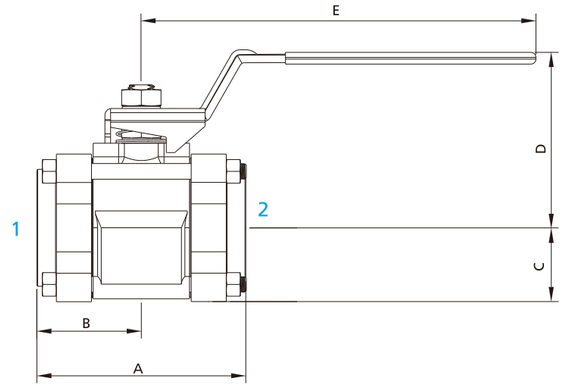


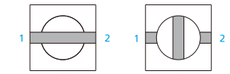




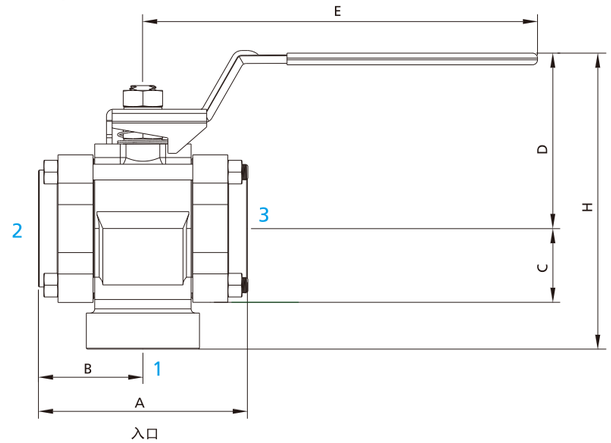
# Size

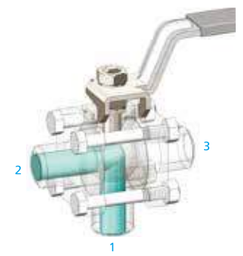
2-way valve



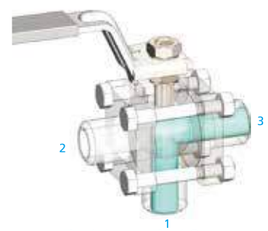




3-way valve




Port 1 and Port 2 are connected




Port 1 and Port 3 are connected

| Basic Ordering Information | | Port types and sizes | | Inner diameter in. (mm) | Cv | Size, in. (mm) | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 2-Way | 2-Way | Port 1 | Port 2/3 | | | A | B | C | D | E | H |
| □□-45-FJ4-05 | □□-45-FJ4-05-3 | 1/4" E-JOE | 1/4" E-JOE | 0.19 (4.8) | 1.2 | 3.17 (80.5) | 1.59 (40.4) | 0.68 (17.3) | 1.66 (42.2) | 2.37 (60.2) | 3.35 (85.1) |
| □□-45-MJ6-05 | □□-45-MJ6-05-3 | 6 mm E-JOE | 6 mm E-JOE | | | | | | | | |
| □□-45-MJ8-05 | □□-45-MJ8-05-3 | 8 mm E-JOE | 8 mm E-JOE | | 2.5 | | | | | | |
| □□-45-TS4-05 | —— | Tube socket weld 1/4" | Tube socket weld 1/4" | | 1.2 | 2.16 (54.9) | 1.08 (27.4) | | | | —— |
| □□-45-MTS6-05 | —— | 3/8" metric Tube socket weld | 3/8" metric Tube socket weld | | | | | | | | |
| □□-45-PB4-05 | —— | 1/4" Pipe butt weld wall thickness specification 80 | 1/4" Pipe butt weld wall thickness specification 80 | | | 2.08 (52.8) | 1.04 (26.4) | | | | |
| □□-45-FN2-07 | □□-45-FN2-07-3 | 1/8 NPT Female Thread | 1/8 NPT Female Thread | 0.28 (7.1) | 3.8 | 2.16 (54.9) | 1.08 (27.4) | 0.68 (17.3) | 1.66 (42.2) | 2.37 (60.2) | 3.12 (79.2) |
| □□-45-FRT2-07 | □□-45-FRT2-07-3 | 1/8" Imperial Standard Pipe Taper female thread | 1/8" Imperial Standard Pipe Taper female thread | | | | | | | | |
| □□-45-FRP2-07 | □□-45-FRP2-07-3 | 1/8" Imperial Standard Pipe Parallel female thread | 1/8" Imperial Standard Pipe Parallel female thread | | | | | | | | |
| □□-45-FN4-07 | □□-45-FN4-07-3 | 1/4 NPT Female Thread | 1/4 NPT Female Thread | | | | | | | | |
| □□-45-FRT4-07 | □□-45-FRT4-07-3 | 1/4" Imperial Standard Pipe Taper female thread | 1/4" Imperial Standard Pipe Taper female thread | | | | | | | | |
| □□-45-FRP4-07 | □□-45-FRP4-07-3 | 1/4" Imperial Standard Pipe Parallel female thread | 1/4" Imperial Standard Pipe Parallel female thread | | | | | | | | |
| □□-45-FJ6-07 | □□-45-FJ6-07-3 | 3/8" E-JOE | 3/8" E-JOE | | | 3.17 (80.5) | 1.59 (40.4) | | | | 4.37 (111) |
| □□-45-MJ10-07 | □□-45-MJ10-07-3 | 10 mm E-JOE | 10 mm E-JOE | | | 3.20 (81.3) | 1.60 (40.6) | | | | |
| □□-45-TS6-07 | —— | 3/8" Tube Socket Weld | 3/8" Tube Socket Weld | | | 2.16 (54.9) | 1.08 (27.4) | | | | —— |
| □□-45-PB6-07 | —— | 3/8" Pipe Butt Weld Wall Thickness Specification 80 | 3/8" Pipe Butt Weld Wall Thickness Specification 80 | | | 2.08 (52.8) | 1.04 (26.4) | | | | |
| □□-45-FJ8-10 | □□-45-FJ8-10-3 | 1/2" E-JOE | 1/2" E-JOE | 0.41 (10.4) | 7.5 | 4.04 (103) | 2.02 (51.3) | 0.89 (22.6) | 2.35 (59.7) | 4.50 (114) | 4.48 (114) |
| □□-45-MJ12-10 | □□-45-MJ12-10-3 | 12 mm E-JOE | 12 mm E-JOE | 0.41 (10.4) | | | | | | | |
| □□-45-TS8-10 | —— | 1/2" Tube Socket Weld | 1/2" Tube Socket Weld | 0.41 (10.4) | | 2.70 (68.6) | 1.34 (34) | | | | —— |
| □□-45-FNJ6-13 | □□-45-FN6-13-3 | 3/8 NPT Female Thread | 3/8 NPT Female Thread | 0.52 (13.1) | 12 | 2.70 (68.6) | 1.35 (34.3) | 0.89 (22.6) | 2.35 (59.7) | 4.50 (114) | 4.19 (106) |
| □□-45-FRT6-13 | □□-45-FRT6-13-3 | 3/8" Imperial Taper Pipe Female Thread | 3/8" Imperial Taper Pipe Female Thread | | | | | | | | |
| □□-45-FRP6-13 | □□-45-FRP6-13-3 | 3/8" Imperial Straight Pipe Female Thread | 3/8" Imperial Straight Pipe Female Thread | | | | | | | | |
| □□-45-FN8-13 | □□-45-FN8-13-3 | 1/2 NPT Female Thread | 1/2 NPT Female Thread | | | | | | | | |
| □□-45-FRT8-13 | □□-45-FRT8-13-3 | 1/2" Imperial Taper Pipe Female Thread | 1/2" Imperial Taper Pipe Female Thread | | | | | | | | |
| □□-45-FRP8-13 | □□-45-FRP8-13-3 | 1/2" Imperial Straight Pipe Female Thread | 1/2" Imperial Straight Pipe Female Thread | | | | | | | | |
| □□-45-FJ12-13 | □□-45-FJ12-13-3 | 3/4" E-JOE | 3/4" E-JOE | | 13.6 | 4.04 (103) | 2.02 (51.3) | | | | 4.48 (114) |
| □□-45-MJ16-13 | □□-45-MJ16-13-3 | 16 mm E-JOE | 16 mm E-JOE | | | | | | | | |
| □□-45-MJ18-13 | □□-45-MJ18-13-3 | 18 mm E-JOE | 18 mm E-JOE | | | | | | | | |
| □□-45-TS12-13 | —— | 3/4" Tube Socket Weld | 3/4" Tube Socket Weld | | | 2.70 (68.6) | 1.34 (34) | | | | —— |
| □□-45-PS8-13 | —— | 1/2" Pipe Socket Weld | 1/2" Pipe Socket Weld | | 15 | | | | | | |
| □□-45-PB8-13 | —— | 1/2" Pipe Butt Weld Wall Thickness Schedule 80 | 1/2" Pipe Butt Weld Wall Thickness Schedule 80 | | 6.8 | 2.69 (68.3) | 1.34 (34) | | | | |







| Basic Ordering Information | | Port types and sizes | | Inner diameter in. (mm) | Cv | Size, in. (mm) | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Straight Through | 3-Way | Port 1 | Port 2/3 | | | A | B | C | D | E | H |
| □□-45-PB12-13 | —— | 3/4" Pipe Butt Weld Wall Thickness Schedule 80 | 3/4" Pipe Butt Weld Wall Thickness Schedule 80 | 0.52 (13.1) | 13.6 | 2.69 (68.3) | 1.34 (34) | 0.89 (22.6) | 2.35 (59.7) | 4.50 (114) | —— |
| □□-45-FN12-22 | □□-45-FN12-22-3 | 3/4 NPT Female Thread | 3/4 NPT Female Thread | 0.88 (22.2) | 31 | 3.59 (91.2) | 1.80 (45.7) | 1.25 (31.8) | 2.94 (74.7) | 6.00 (152) | 5.45 (138) |
| □□-45-FRT12-22 | □□-45-FRT12-22-3 | 3/4" Imperial Standard Taper Pipe Female Thread | 3/4" Imperial Standard Taper Pipe Female Thread | | | | | | | | |
| □□-45-FRP12-22 | □□-45-FRP12-22-3 | 3/4" Imperial Standard Straight Pipe Female Thread | 3/4" Imperial Standard Straight Pipe Female Thread | | | | | | | | |
| □□-45-FN16-22 | □□-45-FN16-22-3 | 1 NPT Female Thread | 1 NPT Female Thread | | 38 | 4.45 (113) | 2.23 (56.6) | | | | |
| □□-45-FRT16-22 | □□-45-FRT16-22-3 | 1" Imperial Standard Taper Pipe Female Thread | 1" Imperial Standard Taper Pipe Female Thread | | | | | | | | |
| □□-45-FRP16-22 | □□-45-FRP16-22-3 | 1" Imperial Standard Straight Pipe Female Thread | 1" Imperial Standard Straight Pipe Female Thread | | | | | | | | |
| □□-45-FJ16-22 | □□-45-FJ16-22-3 | 1" E-JOE | 1" E-JOE | | 40 | 5.36 (136) | 2.68 (68) | | | | 5.91 (150) |
| □□-45-FJ20-22 | □□-45-FJ20-22-3 | 1 1/4" E-JOE | 1 1/4" E-JOE | | | 6.34 (161) | 3.17 (80.5) | | | | |
| □□-45-MJ25-22 | □□-45-MJ25-22-3 | 25 mm E-JOE | 25 mm E-JOE | | 40 | 5.36 (136) | 2.68 (68) | | | | |
| □□-45-MJ28-22 | □□-45-MJ28-22-3 | 28 mm E-JOE | 28 mm E-JOE | | | 6.14 (156) | 3.07 (78) | | | | |
| □□-45-TS16-22 | —— | Tube Socket Weld 1 inch | Tube Socket Weld 1 inch | | | 3.59 (91.2) | 1.80 (45.7) | | | | —— |
| □□-45-MTS25-22 | —— | 25 mm Metric Tube Socket Weld | 25 mm Metric Tube Socket Weld | | 38 | 3.59 (91.2) | 1.80 (45.7) | | | | |
| □□-45-PS12-22 | —— | 3/4" Pipe Socket Weld | 3/4" Pipe Socket Weld | | 36 | | | | | | |
| □□-45-PS16-22 | —— | 1" Pipe Socket Weld | 1" Pipe Socket Weld | | 42 | | | | | | |
| □□-45-PB16-22 | —— | 1" Pipe Butt Weld with Wall Thickness Schedule 80 | 1" Pipe Butt Weld with Wall Thickness Schedule 80 | | 40 | 3.46 (87.9) | 1.73 (43.9) | 1.25 (31.8) | | | |
| □□-45-TS20-29 | —— | 1 1/4" Tube Socket Weld | 1 1/4" Tube Socket Weld | 1.13 (28.6) | 80 | 4.39 (112) | 2.19 (55.6) | 1.53 (38.9) | 4.03 (102) | 9.14 (232) | —— |
| □□-45-PB20-29 | —— | 1 1/4" Pipe Butt Weld with Wall Thickness Schedule 80 | 1 1/4" Pipe Butt Weld with Wall Thickness Schedule 80 | | | 4.57 (116) | 2.28 (57.9) | | | | |
| □□-45-FN20-32 | □□-45-FN20-32-3 | 1 1/4 NPT Female Thread | 1 1/4 NPT Female Thread | 1.25 (31.8) | 90 | 4.39 (112) | 2.19 (55.6) | 1.53 (38.9) | 4.03 (102) | 9.14 (232) | 6.86 (174) |
| □□-45-FN24-32 | □□-45-FN24-32-3 | 1 1/2 NPT Female Thread | 1 1/2 NPT Female Thread | | 100 | | | | | | |
| □□-45-TS24-32 | —— | 1 1/2" Tube Socket Weld | 1 1/2" Tube Socket Weld | | | | | | | | —— |
| □□-45-PS20-32 | —— | 1 1/4" Pipe Socket Weld | 1 1/4" Pipe Socket Weld | | 90 | 4.51 (115) | 2.25 (57.2) | | | | |
| □□-45-PS24-32 | —— | 1 1/2" Pipe Socket Weld | 1 1/2" Pipe Socket Weld | | 100 | 4.57 (116) | 2.28 (57.9) | | | | |
| □□-45-PB24-32 | —— | 1 1/2" Pipe Butt Weld with Wall Thickness Schedule 80 | 1 1/2" Pipe Butt Weld with Wall Thickness Schedule 80 | | | | | | | | |
| □□-45-FN32-38 | □□-45-FN32-38-3 | 2 NPT Female Thread | 2 NPT Female Thread | 1.50 (38.1) | 130 | 4.94 (125) | 2.47 (62.5) | 1.74 (44.2) | 4.16 (106) | 9.14 (232) | 7.21 (183) |
| □□-45-FRT32-38 | □□-45-FRT32-38-3 | 2" Imperial Standard Taper Pipe Female Thread | 2" Imperial Standard Taper Pipe Female Thread | | | | | | | | |
| □□-45-TS32-38 | —— | 2" Pipe Socket Weld | 2" Pipe Socket Weld | | | | | | | | —— |
| □□-45-PS32-38 | —— | 2 Pipe Socket Weld | 2 Pipe Socket Weld | | | | | | | | |
| □□-45-PB32-38 | —— | 2" Pipe Butt Weld with Wall Thickness Schedule 80 | 2" Pipe Butt Weld with Wall Thickness Schedule 80 | | | 6.14 (156) | 3.12 (78) | | | | |

1. Ideal Power Double Ferrule Tube Fitting, TS: Imperial Tube Socket Weld, MTS: Metric Tube Socket Weld, 78: Imperial Tube Butt Weld, MTB: Metric Tube Butt Weld, PS: Pipe Socket Weld, PB: Pipe Butt Weld.
2. The listed sizes and types are standard. Other sizes and types are available upon request. Please contact an Ideal Power authorized distributor for further assistance.
3. In the listed port types, the valve dimensions for thePower Double ferrule fitting refer to the dimensions when the ferrule nut is hand-tightened. All dimensions are for reference only and may be subject to change. For dimensions not listed above, please contact an Power Double authorized distributor.

## Model Description

SS – 45 – FN 8 FRT8 – FJ 8 – P13G – OSHQ3L – SCEF2

| Valve Body Material | | Series | | Port 1 Type | | Port 1 Dimensions | | Port 2/3 Type | Port Size 2/3 | Valve Seat Material | | Internal Path Diameter | | Flow Channel | | Locking Gear | | Actuator Accessories | | Handle/Actuator | | Filling Material | | Special Applications | | Cleaning and Packaging | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| SS | CF8M | 45 | | FN | NPT Female Thread | 2 | 1/8" | | Same as Port 1 | | PTFE | 05 | 0.19" (4.8 mm) | | Straight-Through | | NO | | NONE | | Yellow handle sleeve | | G | Reinforced PTFE | | NONE | | FC-01 | |
| S4 | CF8 | | | N | NPT Male Thread | 4 | 1/4" | | Detailed types and dimensions are the same as Port 1 | R | Reinforced PTFE | 07 | 0.28" (7.1 mm) | 3 | 3-way valve | L | YES | H | Mechanical Limit Switch | C | Red handle sleeve | | Graphite | S | NACE MR0175 | F2 | FC-02 |
| | | | | FRT | Imperial Standard Taper Pipe Female Thread | 5 | 5/16" | | | P | PEEK | 10 | 0.41" (10.4 mm) | | | | | N | Inductive Limit Switch | F | Green handle sleeve | | | SI | Sulfur Passivation | | |
| | | | | RT | Imperial Standard Taper Pipe Male Thread | 6 | 3/8" or 6 mm | | | | | 13 | 0.52" (13.1 mm) | | | | | Q | Solenoid Valve | J | Blue handle sleeve | | | CE | CE Certification | | |
| | | | | FRP | Imperial Standard Straight-Pipe Female Thread (Compatible with O-Gasket) | 8 | 1/2" or 8 mm | | | | | 22 | 0.88" (22.2 mm) | | | | | HQ | Mechanical limit switch and solenoid valve | CS | Normally Closed 90° Spring Return Pneumatic Actuator | | | | | | |
| | | | | BP | Imperial Standard Straight Pipe Male Thread (Compatible with RG Gasket) | 10 | 10 mm | | | | | 29 | 1.13" (28.6 mm) | | | | | NQ | Inductive limit switch and solenoid valve | OS | Normally Open 90° Spring Return Pneumatic Actuator | | | | | | |
| | | | | FMS | Metric Female Thread Compatible with RG Gasket) | 12 | 3/4" or 12 mm | | | | | 32 | 1.25" (31.8 mm) | | | | | | | DA | 90° Double Acting Pneumatic Actuator | | | | | | |
| | | | | MS | Metric Male Thread (Compatible with RG Gasket) | 14 | 14 mm M14 x 1.5 | | | | | 38 | 1.50" (38.1 mm) | | | | | | | LX | 180° Normally Open Left End Spring Return Pneumatic Actuator | | | | | | |
| | | | | MTS | Metric Tube Socket Weld | 16 | 1" or 16 mm | | | | | | | | | | | | | RX | 180° Normally Open Right End Spring Return Pneumatic Actuator | | | | | | |
| | | | | TS | Imperial Tube Socket Weld | 18 | 18 mm | | | | | | | | | | | | | DX | 180° Double Acting Pneumatic Actuator | | | | | | |
| | | | | MTB | Metric Tube Butt Weld | 20 | 1 1/4" or 20 mm or M20 x 1.5 | | | | | | | | | | | | | EA | 90° Electric Actuator | | | | | | |
| | | | | TB | Imperial Tube Butt Weld | 22 | 22 mm or M22 x 1.5 | | | | | | | | | | | | | EX | 180° Electric Actuator | | | | | | |
| | | | | PS | Pipe Socket Weld | 24 | 1 1/2" or M24 x 1.5 | | | | | | | | | | | | | | | | | | | | |
| | | | | PB | Pipe Butt We | 25 | 25 mm | | | | | | | | | | | | | | | | | | | | |
| | | | | FJ | Imperial Double Ferrule Tube Fitting | | | | | | | | | | | | | | | | | | | | | | |
| | | | | MJ | Metric Double Ferrule Tube Fitting | 27 | M27 x 2 | | | | | | | | | | | | | | | | | | | | |
| | | | | UFB | Imperial Tube Live Weld | 28 | 28 mm | | | | | | | | | | | | | | | | | | | | |
| | | | | UMB | Metric Tube Live Weld | 32 | 2" or 32 mm | | | | | | | | | | | | | | | | | | | | |
| | | | | UPB | Pipe Live Weld | | | | | | | | | | | | | | | | | | | | | | |
| | | | | FO | FO Connector | | | | | | | | | | | | | | | | | | | | | | |
| | | | | FR | FR Connector | | | | | | | | | | | | | | | | | | | | | | |

1. 公制螺纹的标准螺距如下：
   *M10*及以下：*1 mm*
   *M12*至*M24*：*1.5 mm*
   *M27*及以上：*2 mm*
   在型号中标准螺距应省略，其它的应明确说明。
2. *FO* 为 E-JOE O 形圈面密封接头
   *FR* 为 E-JOE 金属垫片面密封接头
3. 富氧环境或危险介质，请联系 E-JOE 授权代理商。
4. 清洗和包装：
   *FC-01*：一般工业用的标准清洗和包装。
   *FC-02*：浸润系统组件的特殊清洗和包装，应满足 *ASTM G93 C* 等级要求。
5. 硫钝化：主要润湿金属部件做硫钝化处理，且不含 PEEK 阀座选型。

注：“型号说明”用于说明 E-JOE 产品型号的组成规则，不适用于产品的具体选型，不能随意组合。如有疑问，请联系 E-JOE 授权代理商。







# Integral Instrument Ball Valve

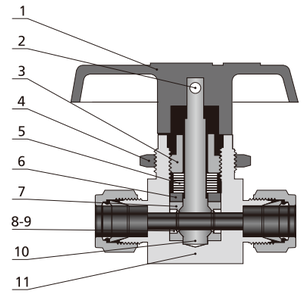
## Series 46

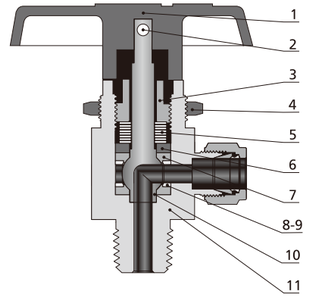
### Characteristics

- Working pressure up to: 207 bar (3000 psig)
- Operating temperature range: -54°C to 148°C (-65°F to 300°F)
- Interface:
  1/4 to 1/2 Pipe Thread
  1/16" to 3/4" or 3 mm to 18 mm Tube Double Ferrule Fitting
- Valves with 2-way, 3-way, 4-way, 5-way, 6-way, and 7-way configurations, capable of providing switching, diverting, and crossover functions.
- One-piece valve body and one-piece spherical stem
- Ball valve without dead zone
- Top-entry design allows for reliable online inspection and adjustment of the system
- Live-loading design improves thermal cycling performance and compensates for packing wear
- Can provide any reasonable interface form
- Pneumatic or electric actuators are available for selection
- Handle colors are available for selection
- Each port can withstand full operating pressure
- Each valve is subjected to a sealing test using nitrogen or compressed air at the rated working pressure, meeting the requirement of no visible leakage.
- Except for the 46 ball valve with a vent, the 46 ball valve has no restrictions on the inlet and outlet

Note:
1. To prevent leakage, it may be necessary to inspect and adjust the packing within the valve's service life.
2. Valves that have not been operated for a period of time may have a higher initial actuation torque.
3. The 46 ball valve exposed to dynamic temperature conditions before installation may lose its initial packing load, and packing adjustment may be required.

### Standard structural materials



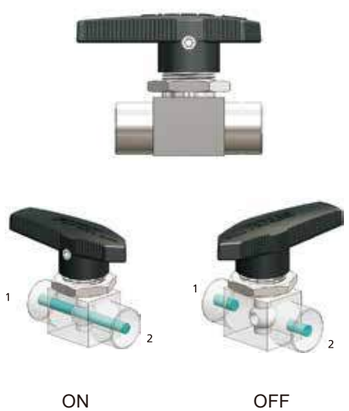
| Serial Number | Component | 316 Stainless Steel | | |
|---|---|---|---|---|
| | | 316 Stainless Steel | Brass | Alloy 400 |
| | | Material Grade / ASTM Specification | | |
| 1 | Handle | Nylon with 304 Stainless Steel Insert | | |
| 2 | Set Screw | Galvanized Carbon Steel | | |
| 3 | Filler Bolt | 316 Stainless Steel/A479 | Brass C36000/B16 | Alloy 400/B164 |
| 4 | Panel Nut | 316 Stainless Steel/A479 | Brass C36000/B16 | 316 Stainless Steel/A479 |
| 5 | Disc Spring | S17700/A693 | | |
| 6 | Gland | 316 Stainless Steel/A479 | 316 Stainless Steel/A479 | Alloy 400/B164 |
| 7 | *Gland Packing* | *PTFE/D1710 或 UHMWPE/D4020 或 PFA/D3307* | | |
| 8 | *Support Ring* | *316 Stainless Steel/A479* | *316 Stainless Steel/A479* | *Alloy 400/B164* |
| 9 | *Support Plate* | | | |
| 10 | *Ball Valve Stem* | *316 Stainless Steel/A479* | *Brass C36000/B16* | *Alloy 400/B164* |
| 11 | *Valve Body* | F316 Stainless Steel/A182 | *Brass C37700/B283* | *Alloy 400/B164* |
| *Wetting Lubricant* | | *Fluorinated Group* | | |
| Non-wetting Lubricant | | Molybdenum Disulfide with Hydrocarbon Binder Coating | | |



## Switch (2-way) Valve

### Standard Flow Path

Straight-through Type




ON OFF

Angle Type




ON OFF

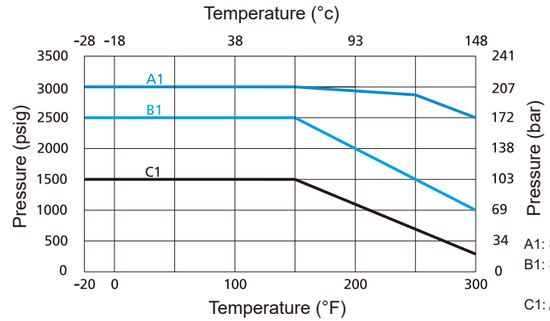




## Temperature Pressure Curve

Applicable to Straight-through Type and Angle Type

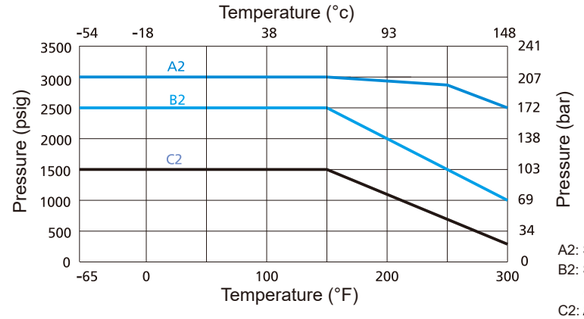
PTFE Packing Seat




A1: Straight-through Valve (Inner Diameter 0.19 inches)
B1: Straight-through Valve (Inner Diameter 0.05" & 0.06" & 0.09" & 0.13" & 0.28" & 0.41")
Angle Valve (Inner Diameter 0.05" & 0.06" & 0.09" & 0.13" & 0.19")
C1: Angle Valve (Inner Diameter 0.28" & 0.41")

PFA, UHMWPE Packing Seat

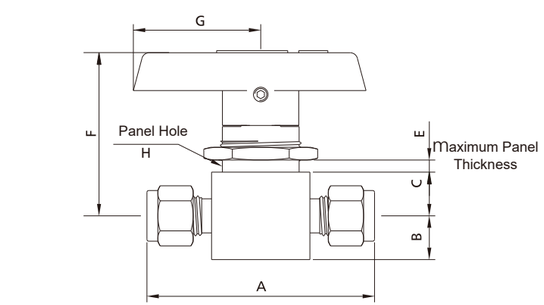
The operating temperature of the UHMWPE packing seat should not exceed 65°C (150°F)



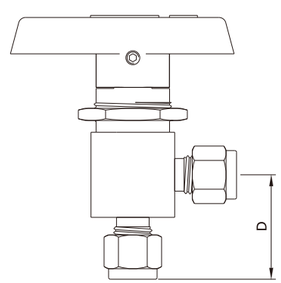

A2: Straight-through Valve (Inner Diameter 0.19 inches)
B2: Straight-through Valve (Inner Diameter 0.05" & 0.06" & 0.09" & 0.13" & 0.28" & 0.41")
Angle Valve (Inner Diameter 0.05" & 0.06" & 0.09" & 0.13" & 0.19")
C2: Angle Valve (Inner Diameter 0.28" & 0.41")

## Size

Straight-through Type




Angle Type



| Basic Ordering Information | Port types and specifications | Inner diameter in. (mm) | Cv | | Size, in. (mm) | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | Straight-through Type | Angle Type | A | B | C | D | E | F | G | H |
| □□-46-FJ1-00 | 1/16" E-JOE | 0.05 (1.3) | 0.10 | —— | 1.68 (42.7) | 0.28 (7.1) | 0.34 (8.6) | —— | 0.25 (6.4) | 1.43 (36.2) | 1.10 (28) | 19/32 (15.1) |
| □□-46-FJ2-02 | 1/8" E-JOE | 0.09 (2.4) | 0.20 | 0.15 | 2.01 (51.1) | | | 0.97 (24.6) | | | | |
| □□-46-FJ4-03 | 1/4" E-JOE | 0.13 (3.2) | 0.60 | 0.35 | 2.21 (56.1) | | | 1.07 (27.2) | | | | |
| □□-46-FJ4-05 | | 0.19 (4.8) | 1.40 | 0.90 | 2.39 (60.7) | 0.38 (9.7) | 0.44 (11.2) | 1.17 (29.7) | 0.19 (4.8) | 1.64 (41.7) | 1.57 (39.9) | 25/32 (19.8) |
| □□-46-FJ6-05 | 3/8" E-JOE | | 1.50 | | 2.58 (65.5) | | | 1.29 (32.8) | | | | |
| □□-46-FJ6-07 | | 0.28 (7.1) | 6.00 | 2.00 | 3.05 (77.5) | 0.56 (14.2) | 0.56 (14.2) | 1.43 (36.3) | 0.35 (9) | 2.19 (55.5) | 2.05 (52) | 1 1/8 (28.6) |
| □□-46-FJ8-10 | 1/2" E-JOE | 0.41 (10.3) | 6.40 | 3.80 | 3.92 (99.6) | 0.69 (17.5) | 0.69 (17.5) | 1.74 (44.2) | 0.49 (12.5) | 2.67 (67.7) | 3.13 (79.6) | 1 1/2 (38.1) |
| □□-46-FJ12-10 | 3/4" E-JOE | | 12.00 | 4.60 | | | | | | | | |
| □□-46-MJ3-02 | 3 mm E-JOE | 0.09 (2.4) | 0.20 | 0.15 | 2.01 (51.1) | 0.28 (7.1) | 0.34 (8.6) | 0.97 (24.6) | 0.25 (6.4) | 1.43 (36.2) | 1.10 (28) | 19/32 (15.1) |
| □□-46-MJ6-03 | 6 mm E-JOE | 0.13 (3.2) | 0.60 | 0.35 | 2.21 (56.1) | | | 1.07 (27.2) | | | | |
| □□-46-MJ6-05 | | 0.19 (4.8) | 1.40 | 0.90 | 2.39 (60.7) | 0.38 (9.7) | 0.44 (11.2) | 1.17 (29.7) | 0.19 (4.8) | 1.64 (41.7) | 1.57 (39.9) | 25/32 (19.8) |
| □□-46-MJ8-05 | 8 mm E-JOE | | 1.50 | | 2.46 (62.5) | | | 1.20 (30.5) | | | | |
| □□-46-MJ10-07 | 10 mm E-JOE | 0.28 (7.1) | 6.00 | 2.00 | 3.07 (78.0) | 0.56 (14.2) | 0.56 (14.2) | 1.43 (36.3) | 0.35 (9) | 2.19 (55.5) | 2.05 (52) | 1 1/8 (28.6) |
| □□-46-MJ12-10 | 12 mm E-JOE | 0.41 (10.3) | 12.00 | 4.60 | 3.92 (99.6) | 0.69 (17.5) | 0.69 (17.5) | 1.74 (44.2) | 0.49 (12.5) | 2.67 (67.7) | 3.13 (79.6) | 1 1/2 (38.1) |
| □□-46 -FN2-03 | 1/8 NPT Female Thread | 0.13 (3.2) | 0.50 | 0.30 | 1.63 (41.4) | 0.28 (7.1) | 0.34 (8.6) | 0.81 (20.6) | 0.25 (6.4) | 1.43 (36.2) | 1.10 (28) | 19/32 (15.1) |
| □□-46 -FN2-05 | | 0.19 (4.8) | 1.20 | 0.70 | 2.00 (50.8) | 0.38 (9.7) | 0.44 (11.2) | 1.0 (25.4) | 0.19 (4.8) | 1.64 (41.7) | 1.57 (39.9) | 25/32 (19.8) |
| □□-46 -FN4-05 | 1/4 NPT Female Thread | | 0.90 | 0.75 | 2.06 (52.3) | | | 1.03 (26.2) | | | | |
| □□-46 -FN4-07 | | 0.28 (7.1) | 3.00 | 1.70 | 2.50 (63.5) | 0.56 (14.2) | 0.56 (14.2) | 1.25 (31.8) | 0.35 (9) | 2.19 (55.5) | 2.05 (52) | 11/8 (28.6) |
| □□-46 -FN6-07 | 3/8 NPT Female Thread | | 2.60 | 1.50 | | | | | | | | |
| □□-46 -FN8-10 | 1/2 NPT Female Thread | 0.41 (10.3) | 6.30 | 3.50 | 3.12 (79.2) | 0.69 (17.5) | 0.69 (17.5) | 1.56 (39.6) | 0.49 (12.5) | 2.67 (67.7) | 3.13 (79.6) | 11/2 (38.1) |
| □□-46 -N4-05 | 1/4 NPT Male Thread | 0.19 (4.8) | 1.20 | 0.75 | 2.00 (50.8) | 0.38 (9.7) | 0.44 (11.2) | 1.03 (26.2) | 0.19 (4.8) | 1.64 (41.7) | 1.57 (39.9) | 25/32 (19.8) |
| □□-46 -FRT4-05 | 1/4" Imperial Standard Taper Pipe Female Thread | | 0.90 | —— | 2.06 (52.3) | | | —— | | | | |
| □□-46 -FRT6-07 | 3/8" Imperial Standard Taper Pipe Female Thread | 0.28 (7.1) | 2.60 | | 2.50 (63.5) | 0.56 (14.2) | 0.56 (14.2) | | 0.35 (9) | 2.19 (55.5) | 2.05 (52) | 1 1/8 (28.6) |
| □□-46 -FRT8-10 | 1/2" Imperial Standard Taper Pipe Female Thread | 0.41 (10.3) | 6.30 | | 3.12 (79.2) | 0.69 (17.5) | 0.69 (17.5) | | 0.49 (12.5) | 2.67 (67.7) | 3.13 (79.6) | 1 1/2 (38.1) |
| □□-46 -FO4-03 | FO Male Thread 1/4" | 0.13 (3.2) | 0.60 | 0.35 | 1.75 (44.4) | 0.38 (9.7) | 0.34 (8.6) | 0.94 (23.9) | 0.25 (6.4) | 1.43 (36.2) | 1.10 (28) | 19/32 (15.1) |
| □□-46 -FO4-05 | | 0.19 (4.8) | 2.40 | 0.90 | 1.88 (47.8) | | 0.44 (11.2) | | 0.19 (4.8) | 1.64 (41.7) | 1.57 (39.9) | 25/32 (19.8) |
| □□-46 -FR4-03 | FR Male Thread 1/4" | 0.13 (3.2) | 0.60 | 0.35 | 2.13 (54.1) | | 0.34 (8.6) | 1.09 (27.7) | 0.25 (6.4) | 1.43 (36.2) | 1.10 (28) | 19/32 (15.1) |
| □□-46 -FR4-05 | | 0.19 (4.8) | 2.40 | 0.90 | | | 0.44 (11.2) | | 0.19 (4.8) | 1.64 (41.7) | 1.57 (39.9) | 25/32 (19.8) |
| □□-46 -FR8-07 | FR Male Thread 1/2" | 0.28 (7.1) | 6.00 | —— | 2.88 (73.2) | 0.56 (14.2) | | —— | 0.35 (9) | 2.19 (55.5) | 2.05 (52) | 1 1/8 (28.6) |
| □□-46 -FR8-10 | | 0.41 (10.3) | 12.00 | | 3.12 (79.2) | 0.69 (17.5) | | | 0.49 (12.5) | 2.67 (67.7) | 3.13 (79.6) | 1 1/2 (38.1) |



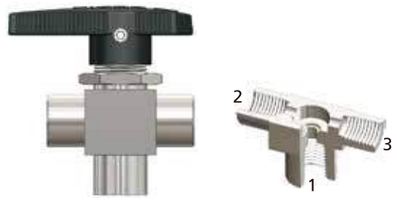




## Switching (3-way, 4-way, 5-way, 6-way, 7-way) Valve

### Standard Flow Path

3-way Valve




The 3L type flow path
This type of valve can connect a side port to the bottom port or shut off all three ports. For the 180° switching handle, it can be switched at 0°, 90°, and 180° positions.




Port 1 and Port 3 are connected | Shut of | Port 1 and Port 2 are connected

3-way Valve




The 4L type flow path
This type of valve can connect a side port to the bottom port while shutting off the other two side ports. For the 360° rotating handle, switching can be completed in 120° increments.




Port 1 and Port 2 are connected | Port 1 and Port 3 are connected | Port 1 and Port 4 are connected

### Five-way valve




5L type flow path
This type of valve can connect one side port to the bottom port while shutting off the other three side ports.
For a 360° rotating handle, switching can be completed in 90° increments.




Port 1 and Port 2 are connected | Port 1 and Port 3 are connected | Port 1 and Port 4 are connected | Port 1 and Port 5 are connected

## Six-way valve




6L type flow path
This type of valve can connect one side port to the bottom port while shutting off the other four side ports. For a 360° rotating handle, switching can be completed in 72° increments.



Port 1 and Port 2 are connected



Port 1 and Port 3 are connected



Port 1 and Port 4 are connected

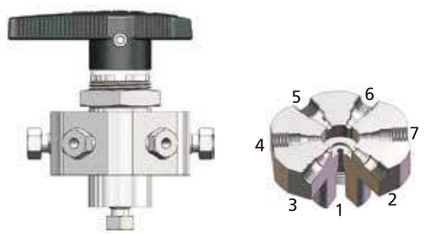


Port 1 and Port 5 are connected



Port 1 and Port 6 are connected

## Seven-way valve




7L type flow path
This type of valve can connect one side port to the bottom port while shutting off the other five side ports. For a 360° rotating handle, switching can be completed in 60° increments.



Port 1 and Port 2 are connected



Port 1 and Port 3 are connected



Port 1 and Port 4 are connected



Port 1 and Port 5 are connected



Port 1 and Port 6 are connected



Port 1 and Port 7 are connected



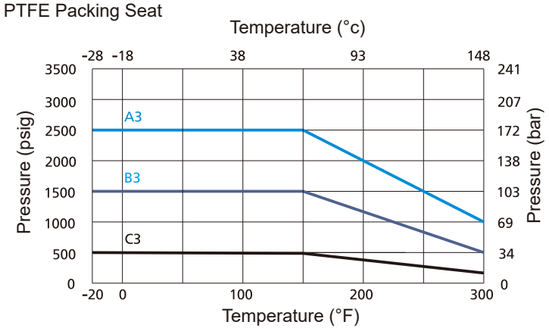




## Temperature Pressure Curve

Suitable for switching valves

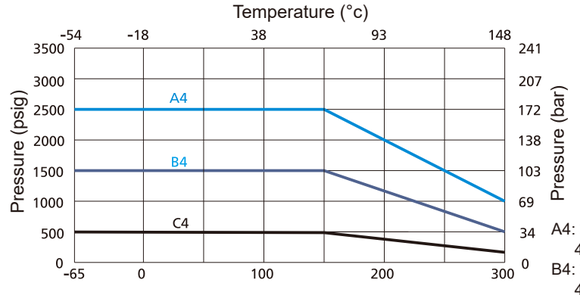
PTFE Packing Seat




A3: 3-way: Inner diameters of 0.05", 0.06", 0.09", 0.13", and 0.19"
4-way and 5-way: (Inner diameter of 0.06)
B3: 3-way: Inner diameters of 0.28" and 0.41"
4-way and 5-way: (Inner diameter of 0.41")
C3: 6-way and 7-way: (Inner diameters of 0.05" and 0.06")

PFA, UHMWPE Packing Seat

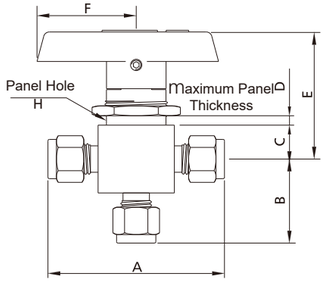
The working temperature of the UHMWPE packing seat should not exceed 65°C (150°F)



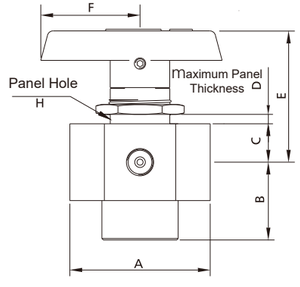

A4: 3-way: Inner diameters of 0.05", 0.06", 0.09", 0.13", and 0.19"
4-way and 5-way: (Inner diameter of 0.06)
B4: 3-way: Inner diameters of 0.28" and 0.41"
4-way and 5-way: (Inner diameter of 0.41")
C4: 6-way and 7-way: (Inner diameters of 0.05" and 0.06")

## Size

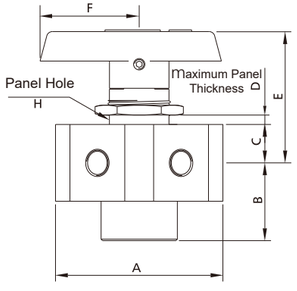
### Three-way valve




### Four-way valve and Five-way valve




### Six-way valve and Seven-way valve



| Basic Ordering Information | Port types and specifications | Inner diameter in. (mm) | Cv | Size, in. (mm) | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | | A | B | C | D | E | F | H |
| **Three-way valve** | | | | | | | | | | |
| □□-46-FJ1-00-3L | 1/16" E-JOE | 0.05 (1.3) | 0.08 | 1.68 (42.7) | 0.81 (20.6) | 0.34 (8.6) | 0.25 (6.4) | 1.43 (36.2) | 1.10 (28) | 19/32 (15.1) |
| □□-46-FJ2-02-3L | 1/8" E-JOE | 0.09 (2.4) | 0.15 | 2.01 (51.1) | 0.97 (24.6) | | | | | |
| □□-46-FJ4-03-3L | 1/4" E-JOE | 0.13 (3.2) | 0.35 | 2.21 (56.1) | 1.07 (27.2) | | | | | |
| □□-46-FJ4-05-3L | | 0.19 (4.8) | 0.90 | 2.39 (60.7) | 1.17 (29.7) | 0.44 (11.2) | 0.19 (4.8) | 1.64 (41.7) | 1.57 (39.9) | 25/32 (19.8) |
| □□-46-FJ6-07-3L | 3/8" E-JOE | 0.28 (7.1) | 2.00 | 2.89 (73.4) | 1.43 (36.3) | 0.56 (14.2) | 0.35 (9) | 2.19 (55.5) | 2.05 (52) | 11/8 (28.6) |
| □□-46-FJ8-10-3L | 1/2" E-JOE | 0.41 (10.3) | 4.60 | 3.48 (88.4) | 1.74 (44.2) | 0.69 (17.5) | 0.49 (12.5) | 2.67 (67.7) | 3.13 (79.6) | 11/2 (38.1) |
| □□-46-FJ12-10-3L | 3/4" E-JOE | | 4.90 | | | | | | | |
| □□-46-MJ3-02-3L | 3 mm E-JOE | 0.09 (2.4) | 0.15 | 2.01 (51.1) | 0.97 (24.6) | 0.34 (8.6) | 0.25 (6.4) | 1.43 (36.2) | 1.10 (28) | 19/32 (15.1) |
| □□-46-MJ6-03-3L | 6 mm E-JOE | 0.13 (3.2) | 0.35 | 2.21 (56.1) | 1.07 (27.2) | | | | | |
| □□-46-MJ6-05-3L | | 0.19 (4.8) | 0.90 | 2.39 (60.7) | 1.17 (29.7) | 0.44 (11.2) | 0.19 (4.8) | 1.64 (41.7) | 1.57 (39.9) | 25/32 (19.8) |
| □□-46-MJ8-05-3L | 8 mm E-JOE | | 0.80 | 2.46 (62.5) | 1.20 (30.5) | | | | | |
| □□-46-MJ10-07-3L | 10 mm E-JOE | 0.28 (7.1) | 2.00 | 2.89 (73.4) | 1.43 (36.3) | 0.56 (14.2) | 0.35 (9) | 2.19 (55.5) | 2.05 (52) | 1 1/8 (28.6) |
| □□-46-MJ12-10-3L | 12 mm E-JOE | 0.41 (10.3) | 4.60 | 3.48 (88.4) | 1.74 (44.2) | 0.69 (17.5) | 0.49 (12.5) | 2.67 (67.7) | 3.13 (79.6) | 1 1/2 (38.1) |
| □□-46-FN2-03-3L | 1/8 NPT Female Thread | 0.13 (3.2) | 0.30 | 1.63 (41.4) | 0.81 (20.6) | 0.34 (8.6) | 0.25 (6.4) | 1.43 (36.2) | 1.10 (28) | 19/32 (15.1) |
| □□-46-FN4-05-3L | 1/4 NPT Female Thread | 0.19 (4.8) | 0.75 | 2.06 (52.3) | 1.03 (26.2) | 0.44 (11.2) | 0.19 (4.8) | 1.64 (41.7) | 1.57 (39.9) | 25/32 (19.8) |
| □□-46-FN4-07-3L | | 0.28 (7.1) | 1.70 | 2.5 (63.5) | 1.18 (30) | 0.56 (14.2) | 0.35 (9) | 2.19 (55.5) | 2.05 (52) | 1 1/8 (28.6) |
| □□-46-FN6-07-3L | 3/8 NPT Female Thread | | 1.50 | | | | | | | |
| □□-46-FN8-10-3L | 1/2 NPT Female Thread | 0.41 (10.3) | 3.50 | 3.13 (79.5) | 1.56 (39.6) | 0.69 (17.5) | 0.49 (12.5) | 2.67 (67.7) | 3.13 (79.6) | 1 1/2 (38.1) |
| □□-46-FRT4-05-3L | 1/4" Imperial Standard Taper Pipe Female Thread | 0.19 (4.8) | 0.75 | 2.06 (52.3) | 1.03 (26.2) | 0.44 (11.2) | 0.19 (4.8) | 1.64 (41.7) | 1.57 (39.9) | 25/32 (19.8) |
| □□-46-FRT6-07-3L | 3/8" Imperial Standard Taper Pipe Female Thread | 0.28 (7.1) | 1.50 | 2.5 (63.5) | 1.18 (30) | 0.56 (14.2) | 0.35 (9) | 2.19 (55.5) | 2.05 (52) | 1 1/8 (28.6) |
| □□-46-FRT8-10-3L | 1/2" Imperial Standard Taper Pipe Female Thread | 0.41 (10.3) | 3.50 | 3.13 (79.5) | 1.56 (39.6) | 0.69 (17.5) | 0.49 (12.5) | 2.67 (67.7) | 3.13 (79.6) | 1 1/2 (38.1) |
| **Four-way valve and Five-way valve** | | | | | | | | | | |
| □□-46-FJ2-01-4L | 1/8" Internal Thread E-JOE Ferrule Fitting | 0.06 (1.6) | 0.07 | 2.36 (60) | 1.32 (33.5) | 0.44 (11.2) | 0.20 (5.2) | 1.76 (44.6) | 1.57 (39.9) | 29/32 (23.1) |
| □□-46-FJ2-01-5L | | | | | | | | | | |
| □□-46-FN2-01-4L | 1/8 NPT Female Thread | 0.06 (1.6) | 0.07 | 1.85 (47) | 0.88 (22.4) | | | | | |
| □□-46-FN2-01-5L | | | | 1.55 (39.4) | | | | | | |
| □□-46-FN8-10-4L | 1/2 NPT Female Thread | 0.41 (10.3) | 3.50 | 3.13 (79.5) | 1.56 (39.6) | 0.69 (17.5) | 0.41 (10.5) | 2.67 (70.2) | 2.63 (66.7) | 1 1/2 (38.1) |
| □□-46-FN8-10-5L | | | | | | | | | | |
| **Six-way valve and Seven-way valve** | | | | | | | | | | |
| □□-46-FJ1-00-6L | 1/16" Internal Thread E-JOE Ferrule Fitting | 0.05 (1.3) | 0.05 | 2.64 (67) | 1.32 (33.5) | 0.44 (11.2) | 0.28 (7) | 1.76 (44.6) | 1.57 (39.9) | 29/32 (23.1) |
| □□-46-FJ1-00-7L | | | | | | | | | | |
| □□-46-FJ2-01-6L | 1/8" Internal Thread E-JOE Ferrule Fitting | 0.06 (1.6) | 0.07 | 2.26 (57.6) | 0.97 (24.7) | | | | | |
| □□-46-FJ2-01-7L | | | | | | | | | | |





## Cross-over 4-way valve and Cross-over 6-way valve

### Standard Flow Path

#### Four-way valve




The 4C type flow path
a valve configuration that can simultaneously connect two sets of adjacent ports. It features a 90° switching handle, allowing it to toggle between the 0° and 90° positions.




Port 1 and Port 2 are connected
Port 3 and Port 4 are connected




Port 1 and Port 4 are connected
Port 2 and Port 3 are connected

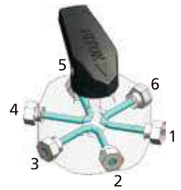
#### Six-way valve




The 6C type flow path
a valve configuration that can simultaneously connect three sets of adjacent ports.
It features a 60° switching handle, allowing it to toggle between the 0° and 60° positions.




Port 1 and Port 2 are connected
Port 3 and Port 4 are connected
Port 5 and Port 6 are connected

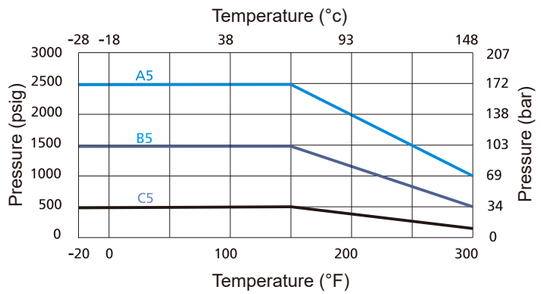



Port 1 and Port 6 are connected
Port 2 and Port 3 are connected
Port 4 and Port 5 are connected

### Temperature-Pressure Curve

Suitable for Cross-Over Switching Valves

PTFE Packing Seat



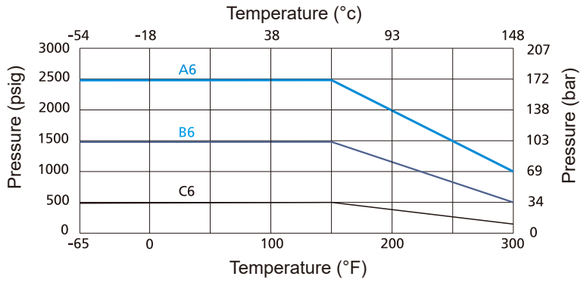

A5: 4-way (inner diameter 0.06")

B5: 4-way (inner diameter 0.41")

C5: 6-way (inner diameters 0.05" & 0.06"

PFA, UHMWPE Packing Seat

The operating temperature of the UHMWPE packing seat does not exceed 65°C (150°F)



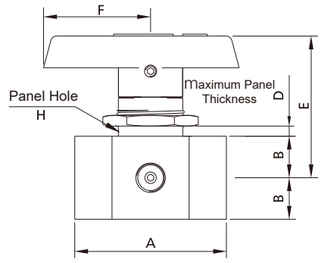

A6: 4-way (inner diameter 0.06")

B6: 4-way (inner diameter 0.41")

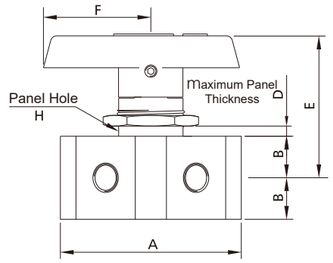
C6: 6-way (inner diameters 0.05" & 0.06"

## Size

### Four-way valve




### Six-way valve




| Basic Ordering Information | Port types and specifications | Inner diameter in. (mm) | Cv | Size, in. (mm) | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | | | | A | B | D | E | F | H |
| **Four-way valve** | | | | | | | | | |
| □□-46-FJ1-00-4C | 1/16" Internal Thread E-JOE Compression Fitting | 0.05 (1.3) | 0.06 | 1.95 (49.6) | 0.44 (11.2) | 0.19 (4.8) | 1.64 (41.7) | 1.57 (39.9) | 25/32 (19.8) |
| □□-46-FJ2-01-4C | 1/8" Internal Thread E-JOE Compression Fitting | 0.06 (1.6) | 0.08 | 2.61 (66.3) | | | | | |
| □□-46-FN2-01-4C | 1/8 NPT Female Thread | | | 1.55 (39.4) | | | | | |
| □□-46-FN8-07-4C | 1/2 NPT Female Thread | 0.28 (7.1) | 1.60 | 3.13 (79.5) | 0.69 (17.5) | 0.48 (12.2) | 2.67 (67.7) | 3.13 (79.6) | 1 1/2 (38.1) |
| **Six-way valve** | | | | | | | | | |
| □□-46-FJ1-00-6C | 1/16" Internal Thread E-JOE Compression Fitting | 0.05 (1.3) | 0.06 | 1.95 (49.5) | 0.44 (11.2) | 0.19 (4.8) | 1.68 (42.7) | 1.53 (38.9) | 29/32 (23.1) |
| □□-46-FJ2-01-6C | 1/8" Internal Thread E-JOE Compression Fitting | 0.06 (1.6) | 0.08 | 2.59 (65.8) | | | | | |

1. Ideal Power represents the Ideal Power double ferrule compression fitting.
2. The dimensions and types listed are standard; other dimensions and types are available upon request. Please contact an authorized Ideal Power distributor for more information.
3. The valve size for Ideal Power compression fittings, as listed in the port types, refers to the size when the compression nut is hand-tightened. All dimensions are for reference only and are subject to change. For dimensions not listed above, please contact an authorized Ideal Power distributor.







## Discharge Port Options

Discharge Valve

The maximum working pressure of the discharge valve is 34.4 bar (500 psig)

Straight-Through Valve

When the valve is closed, the downstream port can vent to the atmosphere through the vent hole on the side of the valve body

Angle and 3-Way Valves

When the valve is closed, the bottom port can vent to the atmosphere through the vent hole on the side of the valve body

Welded Port Connection

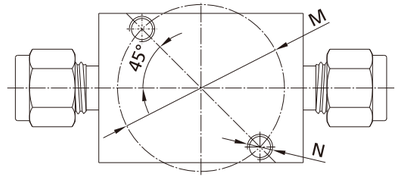
Stainless steel vent valves are available with Tube fittings or Tube stub adapters welded to the vent port

## Bottom threaded panel mounting options

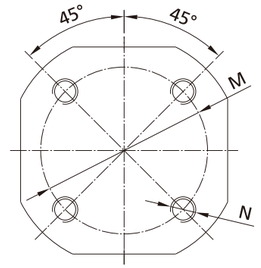
### Inapplicable Valve Types

The bottom threaded mounting option is not applicable to angle valves, 3-way valves, 6-way valves, and 7-way valves.

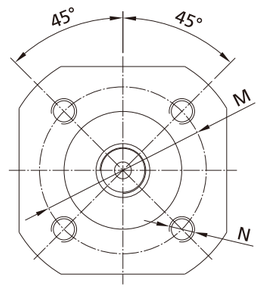
2-Way Valves




4-Way Valves




5-Way Valves




| | Inner diameter in. (mm) | Size, in. (mm) | |
|---|---|---|---|
| | | M | N |
| 2-Way | 0.05~0.13 (1.3~3.2) | 0.63 (15.88) | M2.5 × 0.45 Depth 6 mm (0.24") |
| | 0.19 (4.8) | 0.88 (22.23) | M3 × 0.5 Depth 6 mm (0.24") |
| | 0.28 (7.1) | 1.25 (31.75) | M5 × 0.8 Depth 6 mm (0.24") |
| | 0.41 (10.3) | 1.63 (41.28) | M5 × 0.8 Depth 6 mm (0.24") |
| 4-Way | 0.05~0.06 (1.3~1.6) | 1.25 (31.75) | M5 × 0.8 Depth 6 mm (0.24") |
| | 0.28 (7.1) | 2.00 (50.8) | M5 × 0.8 Depth 6 mm (0.24") |
| 5-Way | 0.05~0.06 (1.3~1.6) | 1.25 (31.75) | M5 × 0.8 Depth 6 mm (0.24") |
| | 0.41 (10.3) | 2.00 (50.8) | M5 × 0.8 Depth 6 mm (0.24") |

## Model Description

SS – 46 – MJ6 FJ4 MJ8 – H05 – OSHQ3L – B – FL4 – SF2

| Valve Body Material | Series | Port 1 Type | Port 1 Size | Port 2 to 7 Types | Port 2 to 7 Dimensions | Valve Seat Material | Internal Diameter Size | Handle/Actuator | Actuator Attachment | Types of Flow Paths | Panel mounting | Discharge Port | Special Applications | Cleaning and Packaging |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| SS 316 Stainless Steel | 46 | FN NPT Female Thread | 1 1/16" | | Same Port 1 | | 00 0.05" (1.3 mm) | C Black Nylon Handle | NONE | A Straight-through Type | B Panel Nut Installation | | NONE | FC-01 |
| S4 304 Stainless Steel | | N NPT Male Thread | 2 1/8" | | The description method is the same as Port 1 | H PTFE | 01 0.06" (1.6 mm) | F Red Nylon Handle | H Mechanical Limit Switch | 3L Angle Type 3-Way | | FJ2 1/8" Tube Connector | S NACE MR0175 | F2 FC-02 |
| S1 321 Stainless Steel | | FRT Imperial Standard Taper Pipe Female Thread | 3 3 mm | | | H UHMWPE | 02 0.09" (2.4 mm) | J Green Nylon Handle | N Inductive Limit Switch | 3HL | | FJ4 1/4" Tube Connector | SI Sulfur Passivation | |
| 6L 316L Stainless Steel | | RT Imperial Standard Taper Pipe Male Thread | 4 1/4" | | | A PFA | 03 0.13" (3.2 mm) | U Blue Nylon Handle | Q Solenoid Valve | 4L 4-Way | | FJ6 3/8" Tube Connector | | |
| B Brass | | FMS Metric Female Thread (Compatible with RG Gasket) | 6 3/8" or 6 mm | | | | 05 0.19" (4.8 mm) | CS Black Aluminum Handle | HQ Mechanical Limit Switch and Solenoid Valve | 4C | | MJ3 3 mm Tube Connector | | |
| M Alloy 400 | | MS Metric Female Thread (Compatible with RG Gasket) | 8 1/2" or 8 mm | | | | 07 0.28" (7.1 mm) | OS Normally Closed 90° Spring Return Pneumatic Actuator | NQ Inductive Limit Switch and Solenoid Valve | 4H | | MJ6 6 mm Tube Connector | | |
| | | FRP Imperial Standard Straight Pipe Female Thread (Compatible with RP Gasket) | 10 10 mm | | | | 10 0.41" (10.3 mm) | DA 90° Double Acting Pneumatic Actuator | | 4HL | | MJ8 8 mm Tube Connector | | |
| | | FJ Imperial Standard Ferrule Fitting | 12 3/4" or 12 mm | | | | | LX 180° Normally Open Spring Return Pneumatic Actuator with Left End | | 4V | | | | |
| | | MJ Metric Ferrule Fitting | 14 14 mm | | | | | RX 180° Normally Open Spring Return Pneumatic Actuator with Right End | | 5L 5-Way | | | | |
| | | FO FO Connector | 16 16 mm | | | | | DX 180° Double Acting Pneumatic Actuator | | 5H | | | | |
| | | FR FR Connector | 18 18 mm | | | | | EA 90° Electric Actuator | | 5HL | | | | |
| | | | | | | | | EX 180° Electric Actuator | | 5LV | | | | |
| | | | | | | | | | | 6L 6-Way | | | | |
| | | | | | | | | | | 6C | | | | |
| | | | | | | | | | | 7L 7-Way | | | | |

"The 'Model Description' is used to explain the composition rules of Ideal Power product models and is not applicable to specific product selection. Models cannot be arbitrarily combined. If you have any questions, please contact an authorized Ideal Power agent."

1. For oxygen-rich environments or hazardous media, please contact an authorized Ideal Power agent.
2. Cleaning and Packaging:
   FC-01: Standard cleaning and packaging for general industrial use.
   FC-02: Special cleaning and packaging for immersion system components, which must meet ASTM G93C grade requirements.
3. Sulfur Passivation: Sulfur passivation treatment is primarily applied to wetted metal components.







# Trunnion Ball Valve

## Series 47 and Series 47H

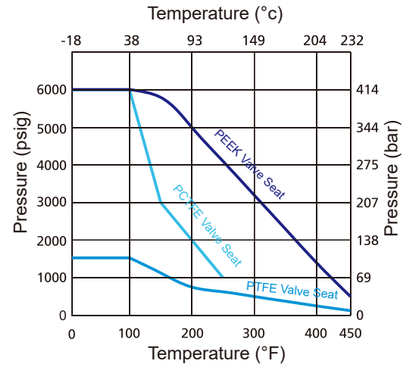
### Characteristics

- Working pressure can reach: 690 bar (10000 psig)
- Operating temperature range: -18°C to 232°C (0°F to 450°F)
- The inner diameter is 4.8 mm (0.19")
- Fixed sphere can achieve bidirectional sealing
- Trunnion-mounted ball: Prevents the ball from being ejected
- Seat automatic pre-tightening seal
- Low operating torque
- Anti-ejection stem structure
- Handle indicates flow direction
- Precise handle positioning
- Handle color options
- Pneumatic or electric actuators available
- Mounting panels are available as options
- Each valve is subjected to a leak-tightness test using nitrogen or compressed air at the rated working pressure, ensuring no visible leakage. For rated working pressures exceeding 6000 psig, the test is conducted at 6000 psig.
- The design is compact and optimized for maximum flow capacity
- 2-way or 3-way flow paths
- Spring-loaded valve seat: It maintains leak-tight integrity in both low-pressure and high-pressure systems, reducing seat wear caused by sudden pressure changes.
- Three-way valve imposes no restrictions on the inlet and outlet

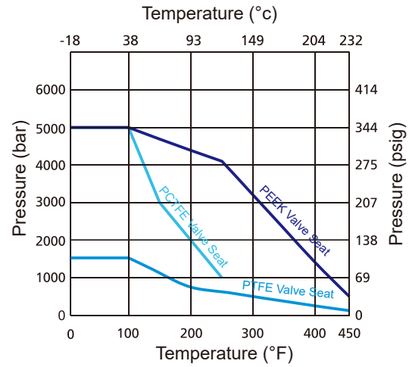
# Temperature Pressure Curve

## Series 47

### 316 Stainless Steel Valve Body

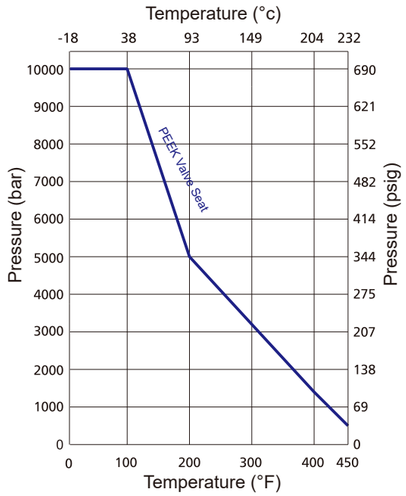



### Alloy 400 Valve Body



# Series 47H

## 316 Stainless Steel Valve Body



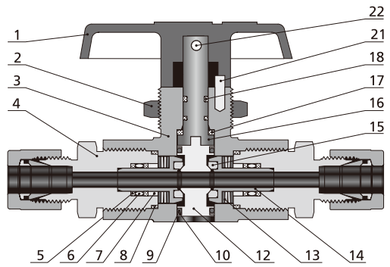

47H Series Pressure Rating at 38°C (100°F)

| Material | Termination | Pressure Rating bar (psig) |
|---|---|---|
| 316 Stainless | FN2、FN4 FJ4、MJ6 | 690 (10000) |
| | MJ10 | 578 (8400) |
| | FJ6/ML8 | 516 (7500) |
| | FJ8 | 461 (6700) |
| | MJ12 | 470 (6800) |

Note: The maximum pressure rating for the 47H series valves is 10,000 psig, with the specific pressure rating depending on the termination.

## Standard Structural Materials

Series 47



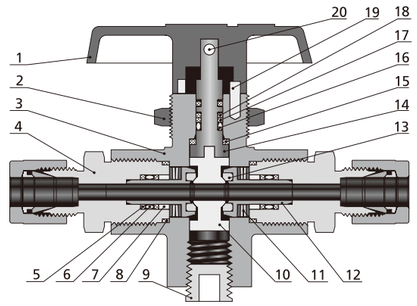

| Serial Number | Component | 316 Stainless Steel 2-Way | 316 Stainless Steel 3-Way | Alloy 400 Valve Body 2-Way | Alloy 400 Valve Body 3-Way |
|---|---|---|---|---|---|
| | | Material Grade / ASTM Specification | | | |
| 1 | Handle | Nylon with Stainless Steel Insert | | | |
| 2 | Threading Nut | 316 Stainless Steel / A479 | | | |
| 3 | *Valve Body* | *316 Stainless Steel / A182* | | *Alloy 400 / B164* | |
| 4 | *End Connection* | *316 Stainless Steel / A479* | | *Alloy 400 / B164* | |
| 5 | *Valve Seat Guide Retainer Ring* | *Reinforced PTFE* | | | |
| 6 | *Valve Seat O-Ring Groove* | *Carbon-Filled FKM* | | | |
| 7 | *Valve Seat Guide Ring* | *316 Stainless Steel / A479* | | *Alloy 400 / B164* | |
| 8 | *End Connection Gasket* | *Silver-Plated 316L/A269* | | | |
| 9 | *Trunnion O-Ring* | *Carbon Gas FKM* | —— | *Carbon Gas FKM* | —— |
| 10 | Trunnion Support Ring | Reinforced PTFE | —— | Reinforced PTFE | —— |
| 11 | *Trunnion Bearing* | —— | *PEEK* | —— | PEEK |
| 12 | *Ball* | *316 Stainless Steel / A479* | *S21800/A479* | *Alloy 400 / B164* | |
| 13 | *Valve Seat Spring* | *Alloy X-750/AMS 5542* | | | |
| 14 | *Valve Seat Holder* | *316 Stainless Steel / A479* | | *Alloy 400 / B164* | |
| 15 | *Valve Seat* | *PTFE or PEEK or PCTFE* | | | |
| 16 | *Valve Stem* | *316 Stainless Steel / A479* | | *Alloy 400 / B164* | |
| 17 | *Valve Stem Washer* | *PEEK* | | | |
| 18 | *Valve Stem O-ring* | *Carbon Gas FKM* | *Carbon Gas FKM* | *Carbon Gas FKM* | *Carbon Gas FKM* |
| 19 | Auxiliary Valve Stem Support Ring | —— | PTFE/D1710 | —— | PTFE/D1710 |
| 20 | Main Valve Stem Support Ring | —— | PEEK | —— | PEEK |
| 21 | Locating Pin | Stainless Steel | | | |
| 22 | Set Screw | Galvanized Carbon Steel | | | |
| | *Grease* | *Fluorinated Group* | | | |

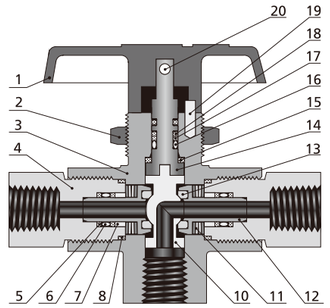
Note: Components in contact with the medium are listed in italics. 1. 47 Series 2-way ball valve, with the valve ball trunnion coated with PTFE; 2. For valves made of other materials, please contact an Ideal Power authorized distributor.





# Series 47H



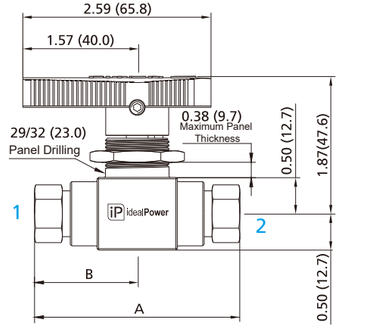

| Serial Number | Component | 2-Way | 3-Way |
|---|---|---|---|
| | | Material Grade / ASTM Specification | |
| 1 | Handle | Nylon with Stainless Steel Insert | |
| 2 | Threading Nut | 316 Stainless Steel / A479 | |
| 3 | *Valve Body* | *316 Stainless Steel / A479* | |
| 4 | *End Connection* | *316 Stainless Steel / A479* | |
| 5 | *Valve Seat Guide Retainer Ring* | *Reinforced PTFE* | |
| 6 | *Valve Seat O-Ring Groove* | *Fluorocarbon FKM* | |
| 7 | *Valve Seat Guide Ring* | *316 Stainless Steel / A479* | |
| 8 | *End Connection Gasket* | *Silver-Plated 316L/A269* | |
| 9 | *End Cap* | *316 Stainless Steel / A479* | |
| 10 | *Ball* | *S21800/A479* | |
| 11 | *Valve Seat Spring* | *Alloy X-750/AMS 5542* | |
| 12 | *Valve Seat Holder* | *316 Stainless Steel / A479* | |
| 13 | *Valve Seat* | *PEEK* | |
| 14 | *Valve Stem* | *316 Stainless Steel / A479* | |
| 15 | *Valve Stem Gasket* | *PEEK* | |
| 16 | *Valve Stem O-ring* | *Fluorocarbon FKM* | |
| 17 | Auxiliary Valve Stem Support Ring | PTFE/D1710 | |
| 18 | Main Valve Stem Support Ring | PEEK | |
| 19 | Locating Pin | Stainless Steel | |
| 20 | Set Screw | Galvanized Carbon Steel | |
| | *Galvanized Carbon Steel* | *Fluoro Group* | |

Note: Components in contact with the medium are listed in italics.
47H Series valve ball trunnions with PTFE coating;
For valves made of other materials, please contact Ideal Power authorized distributors.

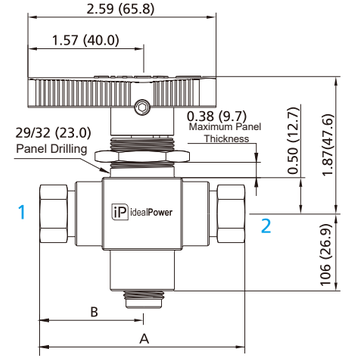
## Size

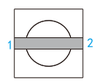
2-Way

Series 47

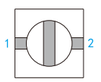



Series 47H



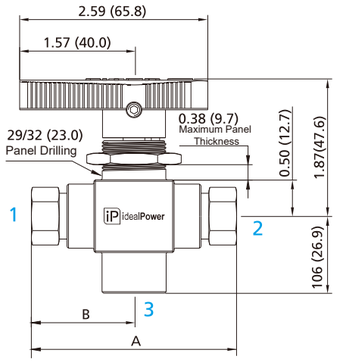

ON




OFF

| Basic Ordering Information | | Port types and sizes | Inner diameter in. (mm) | Cv | Size, in. (mm) | |
|---|---|---|---|---|---|---|
| Series 47 | Series 47H | Port 1/2 | | | A | B |
| □□-47-FN2 | □□-47H-FN2-P | 1/8 NPT Female Thread | 0.19 (4.8) | 1.2 | 2.94 (74.7) | 1.47 (37.3) |
| □□-47-FN4 | ——— | 1/4 NPT Female Thread | | 1.0 | | |
| ——— | □□-47H-FN4-P | | | | 3.93 (99.8) | 1.97 (50.0) |
| □□-47-FN8 | ——— | 1/2 NPT Female Thread | | 1.2 | 4.25 (108.0) | 2.13 (54.1) |
| □□-47-FJ4 | □□-47H-FJ4-P | 1/4” E-JOE | | 1.6 | 4.14 (105.2) | 2.07 (52.6) |
| □□-47-FJ6 | □□-47H-FJ6-P | 3/8” E-JOE | | 1.4 | 4.39 (111.5) | 2.19 (55.6) |
| □□-47-FJ8 | □□-47H-FJ8-P | 1/2” E-JOE | | 1.0 | 4.60 (116.8) | 2.30 (58.4) |
| □□-47-MJ6 | □□-47H-MJ6-P | 6 mm E-JOE | | 1.6 | 4.14 (105.2) | 2.07 (52.6) |
| □□-47-MJ8 | □□-47H-MJ8-P | 8 mm E-JOE | | 1.5 | 4.15 (105.4) | |
| □□-47-MJ10 | □□-47H-MJ10-P | 10 mm E-JOE | | 1.3 | 4.41 (112.0) | 2.20 (55.9) |
| □□-47-MJ12 | □□-47H-MJ12-P | 12 mm E-JOE | | 1.0 | 4.60 (116.8) | 2.30 (58.4) |

## 3-Way Valve






Port 2 and Port 3 are connected



Shutdown



Port 1 and Port 3 are connected

| Basic Ordering Information | | Port types and sizes | | Inner diameter in. (mm) | Cv | Size, in. (mm) | |
|---|---|---|---|---|---|---|---|
| Series BF | Series BFH | Port 1/2 | Port 3 | | | A | B |
| □□-47-FN2-3 | □□-47H-FN2-P-3 | 1/8 NPT Female Thread | 1/4 NPT Female Thread | 0.19 (4.8) | 0.75 | 2.94 (74.7) | 1.47 (37.3) |
| □□-47-FN4-3 | ——— | 1/4 NPT Female Thread | | | | | |
| ——— | □□-47H-FN4-P-3 | | | | | 3.93 (99.8) | 1.97 (50.0) |
| □□-47-FJ4-3 | □□-47H-FJ4-P-3 | 1/4” E-JOE | | | | 4.14 (105.2) | 2.07 (52.6) |
| □□-47-FJ6-3 | □□-47H-FJ6-P-3 | 3/8” E-JOE | | | | 4.39 (111.5) | 2.19 (55.6) |
| □□-47-FJ8-3 | □□-47H-FJ8-P-3 | 1/2” E-JOE | | | | 4.60 (116.8) | 2.30 (58.4) |
| □□-47-MJ6-3 | □□-47H-MJ6-P-3 | 6 mm E-JOE | | | | 4.14 (105.2) | 2.07 (52.6) |
| □□-47-MJ8-3 | □□-47H-MJ8-P-3 | 8 mm E-JOE | | | | 4.15 (105.4) | |
| □□-47-MJ10-3 | □□-47H-MJ10-P-3 | 10 mm E-JOE | | | | 4.41 (112.0) | 2.20 (55.9) |
| □□-47-MJ12-3 | □□-47H-MJ12-P-3 | 12 mm E-JOE | | | | 4.60 (116.8) | 2.30 (58.4) |

1. Ideal Power is the Ideal Power double ferrule fitting.
2. The listed sizes and types are standard; other sizes and types are available. Please contact an Ideal Power authorized agent.
   The valve size of the Ideal Power ferrule fitting in the listed port types is the size when the ferrule nut is hand-tightened.
3. All sizes are for reference only and may be subject to change. For sizes not listed above, please contact an Ideal Power authorized agent.
4. The bottom port of all 3-way valves is: 1/4 NPT female thread. For other port types, please contact an Ideal Power authorized agent.







## Model Description

SS-47 – FN 4 MJ12 – P – RXHQ3 – SCEF2

| | | | | |

# Two-piece Forged Metal Hard-Sealed Ball Valve

## Series 49

- Nominal size: NPS 1/2~NPS 2 (DN 15~DN 50)
- Pressure rating: 900~2500

## Application Specification

- Design Standard: ASME B16.34
- Testing Standards: ASME B16.34 and API 598
- Marking Standard: MSS-SP-25
- Socket Weld End: ASME B16.11
- Buttwelding Ends: ASME B16.25
- Threaded End: ASME B1.20.1

## Characteristics

- Two-piece forged valve body design
- The ball and seat are lapped to ensure 100% contact and complete sealing
- Floating ball valve with compensating seat design
- The high-strength disc spring-loaded seat pushes against the ball
- The hardness of the advanced supersonic rocket spray coating technology exceeds 900 HV
- Advanced stuffing box design and continuous dynamic load application ensure the sealing of valve stem packing
- Low operating torque
- Anti-ejection valve stem design
- Precise handle positioning

## Technical Specifications

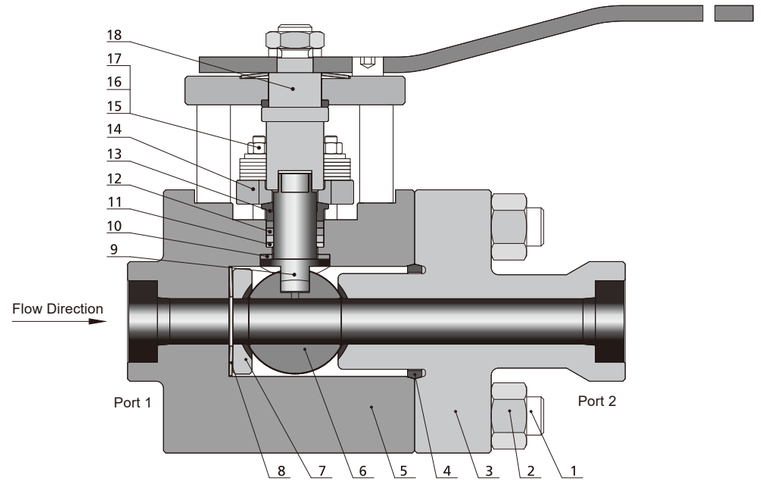
| Serial Number | Port Type | Operating Temperature |
|---|---|---|
| 1 | NPT Female Thread | -28°-232° ( -20°F-450°F ) |
| 2 | Pipe Socket Weld | -28°-538° ( -20°F-1000°F ) |
| 3 | Pipe Butt Weld | -28°-538° ( -20°F-1000°F ) |





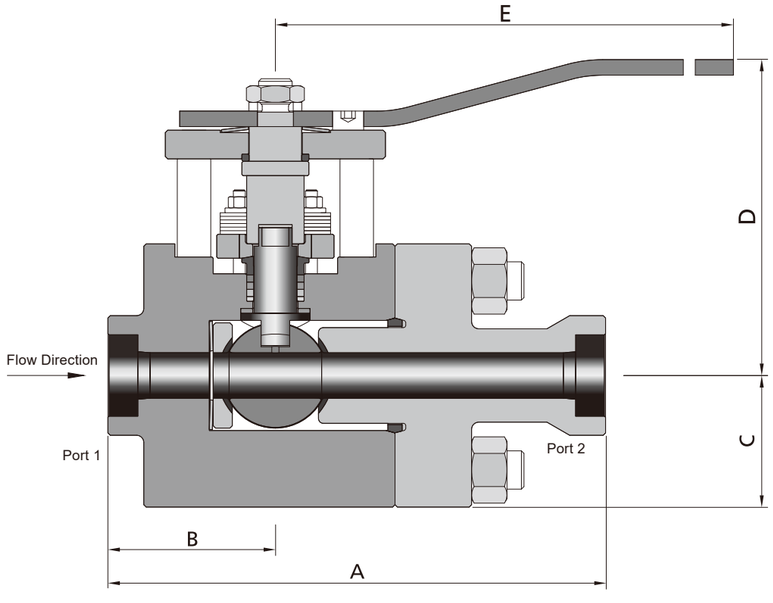


## Standard Structural Material




| Serial Number | Component | Valve Material | | | |
|---|---|---|---|---|---|
| | | A105 | F22 | F91 | F316 |
| | | Material Grade/Specification | | | |
| 1 | Body Bolts | B8M/A193 | B8M/A193 | B8M/A193 | B8M/A193 |
| 2 | Body Nuts | 8M/A194 | 8M/A194 | 8M/A194 | 8M/A194 |
| 3 | End Cap/Integral Seat | A105 (HF) | F22 (HF) | F91 (HF) | F316 (HF) |
| 4 | Body Gasket | S17400/A564 | S17400/A564 | S17400/A564 | S17400/A564 |
| 5 | Valve Body | A105 | F22/A182 | F91/A182 | F316/A182 |
| 6 | Ball | F6a (HOFV31) | F6a (HOFV31) | F6a (HOFV31) | F316 (HOFV31) |
| 7 | Valve Seat | F22 Cl.3 (HF) | F22 Cl.3 (HF) | F22 Cl.3 (HF) | F316 (HF) |
| 8 | Disc Spring | Alloy 718 | Alloy 718 | Alloy 718 | Alloy 718 |
| 9 | Valve Stem | S66286/A638 | S66286/A638 | S66286/A638 | S66286/A638 |
| 10 | Sealing Bearing | Stellite 6 | Stellite 6 | Stellite 6 | Stellite 6 |
| 11 | Sealing Gasket | 316 SS/A276 | 316 SS/A276 | 316 SS/A276 | 316 SS/A276 |
| 12 | Sealing Packing | Graphite | Graphite | Graphite | Graphite |
| 13 | Packing Washer | F316 SS/A182 | F316 SS/A182 | F316 SS/A182 | F316 SS/A182 |
| 14 | Gland | 316 SS/A276 | 316 SS/A276 | 316 SS/A276 | 316 SS/A276 |
| 15 | Gland Bolts | B8M/A193 | B8M/A193 | B8M/A193 | B8M/A193 |
| 16 | Gland Nuts | 8M/A194 | 8M/A194 | 8M/A194 | 8M/A194 |
| 17 | Gland Spring | S17700 | S17700 | S17700 | S17700 |
| 18 | Drive Shaft | S17400/A564 | S17400/A564 | S17400/A564 | S17400/A564 |

1. For other valve materials, please contact Ideal Power or an authorized agent.
2. Surface coating material: Nickel-chromium carbide (HOFV31).
3. Surface overlay material: Stellite (HF).




| Basic Ordering Information | Port types and sizes | | Inner diameter in. (mm) | Size, in. (mm) | | | | | Pressure Class |
|---|---|---|---|---|---|---|---|---|---|
| | Port 1 | Port 2 | | A | B | C | D | E | |
| □□-49-FN8□ | 1/2 NPT Female Thread | 1/2 NPT Female Thread | 0.32 (8.1) | 5.50 (139.7) | 2.17 (55) | 1.30 (33) | 3.71 (94.3) | 7.09 (180) | 900-1500 |
| □□-49-PS8□ | 1/2 Pipe Socket Weld | 1/2 Pipe Socket Weld | | | | | | | |
| □□-49-PB8□ | 1/2 Pipe Butt Weld | 1/2 Pipe Butt Weld | | | | | | | |
| □□-49-FN12□ | 3/4 NPT Female Thread | 3/4 NPT Female Thread | 0.75 (19) | 8.19 (208) | 2.76 (70) | 2.17 (55) | 5.20 (132) | 15.0 (381) | |
| □□-49-PS12□ | 3/4 Pipe Socket Weld | 3/4 Pipe Socket Weld | | | | | | | |
| □□-49-PB12□ | 3/4 Pipe Butt Weld | 3/4 Pipe Butt Weld | | | | | | | |
| □□-49-FN16□ | 1 NPT Female Thread | 1 NPT Female Thread | | | | | | | |
| □□-49-PS16□ | 1 Pipe Socket Weld | 1 Pipe Socket Weld | | | | | | | |
| □□-49-PB16□ | 1 Pipe Butt Weld | 1 Pipe Butt Weld | | | | | | | |
| □□-49-FN24□ | 1 1/2 NPT Female Thread | 1 1/2 NPT Female Thread | 1.5 (38.1) | 10 (254) | 3.35 (85) | 2.72 (69) | 6.10 (155) | 25.98 (660) | |
| □□-49-PS24□ | 1 1/2 Pipe Socket Weld | 1 1/2 Pipe Socket Weld | | | | | | | |
| □□-49-PB24□ | 1 1/2 Pipe Butt Weld | 1 1/2 Pipe Butt Weld | | | | | | | |
| □□-49-FN32□ | 2 NPT Female Thread | 2 NPT Female Thread | | | | | | | |
| □□-49-PS32□ | 2 Pipe Socket Weld | 2 Pipe Socket Weld | | | | | | | |
| □□-49-PB32□ | 2 Pipe Butt Weld | 2 Pipe Butt Weld | | | | | | | |







| Basic Ordering Information | Port types and sizes | | Inner diameter in. (mm) | Size, in. (mm) | | | | | Pressure Class |
|---|---|---|---|---|---|---|---|---|---|
| | Port 1 | Port 2 | | A | B | C | D | E | |
| □□-49-FN8□ | 1/2 NPT Female Thread | 1/2 NPT Female Thread | 0.32 (8.1) | 5.50 (139.7) | 2.17 (55) | 1.30 (33) | 3.71 (94.3) | 7.09 (180) | 2500 |
| □□-49-PS8□ | 1/2 Pipe Socket Weld | 1/2 Pipe Socket Weld | | | | | | | |
| □□-49-PB8□ | 1/2 Pipe Butt Weld | 1/2 Pipe Butt Weld | | | | | | | |
| □□-49-FN12□ | 3/4 NPT Female Thread | 3/4 NPT Female Thread | 0.75 (19) | 8.19 (208) | 2.76 (70) | 2.17 (55) | 5.20 (132) | 15.0 (381) | |
| □□-49-PS12□ | 3/4 Pipe Socket Weld | 3/4 Pipe Socket Weld | | | | | | | |
| □□-49-PB12□ | 3/4 Pipe Butt Weld | 3/4 Pipe Butt Weld | | | | | | | |
| □□-49-FN16□ | 1 NPT Female Thread | 1 NPT Female Thread | | | | | | | |
| □□-49-PS16□ | 1 Pipe Socket Weld | 1 Pipe Socket Weld | | | | | | | |
| □□-49-PB16□ | 1 Pipe Butt Weld | 1 Pipe Butt Weld | | | | | | | |

## Model Description

SS－49－PS8G

| Valve Body Material | | Series | Port Type | | Port Size | | Pressure Class | |
|---|---|---|---|---|---|---|---|---|
| CS | A105/ WCB | 49 | FN | NPT Female Thread | 8 | NPS 1/2 (DN 15) | A | 150 CL |
| 22 | F22/ WC9 | | PB | Pipe Butt Weld | 12 | NPS 3/4 (DN 20) | B | 300 CL |
| 91 | F91/ C12A | | PS | Pipe Socket Weld | 16 | NPS 1 (DN 25) | C | 600 CL |
| SS | F316/ CF8M | | | | 24 | NPS 1 1/2 (DN 40) | E | 900 CL |
| | | | | | 32 | NPS 2 (DN 50) | F | 1500 CL |
| | | | | | | | G | 2500 CL |

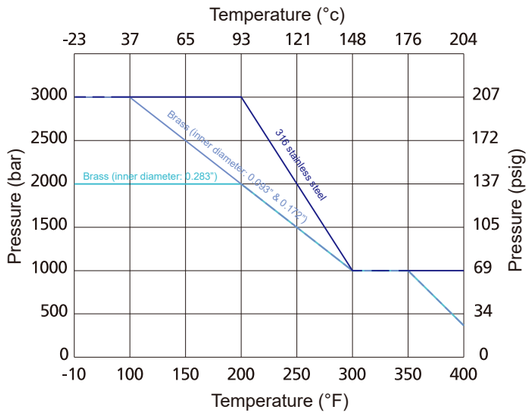
Note: Model Description is used to explain the composition rules of Ideal Power product models and is not applicable for specific product selection. Note: Combinations should not be made arbitrarily. If you have any questions, please contact Ideal Power or an authorized distributor.

# Plug Valves

## Characteristics

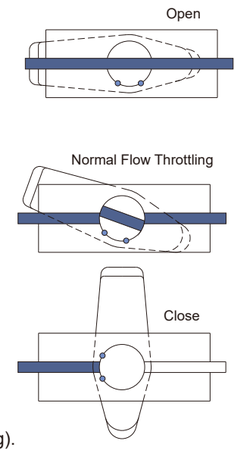
- Working pressure up to: 207 bar (3000 psig)
- Operating temperature range: -23°C to 204°C (-10°F to 400°F)
- Sizes: 6 to 12 mm and 1/8" to 3/4"
- Easy to clean and maintain
- Low torque
- Interchangeable plug components
- Handle indicates flow direction
- Handle color options available
- Reliable handle shut-off
- Each valve is sealed tested with nitrogen or air at rated working pressure
- For 3-way plug valves, the medium can only enter from the bottom port

## Temperature Pressure Curve




1. If reverse flow occurs, the differential pressure should not exceed 10.3 bar (150 psig).
2. Reverse flow throttling may damage the O-ring.
3. The curve is only applicable to plug valves with FKM sealing material.

## Operation (2-way valve)




## Downstream discharge outlet (only for 2-way valve)

When the valve is closed, the valve core and body with a downstream discharge outlet can release the pressure to the atmosphere.
The maximum operating pressure is 10.3 bar (150 psig).

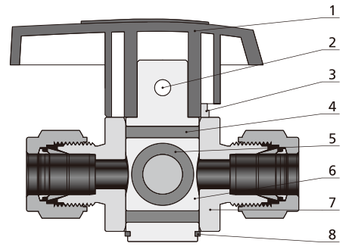







## Standard structural material

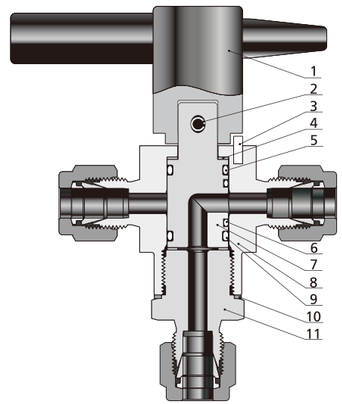
2-Way Valve




| Serial Number | Component | Valve Body Material | |
|---|---|---|---|
| | | 316 Stainless Steel | Brass |
| | | Material Grade/ASTM Specification | |
| 1 | Handle | Nylon or Aluminum | |
| 2 | Handle Pin | Stainless Steel | |
| 3 | Valve Body Pin | Stainless Steel | |
| 4 | *O-ring* | *Fluorocarbon FKM or Neoprene or EPDM or Nitrile rubber or Kalrez* | |
| 5 | *O-ring* | *Fluorocarbon FKM or Neoprene or EPDM or Nitrile rubber or Kalrez* | |
| 6 | *Stopcock* | *PTFE-coated 316 Stainless Steel/A479* | *PTFE-coated Brass/B453* |
| 7 | *Valve Body* | *316 Stainless Steel/A479* | *Brass/B453* |
| 8 | *Retaining Ring* | *Stainless Steel* | |
| *Lubricant* | | *Silicone Base* | |

*Note: Parts in contact with the medium are indicated in italics*

3-Way Valve




Note: The three-way plug valve is only in working condition when the handle is in the extreme position, and there will be a brief connection of all three ports during the rotation of the handle.

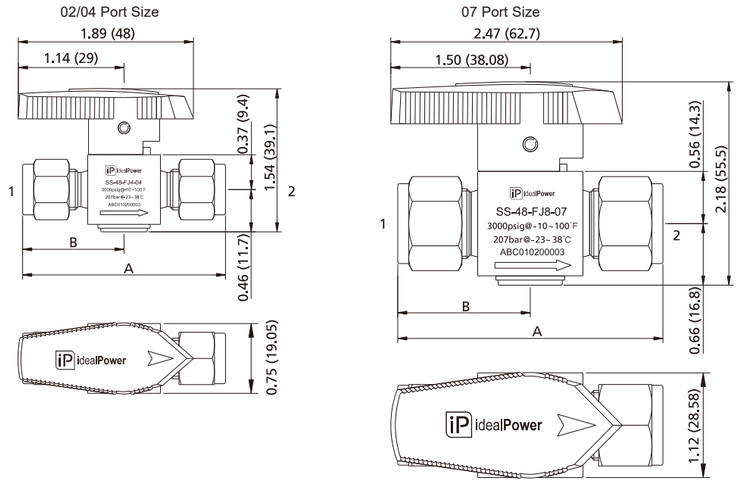
| Serial Number | Component | Valve Body Material | |
|---|---|---|---|
| | | 316 Stainless Steel | Brass |
| | | Material Grade/ASTM Specification | |
| 1 | Handle | Nylon or Aluminum | |
| 2 | Handle Pin | Stainless Steel | |
| 3 | Valve Body Pin | Stainless Steel | |
| 4 | Gasket | PTFE | |
| 5 | *O-ring* | *Fluorocarbon FKM or Neoprene or EPDM or Nitrile rubber or Kalrez* | |
| 6 | *O-ring* | *Fluorocarbon FKM or Neoprene or EPDM or Nitrile rubber or Kalrez* | |
| 7 | *Stopcock* | *PTFE-coated 316 Stainless Steel/A479* | *PTFE-coated Brass/B453* |
| 8 | *Valve Body* | *316 Stainless Steel/A479* | *Brass/B453* |
| 9 | *O-ring* | *Fluorocarbon FKM or Neoprene or EPDM or Nitrile rubber or Kalrez* | |
| 10 | *Gasket* | *Silver-plated 316 Stainless Steel/A479* | *Aluminum/B209* |
| 11 | *Connector* | *316 Stainless Steel/A479* | *Brass/B453* |
| *Lubricant* | | *Silicone Base* | |

*Note: Parts in contact with the medium are indicated in italics.*

# Size

The dimensions are indicated in in. (mm) for reference only and may be subject to change

## 2-Way Valve



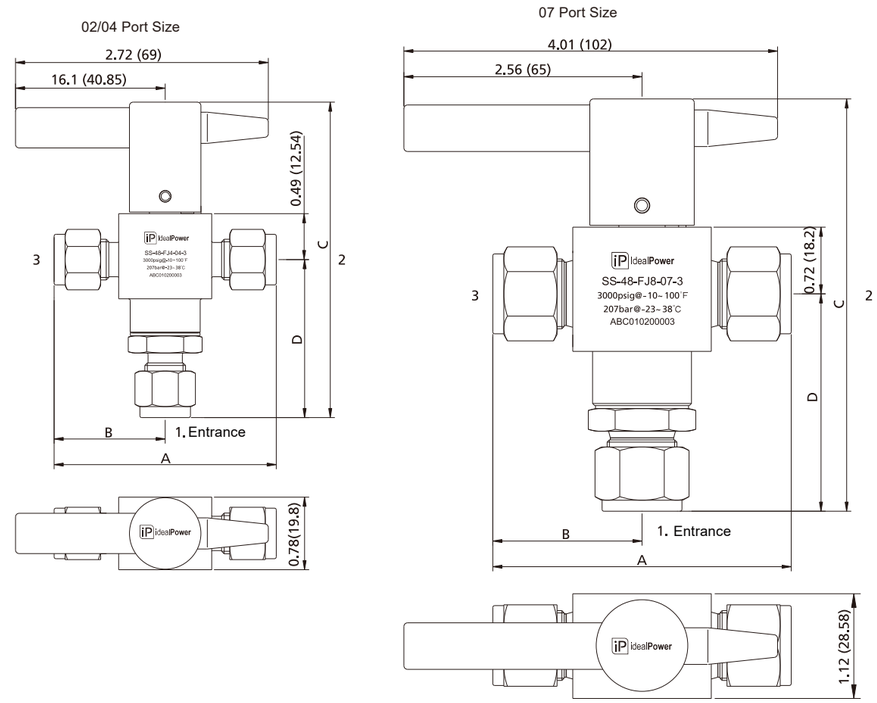

| Basic Ordering Information | Port Types and Sizes | | Inner diameter in. (mm) | Cv | Size, in. (mm) | |
|---|---|---|---|---|---|---|
| | Entrance 1 | Exit 2 | | | A | B |
| □□-48-FJ2-02 | 1/8” E-JOE | | 0.09 (2.4) | 0.1 | 1.99 (50.5) | 0.98 (24.9) |
| □□-48-FJ4-04 | 1/4” E-JOE | | 0.17 (4.4) | 1.6 | 2.17 (55.1) | 1.08 (27.4) |
| □□-48-FJ6-04 | 3/8” E-JOE | | | 1.1 | 2.29 (58.2) | 1.14 (29.0) |
| □□-48-FJ6-07 | 3/8” E-JOE | | 0.28 (7.2) | 6.4 | 2.66 (67.6) | 1.33 (33.8) |
| □□-48-FJ8-07 | 1/2” E-JOE | | | 4.4 | 2.88 (73.2) | 1.44 (36.6) |
| □□-48-MJ6-04 | 6 mm E-JOE | | 0.17 (4.4) | 1.6 | 2.17 (55.1) | 1.08 (27.4) |
| □□-48-MJ8-04 | 8 mm E-JOE | | | 1.5 | 2.25 (57.1) | 1.12 (28.6) |
| □□-48-MJ10-07 | 10 mm E-JOE | | 0.28 (7.2) | 6.4 | 2.68 (68.1) | 1.34 (34.0) |
| □□-48-MJ12-07 | 12 mm E-JOE | | | 4.8 | 2.86 (72.6) | 1.43 (36.3) |
| □□-48-FN2-04 | 1/8 NPT Female Thread | | 0.17 (4.4) | 1.2 | 1.78 (45.2) | 0.89 (22.6) |
| □□-48-FN4-04 | 1/4 NPT Female Thread | | | 0.9 | 2.09 (53.1) | 1.11 (28.2) |
| □□-48-FN4-07 | 1/4 NPT Female Thread | | 0.28 (7.2) | 4.3 | 2.38 (60.5) | 1.19 (30.2) |
| □□-48-FN8-07 | 1/2 NPT Female Thread | | | 2.7 | 2.77 (70.3) | 1.38 (35.2) |
| □□-48-N2-04 | 1/8 NPT Male Thread | | 0.17 (4.4) | 1.0 | 1.53 (38.9) | 0.76 (19.3) |
| □□-48-N4-04 | 1/4 NPT Male Thread | | | 1.0 | 1.90 (48.3) | 0.95 (24.1) |
| □□-48-N8-07 | 1/2 NPT Male Thread | | 0.28 (7.2) | 2.4 | 2.64 (67.0) | 1.32 (33.5) |
| □□-48-FRT2-04 | 1/8 NPT Female Thread | | 0.17 (4.4) | 1.2 | 1.78 (45.2) | 0.89 (22.6) |
| □□-48-FRT4-04 | 1/4 NPT Female Thread | | | 0.9 | 2.09 (53.1) | 1.11 (28.2) |
| □□-48-FRT4-07 | 1/4 NPT Female Thread | | 0.28 (7.2) | 4.3 | 2.38 (60.5) | 1.19 (30.2) |
| □□-48-FRT8-07 | 1/2 NPT Female Thread | | | 2.7 | 2.77 (70.3) | 1.38 (35.2) |





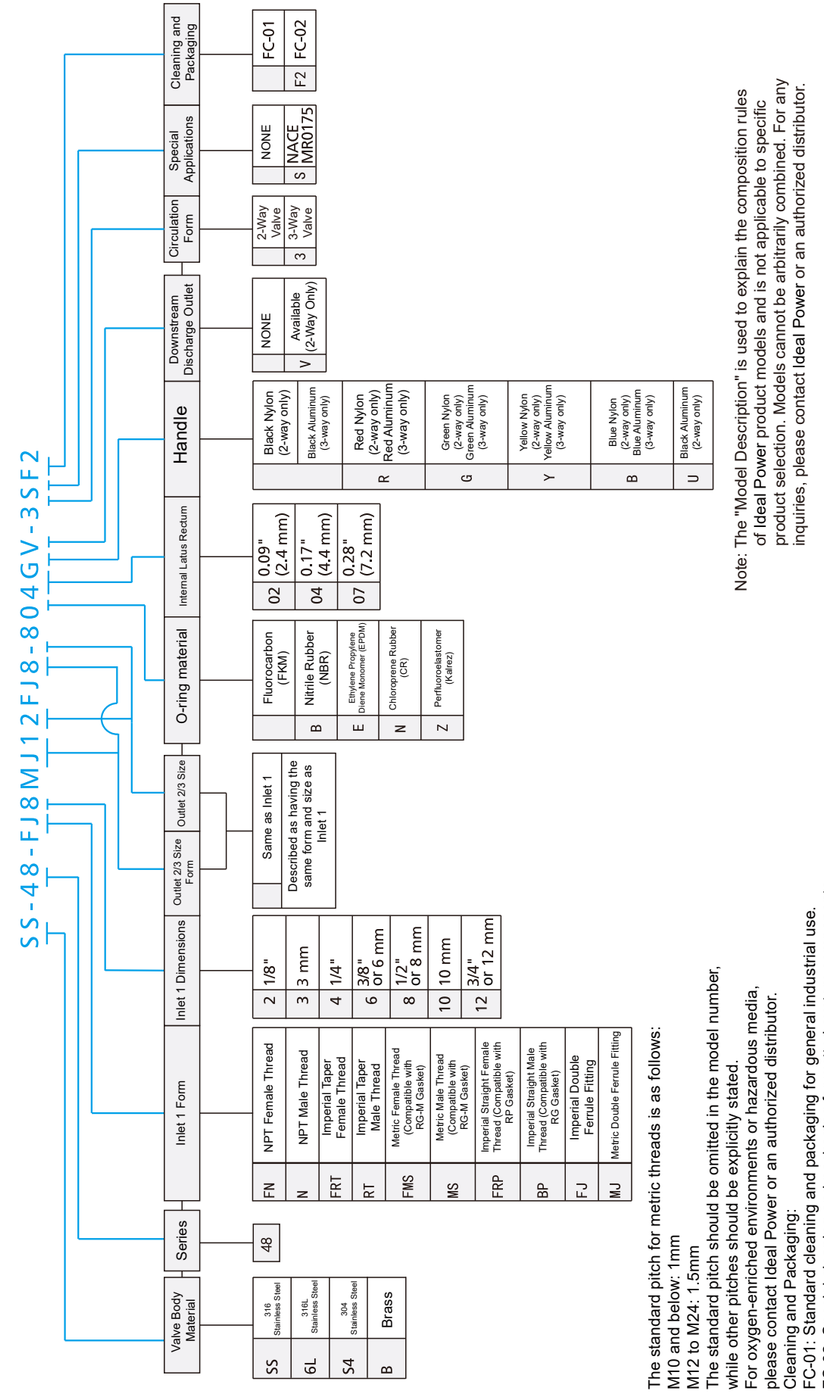


## 3-Way Valve




| Basic Ordering Information | Port Types and Sizes | | Inner diameter in. (mm) | Size, in. (mm) | | | |
|---|---|---|---|---|---|---|---|
| | Entrance 1 | Exit 2/3 | | A | B | C | D |
| □□-48-FJ2-02-3 | 1/8” E-JOE | | 0.09 (2.4) | 2.19 (55.7) | 1.09 (27.8) | 3.29 (83.6) | 1.60 (40.6) |
| □□-48-FJ4-04-3 | 1/4” E-JOE | | 0.17 (4.4) | 2.40 (60.6) | 1.20 (30.3) | 3.39 (86.1) | 1.69 (43.1) |
| □□-48-FJ6-04-3 | 3/8” E-JOE | | | 2.25 (64.0) | 1.26 (32.0) | 3.46 (87.8) | 1.76 (44.8) |
| □□-48-FJ6-07-3 | 3/8” E-JOE | | 0.28 (7.2) | 3.01 (76.4) | 1.51 (38.4) | 4.33 (110) | 2.24 (56.8) |
| □□-48-FJ8-07-3 | 1/2” E-JOE | | | 3.21 (81.6) | 1.61 (40.8) | 4.43 (112.6) | 2.24 (59.4) |
| □□-48-MJ6-04-3 | 6 mm E-JOE | | 0.17 (4.4) | 2.41 (61.3) | 1.21 (30.7) | 3.40 (86.4) | 1.71 (43.5) |
| □□-48-MJ8-04-3 | 8 mm E-JOE | | | 2.48 (62.9) | 1.24 (31.4) | 3.43 (87.2) | 1.74 (44.2) |
| □□-48-MJ10-07-3 | 10 mm E-JOE | | 0.28 (7.2) | 3.02 (76.8) | 1.51 (38.4) | 4.34 (110.2) | 2.24 (57.0) |
| □□-48-MJ12-07-3 | 12 mm E-JOE | | | 3.21 (81.6) | 1.61 (40.8) | 4.44 (112.8) | 2.35 (59.6) |
| □□-48-FN2-04-3 | 1/8 NPT Female Thread | | 0.17 (4.4) | 2.06 (52.3) | 1.03(26.2) | 3.01 (76.4) | 1.11 (33.4) |
| □□-48-FN4-04-3 | 1/4 NPT Female Thread | | | | | 0.32(81.0) | 1.50 (38.0) |
| □□-48-FN4-07-3 | 1/4 NPT Female Thread | | 0.28 (7.2) | 2.38 (60.5) | 1.19 (30.3) | 3.98 (101.2) | 1.89 (48.0) |
| □□-48-FN6-07-3 | 3/8 NPT Female Thread | | | | | | |
| □□-48-N2-04-3 | 1/8 NPT Male Thread | | 0.17 (4.4) | 1.76 (44.8) | 0.88 (22.4) | 3.08 (78.2) | 1.39 (35.2) |
| □□-48-N4-04-3 | 1/4 NPT Male Thread | | | 2.04 (51.9) | 1.02 (26.0) | 3.26 (82.7) | 1.56 (39.7) |
| □□-48-N4-07-3 | 1/4 NPT Male Thread | | 0.28 (7.2) | 2.46 (62.5) | 1.23 (31.3) | 4.13 (104.9) | 2.04 (51.7) |
| □□-48-N6-07-3 | 3/8 NPT Male Thread | | | | | | |

## Model Description




Note: The "Model Description" is used to explain the composition rules of Ideal Power product models and is not applicable to specific product selection. Models cannot be arbitrarily combined. For any inquiries, please contact Ideal Power or an authorized distributor.

1. The standard pitch for metric threads is as follows:
   M10 and below: 1mm
   M12 to M24: 1.5mm
   The standard pitch should be omitted in the model number, while other pitches should be explicitly stated.
2. For oxygen-enriched environments or hazardous media, please contact Ideal Power or an authorized distributor.
3. Cleaning and Packaging:
   FC-01: Standard cleaning and packaging for general industrial use.
   FC-02: Special cleaning and packaging for wetted system components, which must meet ASTM G93C grade requirements.





# Check Valves

## Series 51/52/53/54/531/55 and 56

### Characteristics

### Series 51

- Noiseless and effective check function
- Maximum working pressure: 207 bar (3000 psig)
- Operating temperature: -23°C to 190°C (-10°F to 375°F)
- Cracking pressure: 0.02 to 1.7 bar (1/3 to 25 psig)
- Multiple end connections and valve body materials available
- Fixed cracking pressure, allowing installation in any direction

### Series 52

- Prevents contaminants from affecting the seal
- Maximum working pressure: 414 bar (6000 psig)
- Operating temperature: -23°C to 204°C (-10°F to 400°F)
- Cracking pressure: 0.02 to 1.7 bar (1/3 to 25 psig)
- Multiple end connections and valve body materials available
- Fixed cracking pressure, allowing installation in any direction
- Products with ECE R110 type certification available, suitable for CNG/NGV applications.

### Series 53

- Integrated valve body, compact structure
- Maximum working pressure: 207 bar (3000 psig)
- Operating temperature: -23°C to 190°C (-10°F to 375°F)
- Cracking pressure: 0.02 to 1.7 bar (1/3 to 25 psig)
- Multiple end connections and valve body materials available
- Fixed cracking pressure, allowing installation in any direction

### Series 54

- Maximum Working Pressure: 207 bar (3000 psig)
- Operating Temperature: -23°c to 190°F (-10°F to 375°F)
- Cracking Pressure: 0.2 to 41.4 bar (3 to 600 psig)
- Multiple End Connections and Valve Body Materials Available
- Multiple Spring Options Available
- Adjustable Cracking Pressure, Can Be Installed in Any Orientation

### Series 531

- Integrated Valve Body, Compact Structure
- Working Pressure Can Reach: 207 bar (3000 psig)
- Operating Temperature: -23°C to 190°C (-10°F to 375°F)
- Opening Pressure: 0.2 to 41.4 bar (3 to 600 psig)
- A variety of end connections and valve body materials are available
- A variety of springs are available
- Adjustable opening pressure, can be installed in any direction

### Series 55

- Working pressure up to: 414 bar (6000 psig)
- Operating temperature: -53°c to 482°c (-65°F to 900°F)
- Robust structure, fully constructed of stainless steel
- Combined bonnet design, safer, installed horizontally with the bonnet nut on the upper side
- The reverse flow coefficient is less than 0.1% of the forward flow coefficient

### Series 56

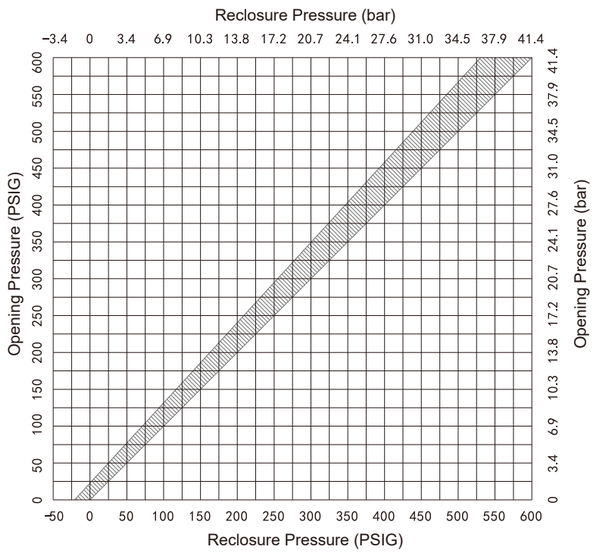
- Working pressure up to: 207 bar (3000 psig)
- Operating temperature: -23°c to 204°c (-10°F to 400°F)
- Opening pressure: below 0.14 bar (2 psig)
- A variety of end connections and valve body materials are available
- Fully welded design for enhanced safety
- Standard or polished finish wetted surfaces are available

1. Except for the 55 series valves, all other valves are coated with lubricants: silicone-based and molybdenum disulfide-based.
2. For other materials, please contact Ideal Power.
3. The 51, 53, 54, and 531 series valves can be equipped with springs coated with PTFE. For details, please contact Ideal Power.
4. Each Ideal Power check valve is tested for sealing under maximum working pressure using nitrogen.
5. If you have more questions, feel free to ask!

## Opening Pressure and Resealing Pressure

Opening Pressure - The upstream pressure at which the initial indication of flow occurs.
Resealing Pressure - The pressure at which there is no indication of flow.

| Series | Nominal Opening Pressure bar (psig) | Actual Opening Pressure bar (psig) | Resealing Pressure bar (psig) |
|---|---|---|---|
| 51 | 0.02 (1/3)<br>0.06 (1)<br>0.21 (3)<br>0.68 (10)<br>1.7 (25) | 0 to 0.21 (0 to 3)<br>0 to 0.28 (0 to 4)<br>0.06 to 0.34 (1 to 5)<br>0.49 to 1.1 (7 to 15)<br>1.4 to 21 (20 to 30) | 0.42 (6) Below Downstream Pressure<br>0.42 (6) Below Downstream Pressure<br>0.42 (6) Below Downstream Pressure<br>0.21 (3) or Above Upstream Pressure<br>1.2 (17) or Above Upstream Pressure |
| 52 | 0.02 (1/3)<br>0.06 (1)<br>0.2 (3)<br>0.68 (10)<br>1.7 (25) | 0 to 0.21 (0 to 3)<br>0 to 0.28 (0 to 4)<br>0.06 to 0.34 (1 to 5)<br>0.49 to 1.1 (7 to 15)<br>1.4 to 21 (20 to 30) | 0.42 (6) Below Downstream Pressure<br>0.35 (5) Below Downstream Pressure<br>0.14 (2) Below Downstream Pressure<br>0.21 (3) or Above Upstream Pressure<br>1.2 (17) or Above Upstream Pressure |
| 53 | 0.02 (1/3)<br>0.06 (1)<br>0.2 (3)<br>0.68 (10)<br>1.7 (25) | 0 to 0.21 ( 0 to 3)<br>0 to 0.28 (0 to 4)<br>0.06 to 0.34 (1 to 5)<br>0.49 to 1.1 (7 to 15)<br>1.4 to 2.1 (20 to 30) | 0.42 to 1.4 (6 to 20) Downstream Pressure<br>0.35 to 1.4 (5 to 20) Downstream Pressure<br>0.21 to 1.4 (3 to 20) Downstream Pressure<br>0.21 to 0.68 (3 to 10) Downstream Pressure<br>0.35 (5) or Above Upstream Pressure |
| 54<br>531 | 0.21 to 3.4 (3 to 50)<br>3.4 to 10.3 (50 to 150)<br>10.3 to 24.1 (150 to 350)<br>24.1 to 41.3 (350 to 600) | ——— | For details, please refer to the chart below |
| 56 | 0.02 (1/3) | 0 to 0.14 (0 to 2) | 0.14 (2) or Below Downstream Pressure |





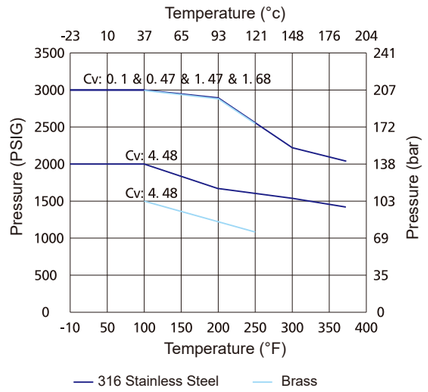




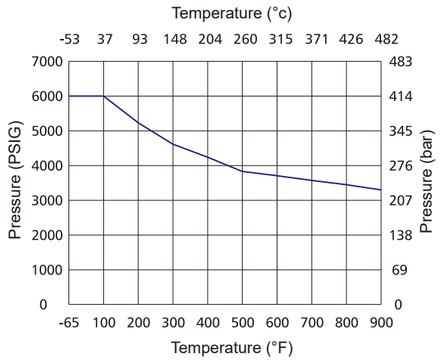

## Pressure-Temperature Rating

Series 51

316 Stainless Steel Valve Body - FKM O-Ring
Brass Valve Body - Nitrile Rubber O-Ring

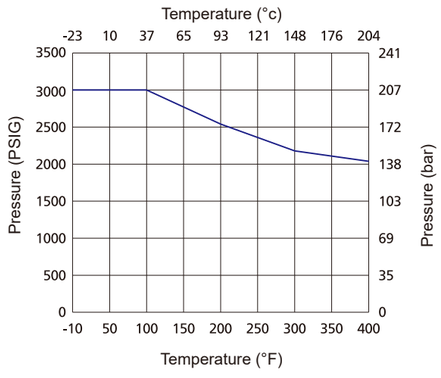



Series 55

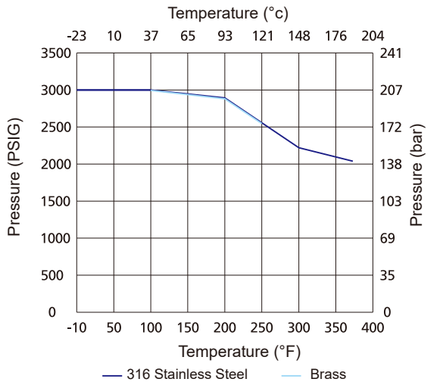



Series 56

316 Stainless Steel Valve Body - FKM O-Ring

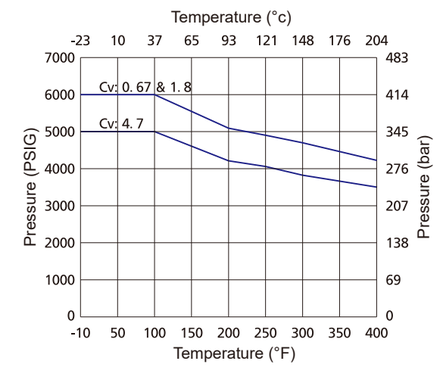



Series 53、54 and 531
316 Stainless Steel Valve Body - FKM O-Ring
Brass Valve Body - Nitrile Rubber O-Ring




Series 52

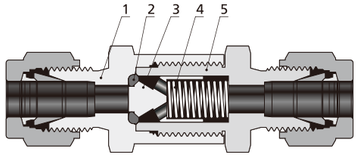
316 Stainless Steel Valve Body - FKM O-Ring Coil




The pressure rating of the 52 series check valve is limited by the end connection

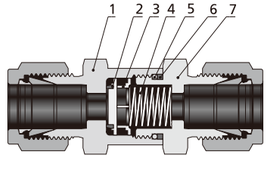
# Structural Materials

## Series 51




| Component | | Material Grade/ASTM Specification | |
|---|---|---|---|
| | | 316 Stainless Steel | Brass |
| 1 | Inlet Valve Body | 316 Stainless Steel/ A479 | Brass C36000/B16 |
| 2 | O-ring | Carbon Gas FKM | Nitrile Rubber |
| 3 | Sliding Sleeve | 316 Stainless Steel/ A479 | Brass C36000/B16 |
| 4 | Spring | 302 Stainless Steel/ A313 | 302 Stainless Steel/ A313 |
| 5 | Outlet Valve Body | 316 Stainless Steel/ A479 | Brass C36000/B16 |

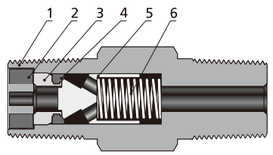
## Series 52




| Component | | Material Grade/ASTM Specification |
|---|---|---|
| 1 | Inlet Valve Body | 316 Stainless Steel/ A479 |
| 2 | Lifting Head Assembly | Fluorocarbon FKM Bonded 316 Stainless Steel/A479 |
| 3 | Lifting Head Retaining Ring | 316 Stainless Steel/ A240 |
| 4 | Spring | 316 Stainless Steel/ A313 |
| 5 | O-ring | Carbon Gas FKM |
| 6 | Support Ring | PTFE/D1710 |
| 7 | Outlet Valve Body | 316 Stainless Steel/ A479 |

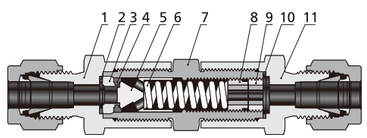


## Series 53




| Component | | Material Grade/ASTM Specification | |
|---|---|---|---|
| | | 316 Stainless Steel | Brass |
| 1 | Valve Body | 316 Stainless Steel/ A479 | Brass C36000/B16 |
| 2 | Insert Locking Nut | 316 Stainless Steel/276/A479 | Brass C36000/B16 |
| 3 | Insert | 316 Stainless Steel/ A479 | Brass C36000/B16 |
| 4 | O-ring | Carbon Gas FKM | Nitrile Rubber |
| 5 | Poppet Head | 316 Stainless Steel/ A479 | Brass C36000/B16 |
| 6 | Spring | 302 Stainless Steel/ A313 | 302 Stainless Steel/ A313 |

## Series 54

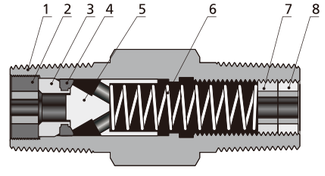



| Component | | Material Grade/ASTM Specification | |
|---|---|---|---|
| | | 316 Stainless Steel | Brass |
| 1 | Inlet Valve Body | 316 Stainless Steel/ A479 | Brass C36000/B16 |
| 2 | Inlet Gasket | PTFE Coated C316 Stainless Steel/A240 | PTFE Coated C316 Stainless Steel/A240 |
| 3 | Insert | 316 Stainless Steel/ A479 | Brass C36000/B16 |
| 4 | O-ring | Carbon Gas FKM | Nitrile Rubber |
| 5 | Poppet Head | 316 Stainless Steel/ A479 | Brass C36000/B16 |
| 6 | Spring | 302 Stainless Steel/ A313 | 302 Stainless Steel/ A313 |
| 7 | Center Valve Body | 316 Stainless Steel/ A479 | Brass C36000/B16 |
| 8 | Adjusting Screw | 316 Stainless Steel/ A276 | 316 Stainless Steel/ A276 |
| 9 | Locking Screw | 316 Stainless Steel/ A276 | 316 Stainless Steel/ A276 |
| 10 | Outlet Gasket | PTFE Coated C316 Stainless Steel/A276 | PTFE Coated C316 Stainless Steel/A276 |
| 11 | Outlet Valve Body | 316 Stainless Steel/ A479 | Brass C36000/B16 |



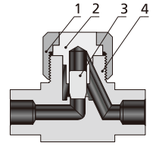


## Series 531




| Component | | Material Grade/ASTM Specification | |
|---|---|---|---|
| | | 316 Stainless Steel | Brass |
| 1 | Valve Body | 316 Stainless Steel/ A479 | Brass C36000/B16 |
| 2 | Insert Lock Nut | 316 Stainless Steel/ A479 | Brass C36000/B16 |
| 3 | Insert | 316 Stainless Steel/ A479 | Brass C36000/B16 |
| 4 | O-ring | Carbon Gas FKM | Nitrile Rubber |
| 5 | Poppet Head | 316 Stainless Steel/ A479 | Brass C36000/B16 |
| 6 | Spring | 302 Stainless Steel/ A313 | 302 Stainless Steel/ A313 |
| 7 | Adjusting Screw | 316 Stainless Steel/ A276 | 316 Stainless Steel/ A276 |
| 8 | Locking Screw | 316 Stainless Steel/ A276 | 316 Stainless Steel/ A276 |

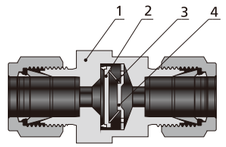
## Series 55




| Component | | Material Grade/ASTM Specification |
|---|---|---|
| 1 | Valve Cap Nut | 316 Stainless Steel/ A479 |
| 2 | Valve Cap | 316 Stainless Steel/ A479 |
| 3 | Poppet Valve Core | S17400/A564 |
| 4 | Valve Body | 316 Stainless Steel/ A479 |



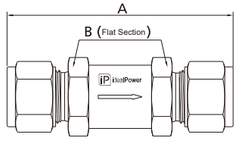
## Series 56




| Component | | Material Grade/ASTM Specification |
|---|---|---|
| 1 | Valve Body | 316 Stainless Steel/ A479 |
| 2 | Poppet | Fluorocarbon FKM Bonded 316 Stainless Steel/A479 |
| 3 | Disc Spring | Hastelloy X-750/B637 |
| 4 | Poppet Retaining Ring | 316 Stainless Steel/ A240 |

## Size

Series 51



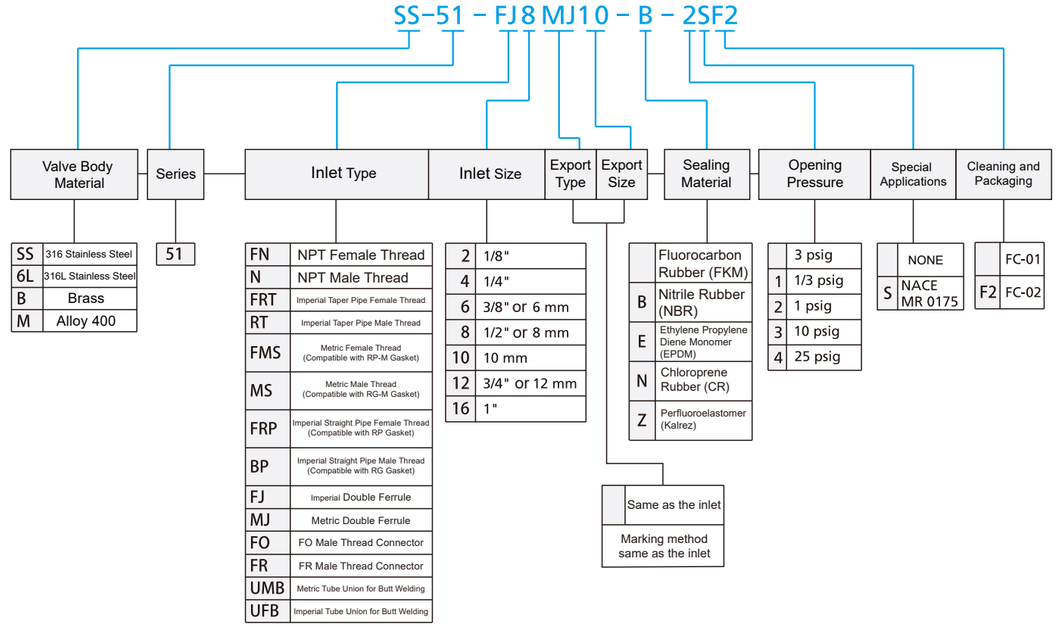

| Basic Ordering Information | Port types and sizes | | Cv | Size, in. (mm) | |
|---|---|---|---|---|---|
| | Inlet | Exit | | A | B |
| □□-51-FJ2- | 1/8” E-JOE | 1/8” E-JOE | 0.10 | 2.14 (54.3) | 5/8 (15.9) |
| □□-51-FJ4- | 1/4” E-JOE | 1/4” E-JOE | 0.47 | 2.35 (59.7) | |
| □□-51-FJ6- | 3/8” E-JOE | 3/8” E-JOE | 1.47 | 3.17 (80.5) | 7/8 (22.2) |
| □□-51-FJ8- | 1/2” E-JOE | 1/2” E-JOE | 1.68 | 3.42 (86.9) | |
| □□-51-FJ12- | 3/4” E-JOE | 3/4” E-JOE | 4.48 | 4.32 (110.0) | 1 1/4 (31.8) |
| □□-51-FJ16- | 1” E-JOE | 1” E-JOE | | 4.74 (120.0) | 1 3/8 (35.0) |
| □□-51-MJ6- | 6 mm E-JOE | 6 mm E-JOE | 0.47 | 2.36 (59.9) | 5/8 (15.9) |
| □□-51-MJ10- | 10 mm E-JOE | 10 mm E-JOE | 1.68 | 3.32 (84.3) | 7/8 (22.2) |
| □□-51-MJ12- | 12 mm E-JOE | 12 mm E-JOE | | 3.42 (86.9) | |
| □□-51-FN2- | 1/8 NPT Female Thread | 1/8 NPT Female Thread | 0.10 | 1.89 (48.0) | 5/8 (15.9) |
| □□-51-FN4- | 1/4 NPT Female Thread | 1/4 NPT Female Thread | 0.47 | 2.15 (54.6) | 3/4 (19.1) |
| □□-51-FN6- | 3/8 NPT Female Thread | 3/8 NPT Female Thread | 1.47 | 2.98 (75.7) | 7/8 (22.2) |
| □□-51-FN8- | 1/2 NPT Female Thread | 1/2 NPT Female Thread | 1.68 | 3.58 (90.9) | 1 1/16 (27.0) |
| □□-51-FN12- | 3/4 NPT Female Thread | 3/4 NPT Female Thread | 4.48 | 4.08 (104.0) | 1 1/4 (31.8) |
| □□-51-FN16- | 1 NPT Female Thread | 1 NPT Female Thread | | 4.84 (123.0) | 1 5/8 (41.3) |
| □□-51-N2- | 1/8 NPT Male Thread | 1/8 NPT Male Thread | 0.10 | 1.71 (43.4) | 5/8 (15.9) |
| □□-51-N4- | 1/4 NPT Male Thread | 1/4 NPT Male Thread | 0.47 | 2.09 (53.1) | |
| □□-51-N6- | 3/8 NPT Male Thread | 3/8 NPT Male Thread | 1.47 | 2.78 (70.6) | 7/8 (22.2) |
| □□-51-N8- | 1/2 NPT Male Thread | 1/2 NPT Male Thread | 1.68 | 3.16 (80.3) | |
| □□-51-N12- | 3/4 NPT Male Thread | 3/4 NPT Male Thread | 4.48 | 4.08 (104.0) | 1 1/4 (31.8) |
| □□-51-N16- | 1 NPT Male Thread | 1 NPT Male Thread | | 4.52 (115.0) | 1 5/8 (41.3) |
| □□-51-FR4- | 1/4” FR Male Thread | 1/4” FR Male Thread | 0.47 | 2.21 (56.1) | 5/8 (15.9) |
| □□-51-FR8- | 1/2” FR Male Thread | 1/2” FR Male Thread | 1.68 | 3.56 (90.4) | 15/16 (23.8) |
| □□-51-FR12- | 3/4” FR Male Thread | 3/4” FR Male Thread | 4.48 | 4.64 (118.0) | 1 5/8 (41.3) |
| □□-51-FR16- | 1” FR Male Thread | 1” FR Male Thread | | 4.76 (121.0) | |





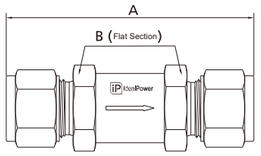


## Model Description




1. Standard Regular Pitch for Metric Threads:
   M10 or below: 1 mm
   M12 to M24: 1.5 mm
   M27 or above: 2 mm
   The standard pitch can be omitted in the ordering information. Special pitches must be specified in the order.
2. For Oxygen-Rich Environments or Hazardous Media: Please contact an authorized Ideal Power agent.
3. Cleaning and Packaging:
   FC-01: Standard cleaning and packaging for general industrial use.
   FC-02: Special cleaning and packaging for immersion system components, which must meet ASTM G93C grade requirements.
4. Material and Specifications in the "Selection Guide:
   The materials listed are general-purpose materials, and the fitting types and sizes are standard specifications.
   For other requirements, please contact Ideal Power or an authorized agent.
5. Reducing Pressure Fluctuation, Vibration, or Pulsation:
   To minimize the risk of O-ring movement within the system due to pressure fluctuations, vibration, or pulsation, the 51 series check valves can be equipped with PTFE-coated 316 stainless steel inlet washers. For specific selection, please contact an authorized Ideal Power agent.
6. Check Valve Design:
   The check valve is designed solely for one-way flow control and must not be used as a safety relief device.
7. Initial Opening Pressure:
   If a check valve has not been opened for a period of time, its initial opening pressure may be higher than the set opening pressure.

## Series 52




| Basic Ordering Information | Port types and sizes | | Pressure rating at 37°C (100°F) in bar (psig) | Cv | Size, in. (mm) | |
|---|---|---|---|---|---|---|
| | Inlet | Exit | | | A | B |
| □□-52-FJ2- | 1/8” E-JOE | 1/8” E-JOE | 414 (6000) | 0.67 | 2.27 (57.7) | 11/16 (17.5) |
| □□-52-FJ4- | 1/4” E-JOE | 1/4” E-JOE | | | 2.43 (61.7) | |
| □□-52-FJ6- | 3/8” E-JOE | 3/8” E-JOE | | 1.8 | 2.75 (69.9) | 1 (25.4) |
| □□-52-FJ8- | 1/2” E-JOE | 1/2” E-JOE | | | 2.96 (75.2) | |
| □□-52-FJ12- | 3/4” E-JOE | 3/4” E-JOE | 344 (5000) | 4.7 | 3.52 (89.4) | 1 5/8 (41.3) |
| □□-52-FJ16- | 1” E-JOE | 1” E-JOE | 323 (4700) | | 3.88 (98.6) | |
| □□-52-MJ6- | 6 mm E-JOE | 6 mm E-JOE | 414 (6000) | 0.67 | 2.43 (61.7) | 11/16 (17.5) |
| □□-52-MJ8- | 8 mm E-JOE | 8 mm E-JOE | | 1.8 | 2.70 (68.6) | 1 (25.4) |
| □□-52-MJ10- | 10 mm E-JOE | 10 mm E-JOE | | | 2.80 (71.1) | |
| □□-52-MJ12- | 12 mm E-JOE | 12 mm E-JOE | | | 2.96 (75.2) | |
| □□-52-MJ22- | 22 mm E-JOE | 22 mm E-JOE | 337 (4900) | 4.7 | 3.48 (88.4) | 1 5/8 (41.3) |
| □□-52-MJ25- | 25 mm E-JOE | 25 mm E-JOE | 316 (4600) | | 3.88 (98.6) | |
| □□-52-FN4- | 1/4 NPT Female Thread | 1/4 NPT Female Thread | 414 (6000) | 0.67 | 2.13 (54.1) | 11/16 (17.5) |
| □□-52-FN6- | 3/8 NPT Female Thread | 3/8 NPT Female Thread | 365 (5300) | 1.8 | 2.55 (64.8) | 1(25.4) |
| □□-52-FN8- | 1/2 NPT Female Thread | 1/2 NPT Female Thread | 337 (4900) | | 3.03 (77.0) | 1 1/16 (27.0) |
| □□-52-FN12- | 3/4 NPT Female Thread | 3/4 NPT Female Thread | 316 (4600) | 4.7 | 3.23 (82.0) | 1 5/8 (41.3) |
| □□-52-FN16- | 1 NPT Female Thread | 1 NPT Female Thread | 303 (4400) | | 3.83 (97.3) | |
| □□-52-N2- | 1/8 NPT Male Thread | 1/8 NPT Male Thread | 414 (6000) | 0.67 | 1.79 (45.4) | 11/16 (17.5) |
| □□-52-N4- | 1/4 NPT Male Thread | 1/4 NPT Male Thread | | | 2.17 (55.1) | |
| □□-52-N6- | 3/8 NPT Male Thread | 3/8 NPT Male Thread | | 1.8 | 2.36 (59.9) | 1 (25.4) |
| □□-52-N8- | 1/2 NPT Male Thread | 1/2 NPT Male Thread | | | 2.73 (69.3) | |
| □□-52-N12- | 3/4 NPT Male Thread | 3/4 NPT Male Thread | 344 (5000) | 4.7 | 3.29 (83.6) | 1 5/8 (41.3) |
| □□-52-N16- | 1 NPT Male Thread | 1 NPT Male Thread | | | 3.67 (93.2) | |
| □□-52-FRT4- | 1/4" Tapered Female Thread | 1/4" Tapered Female Thread | 414 (6000) | 0.67 | 2.28 (57.9) | 11/16 (17.5) |
| □□-52-FRT8- | 1/2" Tapered Female Thread | 1/2" Tapered Female Thread | 351 (5100) | 1.8 | 3.29 (83.6) | 1 1/16 (27.0) |
| □□-52-FRT12- | 3/4" Tapered Female Thread | 3/4" Tapered Female Thread | 330 (4800) | 4.7 | 3.55 (90.2) | 1 5/8 (41.3) |
| □□-52-FRT16- | 1" Tapered Female Thread | 1" Tapered Female Thread | 303 (4400) | | 3.83 (97.3) | |
| □□-52-RT4- | 1/4" Tapered Male Thread | 1/4" Tapered Male Thread | 414 (6000) | 0.67 | 2.17 (55.1) | 11/16 (17.5) |
| □□-52-RT8- | 1/2" Tapered Male Thread | 1/2" Tapered Male Thread | | 1.8 | 2.73 (69.3) | 1 (25.4) |
| □□-52-RT12- | 3/4" Tapered Male Thread | 3/4" Tapered Male Thread | 344 (5000) | 4.7 | 3.35 (85.1) | 1 5/8 (41.3) |
| □□-52-RT16- | 1" Tapered Male Thread | 1" Tapered Male Thread | | | 3.67 (93.2) | |
| □□-52-FR4- | 1/4” FR Male Thread | 1/4” FR Male Thread | 414 (6000) | 0.67 | 2.28 (57.9) | 11/16 (17.5) |
| □□-52-FR8- | 1/2” FR Male Thread | 1/2” FR Male Thread | 296 (4300) | 1.8 | 2.73 (69.3) | 1 (25.4) |
| □□-52-FR12- | 3/4” FR Male Thread | 3/4” FR Male Thread | 254 (3700) | 4.7 | 3.78 (96.0) | 1 5/8 (41.3) |
| □□-52-FO4- | 1/4” FO Male Thread | 1/4” FO Male Thread | 414 (6000) | 0.67 | 1.98 (50.3) | 11/16 (17.5) |
| □□-52-FO8- | 1/2” FO Male Thread | 1/2” FO Male Thread | | 1.8 | 2.35 (59.7) | 1 (25.4) |
| □□-52-FO12- | 3/4” FO Male Thread | 3/4” FO Male Thread | 344 (5000) | 4.7 | 2.90 (73.7) | 1 5/8 (41.3) |
| □□-52-FO16- | 1” FO Male Thread | 1” FO Male Thread | | | | |







## Model Description

SS-52 - FJ8 MJ10 - B - 2SF2

| Valve Body Material | |
|---|---|
| SS | 316 Stainless Steel |
| 6L | 316L Stainless Steel |
| M | Alloy 400 |

| Series |
|---|
| 52 |

| Inlet Type | |
|---|---|
| FN | NPT Female Thread |
| N | NPT Male Thread |
| FRT | Imperial Taper Pipe Female Thread |
| RT | Imperial Taper Pipe Male Thread |
| FMS | Metric Female Thread (Compatible with RP-M Gasket) |
| MS | Metric Male Thread (Compatible with RG-M Gasket) |
| FRP | Imperial Straight Pipe Female Thread (Compatible with RP Gasket) |
| BP | Imperial Straight Pipe Male Thread (Compatible with RG Gasket) |
| FJ | Imperial Double Ferrule |
| MJ | Metric Double Ferrule |
| FO | FO Male Thread Connector |
| FR | FR Male Thread Connector |
| UMB | Metric Tube Union for Butt Welding |
| UFB | Imperial Tube Union for Butt Welding |

| Inlet Size | |
|---|---|
| 2 | 1/8" |
| 4 | 1/4" |
| 6 | 3/8" or 6 mm |
| 8 | 1/2" or 8 mm |
| 10 | 10 mm |
| 12 | 3/4" or 12 mm |
| 16 | 1" |
| 22 | 22 mm or M22 x 1.5 |
| 25 | 25 mm |

| Export Type |
|---|
| |

| Export Size |
|---|
| |

| Sealing Material | |
|---|---|
| | Fluorocarbon Rubber (FKM) |
| B | Nitrile Rubber (NBR) |
| E | Ethylene Propylene Diene Monomer (EPDM) |
| N | Chloroprene Rubber (CR) |

| Opening Pressure | |
|---|---|
| | 3 psig |
| 1 | 1/3 psig |
| 2 | 1 psig |
| 3 | 10 psig |
| 4 | 25 psig |

| Special Applications | |
|---|---|
| | NONE |
| R110 | ECE R 110 |
| S | NACE MR 0175 |

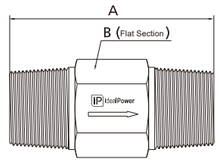
| Cleaning and Packaging | |
|---|---|
| | FC-01 |
| F2 | FC-02 |

| | |
|---|---|
| | Same as the inlet |

Marking method same as the inlet

1. Standard Metric Thread Pitch
   M10 and below: 1 mm
   M12 to M24: 1.5 mm
   M27 and above: 2 mm
   The standard pitch can be omitted in the order information. For special pitches, it must be specified in the order.
2. Oxygen-Rich Environments or Hazardous Media,Please contact an authorized Ideal Power distributor.
3. Cleaning and Packaging
   FC-01: Standard cleaning and packaging for general industrial use.
   FC-02: Special cleaning and packaging for immersion system components, meeting ASTM G93C grade requirements.
4. “Selection Notes”The materials listed in the "Selection Notes" are general-purpose materials, and the fitting types and sizes are standard specifications. For other requirements, please contact an authorized Ideal Power distributor.
5. Design of Check Valves, Check valves are designed solely for one-way flow control and must not be used as safety relief devices.
6. Initial Opening Pressure of Check Valves
   If a check valve has not been opened for a period of time, its initial opening pressure may be higher than the set opening pressure.

## Series 53




| Basic Ordering Information | Port types and sizes | | Cv | Size, in. (mm) | |
|---|---|---|---|---|---|
| | Inlet | Exit | | A | B |
| □□-53-FN4- | 1/4 Female Thread | 1/4 Female Thread | 0.35 | 2.41 (61.2) | 3/4 (19.1) |
| □□-53-FN8- | 1/2 Female Thread | 1/2 Female Thread | 1.20 | 3.71 (94.2) | 1 1/16 (27.0) |
| □□-53-N4- | 1/4 Male Thread | 1/4 Male Thread | 0.35 | 1.62 (41.1) | 9/16 (14.3) |
| □□-53-N8- | 1/2 Male Thread | 1/2 Male Thread | 1.20 | 2.28 (57.9) | 7/8 (22.2) |
| □□-53-FRT4- | 1/4 Tapered Female Thread | 1/4 Tapered Female Thread | 0.35 | 2.54 (64.5) | 3/4 (19.1) |
| □□-53-RT4- | 1/4 Tapered Male Thread | 1/4 Tapered Male Thread | | 1.62 (41.1) | 9/16 (14.3) |

## Model Description

SS-53 - FN 8 N 8 - B - 2SF2

| Valve Body Material | Series | Inlet Type | Inlet Size | Export Type | Export Size | Sealing Material | Opening Pressure | Special Applications | Cleaning and Packaging |
|---|---|---|---|---|---|---|---|---|---|
| SS 316 Stainless Steel | 53 | FN NPT Female Thread | 2 1/8" | Same as the inlet | | Fluorocarbon Rubber (FKM) | 3 psig | NONE | FC-01 |
| 6L 316L Stainless Steel | | N NPT Male Thread | 4 1/4" | Marking method same as the inlet | | B Nitrile Rubber (NBR) | 1 1/3 psig | S NACE MR 0175 | F2 FC-02 |
| B Brass | | FRT Imperial Taper Pipe Female Thread | 6 3/8" | | | E Ethylene Propylene Diene Monomer (EPDM) | 2 1 psig | | |
| M Alloy 400 | | RT Imperial Taper Pipe Male Thread | 8 1/2" | | | N Chloroprene Rubber (CR) | 3 10 psig | | |
| | | | | | | Z Perfluoroelastomer (Kalrez) | 4 25 psig | | |

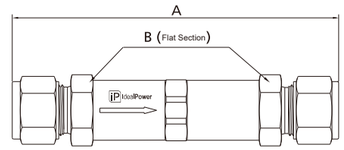
1. For oxygen-enriched environments or hazardous media, please contact an authorized Ideal Power distributor.
2. Cleaning and Packaging:
   FC-01: Standard cleaning and packaging for general industrial use.
   FC-02: Special cleaning and packaging for immersion system components, meeting ASTM G93C grade requirements.
3. The materials listed in the "Selection Instructions" are general materials, and the connector types and sizes are conventional specifications.
   For other requirements, please contact an authorized Ideal Power distributor.
4. The design of the check valve is solely for one-way flow control and should not be used as a safety relief device.
5. If the check valve has not been opened for a period of time, its initial opening pressure may be higher than the set opening pressure.







## Series 54




| Basic Ordering Information | Port types and sizes | | Cv | Size, in. (mm) | |
|---|---|---|---|---|---|
| | Inlet | Exit | | A | B |
| □□-54-FJ4- | 1/4" E-JOE | 1/4" E-JOE | 0.37 | 3.23 (82.0) | 5/8 (15.9) |
| □□-54-MJ6- | 6 mm E-JOE | 6 mm E-JOE | | | |
| □□-54-MJ8- | 8 mm E-JOE | 8 mm E-JOE | | 3.32 (84.3) | |
| □□-54-FR4- | 1/4" FR Male Thread | 1/4" FR Male Thread | | 3.09 (78.5) | |

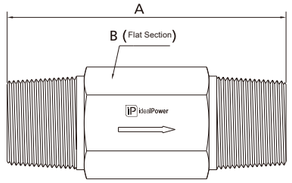
## Model Description

SS-54 - FJ8 MJ10 - B - 5SF2

| Valve Body Material | Series | Inlet Type | Inlet Size | Export Type | Export Size | Sealing Material | Opening Pressure | Special Applications | Cleaning and Packaging |
|---|---|---|---|---|---|---|---|---|---|
| SS 316 Stainless Steel | 54 | FJ Imperial Double Ferrule | 4 1/4" | Same as the inlet | | Fluorocarbon Rubber (FKM) | 3 ~ 50 psig | NONE | FC-01 |
| 6L 316L Stainless Steel | | MJ Metric Double Ferrule | 6 6 mm | Marking method same as the inlet | | B Nitrile Rubber (NBR) | 5 50 ~ 150 psig | S NACE MR 0175 | F2 FC-02 |
| B Brass | | FR FR Male Threaded Connector | 8 8 mm | | | E Ethylene Propylene Diene Monomer (EPDM) | 6 150 ~ 350 psig | | |
| M Alloy 400 | | | | | | N Chloroprene Rubber (CR) | 7 350 ~ 600 psig | | |
| | | | | | | Z Perfluoroelastomer (Kalrez) | | | |

1. For oxygen-rich environments or hazardous media, please contact Ideal Power or authorized agents.
2. Cleaning and Packaging:
   FC-01: Standard cleaning and packaging for general industrial use.
   FC-02: Special cleaning and packaging for wetted system components, meeting ASTM G93 Level C requirements.
3. The materials listed in the "Selection Guide" are general-purpose materials, and the fitting types and sizes are standard specifications.
   For other requirements, please contact Ideal Power or authorized agents.
4. The design of the check valve is solely for one-way flow control and should not be used as a safety relief device.
5. If the check valve has not been opened for a period of time, its initial opening pressure may be higher than the set opening pressure.

## Series 531




| Basic Ordering Information | Port types and sizes | | Cv | Size, in. (mm) | |
|---|---|---|---|---|---|
| | Inlet | Exit | | A | B |
| □□-531-FN4- | 1/4 NPT Female Thread | 1/4 NPT Female Thread | 0.35 | 2.98 (75.7) | 3/4 (19.1) |
| □□-531-N4- | 1/2 NPT Male Thread | 1/2 NPT Male Thread | 0.35 | 1.62 (41.1) | 9/16 (14.3) |
| □□-531-N8- | 1/2 Male Thread | 1/2 Male Thread | 1.20 | 2.56 (65.0) | 7/8 (22.2) |
| □□-531-RT4- | 1/4 Tapered Male Thread | 1/4 Tapered Male Thread | 0.35 | 1.62 (41.1) | 9/16 (14.3) |
| □□-531-RT8- | 1/2 Tapered Male Thread | 1/2 Tapered Male Thread | 1.20 | 2.56 (65.0) | 7/8 (22.2) |

## Model Description

SS - 531- FJ8 MJ8 - B - 5SF2

| Valve Body Material | Series | Inlet Type | Inlet Size | Export Type | Export Size | Sealing Material | Opening Pressure | Special Applications | Cleaning and Packaging |
|---|---|---|---|---|---|---|---|---|---|
| SS 316 Stainless Steel | 531 | FN NPT Female Thread | 4 1/4" | Same as the inlet | Same as the inlet | Fluorocarbon Rubber (FKM) | 3 ~ 50 psig | NONE | FC-01 |
| 6L 316L Stainless Steel | | N NPT Male Thread | 8 1/2" | | Marking method same as the inlet | B Nitrile Rubber (NBR) | 5 50 ~ 150 psig | S NACE MR 0175 | F2 FC-02 |
| B Brass | | RT Imperial Taper Pipe Male Thread | | | | E Ethylene Propylene Diene Monomer (EPDM) | 6 150 ~ 350 psig | | |
| M Alloy 400 | | | | | | N Chloroprene Rubber (CR) | 7 350 ~ 600 psig | | |
| | | | | | | Z Perfluoroelastomer (Kalrez) | | | |

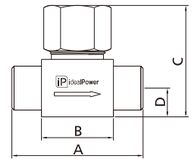
1. For oxygen-rich environments or hazardous media, please contact an authorized Ideal Power agent.
2. Cleaning and Packaging:
   FC-01: Standard cleaning and packaging for general industrial use.
   FC-02: Special cleaning and packaging for immersion system components, which must meet ASTM G93C grade requirements.
   The materials listed in the "Selection Guide" are general materials, and the connector types and sizes are standard specifications.
   For other requirements, please contact an authorized Ideal Power agent.
3. The design of the check valve is solely for one-way flow control and should not be used as a safety relief device.
4. If a check valve has not been opened for a period of time, its initial opening pressure may be higher than the set opening pressure.







## Series 55




| Basic Ordering Information | Port types and sizes | | Cv | Size, in. (mm) | | | |
|---|---|---|---|---|---|---|---|
| | Inlet | Exit | | A | B | C | D |
| □□-55-FJ4 | 1/4" E-JOE | 1/4" E-JOE | 0.30 | 2.40 (61.0) | 1.01 (25.7) | 1.47 (37.3) | 0.39 (9.9) |
| □□-55-FJ6 | 3/8" E-JOE | 3/8" E-JOE | 0.64 | 2.83 (71.9) | 1.31 (33.3) | 1.85 (47.0) | 0.50 (12.7) |
| □□-55-FJ8 | 1/2" E-JOE | 1/2" E-JOE | 2.20 | 3.92 (99.6) | 2.19 (55.6) | 2.44 (62.0) | 0.62 (15.7) |
| □□-55-FJ12 | 3/4" E-JOE | 3/4" E-JOE | | | | | |
| □□-55-MJ6 | 6 mm E-JOE | 6 mm E-JOE | 0.30 | 2.40 (61.0) | 1.01 (25.7) | 1.47 (37.3) | 0.39 (9.9) |
| □□-55-FN2 | 1/8 NPT Female Thread | 1/8 NPT Female Thread | | 2.00 (50.8) | 1.00 (25.4) | 1.47 (37.3) | 0.39 (9.9) |
| □□-55-FN4 | 1/4 NPT Female Thread | 1/4 NPT Female Thread | 0.64 | 2.25 (57.2) | 1.25 (31.8) | 1.85 (47.0) | 0.50 (12.7) |
| □□-55-FN6 | 3/8 NPT Female Thread | 3/8 NPT Female Thread | 2.20 | 3.12 (79.2) | 1.86 (47.2) | 2.44 (62.0) | 0.62 (15.7) |
| □□-55-FN8 | 1/2 NPT Female Thread | 1/2 NPT Female Thread | | | | | |
| □□-55-TS4 | 1/4" imperial Tube socket weld | 1/4" imperial Tube socket weld | 0.30 | 1.81 (46.0) | 0.90 (22.9) | 1.47 (37.3) | 0.39 (9.9) |
| □□-55-TS6 | 3/8" imperial Tube socket weld | 3/8" imperial Tube socket weld | 0.64 | 2.25 (57.2) | 1.25 (31.8) | 1.85 (47.0) | 0.50 (12.7) |
| □□-55-TS8 | 1/2" imperial Tube socket weld | 1/2" inch imperial Tube socket weld | 2.20 | 3.13 (79.5) | 1.88 (47.8) | 2.44 (47.0) | 0.62 (15.7) |
| □□-55-PB4 | 1/4" Pipe butt weld | 1/4" Pipe butt weld | 0.30 | 1.81 (46.0) | 0.90 (22.9) | 1.47 (37.3) | 0.39 (9.9) |
| □□-55-PB6 | 3/8" Pipe butt weld | 3/8" Pipe butt weld | 0.64 | 2.25 (57.2) | 1.25 (31.8) | 1.85 (47.0) | 0.50 (12.7) |
| □□-55-PB8 | 1/2" Pipe butt weld | 1/2" Pipe butt weld | 2.20 | 3.13 (79.5) | 1.88 (47.8) | 2.44 (62.0) | 0.62 (15.7) |

## Model Description

SS－55－FJ8　MJ10－SF2

| Valve Body Material | Series | Inlet Type | Inlet Size | Export Type | Export Size | Special Applications | Cleaning and Packaging |
|---|---|---|---|---|---|---|---|
| SS 316 Stainless Steel | 55 | FN NPT female thread<br>N NPT male thread<br>FRT Imperial Standard Taper Pipe female thread<br>RT Imperial Standard Taper Pipe Thread<br>FMS Metric female thread (compatible with RP-M gasket)<br>MS Metric male thread (compatible with RG-M gasket)<br>FRP BSPP female thread (compatible with RP gasket)<br>BP BSPP male thread (compatible with RG gasket)<br>TS Imperial Tube Socket Weld<br>MTS Metric Tube Socket Weld<br>TB Imperial Tube Butt Weld<br>MTB Metric Tube Butt Weld<br>PS Pipe Socket Weld<br>PB Pipe Butt Weld<br>FJ Imperial Double Ferrule<br>MJ Metric Double Ferrule<br>UFB Imperial Tube Union Butt Weld<br>UMB Metric Tube Union Butt Weld<br>FO FO Male Thread Connector<br>FR FR Male Thread Connector | 2 1/8"<br>4 1/4"<br>6 3/8" or 6 mm<br>8 1/2"<br>12 3/4" | Same as the inlet<br>Marking method same as the inlet | | NONE<br>S NACE MR 0175 | FC-01<br>F2 FC-02 |

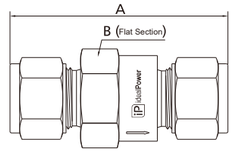
1. For oxygen-rich environments or hazardous media, please contact an authorized Ideal Power agent.
2. Cleaning and Packaging:
   FC-01: Standard cleaning and packaging for general industrial use.
   FC-02: Special cleaning and packaging for immersion system components, which must meet ASTM G93C grade requirements.
   The materials listed in the "Selection Guide" are general materials, and the connector types and sizes are standard specifications.
   For other requirements, please contact an authorized Ideal Power agent.
3. The design of the check valve is solely for one-way flow control and should not be used as a safety relief device.
4. If a check valve has not been opened for a period of time, its initial opening pressure may be higher than the set opening pressure.







## Series 55




| Basic Ordering Information | Port types and sizes | | Cv | Size, in. (mm) | |
|---|---|---|---|---|---|
| | Inlet | Exit | | A | B |
| □□-56-TB4 | 1/4" Imperial Tube Butt Weld | 1/4" Imperial Tube Butt Weld | 0.55 | 1.24 (31.5) | 7/8 (22.2) |
| □□-56-TB6 | 3/8" Imperial Tube Butt Weld | 3/8" Imperial Tube Butt Weld | 0.70 | | |
| □□-56-TB8 | 1/2" Imperial Tube Butt Weld | 1/2" Imperial Tube Butt Weld | | | |
| □□-56-MTB6 | 6 mm Metric Tube Butt Weld | 6 mm Metric Tube Butt Weld | 0.55 | | |
| □□-56-FR4 | 1/4" FR Male Thread | 1/4" FR Male Thread | 0.70 | 1.80 (45.7) | |
| □□-56-FR8 | 1/2" FR Male Thread | 1/2" FR Male Thread | | 2.06 (52.3) | 1 (25.4) |
| □□-56-FJ4 | 1/4" E-JOE | 1/4" E-JOE | 0.55 | 1.96 (49.8) | 7/8 (22.2) |
| □□-56-MJ6 | 6 mm E-JOE | 6 mm E-JOE | | | |

## Model Description

6L-56－FJ8　MJ10－B－SF2

| Valve Body Material | Series | Inlet Type | Inlet Size | Export Type | Export Size | Sealing Material | Special Applications | Cleaning and Packaging |
|---|---|---|---|---|---|---|---|---|
| 6L 316 Stainless Steel | 56 | FJ Imperial Double Ferrule<br>MJ Metric Double Ferrule<br>FFR FR Female Thread Connector<br>FR FR Male Thread Connector<br>RFR FR Male Thread Connector<br>TB Imperial Tube Union Butt Weld<br>MTB Metric Tube Union Butt Weld | 2 1/8"<br>4 1/4"<br>6 3/8" or 6 mm<br>8 1/2" or 8 mm | Same as the inlet<br>Marking method same as the inlet | | Fluorocarbon Rubber (FKM)<br>B Nitrile Rubber (NBR)<br>E Ethylene Propylene Diene Monomer (EPDM) | NONE<br>S NACE MR 0175 | FC-01<br>F2 FC-02<br>F3 FC-03 |

1. Oxygen-rich environments or hazardous media, please contact Ideal Power authorized agents.
2. Cleaning and Packaging:
   FC-01: Standard cleaning and packaging for general industrial use.
   FC-02: Components of the wetted system have an average roughness of 0.5μm after machining and polishing, and the products undergo special cleaning and packaging, meeting ASTM G93C grade requirements.
3. FC-03: Components of the wetted system have an average roughness of 0.2μm after machining and electrolytic polishing, and the products undergo ultra-high purity cleaning and packaging.
4. The materials listed in the selection guide are general-purpose materials, and the connector types and sizes are standard specifications. For other requirements, please contact Ideal Power authorized agents.
5. If the check valve has not been opened for a period of time, its initial opening pressure may be higher than the set opening pressure.

# Proportional Relief Valves

## Series 61/611 and 612

### Introduction

The proportional relief valve opens when the system pressure reaches the set pressure, and closes when the system pressure falls below the set pressure.

## Characteristics

◎ Set Pressure:
The 61 Series offers 7 types of springs to choose from, expanding the range of set pressure options.
3.4 to 414 bar @ 20°C (50 to 6000 psig @ 70°F)
611 Series: 0.68 to 15.5 bar @ 20°C (10 to 225 psig @ 70°F)
612 Series: 3 types of springs are available, expanding the range of set pressure options
3.4 to 103 bar @ 20°C (50 to 1500 psig @ 70°F)

◎ The maximum outlet pressure is:
Series 61: 103 bar (1500 psig)
Series 611: 15.5 bar (225 psig)
Series 612: 103 bar (1500 psig)

◎ Internal Diameter:
Series 61: 3.6 mm (0.14")
Series 611: 4.8 mm (0.19"), 6.4 mm (0.25")
Series 612: 6.4 mm (0.25")

◎ Back Pressure
Back pressure is the pressure at the outlet end of the system valve, which increases the set pressure of the proportional relief valve.
Series 61 and 612: The balanced valve stem design eliminates the effect of back pressure on the set pressure.
Series 611: The preset set pressure = required set pressure - 0.8 × system back pressure.

◎ Operating Temperature: -40°C to 148°C (-40°F to 300°F)
◎ Multiple termination options
◎ Suitable for application with gases or liquids
◎ Adjustable valve cap cover, capable of adjusting the set pressure
◎ Pass a lead-sealed metal wire through the anti-loosening wire hole to lock the proportional relief valve, effectively maintaining the set pressure
◎ A variety of sealing material options are available
◎ The label indicates the range of the set pressure

## Application

When the pressure increases, the proportional relief valve gradually opens. Therefore, they do not have a capacity rating at a given pressure rise (accumulation) and are not calibrated according to ASME or any other standard.

⚠ Certain system applications require proportional relief valves to meet specific safety criteria. Therefore, system designers and users must determine when to apply these safety criteria and whether these proportional relief valves comply with the safety standards.

⚠ Ideal Power proportional relief valves must never be used as safety relief devices as stipulated by the ASME Boiler and Pressure Vessel Code.

⚠ Ideal Power proportional relief valves are not defined as "safety accessories" under the Pressure Equipment Directive 2014/68/EU.





## Pressure-Temperature Rating

| Series | 61 | | | | | 611 | | | | 612 | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Maximum Inlet ① Pressure | 6000 psig (413 bar), Up to during relief 8000 psig (551 bar) | | | | | 6000 psig (413 bar) | | | | 300 psig (20.6 bar) | | | | |
| Maximum Allowable ① Outlet Pressure | 1500 psig (103 bar) | | | | | 1500 psig (103 bar) | | | | 225 psig (15.5bar) | | | | |
| Set Pressure | 50 to 6000 psig (3.4 to 413 bar) | | | | | 50 to 1500 psig (3.4 to 105 bar) | | | | 10 to 225 psig (0.7 to 15.5 bar) | | | | |
| Sealing Material | Fluorocarbon Rubber | Nitrile Rubber | Chloroprene Rubber | Ethylene Propylene Diene Monomer Rubber | Perfluoroelastomer | Fluorocarbon Rubber | Nitrile Rubber | Chloroprene Rubber | Ethylene Propylene Diene Monomer Rubber | Perfluoroelastomer | Nitrile Rubber | Chloroprene Rubber | Ethylene Propylene Diene Monomer Rubber | Perfluoroelastomer |
| Temperature, °c (°F) | Maximum Set Pressure, psig (bar) | | | | | | | | | | | | | |
| −40 (−40) | – | 6000 (413) | – | 6000 (413) | – | – | 1500 (103) | 1500 (103) | 1500 (103) | – | – | – | 225 (15.5) | – |
| −34 (−30) | | | | | | | | | | | | | | |
| −23 (−10) | | | 6000 (413) | | | | | | | | | | | |
| −17 (0) | | | | | | | | | | | | | | |
| −12 (10) | | | | | | | | | | | | | | |
| −4 (25) | 6000 (413) | | | | 6000 (413) | 1500 (103) | | 1500 (103) | | 225 (15.5) | 225 (15.5) | 225 (15.5) | | 225 (15.5) |
| −1 (30) | | | | | | | | | | | | | | |
| 4 (40) | | | | | | | | | | | | | | |
| 10 (50) | | | | | | | | | | | | | | |
| 20 (70) | | | | | | | | | | | | | | |
| 65 (150) | 5580 (384) | 5580 (384) | 3000 (207) | 5580 (384) | 5580 (384) | | | | | | | | | |
| 93 (200) | 5160 (355) | 5160 (355) | 1500 (103) | 5160 (355) | 5160 (355) | 700 (48) | | 700 (48) | | | | | | |
| 121 (250) | 4910 (338) | 4910 (338) | – | 4910 (338) | 4910 (338) | | | | | | | | | |
| 135 (275) | – | – | – | – | 2500 (172) | | | – | – | | | | | |
| 148 (300) | | | | | | | – | | | | | | | |

① The outlet pressure must not exceed the inlet pressure.

### Set Pressure and Reseating Pressure

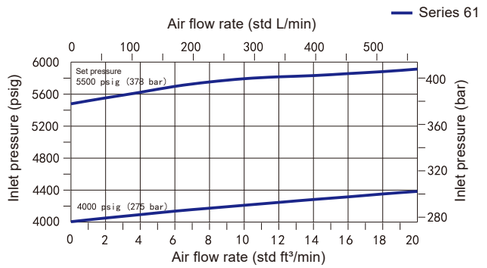
Set Pressure: The set pressure is the upstream pressure when fluid first begins to flow.
At room temperature, after the initial unloading is completed, the set pressure of each valve is repeatable within a range of ±5%.
Between 15 to 26°C (60 to 80°F), the allowable deviation is ±3.0 psig (0.20 bar) or ±5% of the initial set pressure, whichever is greater.
Below 15°C (60°F) and above 26°C (80°F), the allowable deviation is ±6.0 psig (0.40 bar) or ±20% of the initial set pressure, whichever is greater.
Reseating Pressure: The reseating pressure is the upstream pressure when no fluid is flowing, and it is always lower than the set pressure.
Note: For valves that have been in use for a period of time, the initial unloading pressure may be higher than the set pressure.

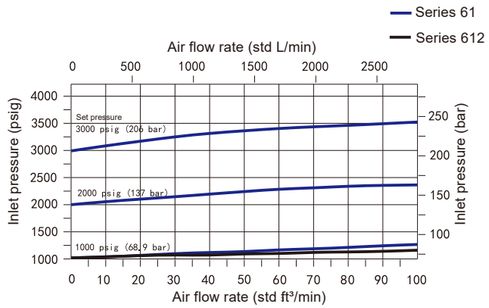
| Series | Test Set Pressure psig (bar) | The minimum resealing pressure as a percentage of the set pressure is 90% |
|---|---|---|
| 611 | 10 to 20 (0.7 to 1.3) | 50 |
| | 175 to 225 (12.0 to 15.5) | 91 |
| 61/612 | 100 to 200 (6.8 to 13.7) | 50 |
| | 850 to 1000 (58.5 to 68.9) | 85 |

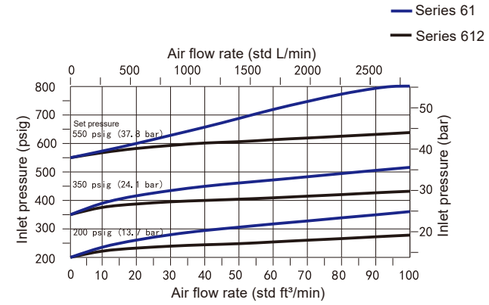
## The flow rate data at 70°F (20°C)

### Air

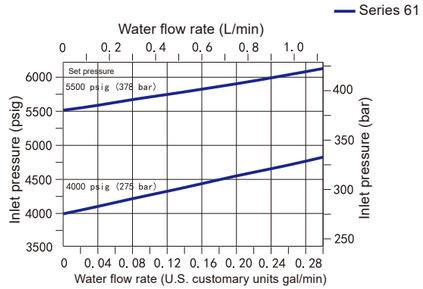
### Series 61 and 612

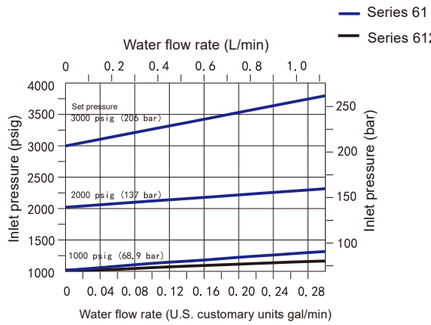


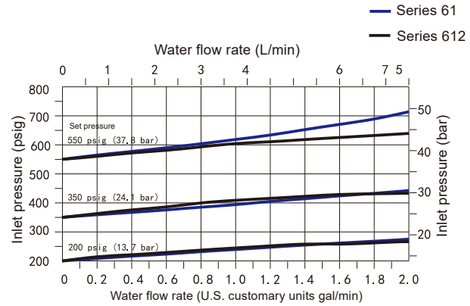



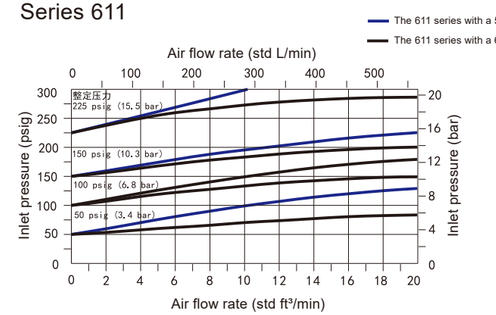

### Water

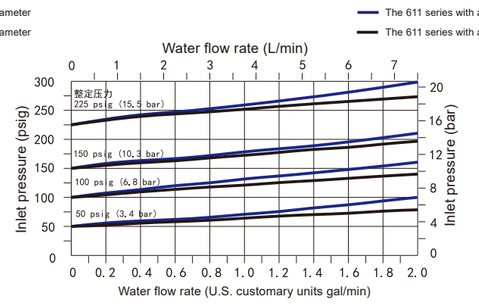



### Series 611







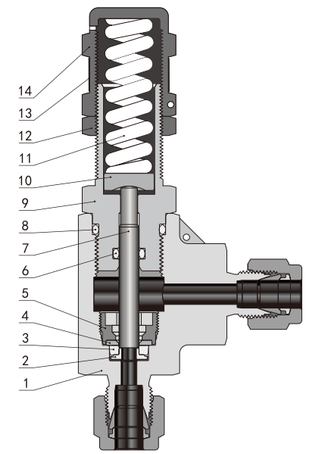



## structural materials

### Series 61

| Component | | Material Grade/ASTM Specification |
|---|---|---|
| 1 | *Valve Body* | *316 Stainless Steel/A182* |
| 2 | *Valve Seat* | *316 Stainless Steel/A479* |
| 3 | *O-ring* | *Fluorocarbon FKM* |
| 4 | Gasket | PEEK |
| 5 | *Seat Retainer* | *316 Stainless Steel/A479* |
| 6 | *O-ring* | *Fluorocarbon FKM* |
| 7 | *Valve Stem* | *316 Stainless Steel/A479* |
| 8 | *O-ring* | *Fluorocarbon FKM* |
| 9 | *Bonnet* | *316 Stainless Steel/A479* |
| 10 | Spring Support | 316 Stainless Steel/A479 |
| 11 | Spring | S17700 Stainless Steel/AMS 5678 |
| 12 | Lock Nut | 17-4PH Powder Metal |
| 13 | Label | Resin |
| 14 | Bonnet Cap | 316 Stainless Steel/A479 |

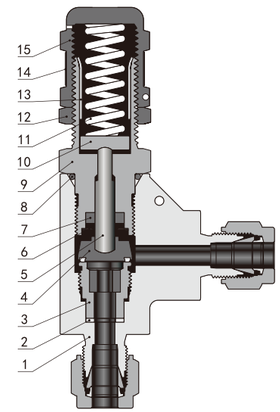
Note: Components in contact with the medium are listed in italics.
1. Lubricant: Silicone-based
2. For other materials, please contact Ideal Power.



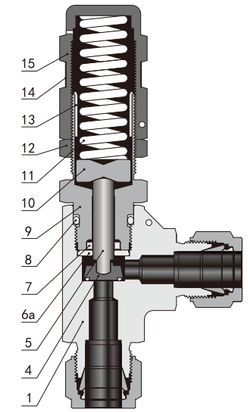

### Series 611

| Component | | Material Grade/ ASTM Specification |
|---|---|---|
| 1 | *Valve Body* | *316 Stainless Steel/A182* |
| 2 | *Gasket* | *316 Stainless Steel/A479* |
| 3 | *Valve Seat* | *316 Stainless Steel/A479* |
| 4 | *Bonding Disk* | *316 Stainless Steel/A479+ Fluorocarbon FKM* |
| 5 | *Valve Stem* | *316 Stainless Steel/A479* |
| 6 | *Retainer Ring* | *316 Stainless Steel/A479* |
| 6a | *Retaining Ring* | *316 Stainless Steel/A479* |
| 7 | *Square Seal* | *Fluorocarbon FKM* |
| 8 | *O-ring* | *Fluorocarbon FKM* |
| 9 | *Bonnet* | *316 Stainless Steel/A479* |
| 10 | Spring Support | 316 Stainless Steel/A479 |
| 11 | Spring | S17700 Stainless Steel/AMS 5678 |
| 12 | Lock Nut | 17-4PH Powdered Metal |
| 13 | Bushing | 304 Stainless Steel/A240 |
| 14 | Label | Resin |
| 15 | Bonnet Cap | 316 Stainless Steel/A479 |

Note: Components in contact with the medium are listed in italics.
1. Lubricant: Silicone-based
2. For other materials, please contact Ideal Power.




5 diameter
0. 19 in. (4.8 mm)

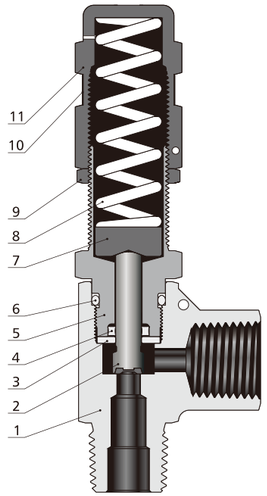



6 diameter
0. 25 in. (6. 4mm)

## 612系列

| Component | | Material Grade/ASTM Specification |
|---|---|---|
| 1 | *Valve Body* | *316 Stainless Steel/A182* |
| 2 | *Valve Stem* | *316 Stainless Steel/A479+ Fluorocarbon FKM* |
| 3 | *Retaining Ring* | *316 Stainless Steel/A479* |
| 4 | *Square Seal* | *Fluorocarbon FKM* |
| 5 | *Bonnet* | *316 Stainless Steel/A479* |
| 6 | *O-ring* | *Fluorocarbon FKM* |
| 7 | Spring Support | 316 Stainless Steel/A479 |
| 8 | Spring | S17700 Stainless Steel/AMS 5678 |
| 9 | Lock Nut | 17-4PH Powder Metal |
| 10 | Label | Resin |
| 11 | Bonnet Cap | 316 Stainless Steel/A479 |

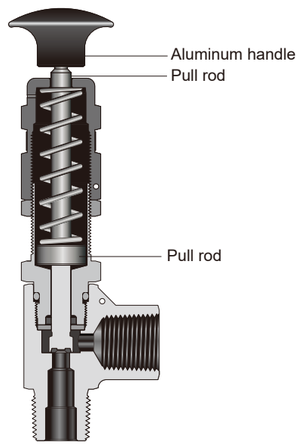
Note: Components in contact with the medium are listed in italics.
1. Lubricant: Silicone-based
2. For other materials, please contact Ideal Power.



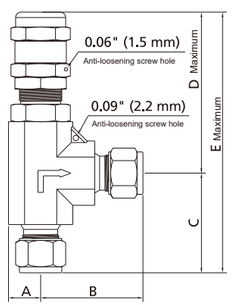

## Manual override handle

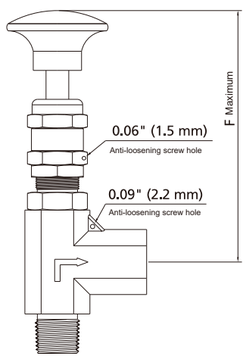
Lift the aluminum handle upward by hand to open the proportional relief valve without altering the set pressure. For use on the following valves:

61 Series - Set Pressure 50~1500 psig (3.4~103.4 bar)
611 Series - Set Pressure 10~225 psig (0.68~15.5 bar)
612 Series - Set Pressure 50~300 psig (3.4~20.7 bar)




## Series










## 61 Series

| Basic Ordering Information | Termination type and specification | | Internal diameter in.(mm) | Dimension, in. (mm) | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | Entrance | Exit | | A | B | C | D | E | F |
| □□-61-FJ4-4-□ | 1/4" E-JOE | 1/4" E-JOE | 0.14 (3.6) | 0.46 (11.9) | 1.60 (40.6) | 1.44 (36.6) | 2.70 (68.6) | 4.14 (105.2) | 3.68 (98.0) |
| □□-61-FJ6-4-□ | 3/8" E-JOE | 3/8" E-JOE | | | | | | | |
| □□-61-FJ8-4-□ | 1/2" E-JOE | 1/2" E-JOE | | 0.54 (13.7) | 1.79 (45.4) | 1.66 (42.2) | 2.72 (69.0) | 4.38 (111.2) | |
| □□-61-MJ6-4-□ | 6 mm E-JOE | 6 mm E-JOE | | 0.46 (11.9) | 1.60 (40.6) | 1.44 (36.6) | 2.70 (68.6) | 4.14 (105.2) | |
| □□-61-MJ8-4-□ | 8 mm E-JOE | 8 mm E-JOE | | | | | | | |
| □□-61-MJ12-4-□ | 12 mm E-JOE | 12 mm E-JOE | | 0.54 (13.7) | 1.83 (46.5) | 1.83 (46.5) | 2.72 (69.0) | 4.55 (115.6) | |
| □□-61-FN4-4-□ | 1/4 NPT Female Thread | 1/4 NPT Female Thread | | 0.46 (11.9) | 1.17 (29.7) | 1.38 (34.9) | 2.70 (68.6) | 4.08 (103.5) | |
| □□-61-N4-4-□ | 1/4 NPT Female Thread | 1/4 NPT Female Thread | | | 1.17 (29.7) | 1.27 (32.2) | 2.70 (68.6) | 3.96 (100.7) | |
| □□-61-FRT4-4-□ | 1/4 Imperial female taper thread | 1/4 Imperial female taper thread | | | 1.17 (29.7) | 1.38 (34.9) | 2.70 (68.6) | 4.08 (103.5) | |

## 611 Series

| Basic Ordering Information | Termination type and specification | | Internal diameter in.(mm) | Dimension, in. (mm) | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | Entrance | Exit | | A | B | C | D | E | F |
| □□-611-FJ4-5 | 1/4" E-JOE | 1/4" E-JOE | 0.19 (4.8) | 0.46 (11.9) | 1.60 (40.6) | 1.44 (36.6) | 2.70 (68.8) | 4.14 (105.0) | 3.74 (95.0) |
| □□-611-MJ6-5 | 6 mm E-JOE | 6 mm E-JOE | | | | | | | |
| □□-611-N4-5 | 1/4 NPT Female Thread | 1/4 NPT Female Thread | | | 1.17 (29.7) | 1.38 (34.9) | | 4.08 (103.5) | |
| □□-611-RT4-5 | 1/4 Imperial female taper thread | 1/4 Imperial female taper thread | | | | | | | |
| □□-611-FN4-5 | 1/4 NPT Female Thread | 1/4 NPT Female Thread | | | | | | | |
| □□-611-FRT4-5 | 1/4 Imperial female taper thread | 1/4 Imperial female taper thread | | | | | | | |
| □□-611-FJ8-6 | 1/2" E-JOE | 1/2" E-JOE | 0.25 (6.4) | 0.54 (13.7) 0.58 (14.7) | 1.83 (46.5) | 1.83 (46.5) | 3.87 (98.4) | 5.71 (145.0) | 4.89 (124.3) |
| □□-611-MJ12-6 | 12 mm E-JOE | 12 mm E-JOE | | | | | | | |
| □□-611-N8-6 | 1/2 NPT Male Thread | 1/2 NPT Male Thread | | | 1.44 (36.6) | 1.44 (36.6) | | 5.31 (135.0) | |
| □□-611-RT8-6 | 1/2 Imperial female taper thread | 1/2 Imperial female taper thread | | | | | | | |
| □□-611-FN8-6 | 1/2 NPT Female Thread | 1/2 NPT Female Thread | | | | | | | |
| □□-611-FRT8-6 | 1/2 Imperial female taper thread | 1/2 Imperial female taper thread | | | | | | | |

## 612 Series

| Basic Ordering Information | Termination type and specification | | Internal diameter in. (mm) | Dimension , in. (mm) | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | Entrance | Exit | | A | B | C | D | E | F |
| □□-612-FJ8-6-□ | 1/2" E-JOE | 1/2" E-JOE | 0.25 (6.4) | 0.54 (13.7) 0.58 (14.7) | 1.83 (46.5) | 1.83 (46.5) | 3.87 (98.4) | 5.73 (145.0) | 4.89 (124.3) |
| □□-612-MJ12-6-□ | 12 mm E-JOE | 12 mm E-JOE | | | 1.44 (36.6) | 1.44 (36.6) | | 5.31 (135.0) | |
| □□-612-N8-6-□ | 1/2 NPT Male Thread | 1/2 NPT Male Thread | | | | | | | |
| □□-612-RT8-6-□ | 1/2 Imperial female taper thread | 1/2 Imperial female taper thread | | | | | | | |
| □□-612-FN8-6-□ | 1/2 NPT Female Thread | 1/2 NPT Female Thread | | | | | | | |
| □□-612-FRT8-6-□ | 1/2 Imperial female taper thread | 1/2 Imperial female taper thread | | | | | | | |

1. Ideal Power: Double Sleeve connector
2. The size shown is the size of the Ideal Power nut when it is tightened with fingers. All sizes are for reference only and are subject to change.
3. Termination types and sizes listed above are standard. For other termination types and sizes, please contact Ideal Power.

## Seal kit

| Series | Path code | Sealed kit basic order number | | | | | Sealing kit contents |
|---|---|---|---|---|---|---|---|
| | | fluororubber | Nitrile butadiene rubber | Neoprene rubber | Epdm rubber | Perfluorinated rubber | |
| 61 | 4 | VI-61-4 | BN-61-4 | N-61-4 | E-61-4 | Z-61-4 | O-ring (3) |
| 611 | 5 | SS611-5-VI | SS611-5-B | SS611-5-N | SS611-5-E | SS611-5-Z | O-ring, square seal, adhesive disc, retainer |
| | 6 | SS611-6-VI | SS611-6-B | SS611-6-N | SS611-6-E | SS611-6-Z | O-ring, square seal, adhesive disc |
| 612 | 6 | SS612-6-VI | SS612-6-B | SS612-6-N | SS612-6-E | – | O-ring, square seal, valve stem |

The 611 and 612 series of sealed kits are listed with a base order number of 316 stainless steel

## The spring kit

| Series | Path code | Spring kit basic ordering number | Set the pressure range **psig (bar)** | Spring color |
|---|---|---|---|---|
| 61 | 4 | 617P-SP4-F-B | 50 to 300 (3.4 to 20.7) | Green |
| | | 617P-SP4-O-B | 300 to 700 (20.7 to 48.3) | Orange |
| | | 617P-SP4-Y-B | 700 to 1500 (48.3 to 103) | Yellow |
| | | 617P-SP4-P-B | 1500 to 2500 (103 to 172) | Purple |
| | | 617P-SP4-W-B | 2500 to 3500 (172 to 241) | White |
| | | 617P-SP4-J-B | 3500 to 4500 (241 to 310) | Blue |
| | | 617P-SP4-C-B | 4500 to 6000 (310 to 414) | Red |
| 611 | 5 | 6117P-SP5-Y-B | 10 to 255 (0.7 to 15) | Yellow |
| | 6 | 6117P-SP6-Y-B | | |
| 612 | 6 | 6127P-SP6-F-B | 50 至 300 (3.4 to 20.7) | Green |
| | | 6127P-SP6-O-B | 300 至 700 (20.7 to 48.3) | Orange |
| | | 6127P-SP6-Y-B | 700 至1500 (48.3 to 103) | Yellow |

The spring kit includes: spring and label
To order a spring kit with springs, labels, and lead seal wire, add "-L" to the spring kit base ordering number for example :617P-SP4-F-B-L.







## Model Description

SS-61– FJ6 MJ8 – 4Z – WM – TSF2

| | | | | |

# Filtration Definition

- Sintered filter element refers to a porous filtration material formed by compacting metal powder (or alloy) in a mold under sufficient pressure, followed by high-temperature sintering.
- Mesh filter element: The cup-shaped mesh filter element consists of two parts: an inner cup-shaped support structure perforated with staggered holes, and an outer cup-shaped wire mesh tightly clamped onto the inner support structure.
- Nominal pore size of filter element: The maximum pore diameter calculated based on the minimum pressure required to form bubbles from the surface of a filter element when it is immersed in a test liquid.

# Characteristic

## T-Type Strainer

### Series 66

- Available in three filtration area specifications: 2, 4, and 8
- Integrated Valve Cap Design for Enhanced Safety
- Nominal Pore Size of Filter Element: 0.5, 2, 7, 15, 40, 60, 80, 100, 150, 250, 450 μm
- Working Pressure: Up to 414 bar (6000 psig)
- Working Temperature: -28°c to 482°c (-20°F to 900°F)
- Filter Body Materials: 316, 316L, 304, 304L, 904L stainless steel and brass
- Multiple End Connections Available

## Bypass Type Filtration

### Series 66T

- Includes three filter area specifications: 2, 4, and 8
- With a bottom bypass channel, it can be used for sampling and cleaning
- The combined valve cap design ensures greater safety
- Nominal pore size of filter element: 0.5, 2, 7, 15, 40, 60, 80, 100, 150, 250, 450 μm
- Working Pressure: Up to 414 bar (6000 psig)
- Working Temperature: -28°c to 482°c (-20°F to 900°F)
- Bypass Type Filtration Material: 316, 316L, 304, 304L, 904L stainless steel and brass
- Multiple End Connections Available

## Straight-through filter

### Series 661

- Includes three filter area specifications: 2, 4, and 8
- Compact structure, space saving
- Filter element nominal pore size: 0.5, 2, 7, 15, 40, 60, 80, 100, 150, 250, 450 um
- Working Pressure: Up to 207 bar (3000 psig)
- Working Temperature: -28°c to 482°c (-20°F to 900°F)
- Straight-through filter Material: 316, 316L, 304, 304L, 904L stainless steel and brass
- Multiple End Connections Available

## Fully welded straight through filter

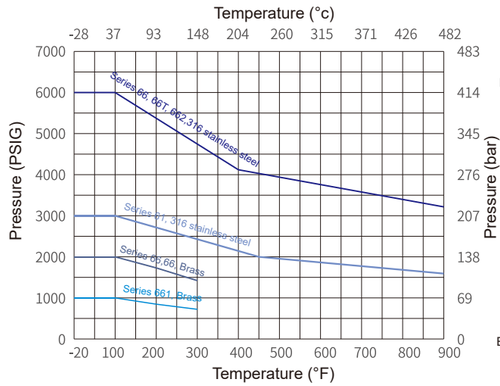
### Series 662

- Large filtration area and high flow coefficient
- Fully welded structure, eliminating leakage
- The flushing process can be completed during reverse flow
- Full penetration welding of valve body and filter element
- Filter element nominal pore size: 0.5, 2, 7, 15, 40 um
- Working Pressure: Up to 414 bar (6000 psig)
- Working Temperature: -28°c to 482°c (-20°F to 900°F)
- Filter element Material: 316, 316L, 304, 304L, 904L stainless steel and brass
- Multiple End Connections Available



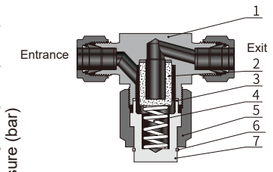


# Pressure-Temperature

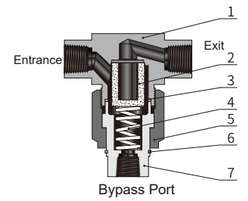



If you need the temperature pressure curve of other materials, please contact Ideal Power company or authorized agent.

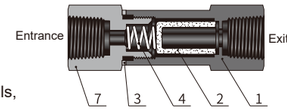
Series 66



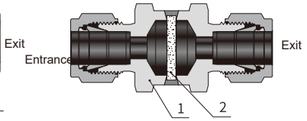

Series 66T




Series 661




Series 662




# Structural Materials

| Component | | Material Grade/ASTM Specification | |
|---|---|---|---|
| | | 316 stainless steel | Brass |
| 1 | Essence | F316 stainless steel/A182 (66/66T series)<br>316 stainless steel/A479 (661/662 series) | Brass C37700/B283 (66/66T series) Brass C36000/B16 (661 series) |
| 2 | Filter element | Sintered 316 stainless steel or filter type 316 stainless steel | Sintered 316 stainless steel or filter type 316 stainless steel |
| 3 | Shim | Spray PTFE or silver plated 316 stainless steel/A479 | Aluminum/B209 |
| 4 | Spring | 302 stainless steel/A313 | 302 stainless steel/A313 |
| 5 | Locking nut | 316 stainless steel/A479 | Brass C36000/B16 |
| 6 | External retaining ring | Stainless Steel | |
| 7 | Filter cover | 316 stainless steel/A479 | Brass C36000/B16 |

1. Brass cannot be used for 662 series filters.
2. Lubricants: molybdenum disulfide based and silicone based grease

## Maximum pressure difference for cleaning filter elements at 20 ° C (70 F)

| Series | Maximum pressure difference bar (PSI) | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | 0.5 μm | 2 μm | 7 μm | 15μm | 40μm | 60 μm | 80μm | 100μm | 150μm | 250 μm | 480 μm |
| 66、66T、661 | 69.0 (1000) | | | | | | | | | | |
| 662 | 41.4 (600) | 6.9 (100) | | | | — | | | | | |

## Filter element

This filter element can filter 95% of solid particulate pollutants larger than the nominal pore size.

| Sintered | | Filter type | |
|---|---|---|---|
| Nominal hole size um | Hole size range um | Nominal hole size um | Number of eyes |
| 0.5 | 0.5 to 2 | 2 | 6250 |
| 2 | 1 to 4 | 7 | 3500 |
| 7 | 5 to 10 | 15 | 800 |
| 15 | 11 to 25 | 40 | 400 |
| 40 | 35 to 53 | 60 | 230 |
| 60 | 50 to 75 | 80 | 200 |
| 80 | 70 to 95 | 100 | 140 |
| — | — | 150 | 100 |
| — | — | 250 | 60 |
| — | — | 450 | 40 |

## Filter area

| Series | Hole size range um | Filter area in. 2 (mm2) | |
|---|---|---|---|
| | | Sintered | Filter type |
| 66/66T | 2 | 1.30 (830) | 1.00 (640) |
| | 4 | 1.30 (830) | 1.00 (640) |
| | 8 | 2.00 (1280) | 1.70 (1090) |
| 661 | 2 | 0.55 (350) | * |
| | 4 | 1.30 (830) | 1.00 (640) |
| | 8 | 2.00 (1280) | 1.70 (1090) |
| 662 * | — | 0.39 (254) | 0.39 (254) |

*Note: The 661 series filter area specification 2 does not provide filter cartridges with filter screens; The 662 series only offers sintered filter cartridge models with a nominal pore size of 0.5um, while the rest of the nominal pore sizes are filter type models.

## Flows

| Series | Filter area specification | Nominal hole size um | Filter element type | Inlet pressure, bar(psig) | | | Pressure difference, bar(psig) | | |
|---|---|---|---|---|---|---|---|---|---|
| | | | | 0.34 (5) | 0.68 (10) | 1.0 (15) | 0.68 (10) | 3.4 (50) | 6.8 (100) |
| | | | | Air flow rate, std ft3/min(L/min) | | | Water flow rate, U.S.gal/min(L/min) | | |
| 66/66T | 2 | 0.5 | sintered | 0.04 (1.1) | 0.06(1.7) | 0.12 (3.4) | 0.04 (0.15) | 0.17 (0.64) | 0.29 (1.0) |
| | | 2 | sintered | 0.20 (5.6) | 0.40 (11) | 0.60 (17) | 0.08 (0.30) | 0.24 (0.91) | 0.40 (1.5) |
| | | 7 | sintered | 0.50 (14) | 0.90 (25) | 1.2 (34) | 0.10 (0.37) | 0.30 (1.1) | 0.48 (1.8) |
| | | 15 | sintered | 0.80 (22) | 1.3 (36) | 1.5 (42) | 0.12 (0.45) | 0.36 (1.3) | 0.58 (2.1) |
| | | 60 | sintered | 1.7 (48) | 2.2 (62) | 2.4 (68) | 0.15 (0.56) | 0.50 (1.8) | 0.70 (2.6) |
| | | 80 | sintered | 1.8 (51) | 2.2 (62) | 2.6 (73) | 0.20 (0.75) | 0.50 (1.8) | 0.60 (2.2) |
| | | 40、60、80、100、150、250、450 | sintered | 1.8 (51) | 2.3(6.5) | 2.6 (73) | 0.20 (0.75) | 0.50(1.8) | 0.60 (2.2) |
| | 4 | 0.5 | sintered | 0.12 (3.4) | 0.26 (7.3) | 0.48 (13) | 0.04 (0.15) | 0.17 (0.64) | 0.29 (1.0) |
| | | 2 | sintered | 0.60 (17) | 1.4 (39) | 2.3 (65) | 0.24 (0.90) | 0.86 (3.2) | 1.3 (4.9) |
| | | 7 | sintered | 1.4 (39) | 2.9 (82) | 4.7 (130) | 0.40 (1.5) | 1.3 (4.9) | 2.0 (7.5) |
| | | 15 | sintered | 1.2 (34) | 2.9 (82) | 4.7 (130) | 0.50 (1.8) | 1.3 (4.9) | 2.1 (7.9) |
| | | 60 | sintered | 3.1 (87) | 5.9(160) | 8.5 (240) | 0.80 (3.0) | 2.7 (10) | 3.9 (14) |
| | | 80 | sintered | 4.1 (110) | 7.5(210) | 10 (280) | 1.1 (4.1) | 3.4 (12) | 4.9 (18) |
| | | 40、60、80、100、150、250、450 | sintered | 4.7 (130) | 8.8(250) | 12 (340) | 1.2 (4.5) | 4.2 (15) | 5.6 (21) |
| | 8 | 0.5 | sintered | 0.36 (10) | 0.86(24) | 1.6 (45) | 0.09 (0.34) | 0.40 (1.5) | 0.76 (2.8) |
| | | 2 | sintered | 1.4 (39) | 2.8(79) | 4.0 (110) | 0.26 (0.98) | 1.1 (4.1) | 1.6 (6.0) |
| | | 7 | sintered | 1.8 (51) | 4.2(119) | 6.8 (190) | 0.64 (2.4) | 2.2 (8.3) | 3.5 (13) |
| | | 15 | sintered | 1.8 (51) | 4.9(130) | 7.9 (220) | 0.84 (3.1) | 2.6 (9.8) | 4.1 (15) |
| | | 60 | sintered | 5.1 (140) | 10(280) | 15 (420) | 1.5 (5.6) | 4.8 (18) | 6.7 (25) |
| | | 80 | sintered | 6.1 (170) | 11(310) | 16 (450) | 1.7 (6.4) | 5.5 (20) | 7.6 (28) |
| | | 40、60、80、100、150、250、450 | sintered | 7.2 (200) | 14(390) | 20 (560) | 2.4 (9.0) | 7.2 (27) | 10 (37) |





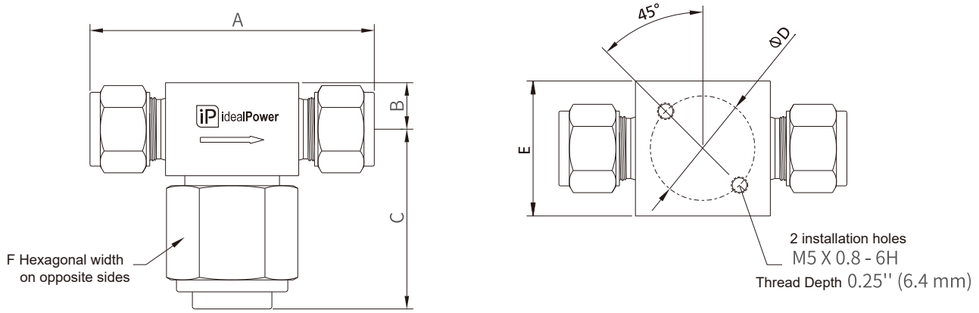


| Series | Filter area specification | Nominal hole size um | Filter element type | Inlet pressure, bar(psig) | | | Pressure difference, bar(psig) | | |
|---|---|---|---|---|---|---|---|---|---|
| | | | | 0.34 (5) | 0.68 (10) | 1.0 (15) | 0.68 (10) | 3.4 (50) | 6.8 (100) |
| | | | | Air flow rate, std ft3/min(L/min) | | | Water flow rate, U.S.gal/min(L/min) | | |
| 661 | 2 | 0.5 | sintered | 0.04 (1.1) | 0.06 (1.7) | 0.12 (3.4) | 0.01 (0.03) | 0.04 (0.15) | 0.12 (0.45) |
| | | 2 | sintered | 0.20 (5.6) | 0.40 (11) | 0.60 (17) | 0.08 (0.30) | 0.24 (0.91) | 0.40 (1.5) |
| | | 7 | sintered | 0.50 (14) | 0.90 (25) | 1.2 (34) | 0.10 (0.37) | 0.30(1.1) | 0.48 (1.8) |
| | | 15 | sintered | 0.80 (22) | 1.3 (36) | 1.5 (42) | 0.12 (0.45) | 0.36 (1.3) | 0.58 (2.1) |
| | | 60 | sintered | 1.7 (48) | 2.2 (62) | 2.4 (68) | 0.15 (0.56) | 0.50 (1.8) | 0.70 (2.6) |
| | | 80 | sintered | 1.8 (51) | 2.2 (62) | 2.6 (73) | 0.20 (0.75) | 0.50 (1.8) | 0.60 (2.2) |
| | 4 | 0.5 | sintered | 0.12 (3.4) | 0.26 (7.3) | 0.48 (13) | 0.04 (0.15) | 0.17 (0.64) | 0.29 (1.0) |
| | | 2 | sintered | 0.60 (17) | 1.4 (39) | 2.3 (65) | 0.24 (0.90) | 0.86 (3.2) | 1.3 (4.9) |
| | | 7 | sintered | 1.4 (39) | 2.9 (82) | 4.7 (130) | 0.40 (1.5) | 1.3 (4.9) | 2.0 (7.5) |
| | | 15 | sintered | 1.2 (34) | 2.9 (82) | 4.7 (130) | 0.50 (1.8) | 1.3 (4.9) | 2.1 (7.9) |
| | | 60 | sintered | 3.1 (87) | 5.9 (160) | 8.5 (240) | 0.90 (3.4) | 3.3 (12) | 4.6 (17) |
| | | 80 | sintered | 4.1 (110) | 7.5 (210) | 10 (280) | 1.2 (4.5) | 4.2 (15) | 6.1 (23) |
| | | 40、60、80、100、150、250、450 | sintered | 4.7 (130) | 8.8 (250) | 12 (340) | 1.7 (6.4) | 5.6 (21) | 7.8 (29) |
| | 8 | 0.5 | sintered | 0.36 (10) | 0.86 (24) | 1.6 (45) | 0.09 (0.34) | 0.40 (1.5) | 0.76 (2.8) |
| | | 2 | sintered | 1.4 (39) | 2.8 (79) | 4.0 (110) | 0.26 (0.98) | 1.1 (4.1) | 1.6 (6.0) |
| | | 7 | sintered | 1.8 (51) | 4.2 (119) | 6.8 (190) | 0.64 (2.4) | 2.2 (8.3) | 3.5 (13) |
| | | 15 | sintered | 1.8 (51) | 4.9 (130) | 7.9 (220) | 0.84 (3.1) | 2.6 (9.8) | 4.1 (15) |
| | | 60 | sintered | 5.1 (140) | 10 (280) | 15 (420) | 2.0 (7.5) | 6.7 (25) | 10 (37) |
| | | 80 | sintered | 6.1 (170) | 11 (310) | 16 (450) | 2.3 (8.7) | 7.6 (28) | 11 (41) |
| | | 40、60、80、100、150、250、450 | sintered | 7.2 (200) | 14 (390) | 20 (560) | 4.8 (18) | 15 (56) | 19 (71) |
| 662 | — | 0.5 | sintered | 0.04 (1.1) . | 0.06 (1.7) | 0.12 (3.4) | 0.01 (0.03) | 0.04 (0.15) | 0.12 (0.45) |

Note: Export emissions to the atmospheric environment.

# Size

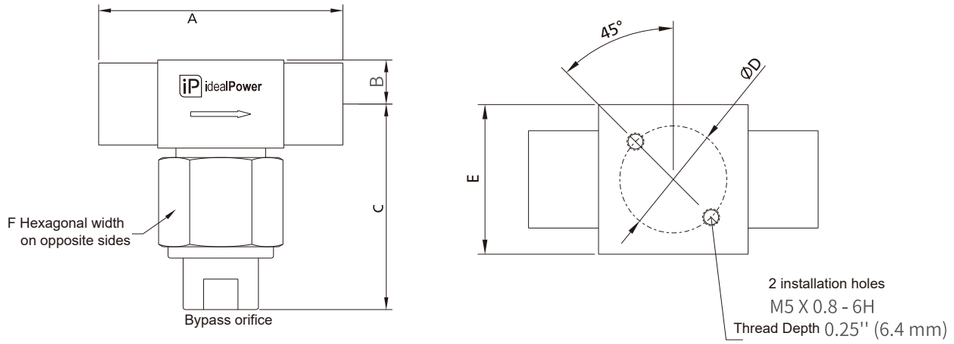
## Series 66




| Basic Ordering Information | Termination type and specification | | Filter element type | Dimension, in. (mm) | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | Entrance | Exit | | A | B | C | ØD | E | F |
| □□-66-FJ2- | 1/8” E-JOE | 1/8” E-JOE | 2 | 2.27 (57.7) | 0.38 (9.7) | 1.49 (37.8) | 1.00 (25.4) | 1.00 (25.4) | 1 (25.4) |
| □□-66-FJ4- | 1/4” E-JOE | 1/4” E-JOE | 4 | 2.47 (62.7) | | | | | |
| □□-66-FJ6- | 3/8” E-JOE | 3/8” E-JOE | 8 | 2.84 (72.1) | 0.46 (11.7) | 1.74 (44.2) | 1.13 (28.7 | 1.13 (28.7) | 1 1/8 (28.6) |
| □□66--FJ8- | 1/2” E-JOE | 1/2” E-JOE | 8 | 3.04 (77.2) | | | | | |
| □□-66-MJ6- | 6 mm E-JOE | 6 mm E-JOE | 4 | 2.46 (62.5) | 0.38 (9.7) | 1.49 (37.8) | 1.00 (25.4) | 1.00 (25.4) | 1 (25.4) |
| □□-66-MJ8- | 8 mm E-JOE | 8 mm E-JOE | 8 | 2.84 (72.1) | 0.46 (11.7) | 1.74 (44.2) | 1.13 (28.7) | 1.13 (28.7) | 1 1/8 (28.6) |
| □□-66-MJ10- | 10 mm E-JOE | 10 mm E-JOE | 8 | 2.86 (72.6) | | | | | |
| □□-66-MJ12- | 12 mm E-JOE | 12 mm E-JOE | 8 | 3.04 (77.2) | | | | | |
| □□-66-TS4- | 1/4” Imperial Tube pipe socket welding | 1/4” Imperial Tube pipe socket welding | 4 | 1.68 (42.7) | 0.38 (9.7) | 1.49 (37.8) | 1.00 (25.4) | 1.00 (25.4) | 1 (25.4) |
| □□-66-TS6- | 3/8” Imperial Tube pipe socket welding | 3/8” Imperial Tube pipe socket welding | 4 | | | | | | |
| □□-66-TB4- | 1/4” Imperial Tube butt welding | 1/4” Imperial Tube butt welding | 4 | | | | | | |
| □□-66-TB6- | 3/8 " Imperial Tube butt welding | 3/8" Imperial Tube butt welding | 4 | | | | | | |
| □□-66-FN2- | 1/8 NPT Female Thread | 1/8 NPT Female Thread | 2 | 2.00 (50.8) | | | | | |
| □□-66-FN4- | 1/4 NPT Female Thread | 1/4 NPT Female Thread | 4 | 2.13 (54.1) | | | | | |
| □□-66-N4- | 1/4 NPT Male Thread | 1/4 NPT Male Thread | 4 | | | | | | |
| □□-66-N6- | 3/8 NPT Male Thread | 3/8 NPT Male Thread | 8 | 2.38 (60.5) | 0.46 (11.7) | 1.74 (44.2) | 1.13 (28.7) | 1.13 (28.7) | 1 1/8 (28.6) |
| □□-66-N8- | 1/2 NPT Male Thread | 1/2 NPT Male Thread | 8 | 2.75 (69.9) | | | | | |
| □□-66-FR4- | 1/4” FR Male Thread | 1/4” FR Male Thread | 4 | 2.30 (58.4) | 0.38 (9.7) | 1.49 (37.8) | 1.00 (25.4) | 1.00 (25.4) | 1 (25.4) |
| □□-66-FR8- | 1/2” FR Male Thread | 1/2” FR Male Thread | 8 | 2.55 (64.8) | 0.46 (11.7) | 1.74 (44.2) | 1.13 (28.7) | 1.13 (28.7) | 1 1/8 (28.6) |

1/4'NPT female thread end connection does not provide installation hole

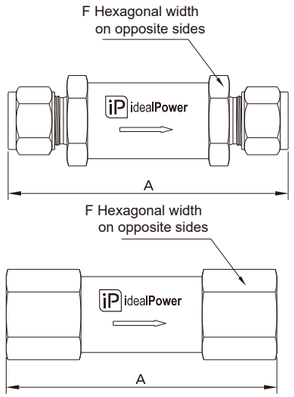
## Series 66T




| Basic Ordering Information | Termination type and specification | | Filter element type | Dimension, in. (mm) | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | Entrance | Exit | | A | B | C | ØD | E | F | Bypass port end connection |
| □□-66T-FJ2- | 1/8” E-JOE | 1/8” E-JOE | 2 | 2.27 (57.7) | 0.38 (9.7) | 1.98 (50.2) | 1.00 (25.4) | 1.00 (25.4) | 1 (25.4) | FJ2 |
| □□-66T-FJ4- | 1/4” E-JOE | 1/4” E-JOE | 4 | 2.47 (62.7) | | 2.44 (61.9) | | | | FJ4 |
| □□-66T-FJ6- | 3/8” E-JOE | 3/8” E-JOE | 8 | 2.84 (72.1) | 0.46 (11.7) | 2.74 (69.1) | 1.13 (28.7) | 1.13 (28.7) | 1 1/8 (28.6) | FJ6 |
| □□-66T-FJ8- | 1/2” E-JOE | 1/2” E-JOE | 8 | 3.04 (77.2) | | 2.96 (74.2) | | | | FJ8 |
| □□-66T-MJ6- | 6 mm E-JOE | 6 mm E-JOE | 4 | 2.46 (62.5) | 0.38 (9.7) | 2.44 (61.9) | 1.00 (25.4) | 1.00 (25.4) | 1 (25.4) | FJ4 |
| □□-66T-MJ8- | 8 mm E-JOE | 8 mm E-JOE | 8 | 2.84 (72.1) | 0.46 (11.7) | 2.74 (69.1) | 1.13 (28.7) | 1.13 (28.7) | 1 1/8 (28.6) | FJ6 |
| □□-66T-MJ10- | 10 mm E-JOE | 10 mm E-JOE | 8 | 2.86 (72.6) | | 2.96 (74.2) | | | | FJ8 |
| □□-66T-MJ12- | 12 mm E-JOE | 12 mm E-JOE | 8 | 3.04 (77.2) | | | | | | |
| □□-66T-TS4- | 1/4” Imperial Tube pipe socket welding | 1/4” Imperial Tube pipe socket welding | 4 | 1.68 (42.7) | 0.38 (9.7) | 1.83 (56.4) | 1.00 (25.4) | 1.00 (25.4) | 1 (25.4) | TB4 |
| □□-66T-TS6- | 3/8” Imperial Tube pipe socket welding | 3/8” Imperial Tube pipe socket welding | 4 | | | | | | | |
| □□-66T-TB4- | 1/4” Imperial Tube butt welding | 1/4” Imperial Tube butt welding | 4 | | | | | | | |
| □□-66T-TB6- | 3/8 " Imperial Tube butt welding | 3/8 " Imperial Tube butt welding | 4 | | | | | | | |
| □□-66T-FN2- | 1/8 NPT Female Thread | 1/8 NPT Female Thread | 2 | 2.00 (50.8) | | 1.71 (43.4) | | | | FN2 |
| □□-66T-FN4- | 1/4 NPT Female Thread | 1/4 NPT Female Thread | 4 | 2.13 (54.1) | | | | | | |
| □□-66T-N4- | 1/4 NPT Male Thread | 1/4 NPT Male Thread | 4 | | | | | | | |
| □□-66T-N6- | 3/8 NPT Male Thread | 3/8 NPT Male Thread | 8 | 2.38 (60.5) | 0.46 (11.7) | 2.00 (50.8) | 1.13 (28.7) | 1.13 (28.7) | 1 1/8 (28.6) | |
| □□-66T-N8- | 1/2 NPT Male Thread | 1/2 NPT Male Thread | 8 | 2.75 (69.9) | | | | | | |
| □□-66T-FR4- | 1/4” FR Male Thread | 1/4” FR Male Thread | 4 | 2.38 (60.5) | 0.38 (9.7) | 2.44 (61.9) | 1.00 (25.4) | 1.00 (25.4) | 1 (25.4) | FJ4 |
| □□-66T-FR8- | 1/2” FR Male Thread | 1/2” FR Male Thread | 8 | 2.75 (69.9) | 0.46 (11.7) | 2.96 (74.2) | 1.13 (28.7) | 1.13 (28.7) | 1 1/8 (28.6) | FJ8 |

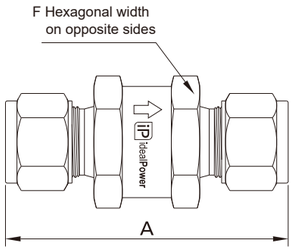
1/4'NPT female thread end connection does not provide installation hole

## Series 61



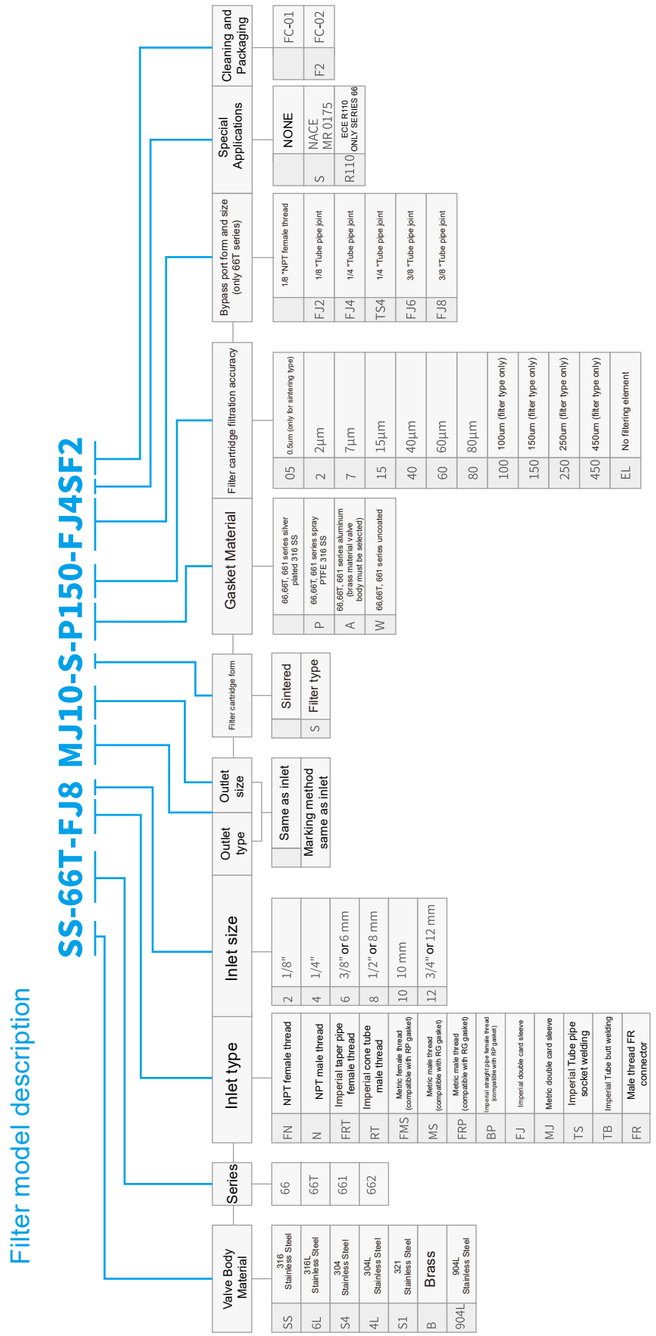

| Basic Ordering Information | Termination type and specification | | Filter element type | Dimension, in. (mm) | |
|---|---|---|---|---|---|
| | Entrance | Exit | | A | F |
| □□-661-FJ2- | 1/8” E-JOE | 1/8” E-JOE | 2 | 2.35 (59.7) | 9/16 (14.3) |
| □□-661-FJ4- | 1/4” E-JOE | 1/4” E-JOE | 4 | 2.95 (74.9) | 3/4 (19.1) |
| □□-661-FJ6- | 3/8” E-JOE | 3/8” E-JOE | 8 | 3.21 (81.5) | 1 (25.4) |
| □□-661-FJ8- | 1/2” E-JOE | 1/2” E-JOE | 8 | 3.49 (88.6) | |
| □□-661-MJ3- | 3 mm E-JOE | 3 mm E-JOE | 2 | 2.38 (60.5) | 9/16 (14.3) |
| □□-661-MJ6- | 6 mm E-JOE | 6 mm E-JOE | 4 | 2.96 (75.2) | 3/4 (19.1) |
| □□-661-FN2- | 1/8 NPT Female Thread | 1/8 NPT Female Thread | 2 | 2.16 (54.9) | 9/16 (14.3) |
| □□-661-FN4- | 1/4 NPT Female Thread | 1/4 NPT Female Thread | 4 | 2.87 (72.9) | 3/4 (19.1) |
| □□-661-N2- | 1/8 NPT Male Thread | 1/8 NPT Male Thread | 2 | 1.88 (47.7) | 9/16 (14.3) |
| □□-661-N4- | 1/4 NPT Male Thread | 1/4 NPT Male Thread | 4 | 2.69 (68.3) | 3/4 (19.1) |
| □□-661-FR2- | 1/8” FR Male Thread | 1/8” FR Male Thread | 2 | 2.79 (70.8) | |
| □□-661-FR4- | 1/4” FR Male Thread | 1/4” FR Male Thread | 4 | | |
| □□-661-FRT2- | 1/8” taper pipe female thread | 1/8” taper pipe female thread | 2 | 2.16 (54.9) | 9/16 (14.3) |
| □□-661-FRT4- | 1/4” taper pipe female thread | 1/4” taper pipe female thread | 4 | 2.87 (72.9) | 3/4 (19.1) |
| □□-661-RT2- | 1/8” taper pipe male thread | 1/8” taper pipe male thread | 2 | 1.88 (47.7) | 9/16 (14.3) |
| □□-661-RT4- | 1/4” taper pipe male thread | 1/4” taper pipe male thread | 4 | 2.69 (68.3) | 3/4 (19.1) |

## Series 662




| Basic Ordering Information | Termination type and specification | | Dimension, in. (mm) | |
|---|---|---|---|---|
| | Entrance | Exit | A | F |
| □□-662-FJ4- | 1/4” E-JOE | 1/4” E-JOE | 2.15 (54.6) | 1 (25.4) |
| □□-662-MJ6- | 6 mmE-JOE | 6 mm E-JOE | | |
| □□-662-FN4- | 1/4 NPT Female Thread | 1/4 NPT Female Thread | 1.57 (39.9) | |
| □□-662-N4- | 1/4 NPT male Thread | 1/4 NPT male Thread | 1.89 (48.0) | |
| □□-662-FR4- | 1/4” FR Male Thread | 1/4” FR Male Thread | 2.04 (51.8) | |

- The 662 series only offers sintered filter cartridge models with a nominal pore size of 0.5um, while the rest of the nominal pore sizes are filter type models.
- Ideal Power is an Ideal Power dual card sleeve connector; FR is a metal end face sealed joint; TS refers to the insertion welding of Imperial Tube pipes; TB refers to butt welding of Imperial Tube pipes.
- The dimensions and models shown are standard, and other dimensions and models can be customized according to requirements.
- The size shown is the size when tightening the Ideal Power nut finger. All dimensions are for reference only and may vary. Exceeding the dimensions indicated in the table, please contact Ideal Power company or authorized agent.




The standard pitch of metric threads is as follows:

- M10 below: 1 mm
- M12 to M24 below: 1.5 mm
- M27 to M24 above: 2 mm

Standard pitch can be ignored in the ordering information, and special pitch must be specified in the order.

### Cleaning & Packaging

- FC-01: Standard cleaning and packaging for general industrial use.
- FC-02: Special cleaning and packaging for immersion system components, compliant with ASTM G93 Class C requirements

Note: "Model Description" is used to explain the composition rules of Ideal Power product models and does not apply to specific product selection. Arbitrary combinations are not allowed. For inquiries, please contact Ideal Power.

## Filter model description

**SS-E-SN8-60**

| Material | Component Name | Filter element type | Filter area specification | Nominal pore size of filter element |
|---|---|---|---|---|
| SS 316 Stainless Steel | E Filter element | SN Sintered | 2 ( Only applicable to sintering type ) | 05 0.5 μm ( Only sintering type ) |
| | | ST Filter type | 4 | 2 2 μm |
| | | | 8 | 7 7 μm |
| | | | | 15 15 μm |
| | | | | 40 40 μm |
| | | | | 60 60 μm |
| | | | | 80 80 μm |
| | | | | 100 100 μm ( Only Filter type ) |
| | | | | 150 150 μm ( Only Filter type ) |
| | | | | 250 250 μm ( Only Filter type ) |
| | | | | 450 450 μm ( Only Filter type ) |

Note: "Model Description" is used to explain the composition rules of Imperial product models and is not applicable to specific product selection. It cannot be combined arbitrarily. If you have any questions, please contact Imperial company or authorized agent.





# Purge Valves Series 64

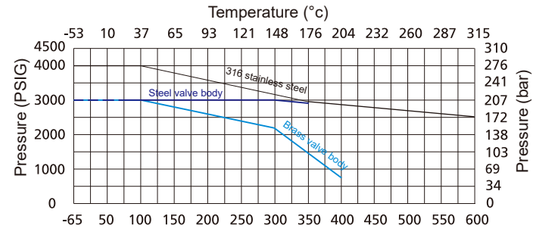
## Intruduction

The Imperial product purge valve is a manually operated relief valve. For safety reasons, permanently install a rolled flower cover on the valve body. Use a wrench to turn it from the hand tight position by a quarter to the initially closed leak proof fastening position, and then turn it with a wrench to continue closing and reach the rated pressure.

## Characteristic

- Compact structure, easy to install
- Valve cap closure design can prevent accidents from occurring
- Working pressure can reach: 276 bar (4000 PSI)
- Working temperature:- 53C to 315C (-65 ° F to 600F)
- Each valve is tested for sealing with nitrogen or compressed air at rated working pressure to achieve the requirement of no visible leakage

## Temperature pressure curve

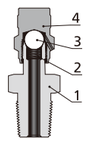



Note: The temperature pressure curve is limited to:

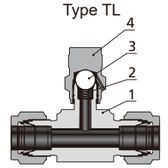
- The minimum value for steel is -28 ° C (-20 ° F).
- the maximum value for SAE end connections made of fluorocarbon FKM O is 232 ° C (450 ° F).

## Structural materials

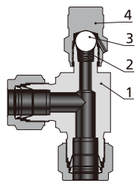
Type L



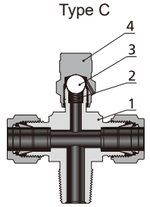

Type TL




Type TA




Type C

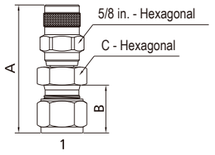



| Component | | Material Grade/ASTM Specification | | |
|---|---|---|---|---|
| | | 316 stainless steel | Brass | Carbon Steel |
| 1 | *Valve Body* | *316 stainless steel/A479*<br>*316 stainless steel/A182* | *Brass C36000/B16*<br>*Brass C36000/B283* | *Cadmium Plating 12L4/A108* |
| 2 | *Spring* | *302 stainless steel/A313* | | |
| 3 | *Valve ball* | *316 stainless steel/A479* | | |
| 4 | *Bonnet* | *316 stainless steel/A479* | *Brass C36000/B16* | *Cadmium Plating 12L4/A108* |

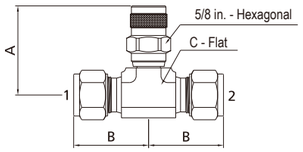
Note: Components in contact with the medium are indicated in italics.
1. Lubricant: Molybdenum disulfide based paste
2. If you need other materials, please contact Ideal Power or authorized agents

# size

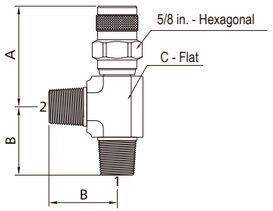
### Type L



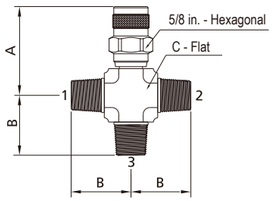

### Type TL




### Type TA




### Type C




| Basic Ordering Information | End Connection Types and Specifications | | sise， in. (mm) | | |
|---|---|---|---|---|---|
| | | | $A_{Maximum}$ | B | C |
| □□-64-L | -FJ4 | 1/4" E-JOE | 1.96 (49.8) | 0.69 (17.5) | 1/2 (12.7) |
| | -FJ6 | 3/8" E-JOE | 2.05 (52.1) | 0.75 (19.1) | 5/8 (15.9) |
| | -FJ8 | 1/2" E-JOE | 2.20 (56.0) | 0.88 (22.4) | 13/16 (20.6) |
| | -MJ6 | 6 mm E-JOE | 1.96 (49.8) | 0.69 (17.5) | 0.55 (14.0) |
| | -MJ8 | 8 mm E-JOE | 2.02 (51.3) | 0.73 (18.6) | 0.59 (15.0) |
| | -MJ10 | 10 mm E-JOE | 2.10 (53.4) | 0.77 (19.6) | 0.71 (18.0) |
| | -MJ12 | 12 mm E-JOE | 2.20 (55.9) | 0.87 (22.0) | 0.87 (22.0) |
| | -FN4 | 1/4 NPT Female Thread | 1.76 (44.7) | 0.72 (18.3) | 3/4 (19.1) |
| | -FN6 | 3/8 NPT Female Thread | 1.83 (46.5) | 0.78 (19.8) | 7/8 (22.2) |
| | -FN8 | 1/2NPT Female Thread | 2.02 (51.3) | 0.97 (24.6) | 1 1/16 (26.9) |
| | -N4 | 1/4NPT Male Thread | 1.84 (46.8) | 0.56 (14.2) | 9/16 (14.3) |
| | -N6 | 3/8NPT Male Thread | 1.89 (48.0) | 0.56 (14.2) | 11/16 (17.5) |
| | -N8 | 1/2NPT Male Thread | 2.11 (53.6) | 0.75 (19.1) | 7/8 (22.2) |
| □□-64-TL<br>□□-64-TA<br>□□-64-C | -FJ4 | 1/4" E-JOE | 1.41 (35.8) | 1.06 (26.9) | 1/2 (12.7) |
| | -FJ6 | 3/8" E-JOE | 1.49 (37.8) | 1.20 (30.5) | 5/8 (15.9) |
| | -FJ8 | 1/2" E-JOE | 1.61 (40.9) | 1.42 (36.1) | 13/16 (20.6) |
| | -MJ6 | 6 mm E-JOE | 1.41 (35.8) | 1.06 (27.0) | 1/2 (12.7) |
| | -MJ8 | 8 mm E-JOE | 1.48 (37.7) | 14,95 (29.9) | 5/8 (15.9) |
| | -MJ10 | 10 mm E-JOE | 1.52 (38.6) | 1.24 (31.6) | 11/16 (17.5) |
| | -MJ12 | 12 mm E-JOE | 1.60 (40.6) | 1.41 (36.0) | 13/16 (20.6) |
| | -FN4 | 1/4 NPT Female Thread | 1.66 (42.2) | 1.17 (29.7) | 11/16 (17.5) |
| | -FN6 | 3/8 NPT Female Thread | 1.75 (44.4) | 1.42 (36.1) | 13/16 (20.6) |
| | -FN8 | 1/2NPT Female Thread | 1.75 (44.4) | 1.56 (39.6) | 1 (25.4) |
| | -N4 | 1/4NPT Male Thread | 1.54 (39.2) | 1.05 (26.7) | 1/2 (12.7) |
| | -N6 | 3/8NPT Male Thread | 1.68 (42.6) | 1.17 (29.7) | 11/16 (17.5) |
| | -N8 | 1/2NPT Male Thread | 1.75 (44.4) | 1.45 (36.8) | 13/16 (20.6) |

1.E-JOE:E-JOE Double Ferrule Fitting

2.Dimensions shown with E-JOE nuts finger-tight. All dimensions are for reference only and are subject to change.

3. End connection types and sizes listed above are standard; contact an E-JOE authorised distributor for other end connection types and sizes.

## Reminder

The purge valve should be installed with the system fluid drain orifice facing away from the operator The drain orifice facing changes with bonnet rotation, which changes the direction of fluid discharge.

Purging valves must be opened slowly. These valves are unpacked. When the valve is opened, some fluid will seep out. The operator must protect himself from exposure to system fluids.





## Model Description

SS – 64 – C – FJ8 MJ10 – FJ8 –SF2

| Body Material | Series | Flow-through Patterns | Port 1 Patterns | Port 1 Dimensions | Port 2 Patterns | Port 2 Dimensions | Port 3 Patterns | Port 3 Dimensions | Special Applications | Cleaning and Packaging |
|---|---|---|---|---|---|---|---|---|---|---|
| SS 316 Stainless Steel | 64 | L Straight straight | FN NPT Female Thread | 2 1/8" | Same as Port 1 | Same as Port 1 | Same as Port 1 | Same as Port 1 | NONE | FC-01 |
| 6L 316L Stainless Steel | | TL Straight Triangle | N NPT Male Thread | 4 1/4" | | | | | S NACE MR 0175 | F2 FC-02 |
| S4 304 Stainless Steel | | TA Angle Tee | FRT Inch tapered pipe female thread | 6 3/8" or 6 mm | Marking method as Interface 1 | Marking method as Interface 1 | Marking method as Interface 1 | Marking method as Interface 1 | | |
| 4L 304L Stainless Steel | | C 4-way | RT Inch tapered pipe male thread | 8 1/2" or 8 mm | | | | | | |
| S1 321 Stainless Steel | | | FMS Metric female thread (adapted to RP-M gaskets) | 10 10 mm | | | | | | |
| B Brass | | | MS Metric male thread (adapted to RG-M gaskets) | 12 3/4" or 12 mm | | | | | | |
| CS Steel | | | FRP Inch straight pipe female thread (adapted to RP gaskets) | 14 14 mm or M14 x 1.5 | | | | | | |
| | | | BP Inch straight male thread (adapted to RG gaskets) | 16 1" or 16 mm | | | | | | |
| | | | FJ Inch double ferrule | | | | | | | |
| | | | MJ Metric double ferrule | | | | | | | |

Note: 'Model Description' is used to illustrate the rules for the composition of E-JOE product models, and does not apply to the specific selection of products that cannot be randomly combined. If in doubt, please contact an authorised E-JOE distributor.

1. Standard conventional pitches for metric threads:
   M10 or below:1 mm
   M12 to M24:1.5 mm
   M27 or above:2 mm
   Standard pitches can be omitted from the ordering information, but special pitches must be specified in the order form.
2. Cleaning and Packaging:
   FC-01:Standard cleaning and packaging for general industrial use.
   FC-02: Special cleaning and packaging of the components of the wetted system shall meet the requirements of ASTM G93C grade.

# Drain Valves

## 63 series

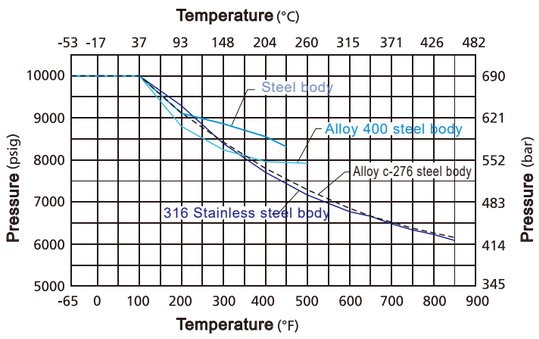
## Introduction

E-JOE Drain Valves can be used on instrumentation devices such as manifolds or gauge valves; to reduce pressure to atmospheric before removing instrumentation or to aid in the calibration of control equipment.

### Features

- Compact design for ease of installation
- Hardened stem threads and head for extended valve life
- Working pressures up to: 690 bar (10,000 psig)
- Operating temperatures :-54°C to 454°C (-65°F to 850°F)
- Multiple End Connections
- Each valve is leak-tight tested with nitrogen or compressed air at rated working pressures to achieve no visible leakage, and rated working pressures above 6000 psig are tested at 6000 psig.

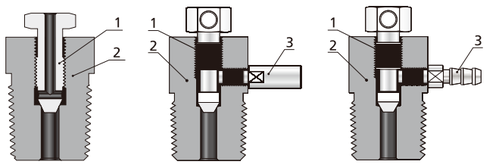
### Temperature profile




Note: Temperature and pressure curves are for all metal seals.

- Limitations: -20°F (-28°C) minimum for steel
- Maximum for SAE end connections with fluorocarbon FKM O-legs
- Maximum for SAE end connections 450°F (232°C) Maximum pressure with SAE end connections 4500 psig (310 bar)

### Materials of Construction




Type 1 Type 2 Type 3

| Components | | Material Grade/ASTM Specification | | | |
|---|---|---|---|---|---|
| | | 316 Stainless Steel | Carbon Steel | Alloy 400 | Alloy C-276 |
| 1 | Stem | Hardened 316 Stainless Steel/A479316 | | Alloy 400/ B164 | Alloy C-276/ B574 |
| 2 | Body | Hardened 316 Stainless Steel/A479316 | 1018/A108 | | |
| 3 | Short Tube | 316 Stainless Steel/A479 | | | |

NOTE: Components in contact with the media are shown in italics.
1. Lubricant: Hydrocarbon carrier
2. For other materials, please contact E-JOE or an authorised agent.

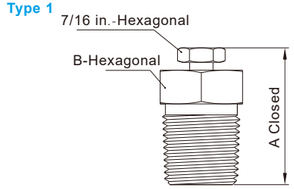




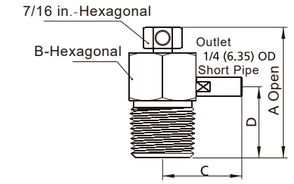
## size

Dimensions, shown in inches (mm), are for reference only and are subject to change.

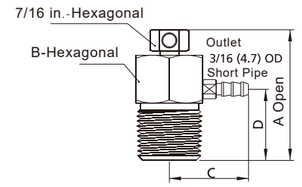
**Type 1**




**Type 2**




**Type 3**




| Type | Basic Ordering Information | End Connection Types and Specifications | size,in.(mm) A | B | C | D |
|---|---|---|---|---|---|---|
| Type 1 | □□-63 -N4 | 1/4 NPT Male Thread | 1.31 (33.4) | 5/8 (15.9) | — | — |
| | □□-63 -N6 | 3/8 NPT Male Thread | 1.46 (37.1) | 7/8 (22.2) | | |
| | □□-63 -N8 | 1/2 NPT Male Thread | | | | |
| | □□-63-RT4 | 1/4 Fractional Tapered Pipe Male Thread | 1.31 (33.4) | 5/8 (15.9) | | |
| | □□-63-RT6 | 3/8 Fractional Tapered Pipe Male Thread | 1.46 (37.1) | 7/8 (22.2) | | |
| | □□-63-RT8 | 1/2 Fractional Tapered Pipe Male Thread | | | | |
| Type 2 | □□-63-N4-L | 1/4 NPT Male Thread | 1.65 (41.8) | 5/8 (15.9) | 0.94 (24) | 0.78 (19.7) |
| | □□-63-N6-L | 3/8 NPT Male Thread | 1.78 (45.1) | 7/8 (22.2) | 1.03 (26.2) | 0.91 (23) |
| | □□-63-N8-L | 1/2 NPT Male Thread | | | 1.04 (26.3) | |
| | □□-63-RT4-L | 1/4 Fractional Tapered Pipe Male Thread | 1.65 (41.8) | 5/8 (15.9) | 0.94 (24) | 0.78 (19.7) |
| | □□-63-RT6-L | 3/8 Fractional Tapered Pipe Male Thread | 1.78 (45.1) | 7/8 (22.2) | 1.03 (26.2) | 0.91 (23) |
| | □□-63-RT8-L | 1/2 Fractional Tapered Pipe Male Thread | | | 1.04 (26.3) | |
| Type 3 | □□-63-N4-C3 | 1/4 NPT Male Thread | 1.65 (41.8) | 5/8 (15.9) | 0.94 (24) | 0.78 (19.7) |
| | □□-63-N6-C3 | 3/8 NPT Male Thread | 1.78 (45.1) | 7/8 (22.2) | 1.03 (26.2) | 0.91 (23) |
| | □□-63-N8-C3 | 1/2 NPT Male Thread | | | 1.04 (26.3) | |
| | □□-63-RT4-C3 | 1/4 Fractional Tapered Pipe Male Thread | 1.65 (41.8) | 5/8 (15.9) | 0.94 (24) | 0.78 (19.7) |
| | □□-63-RT6-C3 | 3/8 Fractional Tapered Pipe Male Thread | 1.78 (45.1) | 7/8 (22.2) | 1.03 (26.2) | 0.91 (23) |
| | □□-63-RT8-C3 | 1/2 Fractional Tapered Pipe Male Thread | | | 1.04 (26.3) | |

The above are standard end connection types and sizes, for other special end connection types and sizes please consult E-JOE Group or an authorised distributor.

### Reminder

Install the drain valve with the system fluid discharge orifice facing away from the operator.
Drain valves must be opened slowly. Since they are unpacked, some fluid will seep out when the valve is opened.
It is important that the operator protect himself or herself from exposure to system fluids.

### Model Description

SS - 63 - N4 - L - SH - SF2

| Body Material | Series | Inlet Types | Inlet Sizes | Drain Ports | Handle | Special Applications | Cleaning and Packaging |
|---|---|---|---|---|---|---|---|
| SS 316 Stainless Steel | 63 | N NPT Positive Threads | 2 1/8" | Type 1 | NONE | NONE | FC-01 |
| 6L 316L Stainless Steel | | RT Inch Taper Pipe Positive Threads | 4 1/4" | L Type 2 | SH Stainless Steel Handle (for Type 2 and Type 3) | S NACE MR 0175 | F2 FC-02 |
| S4 304 Stainless Steel | | | 6 3/8" | C3 Type 3 | | | |
| 4L 304L Stainless Steel | | | 8 1/2" | | | | |
| S1 321 Stainless Steel | | | | | | | |
| HC Alloy C-276 | | | | | | | |
| M Alloy 400 | | | | | | | |
| CS Carbon Steel | | | | | | | |

NOTE: “Model Description”is used to illustrate the rules of E-JOE product models, not for the specific selection of products can not be randomly combined. If in doubt, please contact E-JOE or an authorised agent.
Cleaning and Packaging:
FC-01: Standard cleaning and packaging for general industrial use.
FC-02: Special cleaning and packaging for wetted system components, should meet ASTM G93C grade requirements.

# Meter Valve

## Series 71 and 71H

### Key Feature

- Working Pressures Available:
  Stainless Steel:71 up to 414 bar (6000 psig)
  71H up to 690 bar (10000 psig)
- 71 Series Operating Temperatures:
  PTFE packing: -54°C to 232°C (-65°F to 450°F)
  Graphite packing: -54°C to 649°C (-65°F to 1200°F)
- Non-rotating lower stem
- A wide range of seat and seal materials are available
- Valve has a back seal in the fully open position
- Stem threads are roll formed for good mechanical properties
- Upper stem threads are grease segregated from system media
- Packing can be externally adjusted
- Bonnet is equipped with antitampering screws
- Low-torque T-operated handles
- A wide range of handle colours is available
- Handles are screw-locked on both sides for stability and durability
- Series 71 valves are factory seal tested with nitrogen or compressed air at rated working pressure before delivery. 71 series valves are factory seal tested with nitrogen or compressed air at rated working pressure 71H series valves are factory seal tested with water at 1.1 times rated working pressure

### Materials of construction

| Serial Number | Element | Valve Material |
|---|---|---|
| | | 316 Stainless Steel |
| | | Material Grade/ASTM Specification |
| 1 | Handle | 6061/B211 |
| 2 | Tightening screws | Stainless steel |
| 3 | Packing gland | 304 Stainless steel/A479 |
| 4 | Upper stem | 316 Stainless steel/A479 |
| 5 | Lock nut | Stainless steel |
| 6 | Bonnet | 316 Stainless steel/A479 |
| 7 | Packing pressure ring | 316 Stainless steel/A479 |
| 8 | Packing | PTFE or graphite |
| 9 | Groove pin | Stainless steel |
| 10 | Lower stem | 316 /A479 |
| 11 | Body | 316 Stainless steel/A479<br>316 Stainless steel/A182 |
| 12 | Seat | Acetal or PEEK |
| Lubricant | | Molybdenum disulphide based |

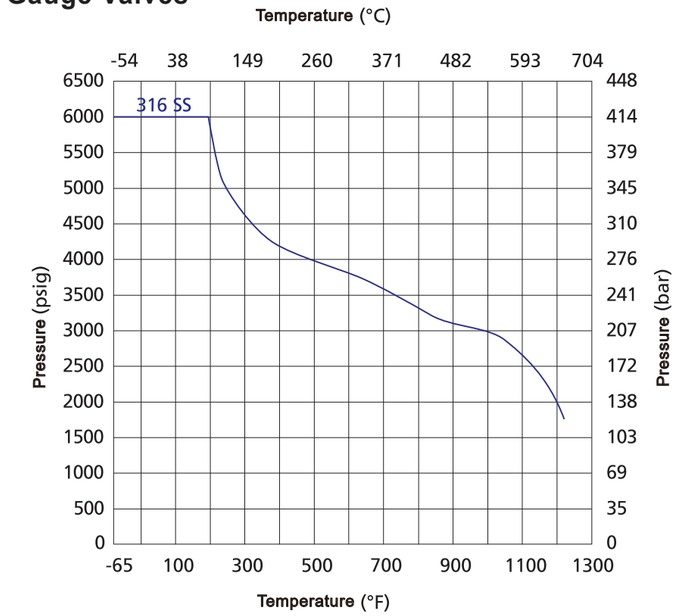
Gauge valves for sour gases can be supplied in a selection of materials according to NACEMRO 175/ISO 15156. For more detailed information please contact an authorised E-JOE agent.



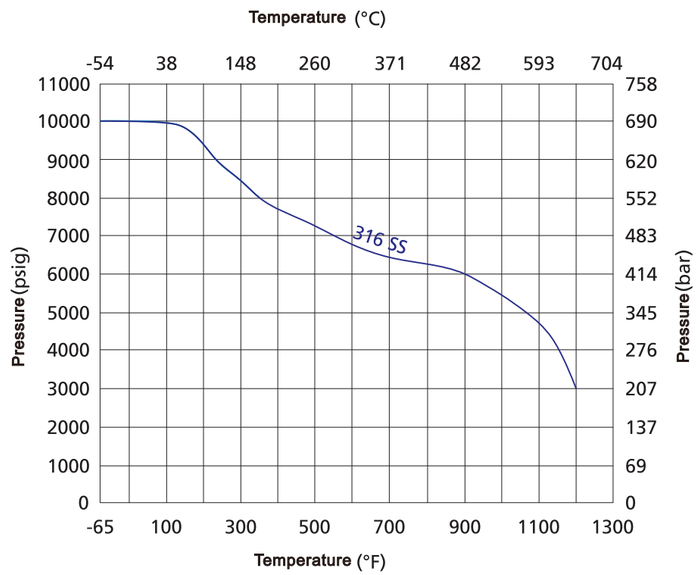


### Temperature profile

#### 71 Series Gauge Valves




#### 71H Series Gauge Valves

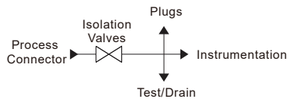


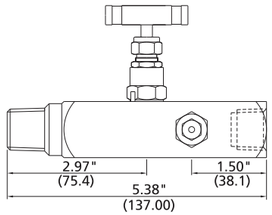

This graph is based on graphite packing.

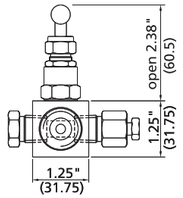
# Selection Chart

## Standard Types

| Basic Ordering Information | Stem design | Inlet/Interface Process | Outlet/Instrumentation | Test/Drain/Plug |
|---|---|---|---|---|
| □□-71-N8FN8 | Ball design | 1/2 NPT Male Thread | 1/2 NPT Female Thread | 1/2 NPT Female Thread |
| □□-71H-N8FN8 | | | | |
| □□-71-N12FN8 | Ball design | 3/4 NPT Male Thread | 1/2 NPT Female Thread | 1/2 NPT Female Thread |
| □□-71H-N12FN8 | | | | |



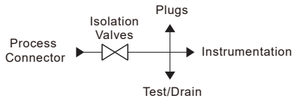



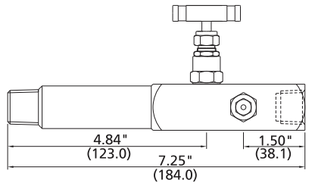



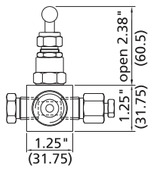

Dimensions shown are for 71 series gauge valves; contact E-J0E if 71H series gauge valve dimensions are required.

## Extension Valve Body Type

| Basic Ordering Information | Inlet/Interface Process | Outlet/Instrumentation | Test/Drain/Plug |
|---|---|---|---|
| □□-71-N8FN8-E | 1/2NPT Male Thread | 1/2 NPT Female Thread | 1/2 NPT Female Thread |
| □□-71H-N8FN8-E | | | |



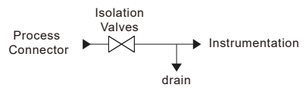



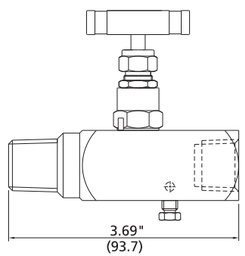



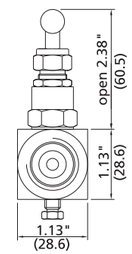

The extension valve body is used as an insulated section to be inserted into the Pipe tubing.
Dimensions shown are for 71 series gauge valves. Contact E-J0E if you need dimensions for 71H series gauge valves.

## Small Body Types

| Basic Ordering Information | Inlet/Interface Process | Outlet/Instrumentation | Drain |
|---|---|---|---|
| □□-71-N8FN8-C | 1/2NPT Male Thread | 1/2 NPT Female Thread | Drain valve stem |
| □□-71H-N8FN8-C | | | |




Dimensions shown are for 71 series gauge valves; contact E-J0E if 71H series gauge valve dimensions are required.







# Model Description

SS – 71 – N8FN8 – CPW – GR – SF2

- Cleaning and Packaging: FC-01 | FC-02 (F2)
- Special Applications: NONE | NACE MR0175 (S)
- Handle: Black Aluminium bar | Red Aluminium bar (R) | Stainless Steel bar (M)
- Packing Material: PTFE | Graphite (G) | PTFE
- Stem Tip Material: Same as valve body | Stellite alloys (W) | 2205 Duplex (D5) | Titanium 4 (TI) | Alloy 20 (A20) | Alloy 600 (INC) | Alloy C-276 (HC)
- Seat Material: Same as valve body | PEEK (P)
- Body Type: Standard Types | Small Body Types (C) | Extended Body Types (E)
- Outlet Size: Same as imported | Marking method same as imported types and imported sizes
- Outlet Type
- Inlet Size: 8 1/2" | 12 3/4" | 20 M20 x 1.5
- Inlet Type: NPT Negative Thread (FN) | NPT Male Thread (N) | Inch tapered pipe female thread (FRT) | Inch tapered pipe male thread (RT) | Metric female thread (fits RP gasket) (FMS) | Metric male thread (fits RG gasket) (MS) | Inch straight pipe female thread (fits RP gasket) (FRP)
- Gauge Valve Series: 71 | 71H
- Body Material: 316 Stainless Steel (SS) | 316L Stainless Steel (6L) | 304 Stainless Steel (S4) | 321 Stainless Steel (S1) | 2205 Duplex (D5) | Alloy 400 (M) | Alloy 600 (INC) | Alloy C-276 (HC)

NOTE:1. Cleaning and Packaging:
FC-01: Standard cleaning and packaging for general industrial use.
FC-02: special cleaning and packaging of the components of the infiltration system, should meet the requirements of the ASTM G93C grade
2. 'Model Description' is used to illustrate the rules for the composition of the E-J0E product model, does not apply to the specific selection of the product can not be arbitrarily combined. If in doubt, please contact E-J0E or an authorised agent.

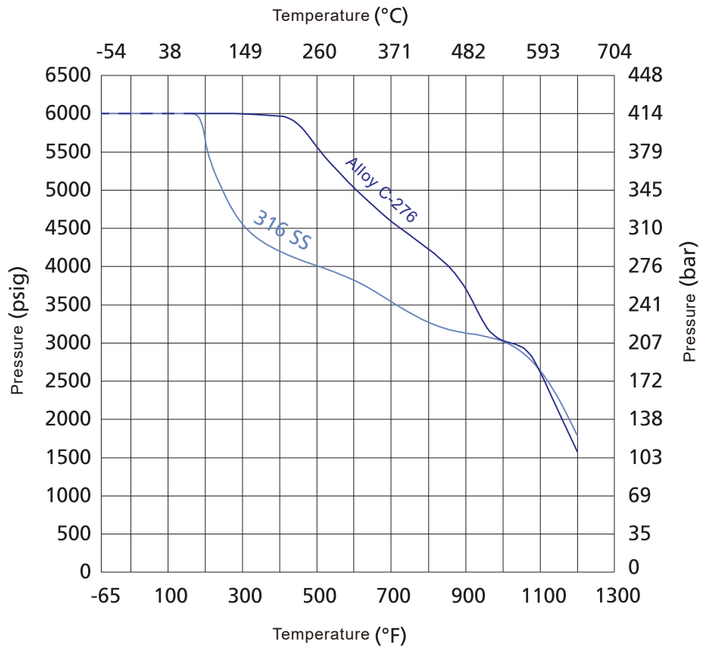
# Instrumentation Manifolds

## Key Group Characteristics

- Working Pressures Available:
  Stainless Steel: 72D,72R,73D,73R,75D,75R up to 414 bar(6000 psig)
  Alloy C-276: 72D,72R,73D,73R,75D,75R up to 414 bar(6000 psig)
- Operating Temperatures:
  PTFE Packing: -54°C to 232°C (-65°F to 450°F)
  Graphite packing: -65°F to 1200°F (-54°C to 649°C)
- ID: 0.157 in.(4.0 mm)
- Two-stroke stem design with rolled, hardened upper stem threads and specially hardened lower stem surface
- Grease segregation of upper stem threads from system media
- Nonrotating lower stem moves up and down instead of threading up and down, reducing packing friction with each stroke and reducing wear between the seat and the tip of the valve
- Valve has back sealing function in the fully open position
- Handle is locked with screws at both ends for stability and durability
- Valves of the series are tested for sealing with nitrogen or compressed air at rated working pressure before shipment from the factory

## Temperature Profiles

72D,72R,73D,73R,75D,75R series




1. This graph is based on graphite filler.
2. For graphs of other materials, please contact an authorised E-J0E or authorised distributor.

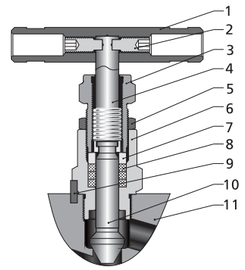


Gauge Valves And Manifolds

## Materials of construction

| Serial Number | Component | Body Material | |
|---|---|---|---|
| | | 316 Stainless Steel | Alloy C-276 |
| | | Material grade/ASTM specification | |
| 1 | Handle | 6061/B211 | |
| 2 | set screw | Stainless Steel | |
| 3 | packing gland | 304 Stainless Steel/A479 | |
| 4 | upper stem | 316 Stainless Steel/A479 | |
| 5 | lock nut | Stainless Steel | |
| 6 | bonnet | 316 Stainless Steel/A479 | Alloy C-276/B574 |
| 7 | packing ring | 316 Stainless Steel/A479 | |
| 8 | packing | PTFE or Graphite | |
| 9 | groove pin | | |
| 10 | lower stem | 316 Stainless steel hardened/A479 | Alloy C-276/B574 |
| 11 | body | 316 Stainless Steel/A479<br>316 Stainless Steel/A182 | Alloy C-276/B564 |
| lubricant | | 二硫化钼基 | |

Instrumentation manifolds for use with sour gases are available in materials manufactured in accordance with NACE MRO175/ISIS. Instrumentation manifolds for sour gases are available in materials selected in accordance with NACE MRO175/ISO 15156 Contact an E-J0E authorised distributor for more information.




Handle Function and Colour:
Black=Isolation/blocking
Red=Test relief
Green=Balancing

## Design Criteria

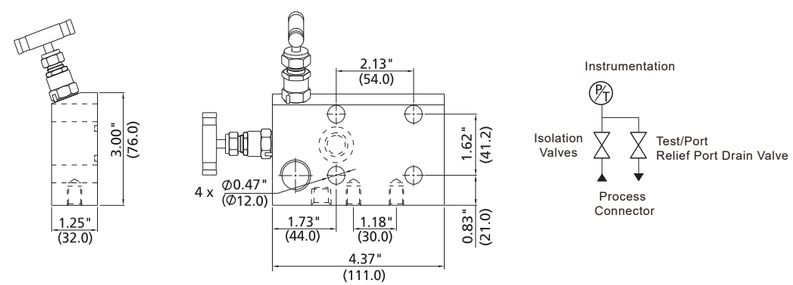
- Manifolds are designed and manufactured in accordance with ASME B31.3 and MSS-SP-105 standards. 105 standards.
  Flange design is based on MSS SP-99 requirements, and flange ports meeting IEC 61518 are also available.
- Two-valve manifolds are used for pressure gauges or pressure transmitters.
- Three-valve and five-valve manifolds are used for differential pressure transmitters.

## Selection Tables

### 2-valve manifolds

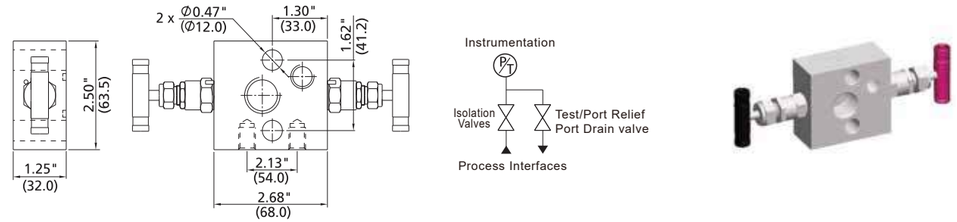
2-valve manifold consisting of 1 isolation valve and 1 relief valve

| Basic Ordering Information | Inlet/Interface Process | Outlet/Instrumentation | Test/Drain Ports |
|---|---|---|---|
| □□-72D-FN8-A | 1/2 NPT **Negative Thread** | **Flanges** | 1/4 NPT **Negative Thread** |




NOTE:1. Each manifold of this model comes standard with one PTFE flange gasket and four 7/16 "UNFx 1.75" high strength bolts.

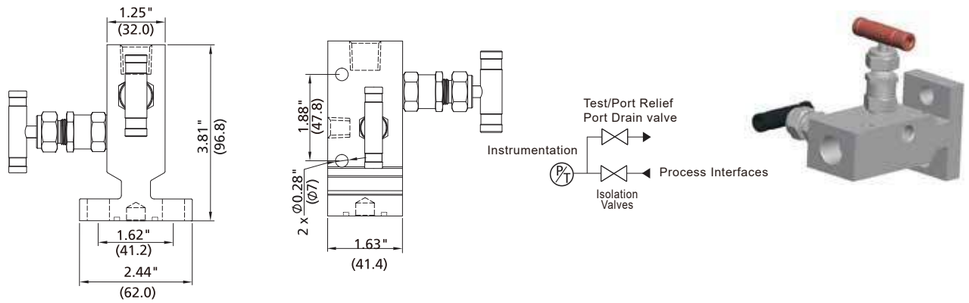
| Basic Ordering Information | Inlet/Interface Process | Outlet/Instrumentation | Test/Drain Ports |
|---|---|---|---|
| □□-72D-FN8-L | 1/2 NPT Female Thread | Flanges | 1/4 NPT Female Thread |






Each manifold comes standard with one PTFE flange gasket and two 7/16‘ UNFx 1.75’ high strength bolts.

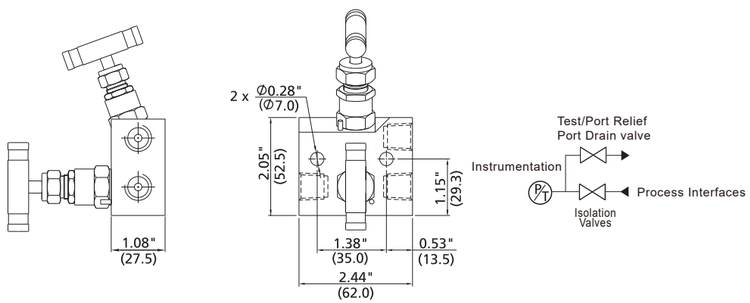
| Basic Ordering Information | Inlet/Interface Process | Outlet/Instrumentation | Test/Drain Ports |
|---|---|---|---|
| □□-72D-FN8-V | 1/2 NPT Female Thread | Flanges | 1/4 NPT Female Thread |






Each standard Western-style manifold of this model includesIncludes.PTFE flange gaskets only and two or six 7/16UNFx24 mm high-strength bolts.

| Basic Ordering Information | Inlet/Interface Process | Outlet/Instrumentation | Test/Drain Ports |
|---|---|---|---|
| □□-72R-FN4-A | 1/4 NPT Female Thread | 1/4 NPT Female Thread | 1/4 NPT Female Thread |

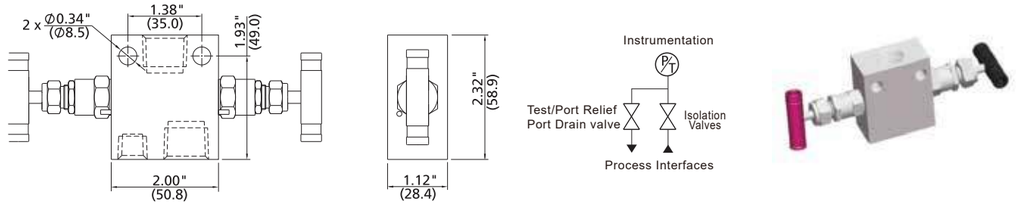




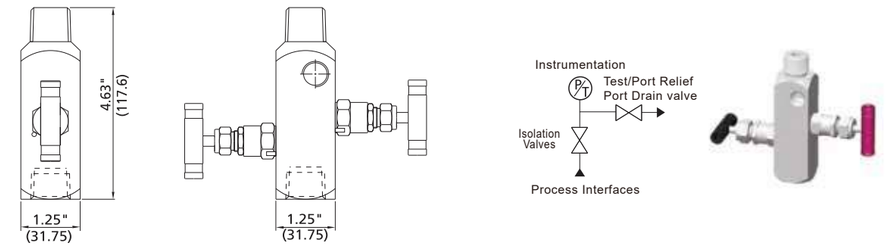




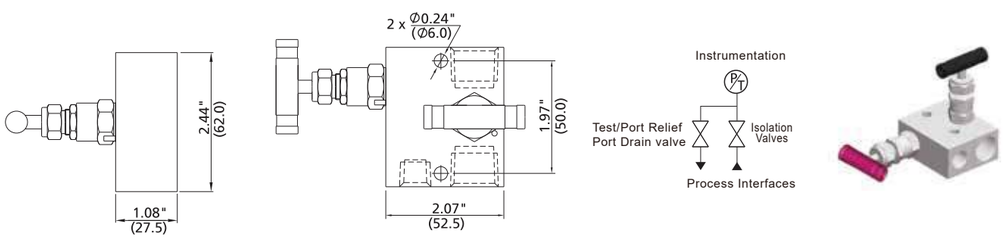

| Basic Ordering Information | Inlet/Interface Process | Outlet/Instrumentation | Test/Drain Ports |
|---|---|---|---|
| □□-72R-FN8-L | 1/2 NPT Female Thread | 1/2 NPT Female Thread | 1/4 NPT Female Thread |




| Basic Ordering Information | Inlet/Interface Process | Outlet/Instrumentation | Test/Drain Ports |
|---|---|---|---|
| □□-72R-FN8N8-H | 1/2 NPT Female Thread | 1/2 NPT Male Thread | 1/4 NPT Female Thread |
| □□-72R-N8-H | 1/2 NPT Female Thread | 1/2 NPT Male Thread | 1/4 NPT Female Thread |



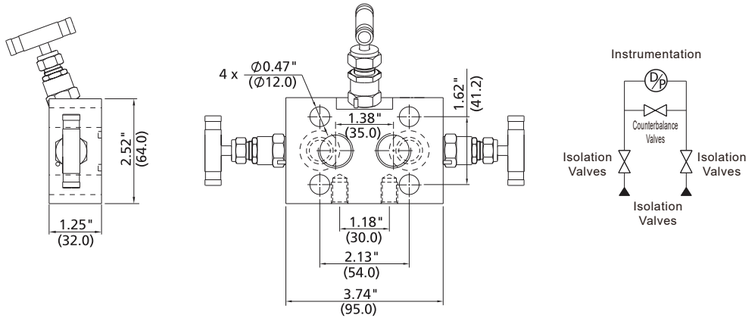

| Basic Ordering Information | Inlet/Interface Process | Outlet/Instrumentation | Test/Drain Ports |
|---|---|---|---|
| □□-72R-FN8-V | 1/2 NPT Female Thread | 1/2 NPT Female Thread | 1/4 NPT Female Thread |



## Triple valve manifold

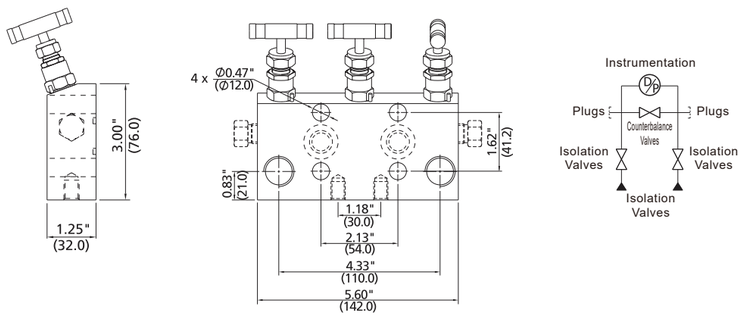
The three-valve manifold consists of two isolation valves and one counterbalance valve.

| Basic Ordering Information | Inlet/Interface Process | Outlet/Instrumentation |
|---|---|---|
| □□-73D-FN8-A | 1/2 NPT Female Thread | Flanges |
| □□-73D-FJ8-A | 1/2" E-JOE | Flanges |




NOTE:1. Each manifold of this model comes standard with two PTFE flange gaskets and four 7/16 'UNFx1.75' high strength bolts.
2、The FJ8 port manifold is composed of the FN8 port manifold through the ferrule male connector.

| Basic Ordering Information | Inlet/Interface Process | Outlet/Instrumentation | Test port |
|---|---|---|---|
| □□-73D-FN8-L | 1/2 NPT Female Thread | Flanges | Options |
| □□-73D-FJ8-L | 1/2" E-JOE | Flanges | Options |



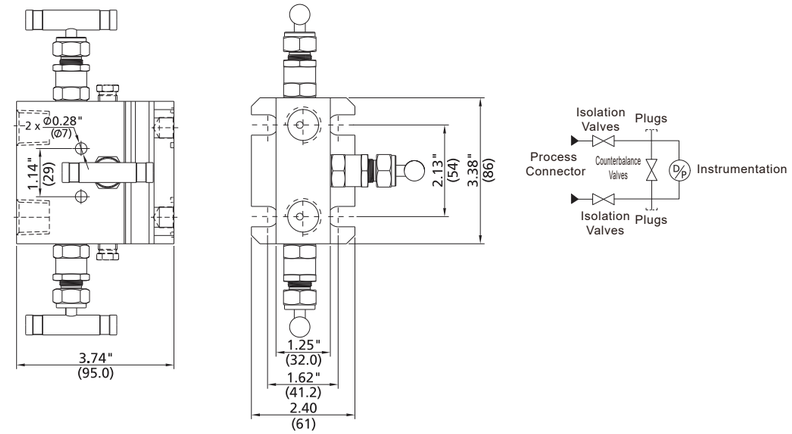



NOTE: 1、Each manifold comes standard with two PTFE flange gaskets and four 7/16' UNFx1.75' high strength bolts.
2、FJ8 port manifolds are made up of FN8 port manifolds adapted with ferrule male fittings.



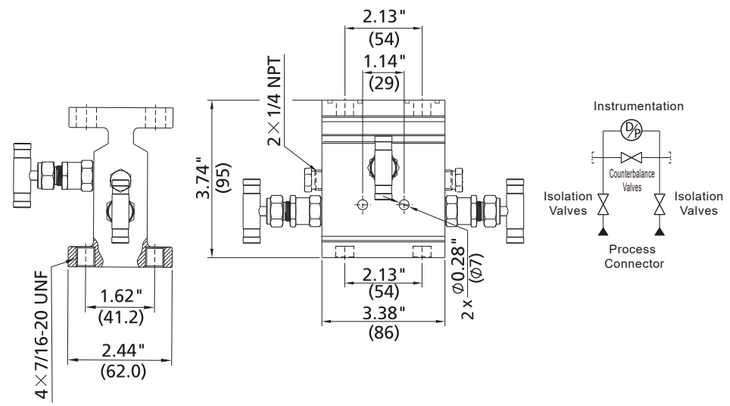


| Basic Ordering Information | Inlet/Interface Process | Outlet/Instrumentation | Test port |
|---|---|---|---|
| □□-73D-FN8-V | 1/2 NPT Female Thread | Flanges | Options |



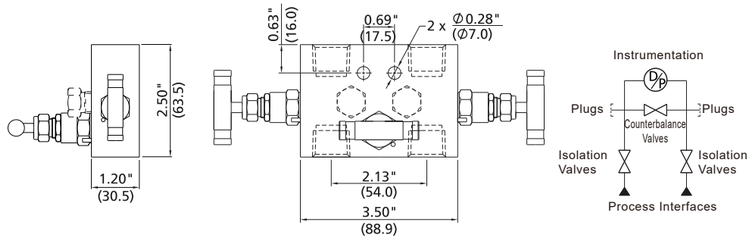

Each manifold comes standard with two PTFE flange gaskets and four 7/16' UNFx24mm high strength bolts.

| Basic Ordering Information | Inlet/Interface Process | Outlet/Instrumentation | Test port |
|---|---|---|---|
| □□-73D-F-V | Flanges | Flanges | Options |




Each manifold comes standard with two PTFE flange gaskets and four 7/16' UNFx24mm high strength bolts.

| Basic Ordering Information | Inlet/Interface Process | Outlet/Instrumentation | Test Ports |
|---|---|---|---|
| □□-73R-FN8-V | 1/2 NPT Female Thread | 1/2 NPT Female Thread | Options |
| □□-73R-FJ8-V | 1/2" E-JOE | 1/2" E-JOE | Options |

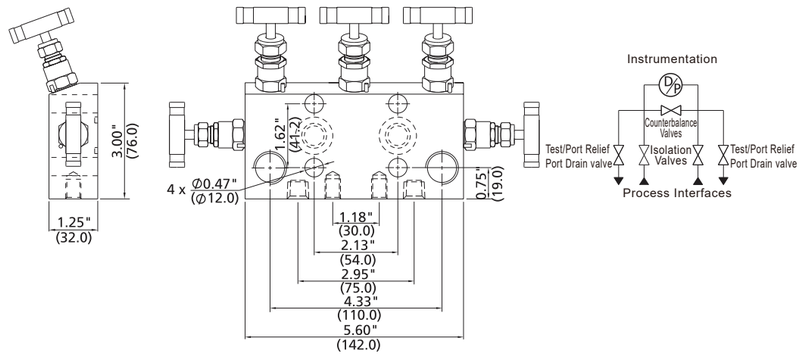



NOTE: 1, FJ8 port manifolds consist of the FN8 port manifolds converted by a ferrule male threaded connector;

## Five Valve Manifolds

1, Dual Drainage Functionality Five Valve Manifolds: consists of 2 isolation valves, 2 relief valves, and 1 counterbalance valve

| Basic Ordering Information | Inlet/Interface Process | Outlet/Instrumentation | Test Ports/Drain Ports |
|---|---|---|---|
| □□-75D-FN8-A | 1/2 NPT Female Thread | Flanges | 1/4 NPT Female Thread |
| □□-75D-FJ8-A | 1/2" E-JOE | Flanges | 1/4 NPT Female Thread |



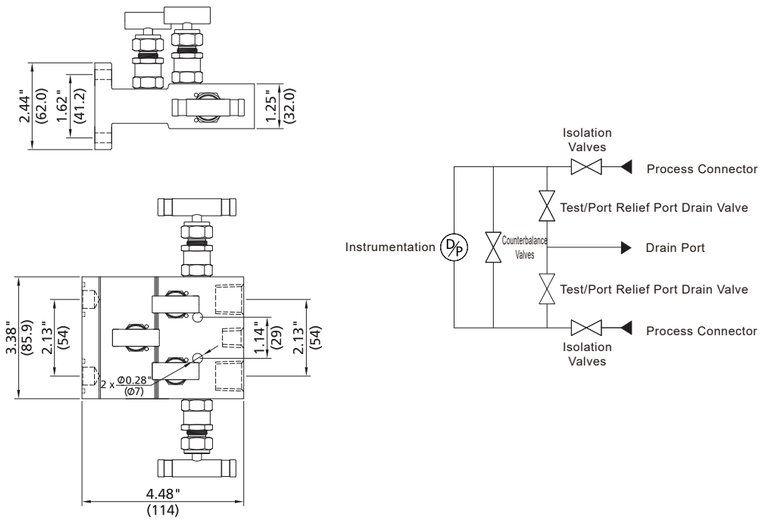

NOTE: 1, Each valve group of this model comes standard with two PTFE flange gaskets and four 7/16" UNFx1.75" high-strength bolts;
2, The FJ8-ported valve group consists of the FN8-ported valve group adapted through a ferrule male connector.





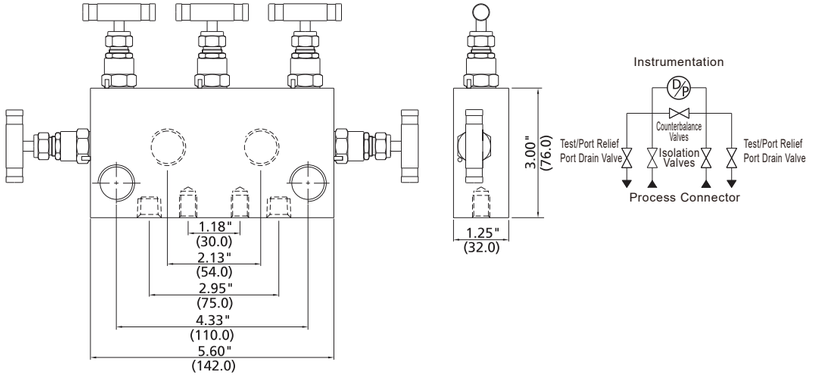


| Basic Ordering Information | Inlet/Interface Process | Outlet/Instrumentation | Test Ports/Drain Ports |
|---|---|---|---|
| □□-75D-FN8-V | 1/2NPT Female Thread | Flanges | 1/4NPT Female Thread |



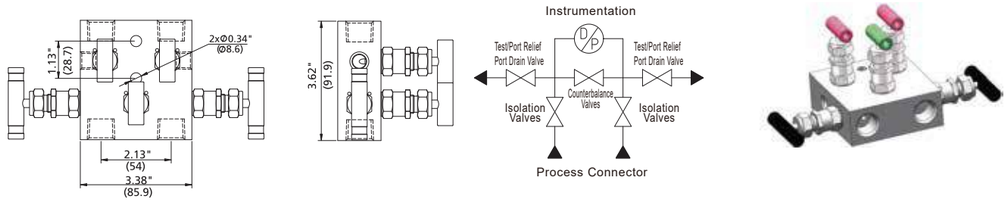

Each manifold comes standard with two PTFE flange gaskets and four 7/16' UNFx24mm high strength bolts.

| Basic Ordering Information | Inlet/Interface Process | Outlet/Instrumentation | Test Ports/Drain Ports |
|---|---|---|---|
| □□-75R-FN8-L | 1/2 NPT Female Thread | 1/2 NPT Female Thread | 1/4 NPT Female Thread |
| □□-75R-FJ8FN8-L | 1/2" E-JOE | 1/2 NPT Female Thread | 1/4 NPT Female Thread |




NOTE: 1. The FJ8 port manifold is composed of the FN8 port manifold adapted by a ferrule male connector;

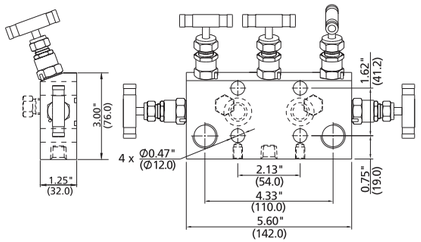
| Basic Ordering Information | Inlet/Interface Process | Outlet/Instrumentation | Test Ports/Drain Ports |
|---|---|---|---|
| □□-75R-FN8-V | 1/2 NPT Female Thread | 1/2 NPT Female Thread | 1/4 NPT Female Thread |

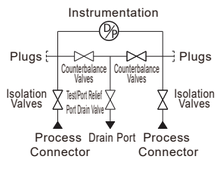





2、Used for closed transport and precision metering of the five-valve manifold (double balancing function): consisting of two isolation valves, two counterbalance valves and a drain valve

| Basic Ordering Information | Inlet/Interface Process | Outlet/Instrumentation | Drain Port | Test port |
|---|---|---|---|---|
| □□-75D-FN8-AB | 1/2 NPT Female Thread | Flanges | 1/4 NPT Female Thread | Options |
| □□-75D-FJ8-AB | 1/2"E-JOE | Flanges | 1/4 NPT Female Thread | Options |

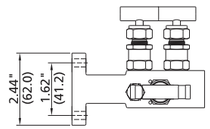


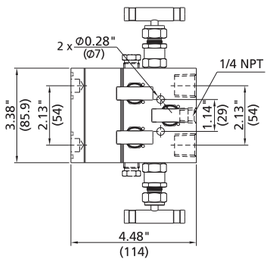



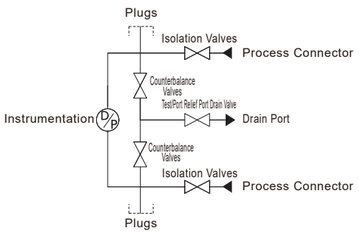



NOTE:1, Each manifold of this model comes standard with two PTFE flanged gaskets and four 7/16 " UNFx1.75" high-strength bolts.
2. FJ8 port manifolds are made up of FN8 port manifolds adapted by ferrule male threaded fittings.

| Basic Ordering Information | Inlet/Interface Process | Outlet/Instrumentation | Drain Port | Test port |
|---|---|---|---|---|
| □□-75D-FN8-VB | 1/2 NPT Female Thread | Flanges | 1/4 NPT Female Thread | Options |





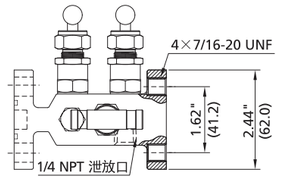

Each manifold comes standard with two PTFE flange gaskets and four 7/16" UNFx24mm high strength bolts.

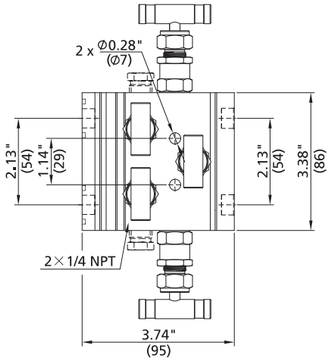


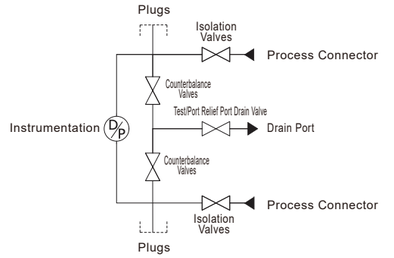




| Basic Ordering Information | Inlet/Interface Process | Outlet/Instrumentation | Drain Port | Test port |
|---|---|---|---|---|
| □□-75D-F-VB | Flanges | Flanges | 1/4 NPT Female Thread | Options |



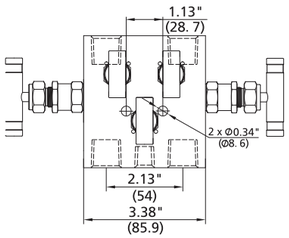



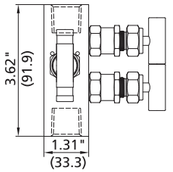



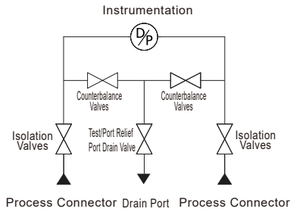



Each manifold comes standard with two PTFE flange gaskets and four 7/16" UNFx24mm high strength bolts.

| Basic Ordering Information | Inlet/Interface Process | Outlet/Instrumentation | Test Ports/Drain Ports |
|---|---|---|---|
| □□-75R-FN8-VB | 1/2 NPT Female Thread | 1/2 NPT Female Thread | 1/4 NPT Female Thread |

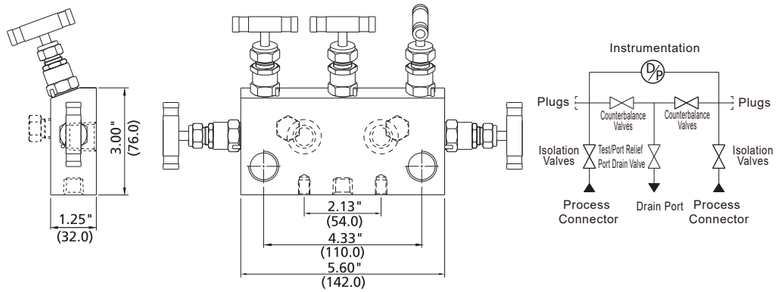





| Basic Ordering Information | Inlet/Interface Process | Outlet/Instrumentation | Drain Port | Test port |
|---|---|---|---|---|
| □□-75R-FN8-AB | 1/2 NPT Female Thread | 1/2 NPT Female Thread | 1/4 NPT Female Thread | Options |
| □□-75R-FJ8FN8-AB | 1/2" E-JOE | 1/2 NPT Female Thread | 1/4 NPT Female Thread | Options |

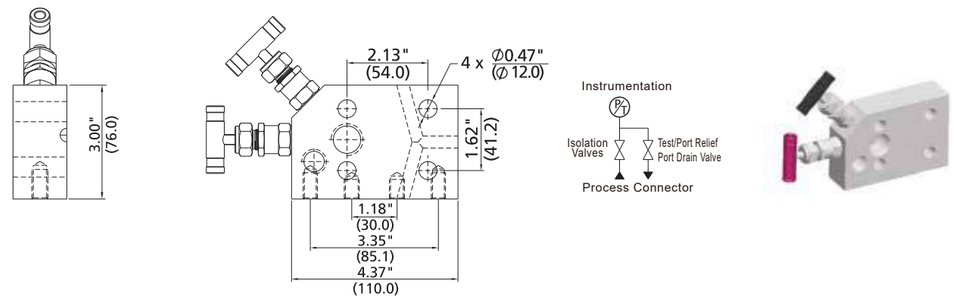



FJ8 port manifolds are made up of FN8 port manifolds adapted with ferrule male fittings.

## Integral Instrumentation Manifolds

Integral instrumentation manifolds are specifically designed for use with Rosemount®coplanarm pressure transmitters, including the 3051C, 3051S, 2024, and 3095 types.
Each manifold comes standard with four 7/16‘ UNEx2’ high strength bolts. It can be mounted directly to the transmitter without flanges.

| Basic Ordering Information | Inlet/Interface Process | Outlet/Instrumentation | Test Ports/Drain Ports |
|---|---|---|---|
| □□-72D-FN8-C | 1/2 NPT Female Thread | Flanges | 1/4 NPT Female Thread |

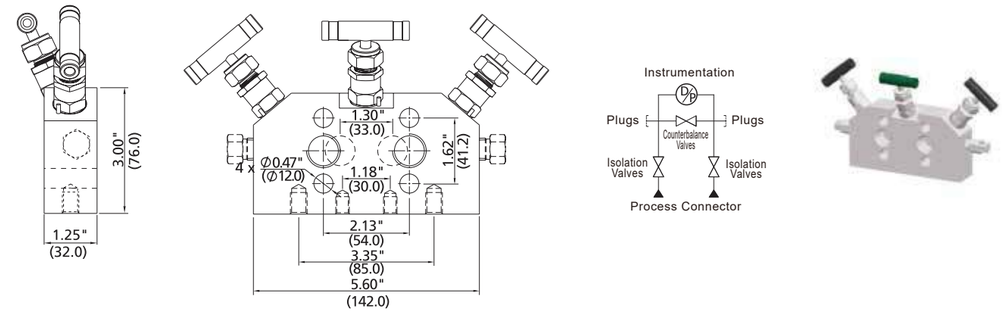




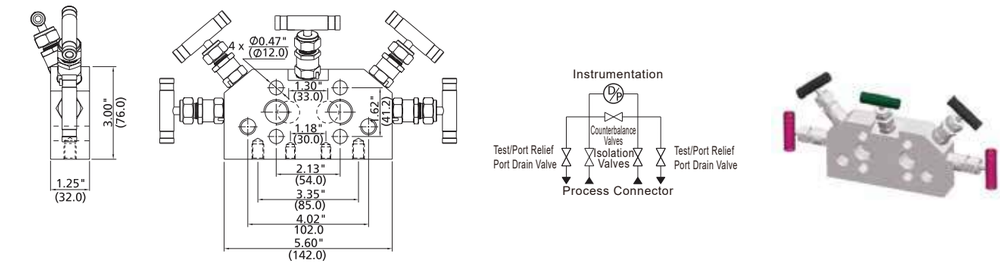





| Basic Ordering Information | Inlet/Interface Process | Outlet/Instrumentation | Test Ports/Drain Ports |
|---|---|---|---|
| □□-73D-FN8-C | 1/2 NPT Female Thread | Flanges | Options |
| □□-73D-FJ8-C | 1/2" E-JOE | Flanges | Options |




| Basic Ordering Information | Inlet/Interface Process | Outlet/Instrumentation | Test Ports/Drain Ports |
|---|---|---|---|
| □□-75D-FN8-C | 1/2 NPT Female Thread | Flanges | 1/4 NPT Female Thread |
| □□-75D-FJ8-C | 1/2" E-JOE | Flanges | 1/4 NPT Female Thread |




FJ8 port manifolds are made up of FN8 port manifolds adapted with ferrule male fittings.

# Model Description

SS – 72D – FN8 – LG – ET – 1M – SF2

| | | |

## Standard Atructural Materials

| Components | | Valve Body Material | | | | |
|---|---|---|---|---|---|---|
| | | Stainless Steel | | Carbon Steel | Duplex Steel | |
| | | Material Grade/Specification | | | | |
| Valve Body/End Cap | | F316 Stainless Steel, F316L Stainless Steel /A 182 | F316 Stainless Steel, F316L Stainless Steel /A 479 | A105, LF2/A350 | F51/A182 | S31803/A479 |
| Ball valve | Ball | 316 Stainless Steel,Stainless Steel/A 479 | | | S31803/A479 | |
| | Stem | | | | | |
| | Packing compression ring | | | | | |
| | Anti-rotation plate | 304 Stainless Steel,Stainless Steel/A 240 | | | | |
| | Valve seat | PEEK/PCTEE | | | | |
| Needle Globe Valves | Valve head | 304 Stainless Steel,316L Stainless Steel/A 479 | | | S31803/A479 | |
| | Valve stem | | | | | |
| | Bonnet | | | | | |
| OS&Y Needle Globe Valves | Valve head | 304 Stainless Steel,316L Stainless Steel/A 479 | | | S31803/A479 | |
| | Valve stem | | | | | |
| | Packing gland | | | | | |
| | Bonnet | LF2/A350,A105,F316 Stainless Steel/A 182 | | | | |

Stainless steel is standard, other materials are available.

## Flange Port

### Pressure-Temperature Ratings

E-JOE isolation relief valve assemblies are available with flange ports in a variety of sizes and pressure ratings in accordance with ASME B16.5.
The ratings listed below are based on ASME B16.5 Table 2-2.2 and Table F2-2.2, based on F316/A182 stainless steel.

| Temperature °C | ASME Grade | | | | | |
|---|---|---|---|---|---|---|
| | 150 | 300 | 600 | 900 | 1500 | 2500 |
| | Working Pressure,bar | | | | | |
| -29 to 38 | 19.0 | 49.6 | 99.3 | 148.9 | 248.2 | 413.7 |
| 50 | 18.4 | 48.1 | 96.2 | 144.3 | 240.6 | 400.9 |
| 100 | 16.2 | 42.2 | 84.4 | 126.6 | 211.0 | 351.6 |
| 150 | 14.8 | 38.5 | 77.0 | 115.5 | 192.5 | 320.8 |
| 200 | 13.7 | 35.7 | 71.3 | 107.0 | 178.3 | 297.2 |
| 250 | 12.1 | 33.4 | 66.8 | 100.1 | 166.9 | 278.1 |
| 300 | 10.2 | 31.6 | 63.2 | 94.9 | 158.1 | 263.5 |
| 325 | 9.3 | 30.9 | 61.8 | 92.7 | 154.4 | 257.4 |
| 350 | 8.4 | 30.3 | 60.7 | 91.0 | 151.6 | 252.7 |
| 375 | 7.4 | 29.9 | 59.8 | 89.6 | 149.4 | 249.0 |
| 400 | 6.5 | 29.4 | 58.9 | 88.3 | 147.2 | 245.3 |
| 425 | 5.5 | 29.1 | 58.3 | 87.4 | 145.7 | 242.9 |
| 450 | 4.6 | 28.8 | 57.7 | 86.5 | 144.2 | 240.4 |

| Temperature °F | ASME Grade | | | | | |
|---|---|---|---|---|---|---|
| | 150 | 300 | 600 | 900 | 1500 | 2500 |
| | Working Pressure,psig | | | | | |
| -20 to 100 | 275 | 720 | 1440 | 2160 | 3600 | 6000 |
| 200 | 235 | 620 | 1240 | 1860 | 3095 | 5160 |
| 300 | 215 | 560 | 1120 | 1680 | 2795 | 4660 |
| 400 | 195 | 515 | 1025 | 1540 | 2570 | 4280 |
| 500 | 170 | 480 | 955 | 1435 | 2390 | 3980 |
| 600 | 140 | 450 | 900 | 1355 | 2255 | 3760 |
| 650 | 125 | 440 | 885 | 1325 | 2210 | 3680 |
| 700 | 110 | 435 | 870 | 1305 | 2170 | 3620 |
| 750 | 95 | 425 | 855 | 1280 | 2135 | 3560 |
| 800 | 80 | 420 | 845 | 1265 | 2110 | 3520 |
| 850 | 65 | 420 | 835 | 1255 | 2090 | 3480 |

Sour Gas Valves Subject to NACE Standards

Process interface manifolds for sour gas applications are available in materials selected in accordance with NACE MR0175/ISO 15156 Please contact E-JOE or an authorised distributor for further information.





## 81 Series: Single Isolation Drain Manifolds

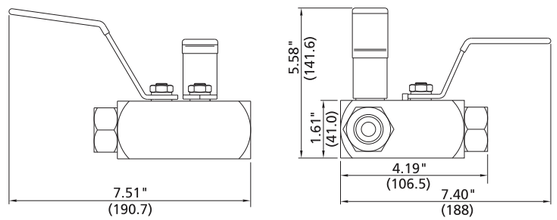
# Instrument Single Isolation Drain Manifolds

## Features

- Threaded port connection or one-piece forged body
- Manifolds (with ball configuration) ID: 9.5 mm (3/8 in.) for ball valves, 4 mm (0.16 in.) for needle valves Manifolds (all needle valve configuration)
  Inside diameter: 4 mm (0.16 in.) as standard, 6.4 mm (0.25 in.), 9.5 mm (0.38 in.) optional.

**Isolation: ball valve Drain: ball valve (manifold construction: BB)**

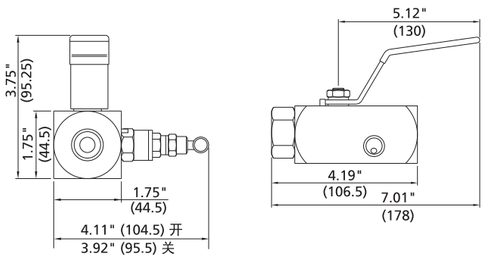
| Basic Ordering Information | Inlet/Interface Process | Outlet/Instrumentation | Drain/Vent Port |
|---|---|---|---|
| □□-81-BB-FN8-V4-C | 1/2 NPT Negative Thread | 1/2 NPT Negative Thread | 1/4 NPT Negative Thread |
| □□-81-BB-FN8-V4-CG | 1/2 NPT Negative Thread | 1/2 NPT Negative Thread | 1/4 NPT Negative Thread |






**Isolation: Ball Valve Drain: Needle Valve (Manifold Configuration: BN)**

| Basic Ordering Information | Inlet/Interface Process | Outlet/Instrumentation | Drain/Vent Port |
|---|---|---|---|
| □□-81-BN-FN8-V4-V | 1/2 NPT Negative Thread | 1/2 NPT Negative Thread | 1/4 NPT Negative Thread |
| □□-81-BN-FN8-V4-VG | 1/2 NPT Negative Thread | 1/2 NPT Negative Thread | 1/4 NPT Negative Thread |
| □□-81-BN-FN8N8-V4-V | 1/2 NPT Negative Thread | 1/2 NPT Negative Thread | 1/4 NPT Negative Thread |
| □□-81-BN-FN8N8-V4-VG | 1/2 NPT Negative Thread | 1/2 NPT Negative Thread | 1/4 NPT Negative Thread |

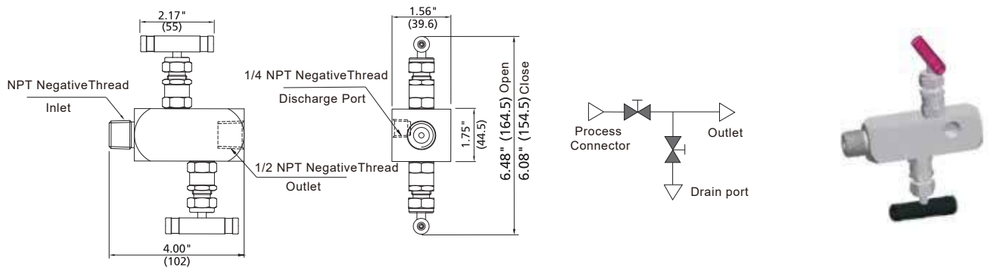





On/Off And Relief Manifolds

**Isolation: Needle Valve Drain: Needle Valve (Manifold Construction: NN)**

| Basic Ordering Information | Inlet/Interface Process | Outlet/Instrumentation | Drain/Vent Port |
|---|---|---|---|
| □□-81-NN-N8FN8-V4-H | 1/2NPT Male Thread | 1/2 NPT Female Thread | 1/4 NPT Female Thread |
| □□-81-NN-N12FN8-V4-HG | 3/4 NPT Male Thread | 1/2 NPT Female Thread | 1/4 NPT Female Thread |



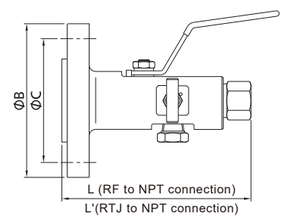


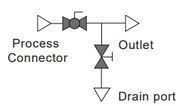

# Flanged Single Isolation Drain Manifolds

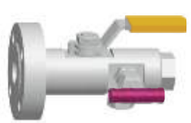
## Features

- Threaded port connection or one-piece forged body
- Process and instrumentation lines united on the same valve body
- 1/2 NPT female standard drain port
- Manifold (ball, needle configurations) ID: 9.5 mm (3/8 in.) for ball valves, 4 mm (0.16 in.) for needle valves Manifold (globe configurations) ID: 9.5 mm (3/8 in.) for globe valves

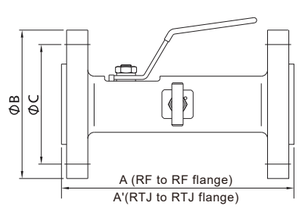
**Isolation: Ball valve Drain: Needle valve (Manifold construction: BN)**

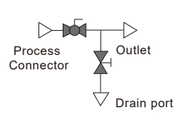


**Isolation: Ball valve Drain: Needle valve (Manifold construction: BN)**



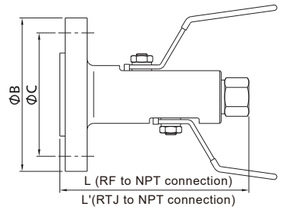



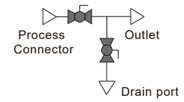






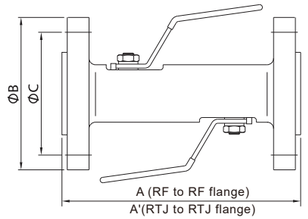

**Isolation: Ball valve Drain: Ball Valves (Manifold construction: BB)**

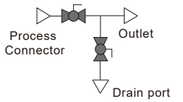





**Isolation: Ball valve Drain: Needle valve (Manifold construction: BB)**






| Flange Dimensions | Inside Diameter in. (mm) | ASME Pounds | L in. (mm) | L' in. (mm) | A in. (mm) | A' in. (mm) | ΦB in. (mm) | ΦC in. (mm) |
|---|---|---|---|---|---|---|---|---|
| NPS 1/2 (DN 15) | 3/8 (9.5) | 150 | 4.88 (124.0) | —— | 6.41 (162.8) | —— | 3.54 (90) | 2.37 (60.3) |
| | | 300 | | 4.88 (124.0) | 6.81 (173.0) | 6.81 (173.0) | 3.74 (95) | 2.63 (66.7) |
| | | 600 | | | | | | |
| | | 900/1500 | 5.67 (144.0) | 5.67 (144.0) | 7.99 (202.9) | 7.99 (202.9) | 4.72 (120) | 3.25 (82.6) |
| | | 2500 | | | | | 5.31 (135) | 3.50 (88.9) |
| NPS 3/4 (DN 20) | | 150 | 4.88 (124.0) | —— | 6.41 (162.8) | —— | 3.94 (100) | 2.75 (69.9) |
| | | 300 | | 4.88 (124.0) | 6.81 (173.0) | 6.81 (173.0) | 4.53 (115) | 3.25 (82.6) |
| | | 600 | | | | | | |
| | | 900/1500 | 5.67 (144.0) | 5.67 (144.0) | 7.99 (202.9) | 7.99 (202.9) | 5.12 (130) | 3.50 (88.9) |
| | | 2500 | | | | | 5.51 (140) | 3.75 (95.2) |
| NPS 1 (DN 25) | | 150 | 4.88 (124.0) | 4.88 (124.0) | 6.41 (162.8) | 6.61 (167.9) | 4.33 (110) | 3.13 (79.4) |
| | | 300 | | | 7.00 (177.8) | 7.00 (177.8) | 4.92 (125) | 3.50 (88.9) |
| | | 600 | | | | | | |
| | | 900/1500 | 5.98 (151.9) | 5.98 (151.9) | 10.30 (261.6) | 10.30 (261.6) | 5.91 (150) | 4.00 (101.6) |
| | | 2500 | | | 10.70 (271.8) | 10.70 (271.8) | 6.30 (160) | 4.25 (108.0) |
| NPS 1 1/2 (DN 40) | | 150 | | | 8.90 (226.1) | 9.49 (241.0) | 4.92 (125) | 3.87 (98.4) |
| | | 300 | | | 9.89 (251.2) | 9.89 (251.2) | 6.10 (155) | 4.50 (114.3) |
| | | 600 | | | | | | |
| | | 900/1500 | 6.61 (167.9) | 6.61 (167.9) | 11.50 (292.1) | 11.50 (292.1) | 7.09 (180) | 4.87 (123.8) |
| | | 2500 | | | 12.40 (315.0) | 12.40 (315.0) | 8.07 (205) | 5.75 (146) |
| NPS 2 (DN 50) | | 150 | 5.98 (151.9) | 5.98 (151.9) | 9.09 (230.9) | 9.49 (241.0) | 5.91 (150) | 4.75 (120.7) |
| | | 300 | | | 10.10 (256.5) | 10.30 (261.6) | 6.50 (165) | 5.00 (127.0) |
| | | 600 | | | | | | |
| | | 900/1500 | 6.61 (167.9) | 6.61 (167.9) | 12.00 (304.8) | 12.00 (304.8) | 8.46 (215) | 6.50 (165.1) |
| | | 2500 | 7.00 (177.8) | 7.00 (177.8) | 13.60 (345.4) | 13.60 (345.4) | 9.25 (235) | 6.75 (171.4) |

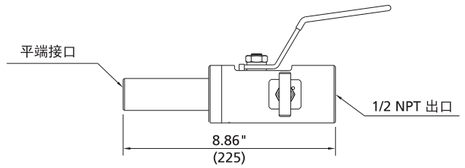
The above dimensions are for reference only and are subject to change.

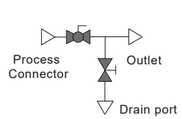
# Based on single isolation relief manifold

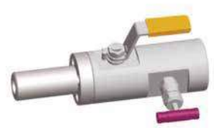
## Features

- Root valve can be mounted directly to vessel or process line
- Weld sizes from NPS 1/2 to NPS 2 on inlet side
- 1/2 NPT Negative Thread Standard Drain Port
- 1/2 NPT negative thread standard outlet
- Manifolds (with ball configuration) ID: 9.5 mm (3/8 in.) ball, 4 mm (0.16 in.) needle
  Manifolds (with full needle configuration) ID: 4 mm (0.16 in.) standard, 6.4 mm (0.25 in.), 9.5 mm (0.38 in.) selectable

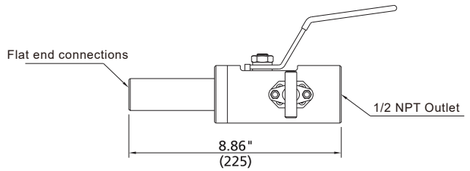
**Isolation: Ball valve Drain: Needle valve (Manifold construction: BN)**

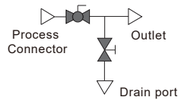


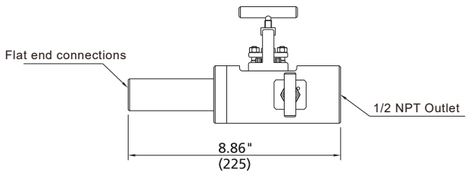
**Isolation: Ball valve Drain: OS&Y (Manifold construction: BO)**

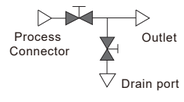




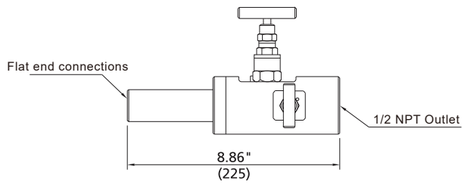

**Isolation:OS&Y Drain:Needle valve (Manifold configuration: ON)**

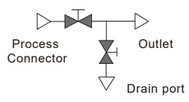





**Isolation:Needle valve Drain:Needle valve (Manifold construction:NN)**






The above dimensions are for reference only and are subject to change.



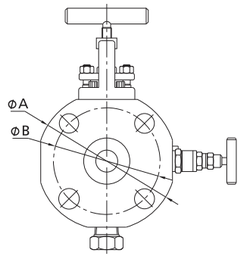


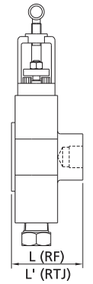
# Monoflange Single Isolation Relief Manifolds

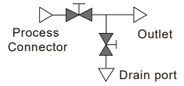
## Features

- Process and instrumentation lines united on the same valve body
- 1/4 NPT negative thread standard drain port
- 1/2 NPT negative thread standard outlet
- ID: 4 mm (0.16 in.) standard, 6.4 mm (0.25 in.), 9.5 mm (0.38 in.) partial flanges optional

**Isolation: OS&Y Drain: Needle valve (Manifold configuration: ON)**

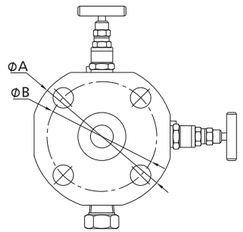


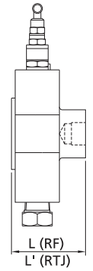






**Isolation: Needle valve Drain:Needle valve (Manifold configuration: NN)**



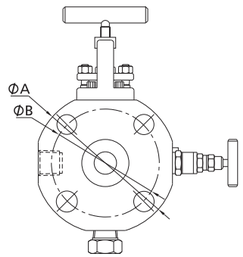



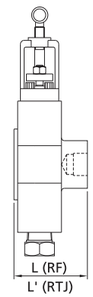


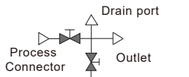




**Isolation:OS&Y Drain:Needle valve (Manifold configuration: ON, 2 drain ports)**

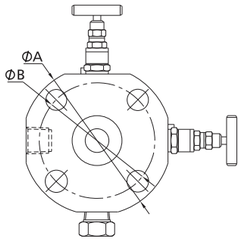


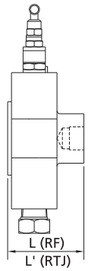



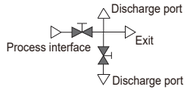






Isolation: needle valve Discharge: needle valve (valve group structure: NN, 2 discharge ports)






| Flange size | Inside diameter in. (mm) | ASME pound class | L in. (mm) | L' in. (mm) | ΦA in. (mm) | ΦB in. (mm) |
|---|---|---|---|---|---|---|
| NPS 1/2 (DN 15) | 0.16 (4.0) | 150 | 2.03 (51.6) | —— | 3.54 (90) | 2.37 (60.3) |
| | | 300 | | 2.03 (51.6) | 3.74 (95) | 2.63 (66.7) |
| | | 600 | | | | |
| | | 900/1500 | | | 4.72 (120) | 3.25 (82.6) |
| | | 2500 | | | 5.31 (135) | 3.50 (88.9) |
| NPS 3/4 (DN 20) | | 150 | 2.03 (51.6) | —— | 3.94 (100) | 2.75 (69.9) |
| | | 300 | | 2.03 (51.6) | 4.53 (115) | 3.25 (82.6) |
| | | 600 | | | | |
| | | 900/1500 | | | 5.12 (130) | 3.50 (88.9) |
| | | 2500 | 2.11 (53.5) | 2.11 (53.5) | 5.51 (140) | 3.75 (95.2) |
| NPS 1 (DN 25) | | 150 | 2.03 (51.6) | 2.03 (51.6) | 4.33 (110) | 3.13 (79.4) |
| | | 300 | | | 4.92 (125) | 3.50 (88.9) |
| | | 600 | | | | |
| | | 900/1500 | 2.11 (53.5) | 2.11 (53.5) | 5.91 (150) | 4.00 (101.6) |
| | | 2500 | | | 6.30 (160) | 4.25 (108.0) |
| NPS 1 1/2 (DN 40) | | 150 | 2.03 (51.6) | 2.03 (51.6) | 4.92 (125) | 3.87 (98.4) |
| | | 300 | 2.11 (53.5) | 2.11 (53.5) | 6.10 (155) | 4.50 (114.3) |
| | | 600 | | | | |
| | | 900/1500 | 2.19 (55.5) | 2.19 (55.5) | 7.09 (180) | 4.87 (123.8) |
| | | 2500 | 2.67 (67.9) | 2.67 (67.9) | 8.07 (205) | 5.75 (146) |
| NPS 2 (DN 50) | | 150 | 2.11 (53.5) | 2.11 (53.5) | 5.91 (150) | 4.75 (120.7) |
| | | 300 | 2.19 (55.5) | 2.19 (55.5) | 6.50 (165) | 5.00 (127.0) |
| | | 600 | | | | |
| | | 900/1500 | 2.42 (61.5) | 2.42 (61.5) | 8.46 (215) | 6.50 (165.1) |
| | | 2500 | 2.88 (73.4) | 2.88 (73.4) | 9.25 (235) | 6.75 (171.4) |

The above dimensions are for reference only and are subject to change.







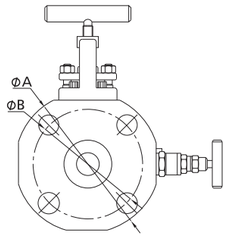
# 82 Series: Dual Isolation Manifold

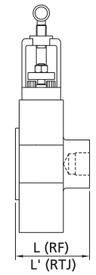
## Single flange (Monoflange) double isolation valve group

### Characteristic

- Process and instrument piping are combined on the same valve body
- 1/2 NPT female thread standard outlet
- Internal diameter: standard 4mm (0.16in.), 6.4mm (0.25 in.), 9.5 mm (0.38 in.) partial flanges are optional

First isolation: OS&Y Second isolation: Needle valve (valve group structure: ON)



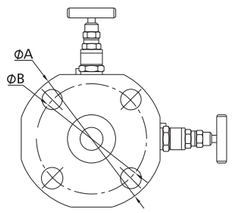



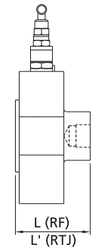






First isolation: needle valve Second isolation: needle valve (valve group structure: ON)









The dimensions are consistent with those of the single flange single isolation single relief valve.

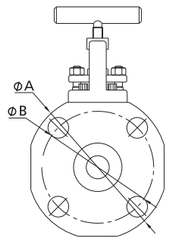
# 83 Series: Single Isolation Valve

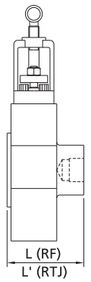
## Single flange (Monoflange) single isolation valve

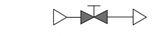
### Characteristic

- Process and instrument piping are combined on the same valve body
- 1/2 NPT female thread standard outlet
- Internal diameter: standard 4mm (0.16in.), 6.4mm (0.25 in.), 9.5 mm (0.38 in.) partial flanges are optional

Isolation:OS&Y(O)

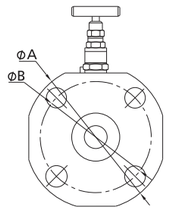


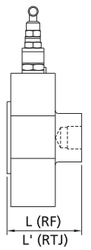






Isolation: Needle valve (N)









The dimensions are consistent with those of the single flange single isolation single relief valve.





# 85 Series: Dual Isolation and Relief Valve Group

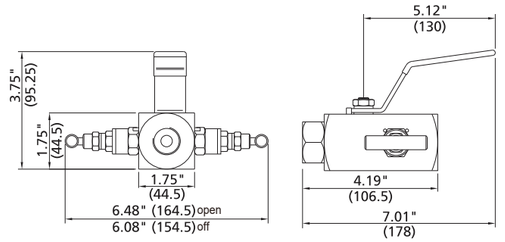
## Instrument double isolation relief valve group

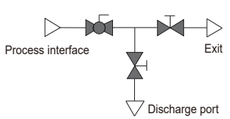
### Characteristic

- Threaded port connection or one-piece forged valve body
- Port size and thread form are available
- Valve group (including ball valve structure) internal diameter: ball valve 9.5 mm (3/8 in.), needle valve 4 mm (0.16 in.)
  Valve group (all needle valve structure) internal diameter: standard is 4mm (0.16 in.), 6.4 mm (0.25 in.), 9.5 mm (0.38 in.) optional

First isolation: ball valve  Second isolation: needle valve  Discharge: needle valve  (valve group structure: BNN)

| Basic ordering information | Inlet/process connection | Outlet/instrument connection | Bleed/drain connection |
|---|---|---|---|
| □□-85-BNN-FN8-V4-V | 1/2 NPT female thread | 1/2 NPT female thread | 1/4 NPT female thread |
| □□-85-BNN-FN8-V4-VG | 1/2 NPT female thread | 1/2 NPT female thread | 1/4 NPT female thread |

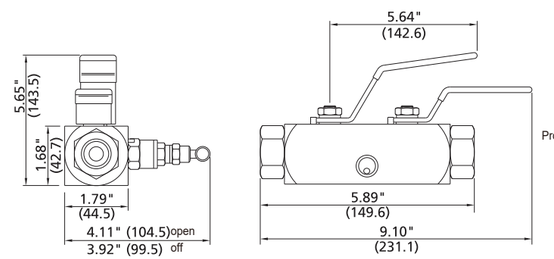


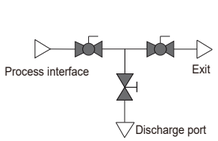






First isolation: ball valve  Second isolation: ball valve  Discharge: needle valve  (valve group structure: BBN)

| Basic ordering information | Inlet/process connection | Outlet/instrument connection | Bleed/drain connection |
|---|---|---|---|
| □□-85-BBN-FN8-V4-V | 1/2 NPT female thread | 1/2 NPT female thread | 1/4 NPT female thread |
| □□-85-BBN-FN8-V4-VG | 1/2 NPT female thread | 1/2 NPT female thread | 1/4 NPT female thread |

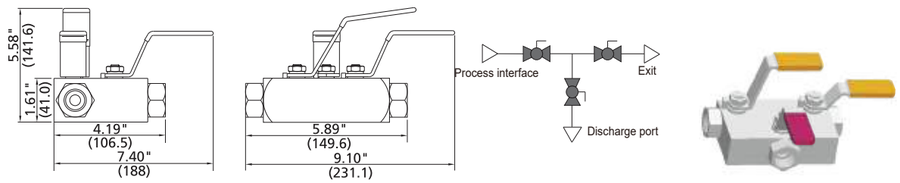





First isolation: ball valve Second isolation: ball valve Discharge: ball valve (valve group structure: BBB)

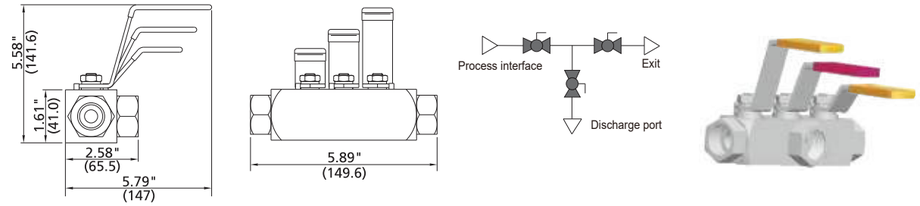
| Basic ordering information | Inlet/process connection | Outlet/instrument connection | Bleed/drain connection |
|---|---|---|---|
| □□-85-BBB-FN8-V4-C | 1/2 NPT female thread | 1/2 NPT female thread | 1/4 NPT female thread |
| □□-85-BBB-FN8-V4-CG | 1/2 NPT female thread | 1/2 NPT female thread | 1/4 NPT female thread |






First isolation: ball valve Second isolation: ball valve Discharge: ball valve (valve group structure: BBB)

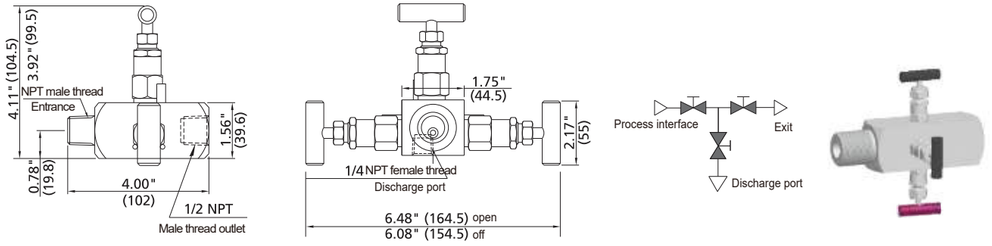
| Basic ordering information | Inlet/process connection | Outlet/instrument connection | Bleed/drain connection |
|---|---|---|---|
| □□-85-BBB-FN8-V4-L | 1/2 NPT female thread | 1/2 NPT female thread | 1/4 NPT female thread |
| □□-85-BBB-FN8-V4-LG | 1/2 NPT female thread | 1/2 NPT female thread | 1/4 NPT female thread |






First isolation: needle valve Second isolation: needle valve Discharge: needle valve (valve group structure: NNN)

| Basic ordering information | Inlet/process connection | Outlet/instrument connection | Bleed/drain connection |
|---|---|---|---|
| □□-85-NNN-N8-V4-V | 1/2 NPT male thread | 1/2 NPT female thread | 1/4 NPT female thread |
| □□-85-NNN-N12-V4-VG | 3/4 NPT male thread | 1/2 NPT female thread | 1/4 NPT female thread |









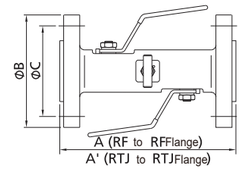


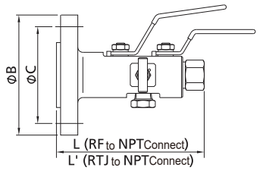

## Flange double isolation relief valve group

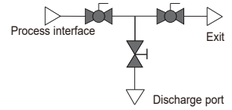
### Characteristic

- One-piece forged valve body structure reduces leakage points
- Process and instrument pipelines are combined on the same valve body
- 1/2 NPT female thread standard drain port
- Valve group (ball valve, needle valve structure) internal diameter: ball valve 9.5 mm (3/8 in.), needle valve 4 mm (0.16 in.)
  Valve group (full needle valve structure) internal diameter: 9.5 mm (0.38 in.)

First isolation: ball valve Second isolation: ball valve Discharge: needle valve (valve group structure: BBN)

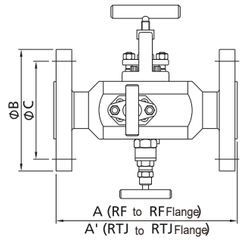


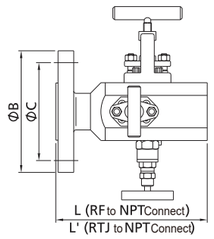




| Flange size | Inside diameter in. (mm) | ASME pound class | L in. (mm) | L' in. (mm) | A in. (mm) | A' in. (mm) | ØB in. (mm) | ØC in. (mm) |
|---|---|---|---|---|---|---|---|---|
| NPS 1/2 (DN 15) | 3/8 (9.5) | 150 | 5.91 (150.1) | —— | 6.41 (162.8) | —— | 3.54 (90) | 2.37 (60.3) |
| | | 300 | | 5.91 (150.1) | 6.81 (173.0) | 6.81 (173.0) | 3.74 (95) | 2.63 (66.7) |
| | | 600 | | | | | | |
| | | 900/1500 | 6.69 (170.0) | 6.69 (170.0) | 7.99 (202.9) | 7.99 (202.9) | 4.72 (120) | 3.25 (82.6) |
| | | 2500 | | | | | 5.31 (135) | 3.50 (88.9) |
| NPS 3/4 (DN 20) | | 150 | 5.91 (150.1) | —— | 6.41 (162.8) | —— | 3.94 (100) | 2.75 (69.9) |
| | | 300 | | 5.91 (150.1) | 6.81 (173.0) | 6.81 (173.0) | 4.53 (115) | 3.25 (82.6) |
| | | 600 | | | | | | |
| | | 900/1500 | 6.69 (170.0) | 6.69 (170.0) | 7.99 (202.9) | 7.99 (202.9) | 5.12 (130) | 3.50 (88.9) |
| | | 2500 | | | | | 5.51 (140) | 3.75 (95.2) |
| NPS 1 (DN 25) | | 150 | 5.91 (150.1) | 5.91 (150.1) | 6.41 (162.8) | 6.61 (167.9) | 4.33 (110) | 3.13 (79.4) |
| | | 300 | | | 7.00 (177.8) | 7.00 (177.8) | 4.92 (125) | 3.50 (88.9) |
| | | 600 | | | | | | |
| | | 900/1500 | 7.00 (177.8) | 7.00 (177.8) | 10.30 (261.6) | 10.30 (261.6) | 5.91 (150) | 4.00 (101.6) |
| | | 2500 | | | 10.70 (271.8) | 10.70 (271.8) | 6.30 (160) | 4.25 (108.0) |
| NPS 1 1/2 (DN 40) | | 150 | | | 8.90 (226.1) | 9.49 (241.0) | 4.92 (125) | 3.87 (98.4) |
| | | 300 | | | 9.89 (251.2) | 9.89 (251.2) | 6.10 (155) | 4.50 (114.3) |
| | | 600 | | | | | | |
| | | 900/1500 | 7.64 (194.1) | 7.64 (194.1) | 11.50 (292.1) | 11.50 (292.1) | 7.09 (180) | 4.87 (123.8) |
| | | 2500 | | | 12.40 (315.0) | 12.40 (315.0) | 8.07 (205) | 5.75 (146) |
| NPS 2 (DN 50) | | 150 | 7.00 (177.8) | 7.00 (177.8) | 9.09 (230.9) | 9.49 (241.0) | 5.91 (150) | 4.75 (120.7) |
| | | 300 | | | 10.10 (256.5) | 10.30 (261.6) | 6.50 (165) | 5.00 (127.0) |
| | | 600 | | | | | | |
| | | 900/1500 | 7.64 (194.1) | 7.64 (194.1) | 12.00 (304.8) | 12.00 (304.8) | 8.46 (215) | 6.50 (165.1) |
| | | 2500 | 8.03 (204.0) | 8.03 (204.0) | 13.60 (345.4) | 13.60 (345.4) | 9.25 (235) | 6.75 (171.4) |

First isolation: OS&Y  Second isolation: OS&Y  Discharge: needle valve  (valve group structure: OON)




| Flange size | Inside diameter in. (mm) | ASME pound class | L in. (mm) | L' in. (mm) | A in. (mm) | A' in. (mm) | ØB in. (mm) | ØC in. (mm) |
|---|---|---|---|---|---|---|---|---|
| NPS 1/2 (DN 15) | 0.38 (9.5) | 150 | 4.88 (124.0) | —— | 6.41 (162.8) | —— | 3.54 (90) | 2.37 (60.3) |
| | | 300 | | 4.88 (124.0) | 6.81 (173.0) | 6.81 (173.0) | 3.74 (95) | 2.63 (66.7) |
| | | 600 | | | | | | |
| | | 900/1500 | 5.60 (142.2) | 5.60 (142.2) | 7.99 (202.9) | 7.99 (202.9) | 4.72 (120) | 3.25 (82.6) |
| | | 2500 | | | | | 5.31 (135) | 3.50 (88.9) |
| NPS 3/4 (DN 20) | | 150 | 4.88 (124.0) | —— | 6.41 (162.8) | —— | 3.94 (100) | 2.75 (69.9) |
| | | 300 | | 4.88 (124.0) | 6.81 (173.0) | 6.81 (173.0) | 4.53 (115) | 3.25 (82.6) |
| | | 600 | | | | | | |
| | | 900/1500 | 5.60 (142.2) | 5.60 (142.2) | 7.99 (202.9) | 7.99 (202.9) | 5.12 (130) | 3.50 (88.9) |
| | | 2500 | | | | | 5.51 (140) | 3.75 (95.2) |
| NPS 1 (DN 25) | | 150 | 4.88 (124.0) | 4.88 (124.0) | 6.41 (162.8) | 6.61 (167.9) | 4.33 (110) | 3.13 (79.4) |
| | | 300 | | | 7.00 (177.8) | 7.00 (177.8) | 4.92 (125) | 3.50 (88.9) |
| | | 600 | | | | | | |
| | | 900/1500 | 5.98 (151.9) | 5.98 (151.9) | 10.30 (261.6) | 10.30 (261.6) | 5.91 (150) | 4.00 (101.6) |
| | | 2500 | | | 10.70 (271.8) | 10.70 (271.8) | 6.30 (160) | 4.25 (108.0) |
| NPS 1 1/2 (DN 40) | | 150 | | | 8.90 (226.1) | 9.49 (241.0) | 4.92 (125) | 3.87 (98.4) |
| | | 300 | | | 9.89 (251.2) | 9.89 (251.2) | 6.10 (155) | 4.50 (114.3) |
| | | 600 | | | | | | |
| | | 900/1500 | 6.61 (167.9) | 6.61 (167.9) | 11.50 (292.1) | 11.50 (292.1) | 7.09 (180) | 4.87 (123.8) |
| | | 2500 | | | 12.40 (315.0) | 12.40 (315.0) | 8.07 (205) | 5.75 (146) |
| NPS 2 (DN 50) | | 150 | 5.98 (151.9) | 5.98 (151.9) | 9.09 (230.9) | 9.49 (241.0) | 5.91 (150) | 4.75 (120.7) |
| | | 300 | | | 10.10 (256.5) | 10.30 (261.6) | 6.50 (165) | 5.00 (127.0) |
| | | 600 | | | | | | |
| | | 900/1500 | 6.61 (167.9) | 6.61 (167.9) | 12.00 (304.8) | 12.00 (304.8) | 8.46 (215) | 6.50 (165.1) |
| | | 2500 | 7.00 (177.8) | 7.00 (177.8) | 13.60 (345.4) | 13.60 (345.4) | 9.25 (235) | 6.75 (171.4) |



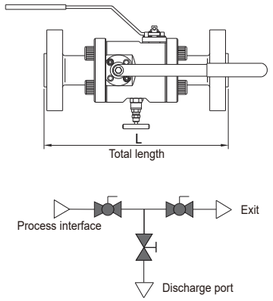




# Three-piece bolted flange double isolation relief valve group

## Characteristic

- The bolted flange 85 valve group supplements the existing one-piece diameter size selection range, with a size range of 9.5mm~50.8mm (3/8in.~2in.)
- Design and manufacturing refer to ASME B16.34 and ASME Boiler and Pressure Vessel Construction Code Volume VIII
- Three-piece forged valve body design
- Fireproof structure design, fireproof design test according to API607, optional anti-static structure
- Side-mounted valve stem structure design, effectively prevents valve stem from rushing out
- Material meets NACE MR 0175/IS0 15156 standard
- 1/2 NPT female thread standard discharge port






Size

| Basic Ordering Information | Flange size | Inside diameter in. (mm) | ASME pound class | L in. (mm) |
|---|---|---|---|---|
| □□-85 -BBN1-□□8□□□-V□-FS-I | NPS 1/2 (DN 15) | 1/2 (14) | 150 | 9.5 (242) |
| | | | 300 | 10.7 (272) |
| | | | 600 | 11.5 (292) |
| | | | 900/1500 | 12.7 (322) |
| | | | 2500 | 13.9 (352) |
| □□-85 -BBN2-□□12□□□-V□-FS-I | NPS 3/4 (DN 20) | 3/4 (20) | 150 | 9.9 (252) |
| | | | 300 | 11.1 (282) |
| | | | 600 | 11.9 (302) |
| | | | 900/1500 | 13.1 (332) |
| | | | 2500 | 14.3 (362) |
| □□-85 -BBN3-□□16□□□-V□-FS-I | NPS 1 (DN 25) | 1 (25.4) | 150 | 11.9 (302) |
| | | | 300 | 12.7 (322) |
| | | | 600 | 13.5 (342) |
| | | | 900/1500 | 15.4 (392) |
| | | | 2500 | 16.2 (412) |
| □□-85 -BBN4-□□24□□□-V□-FS-I | NPS 1 1/2 (DN 40) | 1 1/2 (38.1) | 150 | 14.2 (361) |
| | | | 300 | 14.4 (367) |
| | | | 600 | 15.1 (384) |
| | | | 900/1500 | 15.8 (402) |
| | | | 2500 | 18.2 (463) |
| □□-85 -BBN5-□□32□□□-V□-FS-I | NPS 2 (DN 50) | 2 (50.8) | 150 | 15.4 (390) |
| | | | 300 | 15.7 (398) |
| | | | 600 | 16.4 (416) |
| | | | 900/1500 | 18.9 (481) |

| Basic Ordering Information | Flange size | Inside diameter in. (mm) | ASME pound class | L in. (mm) |
|---|---|---|---|---|
| □□-85-BBN-□□8□□□-V□-FS-I | NPS 1/2 (DN 15) | 3/8 (9.5) | 150 | 9.1 (232) |
| | | | 300 | 9.9 (252) |
| | | | 600 | 10.7 (272) |
| | | | 900/1500 | 12.3 (312) |
| | | | 2500 | 13.5 (342) |
| □□-85-BBN1-□□12□□□-V□-FS-I | NPS 3/4 (DN 20) | 1/2 (14) | 150 | 9.9 (252) |
| | | | 300 | 11.1 (282) |
| | | | 600 | 11.9 (302) |
| | | | 900/1500 | 13.1 (332) |
| | | | 2500 | 14.3 (362) |
| □□-85-BBN2-□□16□□□-V□-FS-I | NPS 1 (DN 25) | 3/4 (20) | 150 | 10.7 (272) |
| | | | 300 | 11.5 (292) |
| | | | 600 | 12.7 (322) |
| | | | 900/1500 | 13.9 (352) |
| | | | 2500 | 15.0 (382) |
| □□-85-BBN3-□□24□□□-V□-FS-I | NPS 1 1/2 (DN 40) | 1 (25.4) | 150 | 12.3 (312) |
| | | | 300 | 13.1 (332) |
| | | | 600 | 13.9 (352) |
| | | | 900/1500 | 15.8 (402) |
| | | | 2500 | 16.6 (422) |
| □□-85-BBN4-□□32□□□-V□-FS-I | NPS 2 (DN 50) | 1 1/2 (38.1) | 150 | 14.3 (364) |
| | | | 300 | 14.6 (372) |
| | | | 600 | 15.4 (390) |
| | | | 900/1500 | 16.3 (415) |
| | | | 2500 | 18.7 (475) |
| □□-85-BBN5-□□48□□□-V□-FS-I | NPS 3 (DN 80) | 2 (50.8) | 150 | 15.7 (400) |
| | | | 300 | 16.1 (410) |
| | | | 600 | 16.9 (428) |
| | | | 900 | 17.4 (441) |
| | | | 1500 | 19.7 (500) |

The above dimensions are for reference only and are subject to change.





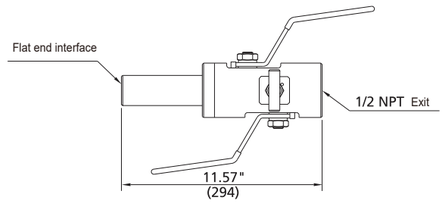


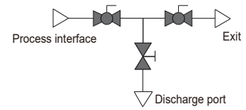
# Root double isolation relief valve group

## Characteristic

- The root valve can be directly installed with the container or process pipeline.
- The welding size of the inlet end ranges from NPS 1/2 to NPS 2.
- 1/2 NPT female thread standard drain port.
- 1/2 NPT female thread standard outlet.
- Valve group (including ball valve structure) internal diameter: ball valve 9.5 mm (3/8 in.), needle valve 4 mm (0.16 in.)
  Valve group (full needle valve structure) internal diameter: standard is 4 mm (0.16 in.), 6.4 mm (0.25 in.), 9.5 mm (0.38 in.) optional

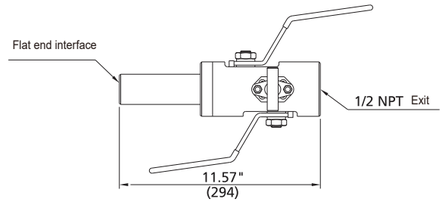
First isolation: ball valve Second isolation: ball valve Discharge: needle valve (valve group structure: BBN)

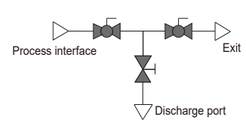




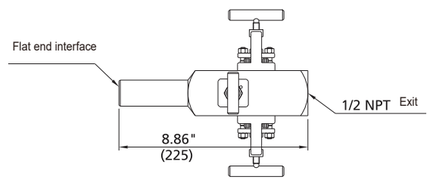

First isolation: ball valve Second isolation: ball valve Discharge: OS&Y (valve group structure: BBO)

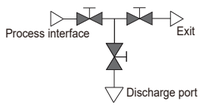




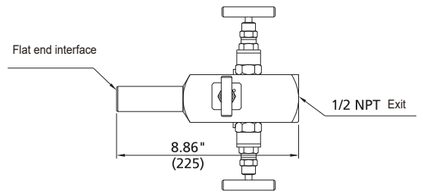

First isolation: OS&Y Second isolation: OS&Y Discharge: needle valve (valve group structure: OON)

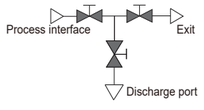





First isolation: needle valve Second isolation: needle valve Discharge: needle valve (valve group structure: NNN)





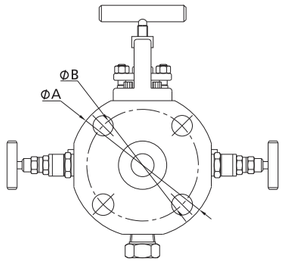

The above dimensions are for reference only and are subject to change.

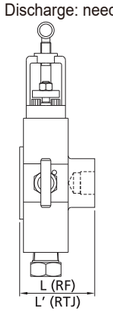
# Single flange (Monoflange) double isolation relief valve group

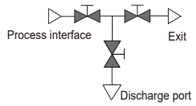
## Characteristic

- Process and instrument piping are combined on the same valve body
- 1/4 NPT female thread standard drain port
- 1/2 NPT female thread standard outlet port
- Internal diameter: standard 4 mm (0.16 in.), 6.4 mm (0.25 in.), 9.5 mm (0.38 in.) partial flanges are optional

First isolation: OS&Y Second isolation: needle valve Discharge: needle valve (valve group structure: ONN)

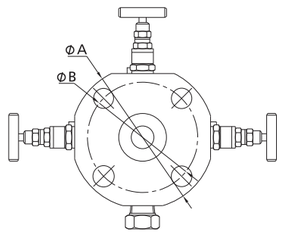


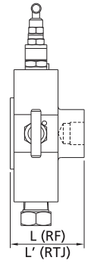



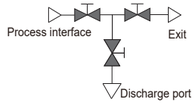






First isolation: needle valve Second isolation: needle valve Discharge: needle valve (valve group structure: NNN)

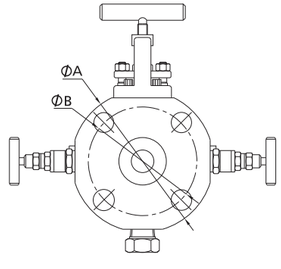


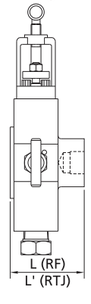



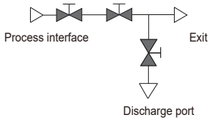






First isolation: OS&Y Second isolation: needle valve Discharge: needle valve (valve group structure: ONN, isolation/isolation/discharge: X)



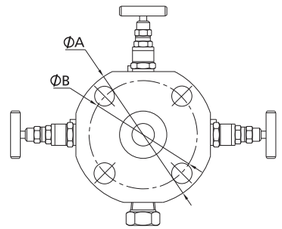


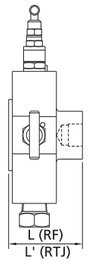


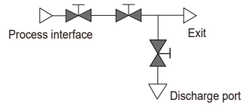





First isolation: needle valve Second isolation: needle valve Discharge: needle valve (valve group structure: NNN, isolation/isolation/discharge: X)





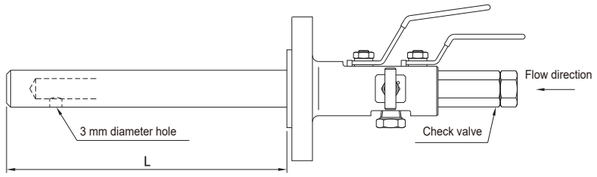

| Flange size | Inside diameter in. (mm) | ASME pound class | L in. (mm) | L' in. (mm) | ΦA in. (mm) | ΦB in. (mm) |
|---|---|---|---|---|---|---|
| NPS 1/2 (DN 15) | 0.16 (4.0) | 150 | 2.03 (51.6) | —— | 3.54 (90) | 2.37 (60.3) |
| | | 300 | | 2.03 (51.6) | 3.74 (95) | 2.63 (66.7) |
| | | 600 | | | | |
| | | 900/1500 | | | 4.72 (120) | 3.25 (82.6) |
| | | 2500 | | | 5.31 (135) | 3.50 (88.9) |
| NPS 3/4 (DN 20) | | 150 | 2.03 (51.6) | —— | 3.94 (100) | 2.75 (69.9) |
| | | 300 | | 2.03 (51.6) | 4.53 (115) | 3.25 (82.6) |
| | | 600 | | | | |
| | | 900/1500 | | | 5.12 (130) | 3.50 (88.9) |
| | | 2500 | 2.11 (53.5) | 2.11 (53.5) | 5.51 (140) | 3.75 (95.2) |
| NPS 1 (DN 25) | | 150 | 2.03 (51.6) | 2.03 (51.6) | 4.33 (110) | 3.13 (79.4) |
| | | 300 | | | 4.92 (125) | 3.50 (88.9) |
| | | 600 | | | | |
| | | 900/1500 | 2.11 (53.5) | 2.11 (53.5) | 5.91 (150) | 4.00 (101.6) |
| | | 2500 | | | 6.30 (160) | 4.25 (108.0) |
| NPS 1 1/2 (DN 40) | | 150 | 2.03 (51.6) | 2.03 (51.6) | 4.92 (125) | 3.87 (98.4) |
| | | 300 | 2.11 (53.5) | 2.11 (53.5) | 6.10 (155) | 4.50 (114.3) |
| | | 600 | | | | |
| | | 900/1500 | 2.19 (55.5) | 2.19 (55.5) | 7.09 (180) | 4.87 (123.8) |
| | | 2500 | 2.67 (67.9) | 2.67 (67.9) | 8.07 (205) | 5.75 (146) |
| NPS 2 (DN 50) | | 150 | 2.11 (53.5) | 2.11 (53.5) | 5.91 (150) | 4.75 (120.7) |
| | | 300 | 2.19 (55.5) | 2.19 (55.5) | 6.50 (165) | 5.00 (127.0) |
| | | 600 | | | | |
| | | 900/1500 | 2.42 (61.5) | 2.42 (61.5) | 8.46 (215) | 6.50 (165.1) |
| | | 2500 | 2.88 (73.4) | 2.88 (73.4) | 9.25 (235) | 6.75 (171.4) |

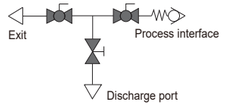
The above dimensions are for reference only and are subject to change.

# Injection double isolation and relief valve group

## Function-Injection

This design allows the injection of chemicals and other media into the process fluid system. The check valve is installed to prevent the process fluid from flowing back through the injection extension. There is a 0.125" (3 mm) diameter hole on the injection nozzle. The length of the injection tube (L) is manufactured according to user requirements and specified needs. The injection hole is rotatable and the injection valve can provide most forms in the 85 range.




### Injection tube

The length of the injection tube (L) is manufactured according to user requirements.
The standard diameter of the injection hole is 3mm.

### Integral check valve

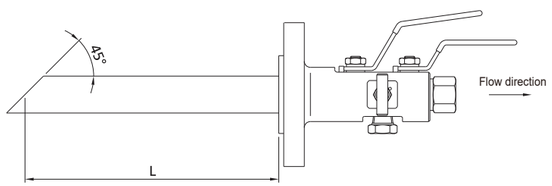
The standard material of the soft seal of this spring return check valve is FKM.

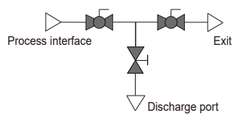


# Sampling double isolation relief valve group

## Function - Sampling

This design can be used directly to extract samples from process fluid pipelines with normal pressure, and the customized sampling tube extends from the process flange to the sampling container. The sampling valve can be provided without sampling probe and can provide most forms in the 85 range.




### Sampling probe

The length (L) of the sampling probe is manufactured according to user requirements.





## Model Description

SS – 85 – 1BBO1 – FN8 – 2V8 – HGSF2 – IE

| Body material | Series | Needle valve diameter selection | Structure | Ball valve diameter selection | Inlet type | Inlet size | Pressure rating | Outlet type | Outlet size | Same as entrance | Number of vents | Vent type and size | Body type/ function | Packing/ seal material | Special application | Cleaning and packaging | Special function |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| SS 316 stainless steel | 81 Single isolation relief valve group | 1 0.16" (4 mm) | NNN First isolation: Needle valve; Second isolation: Needle valve; Release: Needle valve | 1 1/2" (14 mm) | FN NPT female thread | 4 1/4" | Instrument port: Class 2500 | | | | 1 A vent | V4 1/4 NPT Female thread with plug | Flange or root valve | None | None | None | FC-01 | None |
| 6L 316L stainless steel | 82 Double isolation valve group | 2 0.25" (6.4 mm) | BNN First isolation: Ball valve; Second isolation: Needle valve; Release: Needle valve | 2 3/4" (20 mm) | N NPT male thread | 6 3/8" or 6 mm | 10K Class 4500 | | | | 2 Two drain ports | V8 1/2 NPT Female thread with plug | C Compact structure | S NACE MR 0175 | F2 FC-02 | I Fireproof (not applicable to valve products with all Needle valves) | |
| D5 Duplex steel 2205 | 83 Single isolation valve | 3 0.38" (9.5 mm) | BBN First isolation: Ball valve; Second isolation: Ball valve; Release: Needle valve | 3 1" (25.4 mm) | FRT Imperial taper female thread | 8 1/2" or 8 mm | ASME Flange port (Class series): 150 Class 150 | | | | | | L Composition valve collinear distribution | PTFE | | E Antistatic | |
| CS Carbon steel | 85 Double isolation relief valve group | | BBB First isolation: Ball valve; Second isolation: Ball valve; Release: Needle valve | 4 1 1/2" (38.1 mm) | RT Imperial taper male thread | 10 10 mm | 300 Class 300 | | | | | | V Composition valve vertical distribution | Fireproof valve | | IE Fireproof and antistatic | |
| | | | OON First isolation: OS&Y; Second isolation: OS&Y; Release: OS&Y | 5 2" (50.8 mm) | MJ Metric double ferrule | 12 3/4"or 12 mm | 600 Class 600 | | | | | | H Composition valve horizontal distribution | G Graphite | | | |
| | | | BBO First isolation: Ball valve; Second isolation: Ball valve; Release: Needle valve | | FJ Imperial double ferrule | 14 14 mm | 900 Class 900 | | | | | | F Three-piece bolt connection | | | | |
| | | | ONN First isolation: OS&Y; Second isolation: Needle valve; Release: Needle valve | | FMS Metric female thread | 16 1" or 16 mm | 1500 Class 1500 | | | | | | X Isolation/isolation /relief | | | | |
| | | | BB First isolation: Ball valve; Second isolation: —; Release: Needle valve | | MS Metric male thread | 20 1 1/4"or M20 x 1.5 | 2500 Class 2500 | | | | | | SA Sampling function | | | | |
| | | | NN First isolation: Needle valve; Second isolation: Needle valve; Release: —— | | UMB Metric Tube butt weld | 24 1 1/2" | EN Flange port (PN series): 6 PN 6 | | | | | | IN Injection function | | | | |
| | | | BN First isolation: Ball valve; Second isolation: ——; Release: Needle valve | | FM RF sealing flange | 32 2" | 10 PN 10 | | | | | | | | | | |
| | | | BO First isolation: Ball valve; Second isolation: ——; Release: OS&Y | | RTJ RTJ flange sealing surface | 48 3" | 16 PN 16 | | | | | | | | | | |
| | | | ON First isolation: OS&Y; Second isolation: ——; Release: Needle valve | | MM RF single flange sealing surface | | 25 PN 25 | | | | | | | | | | |
| | | | O First isolation: OS&Y; Second isolation: ——; Release: —— | | RV Root valve flat pipe port | | 40 PN 40 | | | | | | | | | | |
| | | | N First isolation: Needle valve; Second isolation: ——; Release: —— | | BWE Butt weld branch seat | | 63 PN 63 | | | | | | | | | | |
| | | | | | | | 100 PN 100 | | | | | | | | | | |
| | | | | | | | 160 PN 160 | | | | | | | | | | |

Note: "Model Description" is used to explain the composition rules of E-JOE product models. It is not applicable to the specific selection of products and cannot be combined at will. If you have any questions, please contact E-JOE or an authorized agent.

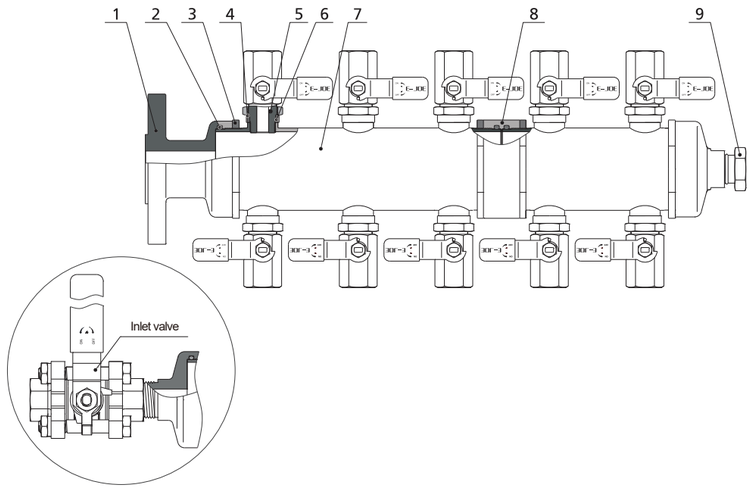
1. Selection of ball valve diameter:
   1.1.3/8" (10mm) hole (process interface ≥1/2", select connection size ≥DN15);
   1.2.1/2" (14mm) hole (process interface ≥3/4", select connection size ≥DN20);
   1.4.1" (25.4mm) hole (process interface ≥1", select connection size ≥DN25);
   1.5.1-1/2" (38.1mm) hole (process interface ≥1-1/2", select connection size ≥DN40);
   1.6.2" (50.8mm) hole (process interface ≥2", select connection size ≥DN50).
2. For oxygen-rich environments or hazardous media, please contact an authorized agent or E-JOE
3. Cleaning and packaging:
   3.1.FE-01: Standard cleaning and packaging for general industrial use.
   3.2.FE-02: Special cleaning and packaging for wetted system components should meet ASTM G93 C grade requirements.

# 67 Series Air Distributor

## Features

- Working pressure up to 1000 psig
- Working temperature: -18 to 121°C (0 to 250°F)
- Modular design, easy installation and maintenance
- Standard modules can be provided separately, with 4 or 6 outlets available
- Multiple inlet and outlet types can be provided separately, which can be replaced online
- All products are tested for tightness with air or nitrogen at rated working pressure before leaving the factory

## Main structural materials




| Serial number | Component | Material | |
|---|---|---|---|
| 1 | Inlet valve | 44 series ball valve | |
| | Flange/connector | 316 stainless steel | 304 stainless steel |
| 2 | O-ring | Nitrile rubber | |
| 3 | Lock nut | 304 stainless steel | |
| 4 | Support ring | 304 stainless steel | |
| 5 | Outlet valve | 43 series ball valve | |
| 6 | Seal ring | PTFE | |
| 7 | Main pipe | 316 stainless steel | 304 stainless steel |
| 8 | Connection nut | 316 stainless steel | 304 stainless steel |
| 9 | Plug | 316 stainless steel | 304 stainless steel |





## Standard port format

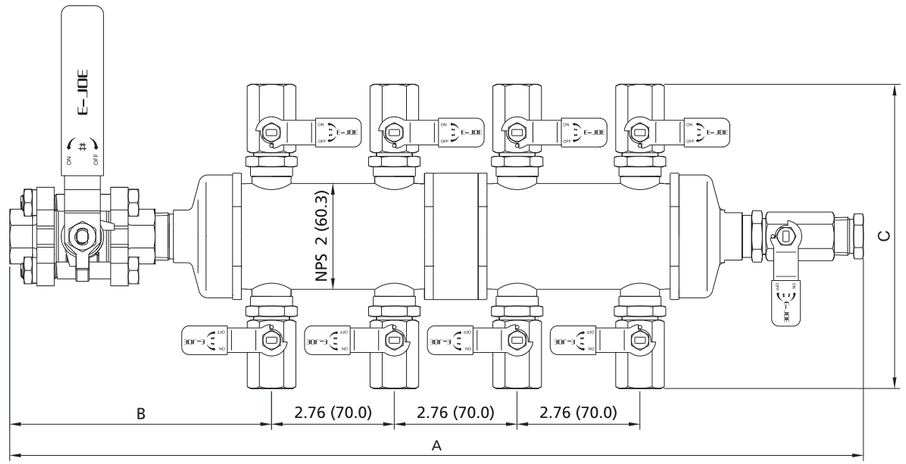
| Port | Type | Specification | Standard |
|---|---|---|---|
| Inlet | NPT Female | 1" | ASME B1.20.1 |
| | Flange | Class 150, Class 300 | ASME B16.5 |
| | | PN16, PN25, PN40 | EN1092, GB/T9115 |
| Outlet | NPT Female | 1/2" | ASME B1.20.1 |
| Drain | NPT Female | 1/2" | ASME B1.20.1 |

Note: The ports listed above are standard products. If other port types are required, please refer to "Model Description" for selection.

## Dimensions and Ordering Information

Dimensions are in inches (millimeters) and are for reference only.

### Overall product




| Basic Ordering Information | Port Type and Size | Size, in. (mm) | | |
|---|---|---|---|---|
| | | A | B | C |
| □□-67-AM16-8FN8-FN8 | Inlet 1" Class 150 RF flange,<br>Outlet 1/2" NPT female thread, number of outlets 8,<br>Discharge port 1/2" NPT female thread with plug. | 14.60 (370.8) | 3.39 (86.0) | 6.81 (173.0) |
| □□-67-FN8-4FJ4Y-FN8 | Inlet 1/2"NPT female thread, outlet 1/4",<br>E-JOE ferrule connector with plug, 4 outlets,<br>Discharge port 1/2"NPT female thread with plug. | 8.00 (203.0) | 2.29 (58.2) | 9.71 (246.7) |
| □□-67-FN12Y-8FN8-VPFN8 | Inlet 3/4"NPT female thread with 44 ball valve,<br>Outlet 1/2"NPT female thread, 8 outlets,<br>Discharge port 1/2"NPT female thread with valve and plug | 19. 80 (503.0) | 6. 61 (168.0) | 6.81 (173.0) |

Add material code to complete ordering number. Contact E-JOE for other ports and sizes.

## Model Description

S4- 67 - FN 12Y - 4MJ10Y - VFN 8 - U - F2

| | | |

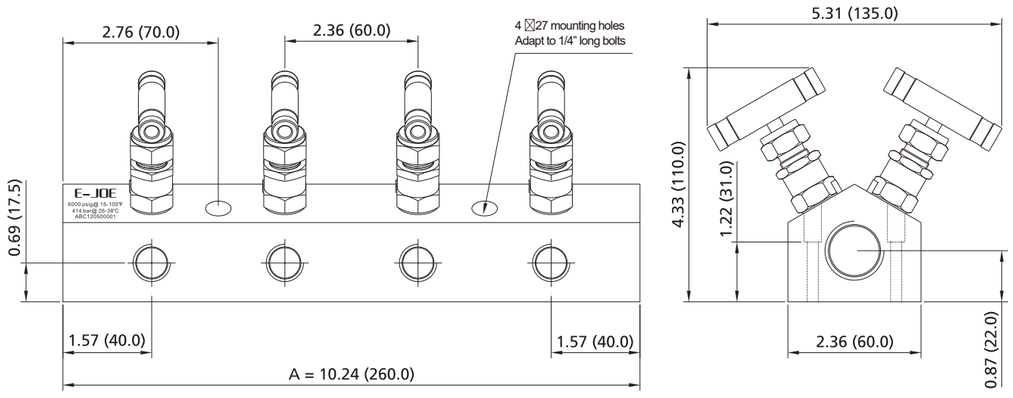
## Standard port format

| Port | Type | Specifications | Standard |
|---|---|---|---|
| Entrance | NPT Female Thread | 3/4" | ASME B1.20.1 |
| Exit | NPT Female Thread | 1/4" | ASME B1.20.1 |
| Discharge port | NPT Female Thread | 1/2" | ASME B1.20.1 |

Note: The ports listed above are standard products. If other port types are required, please refer to "Model Description" for selection.

## Size

Dimensions are in inches (mm) and are for reference only.
A change in the number of outlets will cause the total length A to change, while the rest will remain unchanged.




8 outlet valve group







## Model Description

SS-68-FN12-8FN4Y-VFN8-GC-SF2

- Body Material: SS 316 stainless steel; S4 304 stainless steel
- Series: 68
- Inlet type: FN NPT female thread; FRT Imperial taper female thread; FRP Imperial straight pipe female thread; PS Pipe plug welding; PB Pipe butt welding
- Inlet size: 8 1/2"; 12 3/4"; *16 1"
- Number of outlets: 4; 6; 8; 10; 12
- Outlet type: FN NPT female thread; N NPT male thread; MJ Metric double ferrule fitting; FJ Imperial double ferrule fitting; MS Metric male thread (compatible with RG gasket); BP Imperial straight pipe male thread (compatible with RG gasket)
- Outlet size: 4 1/4"; 6 3/8" or 6 mm; 8 1/2" or 8 mm; 10 M10×1 or 10 mm; 12 3/4" or 12 mm; 14 M14×1.5 or 14 mm
- Outlet plug: V Plug; VP Valve; VP Valve with plug
- Discharge valve/plug: None; Y Have
- Discharge size: 8 1/2" or 8 mm; 10 M10 x 1 or 10 mm; 12 3/4" or 12 mm; 14 M14 x 1.5 or 14 mm
- Needle valve packing: PTFE; G Graphite
- Handle: C Black alumina rod; C Red alumina rod; F Green alumina rod; J Blue alumina rod; M Stainless steel rod
- Special applications: None; S NACE MR 0175
- Cleaning and packaging: FC-01; F2 FC-02

Note:
1. "Model Description" is used to explain the composition rules of E-JOE models. Some combinations do not exist.
2. Cleaning and packaging:
FC-01: Standard cleaning and packaging for general industrial use.
FC-02: Special cleaning and packaging for wetted system components, which should meet ASTM G93 C grade requirements.
3. *Mark is only used for maximum working pressure 3000 psig

# Tubing Selection

Proper selection, handling, and installation of tubing is critical to achieving a reliable piping system when used with E-JOE tube fittings.
When ordering tubing for use with E-JOE tube fittings, the following variables should be considered:

- Surface finish
- Material
- Hardness
- Wall thickness

## Tubing Surface Finish

Many ASTM specifications cover the above requirements, but they often do not describe surface finishing in great detail.
For example, the general pipe standard ASTM A450 states:

12. Trueness and Finish

12.1 Machined ferrules shall be fairly straight with smooth, burr-free ends and a good manual finish. Surface imperfections (Note 1) may be removed by grinding, provided that a smooth curved surface is maintained and the wall thickness of the tube is not less than that permitted by this specification or the product specification. The outside diameter of the ground area may be reduced by grinding.

Note 1: A defect is any discontinuity or irregularity found on the tubing.

## Tube material

Our ordering instructions for each tubing type are shown below the corresponding table.

## Tube hardness

Tubing used with E-JOE metal tube fittings must be softer than the fitting material. E-JOE tube fittings will provide a reliable connection with the tubing recommended in the ordering information.

## Tube wall thickness

The attached table shows the working pressures for various tube wall thicknesses. These pressures are calculated based on the S-values specified for ASME B31.3 process piping.

E-JOE tube fittings have been tested repeatedly at both the minimum and maximum wall thicknesses shown.

It is not recommended to use E-JOE tube fittings on tubes outside the range of the table.

# Tubing treatment

Good preparation can greatly reduce scratches on the tubing and preserve the excellent surface finish provided by a reliable tubing manufacturer.

- Tubing should never be pulled from a pipe rack or over a rough surface.
- Keep the cutter or hacksaw sharp. Do not cut too deep with each rotation of the cutter or stroke of the hacksaw.
- The end of the tubing should be deburred. This helps ensure that the tubing will pass completely through the ferrule without damaging the sealing edge of the ferrule.

# Gas supply services

Gases (air, hydrogen, helium, ammonia, etc.) have very small molecules that can escape through even the smallest leak path.

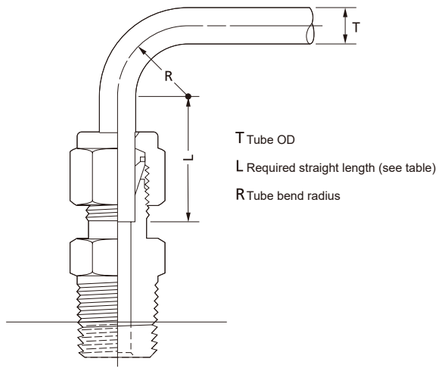
Certain surface imperfections on the tubing can provide such a leak path. As the tubing outside diameter (O.D.) increases, the likelihood that scratches or other surface imperfections will affect the seal also increases. The most successful gas service connection will be achieved if the installation instructions are carefully followed and the larger tubing wall thickness from the attached table is selected.

Thicker wall tubing helps the ferrule tighten around the tubing better than thinner wall tubing, allowing the ferrule to compensate for smaller surface imperfections. In the Tube Working Pressure table, select a tube wall thickness that provides a working pressure outside the shaded area.





# Tube Installation




T Tube OD

L Required straight length (see table)

R Tube bend radius

When used in conjunction with high-quality E-JOE fittings, properly selected and treated tubing will p-rovide you with a leak-free system. When properly installed on such tubing, E-JOE fittings will provide reliable service in a variety of fluid applications.

When installing fittings near tubing bends, there m-ust be sufficient straight length to allow the tubing t-o bottom out in the E-JOE fitting (see table).

For maximum reliable performance, install E-JOE tu-be fittings according to catalog instructions and use high-quality tubing that has been properly selected and treated—such as that provided by E-JOE.

| Imperial, in. | |
|---|---|
| T Tube OD | L① |
| 1/16 | 1/2 |
| 1/8 | 23/32 |
| 3/16 | 3/4 |
| 1/4 | 13/16 |
| 5/16 | 7/8 |
| 3/8 | 15/16 |
| 1/2 | 1 3/16 |
| 5/8 | 1 1/4 |
| 3/4 | |
| 7/8 | 1 5/16 |
| 1 | 1 1/2 |
| 1 1/4 | 2 |
| 1 1/2 | 2 13/32 |
| 2 | 3 1/4 |

① Required straight pipe length.

| Metric, mm | |
|---|---|
| T Tube OD | L① |
| 3 | 19 |
| 6 | 21 |
| 8 | 23 |
| 10 | 25 |
| 12 | 31 |
| 14 | 32 |
| 15 | |
| 16 | |
| 18 | |
| 20 | 34 |
| 22 | |
| 25 | 40 |
| 28 | 46 |
| 30 | 50 |
| 32 | 54 |
| 38 | 63 |
| 50 | 80 |

## Hydraulic preloader

When installing carbon steel or stainless steel E-JOE tube fittings over 1 in. (25 mm), you must use the E-JOE hydraulic preswaging device. For 11/4, 11/2, and 2 in. (28, 30, 32, 38, and 50 mm) E-JOE tube fittings, this device fully preswages the ferrules onto the tube.

# Types of tubing

Tubing includes TST and TPT series

- TST series seamless straight tubes, pickled or bright annealed, mechanically polished on the outer surface.
- TPT series seamless coils, bright annealed, mechanically polished on the outer surface.

# Tubing working pressure gauge

All figures and tables are for reference only. No implication is made that these figures may be used for design work. Applicable codes and practices in the industry should be considered. The ASME code is the successor and replacement of the ASA piping code.

- All pressures are calculated from equations in ASME B31.3 “Process Piping”. See coefficients for working pressures per ASME B31.1 “Power Piping”.
- Calculations are based on maximum OD and minimum wall thickness unless otherwise noted in table.
  Example: 1/2 in. OD x 0.035 in. wall stainless steel tubing: Purchased per ASTM A269
  OD tolerance ±0.005 in./wall ±10%
  Calculations are based on 0.505 in. OD x 0.0315 in. wall tubing.
- Corrosion is not permitted.

## Stainless Steel Tubing

### Table 1 - Imperial Seamless Tubing

For ASTM A269 tubing at -28 to 37°C (-20 to 100°F), the allowable working pressure is calculated from the S-value of 20,000 psi (137,800 kPa) as listed in ASME B31.3 and ASME B31.1.

### For Welded Tubing

For welded and drawn tubing, the derating factor must be multiplied to achieve weld integrity:

- For double-sided welded tubing, multiply the pressure rating by 0.85
- For single-sided welded tubing,multiply the pressure rating by 0.80.

| Tube outer diameter (in.) | Tubing Wall Thickness, in. | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 0.010 | 0.012 | 0.014 | 0.016 | 0.020 | 0.028 | 0.035 | 0.049 | 0.065 | 0.083 | 0.095 | 0.109 | 0.120 | 0.134 | 0.156 | 0.188 |
| | Working Pressure, psig | | | | | | | | | | | | | | | |
| 1/16 | 5600 | 6800 | 8100 | 9400 | 12000 | | | | | | | | | | | |
| 1/8 | | | | | | 8500 | 10900 | | | | | | | | | |
| 3/16 | | | | | | 5400 | 7000 | 10200 | | | | | | | | |
| 1/4 | | | | | | 4000 | 5100 | 7500 | 10200 | | | | | | | |
| 5/16 | | | | | | | 4000 | 5800 | 8000 | | | | | | | |
| 3/8 | | | | | | | 3300 | 4800 | 6500 | | | | | | | |
| 1/2 | | | | | | | 2600 | 3700 | 5100 | 6700 | | | | | | |
| 5/8 | | | | | | | | 2900 | 4000 | 5200 | 6000 | | | | | |
| 3/4 | | | | | | | | 2400 | 3300 | 4200 | 4900 | 5800 | | | | |
| 7/8 | | | | | | | | 2000 | 2800 | 3600 | 4200 | 4800 | | | | |
| 1 | | | | | | | | | 2400 | 3100 | 3600 | 4200 | 4700 | | | |
| 1 1/4 | | | | | | | | | | 2400 | 2800 | 3300 | 3600 | 4100 | 4900 | |
| 1 1/2 | | | | | | | | | | | 2300 | 2700 | 3000 | 3400 | 4000 | 4900 |
| 2 | | | | | | | | | | | | 2000 | 2200 | 2500 | 2900 | 3600 |

NOTE: For gas service, select a wall thickness outside the shaded area.

Suggested Ordering Information

High quality (type 304/304L\316/316L, etc.) fully annealed (seamless or welded and drawn) stainless steel hydraulic tubing conforming to ASTM A269 or A213 or equivalent. Hardness 80HRB or less. Tubing should be scratch free and suitable for bending and expanding. Note: Some austenitic stainless steel tubing has an allowable elliptical tolerance of twice the outside diameter tolerance and may not fit E-JOE precision tube fittings.







### Table 2 - Metric Seamless Tubing

For EN ISO 1127 tubing (D4, T4 tolerances from 3 to 12 mm; D4, T3 tolerances from 14 to 50 mm), the allowable working pressure is based on the equation from ASME B31.3, using a stress value of 1370 bar (20 000 psi) and a tensile strength of 5170 bar (75 000 psi) as listed in ASME B31.3 and ASME B31.1.

### For Welded Tubing

For welded and drawn tubing, the derating factor must be multiplied to achieve weld integrity:

- For double-sided welded tubing, multiply the pressure rating by 0.85
- For single-sided welded tubing,multiply the pressure rating by 0.80.

| Tube outer diameter (mm) | Tubing Wall Thickness, mm | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 0.8 | 1.0 | 1.2 | 1.5 | 1.8 | 2.0 | 2.2 | 2.5 | 2.8 | 3.0 | 3.5 | 4.0 | 4.5 | 5.0 |
| | Working Pressure, bar | | | | | | | | | | | | | |
| 3 | 670 | | | | | | | | | | | | | |
| 6 | 310 | 420 | 540 | 710 | | | | | | | | | | |
| 8 | | 310 | 390 | 520 | | | | | | | | | | |
| 10 | | 240 | 300 | 400 | 510 | 580 | | | | | | | | |
| 12 | | 200 | 250 | 330 | 410 | 470 | | | | | | | | |
| 14 | | 160 | 200 | 270 | 340 | 380 | 430 | | | | | | | |
| 15 | | 150 | 190 | 250 | 310 | 360 | 400 | | | | | | | |
| 16 | | | 170 | 230 | 290 | 330 | 370 | 400 | | | | | | |
| 18 | | | 150 | 200 | 260 | 290 | 320 | 370 | | | | | | |
| 20 | | | 140 | 180 | 230 | 260 | 290 | 330 | 380 | | | | | |
| 22 | | | 140 | 160 | 200 | 230 | 260 | 300 | 340 | | | | | |
| 25 | | | | | 180 | 200 | 230 | 260 | 290 | 320 | | | | |
| 28 | | | | | | 180 | 200 | 230 | 260 | 280 | 330 | | | |
| 30 | | | | | | 170 | 180 | 210 | 240 | 260 | 310 | | | |
| 32 | | | | | | 160 | 170 | 200 | 220 | 240 | 290 | 330 | | |
| 38 | | | | | | | 140 | 160 | 190 | 200 | 240 | 270 | 310 | |
| 50 | | | | | | | | | | 150 | 180 | 210 | 240 | 270 |

NOTE: For gas service, select a wall thickness outside the shaded area.

Suggested Ordering Information

High quality (type 3041304L, 316/316L, etc.) stainless steel tubing, fully annealed, EN IS0 1127 or equivalent. Hardness 80 HRB or less.The tubing should be scratch-free and suitable for bending or expanding.

## Carbon Steel Tubing

### Table 3 - Imperial

For ASTM A179 tubing at -28 to 37°C (-20 to 100°F), the allowable working pressure is calculated from an S-value of 15 700 psi (108 200 kPa) as listed in ASME B31.3. Per ASME B31.1, multiply the carbon steel rating by 0.85 to find the working pressure.

| Tube outer diameter (in.) | Tubing Wall Thickness, in. | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 0.028 | 0.035 | 0.049 | 0.065 | 0.083 | 0.095 | 0.109 | 0.120 | 0.134 | 0.148 | 0.165 | 0.180 | 0.220 |
| | Working Pressure, psig | | | | | | | | | | | | |
| 1/8 | 8000 | 10200 | | | | | | | | | | | |
| 3/16 | 5100 | 6600 | 9600 | | | | | | | | | | |
| 1/4 | 3700 | 4800 | 7000 | 9600 | | | | | | | | | |
| 5/16 | | 3700 | 5500 | 7500 | | | | | | | | | |
| 3/8 | | 3100 | 4500 | 6200 | | | | | | | | | |
| 1/2 | | 2300 | 3200 | 4500 | 5900 | | | | | | | | |
| 5/8 | | 1800 | 2600 | 3500 | 4600 | 5300 | | | | | | | |
| 3/4 | | | 2100 | 2900 | 3700 | 4300 | 5100 | | | | | | |
| 7/8 | | | 1800 | 2400 | 3200 | 3700 | 4300 | | | | | | |
| 1 | | | 1500 | 2100 | 2700 | 3200 | 3700 | 4100 | | | | | |
| 1 1/4 | | | | 1600 | 2100 | 2500 | 2900 | 3200 | 3600 | 4000 | 4600 | 5000 | |
| 1 1/2 | | | | | 1800 | 2000 | 2400 | 2600 | 2900 | 3300 | 3700 | 4100 | 5100 |

NOTE: For gas service, select a wall thickness outside the shaded area.

### Suggested Ordering Information

High quality soft annealed seamless carbon steel hydraulic tubing per ASTM A179 or equivalent. Hardness 72 HRB (130 HV) or less. The tubing should be free of scratches and suitable for bending or expanding.

### Table 4 - Metric

For DIN 2391 tubing, allowable working pressures are based on equations from ASME B31.3, using a stress value of 1130 bar (16,400 psi) and a tensile strength of 3400 bar (49,300 psi).

| Tube outer diameter (mm) | Tubing Wall Thickness, mm | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 0.8 | 1.0 | 1.2 | 1.5 | 1.8 | 2.0 | 2.2 | 2.5 | 2.8 | 3.0 | 3.5 | 4.0 | 4.5 |
| | Working Pressure, bar | | | | | | | | | | | | |
| 3 | 630 | 790 | | | | | | | | | | | |
| 6 | 290 | 370 | 460 | 590 | | | | | | | | | |
| 8 | | 270 | 330 | 430 | | | | | | | | | |
| 10 | | 210 | 260 | 330 | | | | | | | | | |
| 12 | | 170 | 210 | 270 | 330 | 380 | 420 | | | | | | |
| 14 | | 150 | 180 | 230 | 280 | 320 | 350 | | | | | | |
| 15 | | 140 | 170 | 210 | 260 | 290 | 330 | | | | | | |
| 16 | | 130 | 150 | 200 | 240 | 270 | 300 | 350 | | | | | |
| 18 | | | 140 | 170 | 210 | 240 | 270 | 310 | | | | | |
| 20 | | | 120 | 160 | 190 | 210 | 240 | 270 | 310 | | | | |
| 22 | | | 110 | 140 | 170 | 190 | 210 | 240 | 280 | | | | |
| 25 | | | 100 | 120 | 150 | 170 | 180 | 210 | 240 | 260 | | | |
| 28 | | | | | | 150 | 160 | 190 | 210 | 230 | 270 | | |
| 30 | | | | | | 140 | 150 | 170 | 200 | 210 | 250 | | |
| 32 | | | | | | 130 | 140 | 160 | 180 | 200 | 230 | 270 | |
| 38 | | | | | | | 120 | 130 | 150 | 160 | 190 | 230 | 260 |

NOTE: For gas service, select a wall thickness outside the shaded area.

### Suggested Ordering Information

High-quality soft-annealed carbon steel tubing per DIN 2391 or equivalent. Hardness 130 HV (72 HRB) or less. Tubing should be scratch-free and suitable for bending or expanding.







## Copper Tubing

For ASTM B75 (B75M) tubing at -28 to 37°C (-20 to 100°F), the allowable working pressure is calculated from the S-value of 6000 psi (41 300 kPa) as listed in ASME B31.3 and ASME B31.1.

### Table 5 - Imperial

| Tube outer diameter (in.) | Tubing Wall Thickness, in. | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | 0. 028 | 0. 030 | 0. 035 | 0. 049 | 0. 065 | 0. 083 | 0. 095 | 0. 109 | 0. 120 | 0. 134 |
| | Working Pressure, psig | | | | | | | | | |
| 1/8 | 2700 | 3000 | 3600 | | | | | | | |
| 3/16 | 1800 | 1900 | 2300 | 3400 | | | | | | |
| 1/4 | 1300 | 1400 | 1600 | 2500 | 3500 | | | | | |
| 5/16 | | | 1300 | 1900 | 2700 | | | | | |
| 3/8 | | | 1000 | 1600 | 2200 | | | | | |
| 1/2 | | | 800 | 1100 | 1600 | 2100 | | | | |
| 5/8 | | | | 900 | 1200 | 1600 | 1900 | | | |
| 3/4 | | | | 700 | 1000 | 1300 | 1500 | 1800 | | |
| 7/8 | | | | 600 | 800 | 1100 | 1300 | 1500 | | |
| 1 | | | | 500 | 700 | 900 | 1100 | 1300 | 1500 | |
| 1 1/8 | | | | | 600 | 800 | 1000 | 1100 | 1300 | 1400 |

NOTE: For gas service, select a wall thickness outside the shaded area.

### Table 6 - Metric

| Tube outer diameter (mm) | Tubing Wall Thickness, mm | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | 0.8 | 1.0 | 1.2 | 1.5 | 1.8 | 2.0 | 2.2 | 2.5 | 2.8 | 3.0 |
| | Working Pressure, bar | | | | | | | | | |
| 6 | 110 | 140 | 170 | 220 | | | | | | |
| 8 | | 100 | 120 | 160 | | | | | | |
| 10 | | 80 | 100 | 130 | | | | | | |
| 12 | | 60 | 80 | 100 | 130 | 140 | | | | |
| 14 | | 50 | 60 | 90 | 110 | 120 | 130 | | | |
| 15 | | | 60 | 80 | 100 | 110 | 120 | | | |
| 16 | | | | 70 | 90 | 100 | 110 | 120 | | |
| 18 | | | | 60 | 80 | 90 | 100 | 110 | | |
| 20 | | | | 60 | 70 | 80 | 90 | 100 | 110 | |
| 22 | | | | 50 | 60 | 70 | 80 | 90 | 100 | |
| 25 | | | | 40 | 50 | 60 | 70 | 80 | 90 | 100 |
| 28 | | | | | 40 | 50 | 60 | 70 | 80 | 90 |

NOTE: For gas service, select a wall thickness outside the shaded area.

### Suggested Ordering Information

High-quality soft annealed seamless copper tubing conforming to ASTM B75 (B75M) or equivalent. Also available are soft annealed (Temper O) copper water pipe, Type K or Type L, conforming to ASTM B88.

## Alloy 400 Tubing

For ASTM B165 tubing at -28 to 37°C (-20 to 100°F), the allowable working pressure is calculated from the S-value of 18,700 psi (128,800 kPa) as listed in ASME B31.3 and ASME B31.1.

Table 7 - Imperial

| Tube outer diameter (in.) | Tubing Wall Thickness, in. | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| | 0.028 | 0.035 | 0.049 | 0.065 | 0.083 | 0.095 | 0.109 | 0.120 |
| | Working Pressure, psig | | | | | | | |
| 1/8 | 7900 | 10 100 | | | | | | |
| 1/4 | 3700 | 4 800 | 7000 | 9500 | | | | |
| 5/16 | | 3 700 | 5400 | 7300 | | | | |
| 3/8 | | 3 100 | 4400 | 6100 | | | | |
| 1/2 | | 2 300 | 3200 | 4400 | | | | |
| 3/4 | | | 2200 | 3000 | 4000 | 4600 | | |
| 1 | | | | 2200 | 2900 | 3400 | 3900 | 4300 |

NOTE: For gas service, select a wall thickness outside the shaded area.

Table 8 - Metric

| Tube outer diameter (mm) | Tubing Wall Thickness, mm | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | 0.8 | 1.0 | 1.2 | 1.5 | 1.8 | 2.0 | 2.2 | 2.5 | 2.8 | 3.0 |
| | Working Pressure, bar | | | | | | | | | |
| 6 | 310 | 390 | 490 | 620 | | | | | | |
| 8 | | 290 | 350 | 450 | | | | | | |
| 10 | | 220 | 280 | 350 | | | | | | |
| 12 | | 180 | 230 | 290 | | | | | | |
| 14 | | 160 | 190 | 240 | 270 | | | | | |
| 18 | | | 150 | 200 | 240 | 270 | 300 | | | |
| 20 | | | | 180 | 210 | 240 | 270 | 290 | | |
| 25 | | | | | 170 | 190 | 210 | 240 | 270 | 290 |

NOTE: For gas service, select a wall thickness outside the shaded area.

Suggested Ordering Information

High-quality seamless alloy 400 hydraulic tubing, fully annealed, ASTM B165 or equivalent. Maximum hardness is 75 HRB. Tube should be scratch-free and suitable for bending and expanding. Outside diameter tolerance shall not exceed 0.005in. (±0.13mm).







## Alloy C-276 Tubing

Allowable working pressure is based on equations from ASME B31.3 and ASME B31.1 and a maximum S value of 20 000 psi (137 800 kPa).

Table 9 - Imperial

| Tube outer diameter (in.) | Tubing Wall Thickness, in. | | | |
|---|---|---|---|---|
| | 0.028 | 0.035 | 0.049 | 0.065 |
| | Working Pressure, psig | | | |
| 1/4 | 4000 | 5100 | 7500 | 1 0200 |
| 5/16 | | 4000 | 5800 | 7 800 |
| 3/8 | | 3300 | 4800 | 6 500 |
| 1/2 | | 2600 | 3700 | 5 100 |

NOTE: For gas service, select a tube wall thickness outside the shaded area.

Table 10 - Metric

| Tube outer diameter (mm) | Tubing Wall Thickness, mm | | | |
|---|---|---|---|---|
| | 0.8 | 1.0 | 1.2 | 1.5 |
| | Working Pressure, bar | | | |
| 6 | 310 | 420 | 520 | 670 |
| 8 | | 310 | 390 | 500 |
| 10 | | 240 | 300 | 380 |
| 12 | | 200 | 240 | 310 |

NOTE: For gas service, select a tube wall thickness outside the shaded area.

Suggested Ordering Information

High-quality alloy C-276 tubing, fully annealed, ASTM B622 or equivalent. Maximum hardness is 100 HRB.
Tubing should be scratch-free and suitable for bending and expanding. Outside diameter tolerance should not exceed ±0.005 in. (±0.13 mm)

## Alloy 20 Tubing

Allowable working pressure is based on equations from ASME B31.3 and ASME B31.1 and a maximum S value of 20 000 psi (137 800 kPa).

Table 11 - Imperial

| Tube outer diameter (in.) | Tubing Wall Thickness, in. | | | |
|---|---|---|---|---|
| | 0.028 | 0.035 | 0.049 | 0.065 |
| | Working Pressure, psig | | | |
| 1/4 | 4000 | 5100 | 7500 | 1 0200 |
| 3/8 | | 3300 | 4800 | 6 500 |
| 1/2 | | 2600 | 3700 | 5 100 |

NOTE: For gas service, select a tube wall thickness outside the shaded area.

Table 12 - Metric

| Tube outer diameter (mm) | Tubing Wall Thickness, mm | | | |
|---|---|---|---|---|
| | 0.8 | 1.0 | 1.2 | 1.5 |
| | Working Pressure, bar | | | |
| 6 | 310 | 420 | 520 | 670 |
| 10 | | 240 | 300 | 380 |
| 12 | | 200 | 240 | 310 |

NOTE: For gas service, select a tube wall thickness outside the shaded area.

Suggested Ordering Information

Alloy 20 tubing, fully annealed, seamless or welded and drawn, ASTM B729, B468 or equivalent.
Tubing should be free of scratches and suitable for bending and expanding. Outside diameter tolerance should not exceed ±0.005 in. (±0.13 mm)

## Alloy 600 Tubing

Allowable working pressure is based on equations from ASME B31.3 and ASME B31.1 and a maximum S value of 20 000 psi (137 800 kPa).

Table 13 - Imperial

| Tube outer diameter (in.) | Tubing Wall Thickness, in. | | | |
|---|---|---|---|---|
| | 0.028 | 0.035 | 0.049 | 0.065 |
| | Working Pressure, psig | | | |
| 1/4 | 4000 | 5100 | 7500 | 10200 |
| 3/8 | | 3300 | 4800 | 6500 |
| 1/2 | | 2600 | 3700 | 5100 |

NOTE: For gas service, select a tube wall thickness outside the shaded area.

Table 14 - Metric

| Tube outer diameter (mm) | Tubing Wall Thickness, mm | | | |
|---|---|---|---|---|
| | 0.8 | 1.0 | 1.2 | 1.5 |
| | Working Pressure, bar | | | |
| 6 | 310 | 420 | 520 | 670 |
| 10 | | 240 | 300 | 380 |
| 12 | | 200 | 240 | 310 |

NOTE: For gas service, select a tube wall thickness outside the shaded area.

### Suggested Ordering Information

Cold drawn, fully annealed, #1 tempered alloy 600 seamless tubing, ASTM B167 or equivalent. Hardness 92 HRB or less. Tubing should be scratch free and suitable for bending and expanding. Order by OD and wall thickness only, not ID or average wall thickness. OD tolerance shall not exceed ±0.005 in. (±0.13 mm).

## Grade 2 Titanium Tubing

For ASTM B338 tubing at -28 to 37°C (-20 to 100°F), the allowable working pressure is calculated from the S-value of 16,700 psi (115,000 kPa), as listed in ASME B31.3. Per ASME B31.1, multiply the Grade 2 titanium rating by 0.85 to find the working pressure.



Table 15 - Imperial

| Tube outer diameter (in.) | Tubing Wall Thickness, in. | | | |
|---|---|---|---|---|
| | 0.028 | 0.035 | 0.049 | 0.065 |
| | Working Pressure, psig | | | |
| 1/4 | 3500 | 4500 | 6700 | 9100 |
| 3/8 | | 2900 | 4200 | 5800 |
| 1/2 | | 2100 | 3100 | 4200 |

NOTE: For gas service, select a tube wall thickness outside the shaded area.

Table 16 - Metric

| Tube outer diameter (mm) | Tubing Wall Thickness, mm | | | |
|---|---|---|---|---|
| | 0.8 | 1.0 | 1.2 | 1.5 |
| | Working Pressure, bar | | | |
| 6 | 290 | 380 | 470 | 600 |
| 10 | | 210 | 260 | 340 |
| 12 | | 180 | 220 | 280 |

NOTE: For gas service, select a tube wall thickness outside the shaded area.

### Suggested Ordering Information

Fully annealed seamless or welded and drawn Grade 2 titanium tubing per ASTM B338 or equivalent. Tubing should be free of scratches and suitable for bending. OD tolerances should not exceed ±0.005 in. (±0.13 mm).





## SAF 2507 Super Duplex Tubing

For ASTM A789 tubing at -28 to 37°C (-20 to 100°F), the allowable working pressure is calculated from the S-value of 38,700 psi (266,000 kPa), as listed in ASME B31.3.

Table 17 - Imperial

| Tube outer diameter (in.) | Tubing Wall Thickness, in. | | | | |
|---|---|---|---|---|---|
| | 0.035 | 0.049 | 0.065 | 0.083 | 0.095 |
| | Working Pressure, psig | | | | |
| 1/4 | 10 000 | 15 000 | | | |
| 3/8 | 6 500 | 10 100 | 12 700 | | |
| 1/2 | 5 000 | 7 200 | 10 100 | 12 900 | |
| 5/8 | | 5 800 | 7 600 | 10 100 | |
| 3/4 | | 4 700 | 6 300 | 8 500 | 10 000 |

NOTE: For gas service, select a wall thickness outside the shaded area.

### Suggested Ordering Information

Fully annealed SAF 2507 super duplex tubing per ASTM A789 or equivalent. Hardness 32 HRC or less. Tubing should be scratch-free and suitable for bending and expanding.

## Alloy 825 Tubing

Allowable working pressure is based on equations from ASME BPV.



Table 18 - Imperial

| Tube outer diameter (in.) | Tubing Wall Thickness, in. | | |
|---|---|---|---|
| | 0.035 | 0.049 | 0.065 |
| | Working Pressure, psig | | |
| 1/4 | 6400 | 9300 | 11 600 |
| 3/8 | 4100 | 5900 | 8 200 |
| 1/2 | 3000 | 4300 | 5 900 |

Table 19 - Metric

| Tube outer diameter (mm) | Tubing Wall Thickness, mm | | | | |
|---|---|---|---|---|---|
| | 0.8 | 1.0 | 1.2 | 1.5 | 1.8 |
| | Working Pressure, bar | | | | |
| 6 | 410 | 530 | 660 | | |
| 10 | | 300 | 370 | 480 | |
| 12 | | 250 | 300 | 390 | 480 |

### Suggested Ordering Information

Seamless alloy 825 tubing, fully annealed, ASTM B163, or equivalent. Welded alloy 825 tubing, fully annealed, ASTM B704, Grade 1, or equivalent. Maximum hardness Rockwell 90 (201 HV) at 15T. Tubing should be scratch-free and suitable for bending and expanding.

## Alloy 625 Tubing

Allowable working pressure is calculated from an S value of 26 700 psi (183 900 kPa) for ASTM B4442 grade tubing at -28 to 37°C (-20 to 100°C) per the requirements listed in ASME BPV2001, Table 1B; tubing OD and wall thickness tolerances are in accordance with ASTM B444 for small diameter tubing.

### Table 20 - Imperial

| Tube outer diameter (in.) | Tubing Wall Thickness, in. | | |
|---|---|---|---|
| | 0.035 | 0.049 | 0.065 |
| | Working Pressure, psig | | |
| 1/4 | 7300 | 10 700 | 14 600 |
| 3/8 | 4700 | 6 800 | 9 400 |
| 1/2 | 3500 | 5 000 | 6 800 |

### Table 21 - Metric

| Tube outer diameter (mm) | Tubing Wall Thickness, mm | | | | |
|---|---|---|---|---|---|
| | 0.8 | 1.0 | 1.2 | 1.5 | 1.8 |
| | Working Pressure, bar | | | | |
| 6 | 470 | 610 | 750 | | |
| 10 | | 350 | 430 | 550 | |
| 12 | | 290 | 350 | 450 | 550 |

### Suggested Ordering Information

Fully annealed seamless alloy 625 tubing conforming to ASTM B444, Grade 1 or equivalent. Maximum hardness is 25 HRC (266 HV). Tubing should be scratch-free and suitable for bending and expanding.

## Pressure rating at high temperature

### Table 22 - High temperature coefficients

| Temperature | | Tubing Material | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| °F | °C | Copper | Carbon Steel[1] | 304/304L② | 316/316L② | Alloy 400 | Alloy 20® | Alloy C-276® | Alloy 600® | Titanium | SAF 2507 | Alloy 825 | Alloy 625 |
| 200 | 93 | 0.80 | 0.95 | 1.00 | 1.00 | 0.87 | 1.00 | 1.00 | 1.00 | 0.86 | 0.90 | 1.00 | 0.93 |
| 400 | 204 | 0.50 | 0.87① | 0.93 | 0.96 | 0.79 | 0.96 | 0.96 | 0.96 | 0.61 | 0.82 | 0.90 | 0.85 |
| 600 | 315 | | | 0.82 | 0.85 | 0.79 | 0.85 | 0.85 | 0.85 | 0.45 | 0.80 | 0.84 | 0.79 |
| 800 | 426 | | | 0.76 | 0.79 | 0.75 | 0.79 | 0.79 | 0.79 | | | 0.81 | 0.75 |
| 1000 | 537 | | | 0.69 | 0.76 | | | 0.76 | 0.35 | | | | 0.73 |

① Based on 190°C (375°F) maximum temperature

② Based on lower derating factors for stainless steel per ASME B31.3.

To determine the allowable working pressure at elevated temperatures, multiply the allowable working pressure from Tables 1 through 21 by the factor shown in Table 22.
Example: 1/2 in. OD x 0.035 in. wall 316/316L stainless steel type at 1000°F:
1. The allowable working pressure at -28 to 37° (-20 to 100°F) is 2600 psig (see Table 1, page 3).
2. The high temperature factor at 537°C (1000°F) is 0.76 (see Table 22 above):
2600 psig x 0.76 = 1976 psig
The allowable working pressure for 1/2 in. OD x 0.035 in. wall 316/316L stainless steel tubing at 537° (1000°F) is 1976 psig







## Ordering Information

### Basic Ordering Information

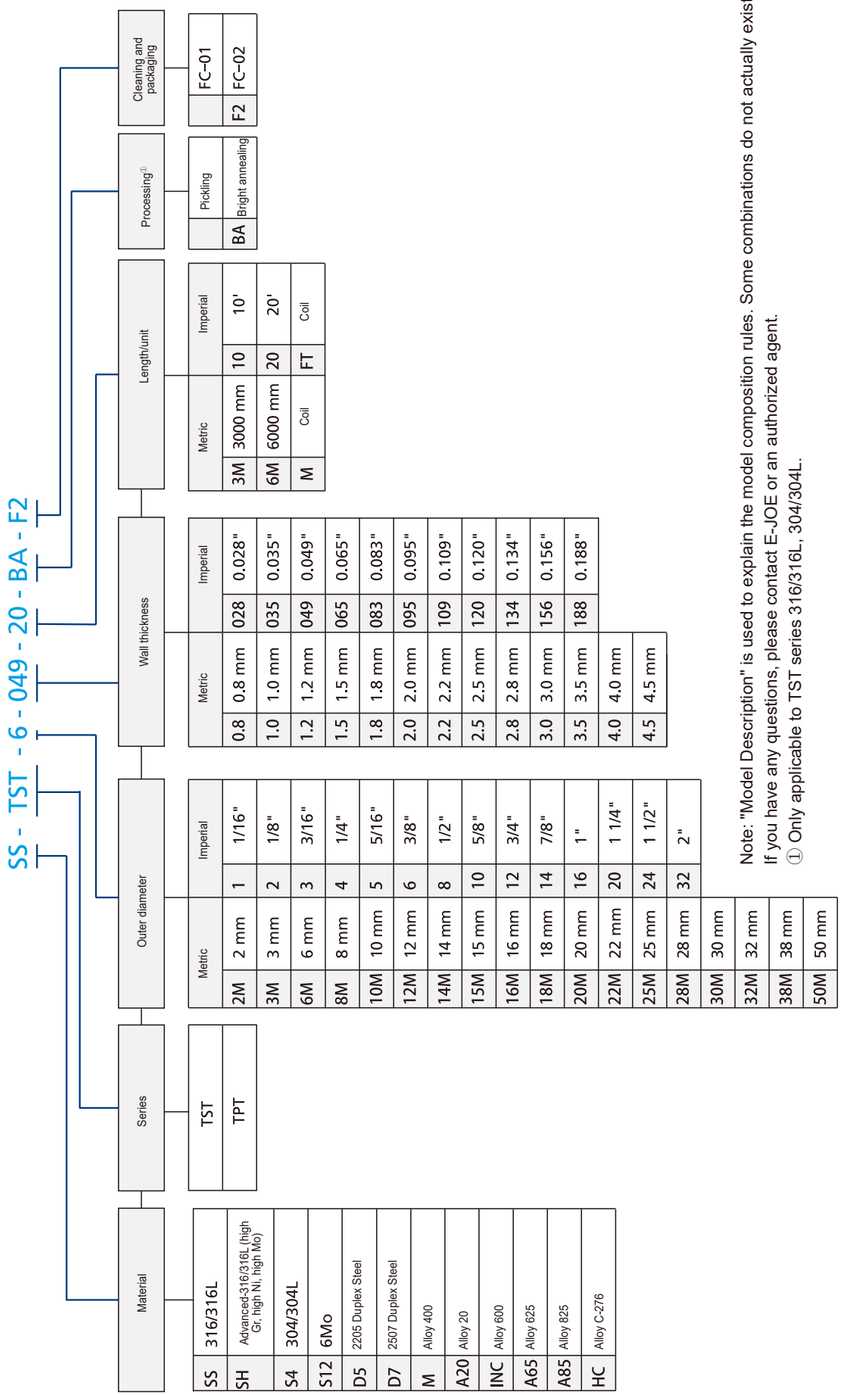
### Fractional Stainless Steel Seamless Tubing

| Tube outer diameter (in.) | Tubing Wall Thickness, in. | Basic Ordering Information | | Weight |
|---|---|---|---|---|
| | | 316/316L | 304/304L | lb/ft |
| 1/4 | 0.035 | SS-TST-4-035- | S4-TST-4-035- | 0.082 |
| | 0.049 | SS-TST-4-049- | S4-TST-4-049- | 0.107 |
| 3/8 | 0.049 | SS-TST-6-049- | S4-TST-6-049- | 0.173 |
| | 0.065 | SS-TST-6-065- | S4-TST-6-065- | 0.219 |
| 1/2 | 0.049 | SS-TST-8-049- | S4-TST-8-049- | 0.240 |
| | 0.065 | SS-TST-8-065- | S4-TST-8-065- | 0.307 |
| 3/4 | 0.065 | SS-TST-12-065- | S4-TST-12-065- | 0.484 |
| 1 | 0.083 | SS-TST-16-083- | S4-TST-16-083- | 0.827 |
| 1 1/2 | 0.134 | SS-TST-24-134- | S4-TST-24-134- | 1.989 |

### Metric Stainless Steel Seamless Tubing

| Tube outer diameter (mm) | Tubing Wall Thickness, mm | Basic Ordering Information | | Weight |
|---|---|---|---|---|
| | | 316/316L | 304/304L | Kg/m |
| 6 | 1.0 | SS-TST-6M-1.0- | S4-TST-6M-1.0- | 0.125 |
| 8 | 1.0 | SS-TST-8M-1.0- | S4-TST-8M-1.0- | 0.175 |
| 10 | 1.0 | SS-TST-10M-1.0- | S4-TST-10M-1.0- | 0.226 |
| | 1.5 | SS-TST-10M-1.5- | S4-TST-10M-1.5- | 0.320 |
| 12 | 1.5 | SS-TST-12M-1.5- | S4-TST-12M-1.5- | 0.395 |
| | 2.0 | SS-TST-12M-2.0- | S4-TST-12M-2.0- | 0.501 |
| 14 | 1.5 | SS-TST-14M-1.5- | S4-TST-14M-1.5- | 0.470 |
| | 2.0 | SS-TST-14M-2.0- | S4-TST-14M-2.0- | 0.602 |
| 16 | 1.5 | SS-TST-16M-1.5- | S4-TST-16M-1.5- | 0.545 |
| | 2.0 | SS-TST-16M-2.0- | S4-TST-16M-2.0- | 0.702 |
| 18 | 1.5 | SS-TST-18M-1.5- | S4-TST-18M-1.5- | 0.620 |
| | 2.0 | SS-TST-18M-2.0- | S4-TST-18M-2.0- | 0.802 |
| 20 | 2.0 | SS-TST-20M-2.0- | S4-TST-20M-2.0- | 0.903 |
| 25 | 2.5 | SS-TST-25M-2.5- | S4-TST-25M-2.5- | 1.410 |
| 28 | 2.5 | SS-TST-28M-2.5- | S4-TST-28M-2.5- | 1.769 |
| 30 | 3.0 | SS-TST-30M-3.0- | S4-TST-30M-3.0- | 2.031 |
| 32 | 3.5 | SS-TST-32M-3.5- | S4-TST-32M-3.5- | 2.501 |
| 38 | 4.0 | SS-TST-38M-4.0- | S4-TST-38M-4.0- | 3.410 |

Weight unit conversion:
1 lb/ft = 1.488 kg/m
1 kg/m = 0.672 lb/ft




Note: "Model Description" is used to explain the model composition rules. Some combinations do not actually exist.
If you have any questions, please contact E-JOE or an authorized agent.
① Only applicable to TST series 316/316L, 304/304L.

## Model Description





# Tubing Tools

## Manual pipe bender features

- Suitable for bending stainless steel and copper tubes with OD from 1/4" to 1/2" and OD from 6mm to 16 mm.
- Compared with sliders, screw rollers reduce bending forces and tube ovality.
- Bending range from 1° to 180°.

### Ordering Information

| Ordering model | Tube outer diameter | Bending radius |
|---|---|---|
| HTB-4S | 1/4'' | 0.56'' |
| HTB-4 | 1/4'' | 0.75'' |
| HTB-5 | 5/16'' | 0.94'' |
| HTB-6 | 3/8'' | |
| HTB-8 | 1/2 '' | 1.5'' |
| HTB-6M | 6 mm | 15 mm |
| HTB-8M | 8 mm | 24 mm |
| HTB-10M | 10 mm | |
| HTB-12M | 12 mm | 38 mm |
| HTB-14M-L | 14 mm | 56 mm |
| HTB-16M-L | 16 mm | |



Manual tube bender should not be used for duplex steel 2507 tube and heavy wall tube for medium pressure applications.

# Pipe cutter

## Features

- Suitable for cutting stainless steel, copper and wrought iron tubes with ODs from 1/8" to 25/8" and 3mm to 65 mm.
- It can reduce the amount of flaring and work hardening of tube ends.

### Ordering Information

| Ordering model | Tube outer diameter | Knife wheel ordering information |
|---|---|---|
| FTC-03 | 1/8" to 1"and3 mm to 25 mm | FTC-03-RR |
| FTC-04 | 1/4" to 1 3/8"and6 mm to 35 mm | FTCW-45 |
| FTC-05 | 1/4" to 2 5/8" 6 mm to 65 mm | |



# Tube Deburring Tools



## Features

- Suitable for removing burrs from stainless steel, carbon steel, steel and aluminum pipes.
- Steel blades for long product life.

## Ordering Information

| Ordering Information | Deburring Locations | Size Ranges | Tube Materials |
|---|---|---|---|
| TDT-01 | Inner diameter | Under 6mm | Copper, aluminum, carbon steel, stainless steel |
| TDT-03 | Outer diameter | 6 mm to 38 mm and 1/4" to 1 1/2" | Copper, aluminum |
| | Inner diameter | | |
| TDT-05 | Outer diameter | 6 mm to 36 mm and 1/4" to 1 1/4" | Stainless steel, carbon steel |
| | Inner diameter | | |

# Manual preloader

## Features

In narrow or difficult working environments, the MPT manual pre-installer is a convenient and practical tool. When used with a vise, it can keep the pre-installation away from harsh working environments, achieving the purpose of easy and reliable installation.



- Suitable for pre-installation of carbon steel, stainless steel and alloy steel tube fittings with sizes from 1/4" to 1" and 6mm to 25 mm.
- Made of high-quality alloy steel, the product has a long service life.
- Can be easily installed on a vise for use.
- Install in a more open and safe environment.

## Ordering Information

| Ordering Information | Tube outer diameter |
|---|---|
| MPT-6M | 6 mm |
| MPT-8M | 8 mm |
| MPT-10M | 10 mm |
| MPT-12M | 12 mm |
| MPT-14M | 14 mm |
| MPT-15M | 15 mm |
| MPT-16M | 16 mm |
| MPT-18M | 18 mm |
| MPT-20M | 20 mm |
| MPT-22M | 22 mm |
| MPT-25M | 25 mm |

| Ordering Information | Tube outer diameter |
|---|---|
| MPT-4 | 1/4" |
| MPT-6 | 3/8" |
| MPT-8 | 1/2" |
| MPT-10 | 5/8" |
| MPT-12 | 3/4" |
| MPT-14 | 7/8" |
| MPT-16 | 1" |

E-J0E gap inspection gauge cannot be used to inspect tube fittings pre-assembled by MPT series pre-assemblers.







# Gap Inspection Gauge

## Features

When you first install a tube fitting, you can use a gap inspection gauge to check that the fitting is adequately tightened.

- Simple and consistent operation.

## Ordering Information

| Connector specifications | | Order model |
|---|---|---|
| in. | mm | |
| 1/16 | —— | GIG-1 |
| 1/8 | 2, 3 | GIG-2 |
| 3/16 | 4 | GIG-3 |
| 1/4 | 6 | GIG-4 |
| 5/16 | 8 | GIG-5 |
| 3/8 | —— | GIG-6 |
| —— | 10 | GIG-10M |
| 1/2 | 12 | GIG-8 |
| 5/8 | 14, 15, 16 | GIG-10 |
| 3/4 | 18 | GIG-12 |
| 7/8 | 20, 22 | GIG-14 |
| 1 | 25 | GIG-16 |
| 1/4, 3/8, 1/2 | 6, 12 | GIG-468 |
| 1/4, 1/2 | 6, 8, 10, 12 | GIG-48 |



Single specification series



Multiple specification series

All dimensions are for reference only. E-J0E may change product designs at any time.
Please keep an eye on E-J0E's latest electronic samples.